

City of Biddeford
Finance Committee

April 05, 2022 5:00 PM Council Chambers and via Zoom

Please click the link below to join the webinar:

<https://biddeford.zoom.us/j/96094309719?pwd=aWh5U3FTUkozTy9LOVZNRjBzdkNGZz09>

Passcode: 466936

Or One tap mobile :

US: +13017158592,,96094309719# or +13126266799,,96094309719#

Or Telephone:

Dial(for higher quality, dial a number based on your current location):

**US: +1 301 715 8592 or +1 312 626 6799 or +1 646 558 8656 or +1 253 215 8782 or +1
346 248 7799 or +1 669 900 9128**

Webinar ID: 960 9430 9719

International numbers available: <https://biddeford.zoom.us/j/96094309719?pwd=aWh5U3FTUkozTy9LOVZNRjBzdkNGZz09>

Zoom Meeting Link

Please click the link below to join the webinar:

<https://biddeford.zoom.us/j/96094309719?pwd=aWh5U3FTUkozTy9LOVZNRjBzdkNGZz09>

Passcode: 466936

Or One tap mobile :

US: +13017158592,,96094309719# or +13126266799,,96094309719#

Or Telephone:

Dial(for higher quality, dial a number based on your current location):

US: +1 301 715 8592 or +1 312 626 6799 or +1 646 558 8656 or +1 253 215
8782 or +1 346 248 7799 or +1 669 900 9128

Webinar ID: 960 9430 9719

International numbers available: <https://biddeford.zoom.us/j/96094309719?pwd=aWh5U3FTUkozTy9LOVZNRjBzdkNGZz09>

- 1. Call to order**
- 2. Approval of the Minutes**
 - 2.1. March 15, 2022 Finance Committee Meeting Minutes
[3-15-2022 Finance Committee Minutes.pdf](#)
- 3. Signing of the expenditure warrant**
- 4. Discussion/Approval {Public Comments Allowed}**
 - 4.1. Approval/Civic Engagement Platform
[4-05-2022 Civic Engagement Platform-MEMO.docx](#)
[4-05-2022 Civic Engagement Platform RFP Submissions.pdf](#)
[4-05-2022 RFP for Civic Engagement Platform.pdf](#)

- 4.2. Recommendation: Fire Department Assessment Consultant/Center for Public Safety Management, LLC
 - [4-05-2022 Fire Department Assessment-MEMO.docx](#)
 - [4-05-2022 Fire Dept Assessment-CPSM Project Scope and Fee Proposal Letter.pdf](#)
 - [4-05-2022 Fire Dept Assessment- CPSM Fee Proposal.pdf](#)
 - [4-05-2022 Fire Dept Assessment-CPSM RFQ Submittal - Fire EMS Quals.pdf](#)
 - [4-05-2022 Fire Dept Assessment-Matrix Consulting RFQ Submittal - Fire EMS Quals.pdf](#)

5. Other Business

- 5.1. Discussion: Bond Rating Upgrade
- 5.2. Update: River Wall Repair Alternatives Analysis - Recommended Extension of Contract with Weston & Sampson
 - [20220405 Mechanics Park Wall Repair Permitting - Weston & Sampson - ORDER](#)
 - [20220405 River Wall Repair Alternatives-MEMO.docx](#)
 - [20200325 Alternatives Study Report - Riverwalk Retaining Walls Replacement \(FEMA\).pdf](#)
 - [20220404 River Wall Repair Alternatives - 3rd Party Review - Sewall.pdf](#)

6. Adjournment

City of Biddeford
Finance Committee Meeting Minutes
March 15, 2022

The meeting was called to order at 5:02 p.m. by Councilor Belanger.

Present: Mayor Alan Casavant; Councilor Norman Belanger; Councilor William Emhiser; Councilor Marc Lessard (arrived at 5:05); Chief Operating Officer, Brian Phinney; City Clerk, Carmen Bernier; and Finance Director, Nichole Wood.

Adjustment to the Agenda

No adjustments to the agenda.

Approval of Minutes of March 1, 2022

Motion by Councilor Emhiser to accept the minutes as printed, seconded by Mayor Casavant.

Vote: unanimous.

Motion carries.

Expenditure Warrants:

The Warrants were available for review.

Discussion/Approval

Recommendation: Use of Grant & Matching Funds for Purchase of Breathing Apparatus Equipment for Fire Department/Bergeron Protective Clothing

Motion by Councilor Emhiser to recommend the use of Grant and Matching Funds for the purchase of breathing apparatus equipment for the Fire Department, from Bergeron Protective Clothing, seconded by Mayor Casavant.

Fire Chief Scott Gagne presented this item. Funds are being requested to match Grant funds for breathing apparatus equipment. The City's match is a 10% match which comes to \$28,530.45.

Chief Gagne explained he will work with Bergeron Protective Clothing to assist with disposing of the old units, or he may look into finding a small community who might be able to use them.

Vote: unanimous.

Motion carries.

Recommendation: Extended Paving Contract with Shaw Brothers for City's Paving Program

Motion by Councilor Lessard to recommend the extension of the paving contract with Shaw Brothers for the City's Paving Program, seconded by Councilor Emhiser. The contract amount from Shaw Brothers is \$79.00 per ton. Jeff is confident that if the City does not lock in to the price now, it will surely be more in the future.

Public Works Director, Jeff Demers, presented the item.

Vote: unanimous.
Motion carries.

Other Business

Review of January 2022 Financials:

Finance Director Nichole Wood gave an overview of the January 2022 Financials.

Councilor Lessard would like for the Finance Committee to have a more in-depth discussion on investments and returns sometime after the budget season.

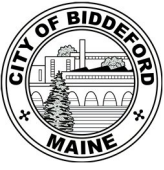
Councilor Emhiser brought up the Fund balances and would like to see those spent as they were budgeted for. Chief Operating Officer Brian Phinney explained that this issue is discussed with the Department Heads each year about this time to remind them that the budgeted funds for specific projects needs to be spent.

Motion to adjourn made by Councilor Emhiser, seconded by Councilor Lessard.

Vote: unanimous.

Motion carries.

Adjourned at 5:40 p.m.



Finance Committee Meeting

Meeting Date: April 5, 2022

Meeting Time: 5:00 p.m.

Agenda Item No: 4.1.

Item Description: Civic Engagement Platform

Submitted by: Danica Lamontagne, Communications Coordinator

Supporting Information/Documentation:

- Civic Engagement Platform RFP Document
- Submitted Proposals

Key Terms:

Civic Engagement Platform: A civic engagement platform is an online tool that facilitates citizen participation in government. With the ability to contribute to the democratic process from the comfort of home, more members of the community are empowered to share their thoughts and ideas. Additionally, these tools help governments efficiently collect and share information with the public.

Executive Summary:

The Communications Division is requesting the purchase of a license for a new online civic engagement platform to further our outreach and engagement work.

Detailed Review:

In conjunction with the approval of the Outreach & Inclusion Coordinator position, the City Council allocated \$30,000 of funding for a new civic engagement platform tool for residents.

Staff researched the various types of online software offerings aimed at improving communication and engagement with citizens and determined that a project-based solution would best serve the City's needs. This kind of service will act as a hub for us to provide information and gather feedback from the public on specific projects and proposals.

An RFP was issued on February 24, 2022 and responses were due on March 18, 2022. Six responses were received and considered. Please note that each company provided pricing in a slightly different format, and several provided multiple pricing quotes for different tiers of service. I have summarized the pricing quotes here but full quotes can be found in each of the respective proposals:

- Public Input: Year 1 cost of \$10,600, Year 2 cost of \$8,343
- ZenCity Civil Space: 2 years of service for \$30,000
- CitizenLab: For standard tier of service, 3 years of service for \$20,060

- Qualtrics: \$43,275 for 3 years of service
- BangtheTable: Year 1 cost of \$17,000, Year 2 cost of \$14,500
- Maptionnaire: \$20,000 for first year of service

Upon an evaluation of the various offerings, staff found that the lowest-priced offering, CitizenLab, meets all of the needs outlined in the RFP. CitizenLab will provide the City a brandable, custom URL that will direct to an “engagement hub” for all active projects. When a user selects a specific project, they will be able to learn about the project in detail, see other users who have voted or suggested ideas, learn about project phases and timelines, participate in any open engagement activities, and register for upcoming events.

The tools that are available for engagement through this platform include:

- Idea Wall – Community members can provide detailed input and suggestions in response to a question. Other users can vote on and reply to their ideas.
- Traditional Surveys
- Quick Polling (for simple yes/no or multiple choice questions)
- Option Analysis – Community members can select their preferred plan or proposal from predefined options.
- Q&A
- Mapping – Community members can pinpoint areas on a map to provide feedback.
- Participatory Budgeting – Community members can select from options to build their ideal budget until the total estimated costs reach a predefined level.
- Online Workshops – The platform offers a built-in video conferencing tool for project meetings, which offers features such as breakout rooms for small-group discussions.
- Proposals – The City can allow community members to propose their own initiatives that are not addressed by one of the existing projects on the platform.
- Volunteering – The City can coordinate volunteer efforts with those who have signed up to help on a certain project.

Once our engagement efforts are complete, staff will be able to generate detailed reports on the feedback that was collected.

CitizenLab offers three tiers of service. We believe that the Standard tier of service, which is the middle tier, will best fit the needs outlined in the RFP. The cost for one year of licensing of CitizenLab is \$6,400/year, and there is a one-time implementation fee of \$2,300. A 7.5% discount is offered by agreeing to a contract for three years up front. The total cost with this discount applied, including a one-time implementation fee and three years of licensing, is \$20,060. This amounts to a savings of \$1,440 compared to purchasing the license on an annual basis for three years.

Funding Source:

Funding for this software will come from reserve account 22001-92111-12106 which was allocated for a civic engagement software solution. There is \$30,000 available in this account.

Staff Recommendation:

Staff recommends accepting the proposal from CitizenLab and authorizing the expenditure of \$20,060 for three years of service.

Table of Contents

1. INDEX	2
2. ABOUT CITIZENLAB	3
2.1. INTRODUCTION	3
2.2. CITIZENLAB TEAM	4
3. PLATFORM FUNCTIONALITY	6
3.1. WHAT'S UNIQUE ABOUT CITIZENLAB	6
3.2. SETUP	8
3.2.1. <i>Configuration</i>	8
3.2.2. <i>Navigational structure</i>	11
3.3. ENGAGE	16
3.3.1. <i>Create participation projects (back-office)</i>	16
3.3.2. <i>Participation methods</i>	18
3.3.3. <i>Templates</i>	24
3.3.4. <i>Communication tools</i>	25
3.4. MANAGE	27
3.4.1. <i>Users</i>	27
3.4.2. <i>Input</i>	29
3.4.3. <i>Collaboration & feedback</i>	30
3.5. DECIDE	31
3.5.1. <i>Dashboards</i>	31
3.5.2. <i>Reporting</i>	34
4. TECHNICAL SPECIFICATIONS	35
4.1. PLATFORM COMPATIBILITY AND ACCESSIBILITY	35
4.2. DATA MANAGEMENT	35
4.3. PRIVACY & DATA PROCESSING	37
4.4. SECURITY	38
4.5. HOSTING & MAINTENANCE	39
4.6. TECHNICAL ARCHITECTURE	41
5. ACTION PLAN	44
5.1. YOUR DEDICATED GOVERNMENT SUCCESS MANAGER	44
5.2. PROJECT TIMELINE AND APPROACH	45
5.2.1. <i>Project overview</i>	45
5.3. PROJECT DELIVERABLES AND SCHEDULE	46
5.4. IMPLEMENTATION	46
5.4.1. <i>Strategy</i>	47
5.4.2. <i>Preparation</i>	48
5.4.3. <i>Launch + Follow Up Reviews</i>	49
5.5. ONGOING SUPPORT	49
6. PRICING	51
6.1.1. <i>CitizenLab Pricing Packages</i>	51
6.1.2. <i>Pricing Table</i>	51
6.1.3. <i>Full Pricing Comparison Table</i>	52

1.Index

The table below maps requirements to specific pages within the platform to allow for easy readability and ensures that all requirements articulated in the RFQ have been addressed in the proposal below.

Requirement	Section No
<i>Platform and Features</i>	
Vendor Description	Section 2.1
Government Success Manager Details	Section 2.2 and Section 5.1
Platform Description	Section 3.1 – 3.5
Data (types of User data collected) and Reporting	Section 3.2 and Section 3.5.2
ELP Support (Multilingualism)	Section 3.2.1
Accessibility Features	Section 4.1
Technical Specifications (including Data Management)	Section 4 (including 4.2)
<i>Project Plan and Implementation</i>	
Project Timeline/Deliverable Schedule	Section 5.2 and Section 5.3
Project Management	Section 5.1
Training, Implementation, and Ongoing Support	Section 5.4 and Section 5.5
<i>Pricing</i>	
Pricing / Project Budget	Section 6

2. About CitizenLab

2.1. Introduction

Background information

CitizenLab is an **impact-driven** social enterprise that provides city governments, regional authorities, local civic organizations with an **online community engagement platform**. The user-friendly platform enables organizations like City of Biddeford to centralize and manage all your public participation and community consultation projects in a single online hub.

By working with CitizenLab, we will become your **partner in participation**. We will help you strengthen the interaction with your communities and use their input to improve your decision-making process. After a thorough onboarding process, we proactively follow up with a series of continuous services to help you achieve your goals.

The objective of the platform is to offer a **simple user experience** at the front, for maximum citizen involvement, combined with a **powerful and flexible back-office** in which administrators can work completely autonomously, for maximum operational efficiency.

Recent awards and accolades

- 2020: Awarded the “**Innovative Starters Award 2019**” by Innoviris
- 2020: Awarded as **World Summit Awards Winner** Best Sustainable and Innovative Startup in the “Government and Citizen Participation” Category
- 2019: Awarded **Nesta’s Collective Intelligence Grant Programme**
- 2019: Awarded the “**Best Social Impact Startup**” DT50 Prize at the TechCrunch Berlin conference

Client portfolio

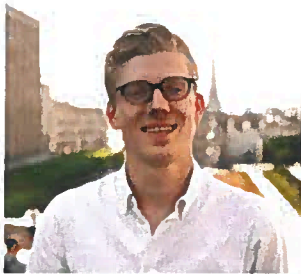
Since CitizenLab’s inception in 2015, we have worked with **over 300 local governments** worldwide, including the Cities of **Seattle, WA; Wichita, KS; and Lancaster, PA** among others in the United States.



2.2. CitizenLab team

We are a diverse team of 35 members with a good mix of government experts, sales and marketing talent, software engineers and data scientists. Rest assured that CitizenLab is fully prepared and equipped to support your participation efforts.

Key Management



[in](#)

Wietse Van Ransbeeck

Managing Director & Co-Founder

Wietse was trained as a commercial engineer at the Solvay Brussels School (VUB & ULB) and Waseda University in Tokyo. He was elected by business magazine Forbes as '30 under 30' in Europe and as a YTIIL fellow by the German Marshall Fund. Wietse designed the prototype of the CitizenLab platform and is currently mainly involved in strategy, finance and HR within CitizenLab.

Aline Muylaert

Head of Government Relations & Co-Founder

Aline graduated from the Solvay Brussels School (VUB) as a commercial engineer. Fed by a strong interest in urban studies and user involvement, she co-founded CitizenLab. Together with Wietse, Aline was elected by business magazine Forbes as '30 under 30' in Europe. She manages the contacts with customers and is responsible for an optimal customer satisfaction through close project follow-up.



[in](#)



[in](#)

Koen Gremmelprez

Chief Technology Officer & Co-Founder

Koen holds a master's degree in both Computer Sciences and Management from the Free University of Brussels. He joined CitizenLab as co-founder and CTO in the spring of 2016. As a full-stack web developer, Koen has more than five years of experience in building scalable web applications. Previously, Koen was lead developer at the IT consultancy company Entrust-It and founder of the data transformation startup Transformy.

Key personnel

Amanda Rotella

Government Success Manager

Amanda joined the CitizenLab team after serving as an Assistant City Manager for the City of Seaside, CA. Prior to that, she served for the City of Santa Cruz, CA in a variety of economic development roles. Her wide breadth of leadership experience in community engagement, economic development, and infrastructure and planning projects gives her a unique perspective on online engagement and how it can support decision-making. Amanda attended Fordham University for her undergraduate and Master's degrees and now lives in Santa Cruz, CA.



[in](#)

Ben Gordon

Business Development Lead



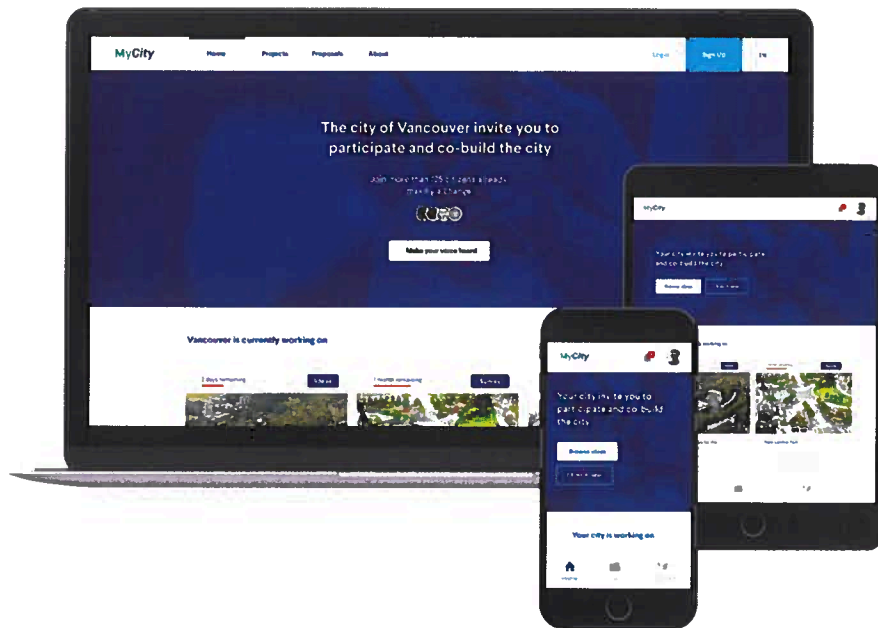
[in](#)

Ben oversees partnerships, sales, and business development activities for CitizenLab in North America. Prior to joining the company, he led a similar role at Shared_Studios, where he oversaw the company's work in smart cities, community development, and placemaking. Ben also ran business development for Manhattan Strategy Group, a federal consulting firm that provides technical assistance and program evaluation to the U.S. Departments of Education, Labor, among others.

CitizenLab Advisors

CitizenLab is assisted by leading academics and experts such as **Beth Simone Noveck** (current Chief Innovation Officer for the State of New Jersey, ex-Deputy CTO of the White House's Open Government Initiative, and Co-Founder & Director at The GovLab at New York University), **Bas Baccarne** (User-centric Innovation Research at UGent and imec) and **Stephen Boucher** (Visiting Professor of Civic Tech at Sciences Po & Scientific collaborator at Institute for European Studies, ULB).

3. Platform Functionality



The CitizenLab digital engagement platform

The CitizenLab participation platform focuses on ease of use for all users, including participating community members and those who manage and moderate the platform. The philosophy behind the platform is a simple user experience at the front, for **maximum community engagement**; combined with a powerful and flexible back-office in which administrations can work completely autonomously, for **maximum operational efficiency**.

3.1. What's unique about CitizenLab

Setup: Modular toolkit

Your team and administrators have access to a modular toolkit that allows for easy, self-guided design and customization to best meet participation goals and needs. The CitizenLab platform supports a wide range of participation methods and allows you to involve different stakeholder groups.

Engage: Intuitive user experience

The CitizenLab platform provides a **simple and accessible user experience**, designed in collaboration with dozens of local government employees in the US and abroad. This intuitive experience is critical, as it allows for your team to operate the platform with ease and confidence, and to do so efficiently so as to avoid making additional hires or adding FTE support.

This intuitive experience also extends to the platform's front-end and includes language tools and accessibility features designed to make the platform as inclusive as possible. As discussed in *Section 4.1*, CitizenLab meets the highest accessibility standards, and has been designed for compatibility with numerous browsers and devices. As discussed in *Section 3.2*, the platform can be configured in nearly a dozen languages, including Spanish, with the ability to add more as needed.

Manage: Centralized collaboration

Given the **wide range of participation methods** (e.g., surveys, polls, ideation, etc.), the platform functions as an online hub for all of City of Biddeford's participation projects and processes. This means your community will have a consistent and reliable online space to provide feedback, and your team will have a central location to manage (i.e., create, run, moderate) all active and future participation projects. Over time, the value of this online hub increases, as your team will be able to collect and analyze consistent data across projects. The platform also facilitates internal collaboration between different departments within your organization, as well as cross-organizational collaboration within your region.

Decide: Text analytics & insights

To help make sense of all of these new data, and easily report findings, the platform provides a suite of data-driven reporting and text analytics tools. Our latest development uses Natural Language Processing (NLP), a type of text-driven machine learning, to analyze any and all open-ended feedback (e.g., their ideas, comments, proposals, etc.) provided by community members on the platform. This tool helps surface new, emergent insights that help your team answer questions they would otherwise not think to ask, as well as save time when processing data. Through our reporting tools, all data can be easily exported and integrated into your policy-making processes. In addition to automated reports, we also use NLP techniques to detect spam and monitor for inappropriate behavior on the platform.



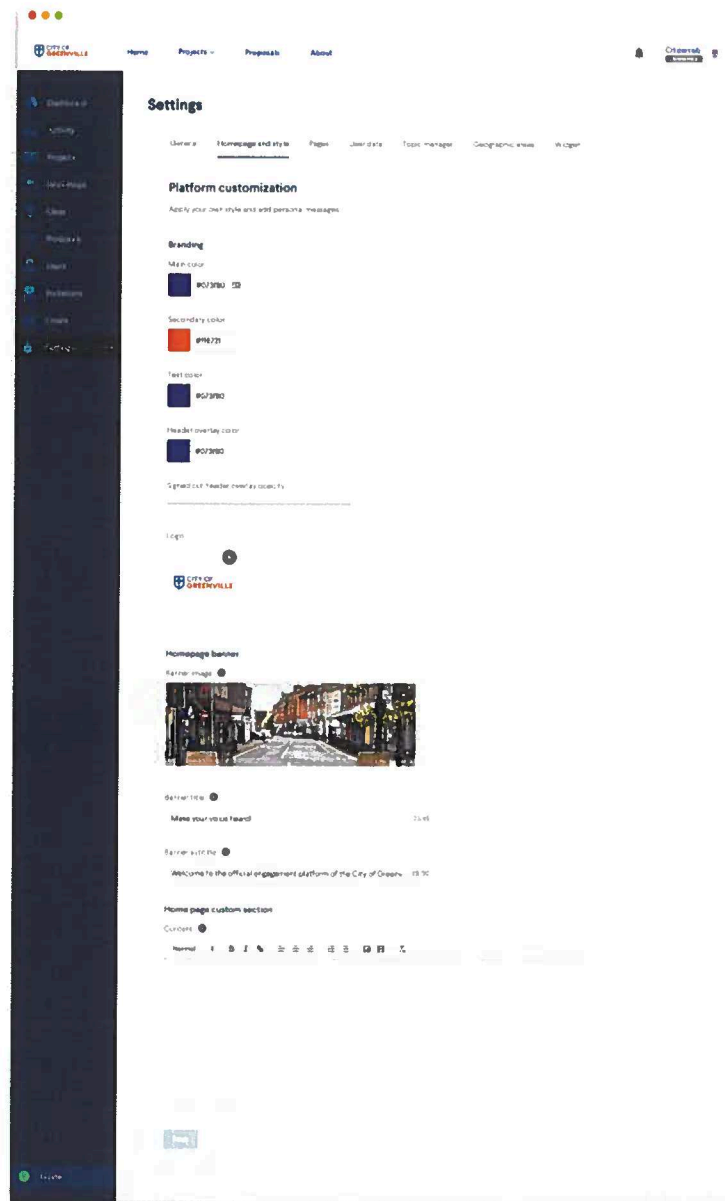
3.2. Setup

The setup phase is designed to get the platform ready and ensure it meets your needs.

3.2.1. Configuration

Visual identity, Custom URL

The platform is a white-labelled solution, meaning your team can apply City of Biddeford's visual identity via logos, brand colors, custom homepages, and personal messages, all to make the site feel local and recognizable to your community. To reinforce your branding, you can even choose a personalized domain name and change its metadata to optimize the web traffic to your platform.



Configurable visual identity

Organizing Content by Topics

Ideas can be organized by and linked to topics (e.g., climate, mobility, housing), allowing for users and administrators to filter platform content based on interest. These topics can align with City of Biddeford's existing structure (e.g., specific cities or transportation routes) or tie to sub-topics where your team wants greater community input (e.g., bike lanes). The platform comes with common topics by default, but these can be customized to match project requirements.

Additionally, your team can choose to set sub-topics per project to provide direction to the input and discussion between community members. Sub-topics can be used to ask more specific questions within a given topic (e.g., bike lanes as a subtopic to mobility).

Organizing Content by Location (Neighborhoods)

On the platform, projects can be organized geographically. When signing up, users can indicate their neighborhood or area of residence, which provides greater data insights and understanding of who is participating and how different communities feel about certain issues. Projects can also be assigned to a specific neighborhood, meaning that only users from that neighborhood can participate.

The platform's *Mapping* tool also allows for your team to collect and display community input within areas on a map. For this, we use the geotechnology OpenStreetMap. Using this tool, your team can create custom map layers and dedicated pins to build context and demonstrate the geospatial relationships between various points of interest.

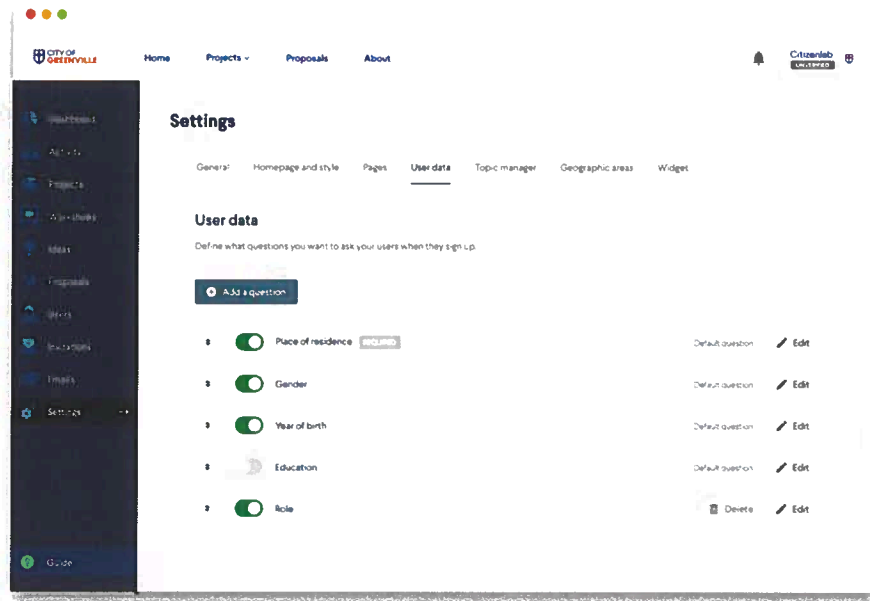
Sign-Up/Registration methods

Visitors can register with an email address and password or with single click via their Facebook or Google account. Depending on the availability of verification methods, it may be possible to verify the identity of users, including incorporating email addresses from a specific network (e.g., Boise State students). *CitizenLab will work with City of Biddeford to determine which registration methods are appropriate during platform onboarding and setup.*

User data

During the registration process, City of Biddeford can ask users to provide additional demographic information through custom registration fields. The most commonly used fields (gender, neighborhood, age and level of education) are already built into the platform. *CitizenLab will work with City of Biddeford to determine which registration fields are appropriate during platform onboarding and setup.* All registered users can change their data via their profile page after logging in.

While there is no limit to the amount of registration fields that can be added, too many fields can burden users and deter them from signing up. For all fields that are included, your team can sort and segment users by these fields to provide more specific insights and analysis. User attributes can also be used to provide specific group permissions on the platform (e.g., only residents from a certain neighborhood can vote in a neighborhood-specific project).

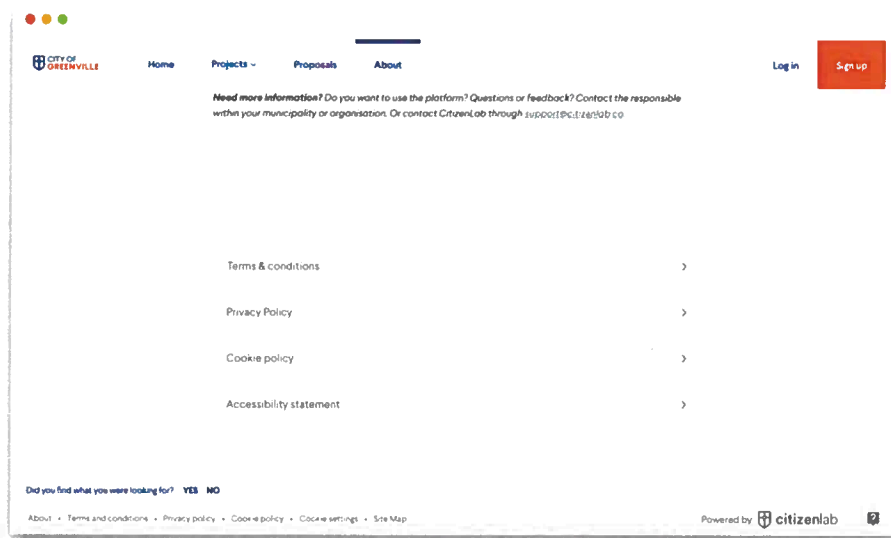


Configurable registration fields

Pages

The platform can also function like a traditional website in that it can provide one-way information to the community about specific projects as well as your organization's broader engagement strategy. The platform's *About* page is customizable and is often where community members can find information about the platform itself. The page can also feature images, videos, hyperlinks or attachments.

The *About* page is also home to all relevant legal information, including the Terms and Conditions, Privacy Policy and Cookie Policy. The platform comes pre-loaded with relevant legal content tailored compliant with all relevant legal frameworks, including but not limited to GDPR. This information can be customized in the platform's *Settings*. The legal pages are accessible for users through the footer.



Multilingualism

The platform is currently available in several languages, including among others English, French, German, Spanish, Danish, Dutch, Norwegian, Polish, Romanian, Portuguese and Arabic. CitizenLab has unique translation capabilities that: 1) allow residents who speak multiple language to use the same platform; and 2) allow residents to converse with one another in their language of choice. *However, to limit miscommunication in all official materials, CitizenLab recommends that City of Biddeford review all attachments, videos, and project descriptions in both English and Spanish.*

Moderation Policy and Tools

To support admins, CitizenLab has created an automated profanity filter designed to limit and prevent offensive speech or disruptive behavior on the platform. Once a day, our system checks user-generated content against [a long list of profane words](#), as well as any other local or context-specific words that might be used in the City of Biddeford's community.

If any of the published content contains any words on that list, one or more admins will receive a notification showing the input in question and providing a series of options to take action if needed. CitizenLab has designed this system so that admins can retain full control of the platform and its content and will never automatically delete any content without admin approval. Instead, the profanity filter allows admins to manage potentially inappropriate content on a project-by-project basis.

3.2.2. Navigational structure

Front page: visitor & user

Your community will see the front page of your platform. Here they can browse through folders with projects (content), create or follow up ideas or start their own initiative. This part of the platform is visually attractive, easy to use and structured in such a way that they can explore your content step by step.

Main information architecture:

- Home page
- Projects
- Ideas
- About pages
- Settings

Back-office: admin & moderator

You and your team also have access to the platform's back-office. This part is structured to align with your internal processes and workflows and gives you all the options to manage and customize everything that takes place on your platform.

Main information architecture:

- Dashboard
- Project management
- Input management
- User management
- Invites & emails
- Settings

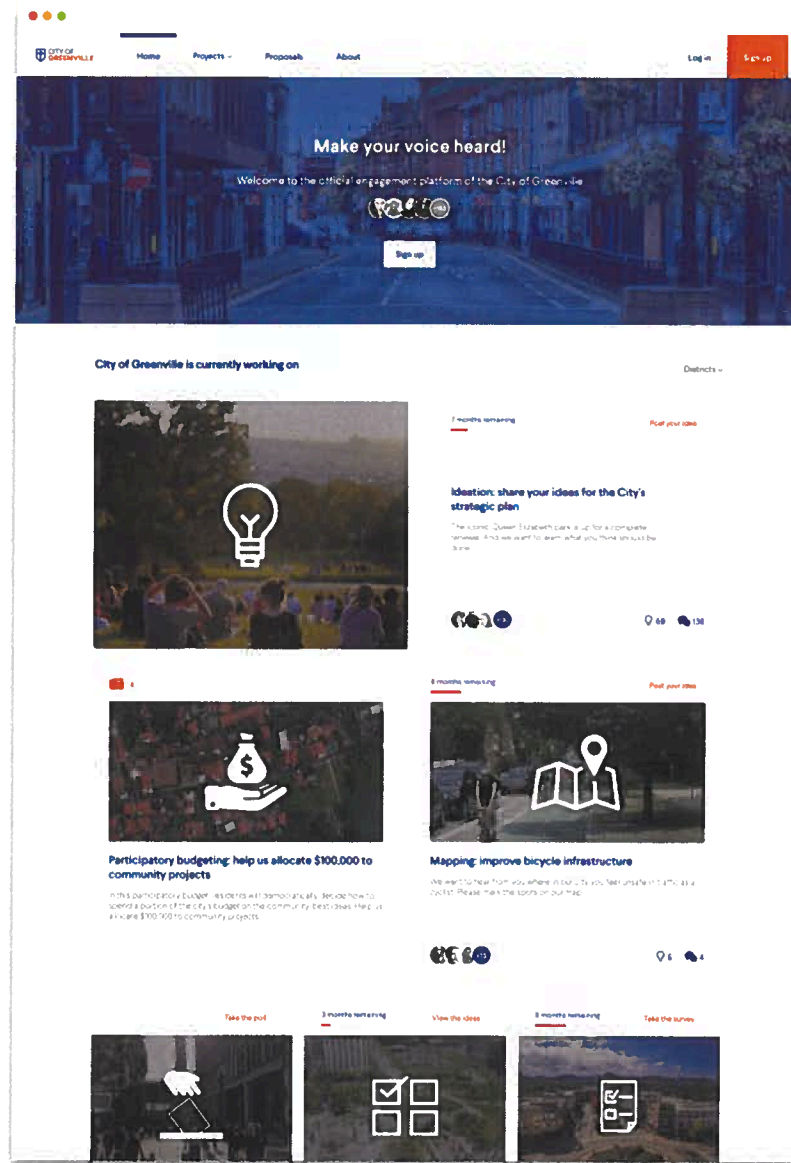
By default, a non-logged-in user has the rights to view but cannot take action (e.g., vote, comment). They are prompted to create an account once they click on a vote button or start filling out the idea form.

Once signed in, a user's actions are tied to their account, so they will be unable to take the same action multiple times (e.g., upvote an idea or submit a poll), ensuring that one action represents one user. Users are able to participate anonymously with surveys.

Home page

The main purpose of the home page is to give the user an overview of the different (active) projects and folders. On the platform, a folder can house several projects, often around a specific theme. For each project, in addition to the name and a short description, users will see actions (i.e., participation methods) available to them, along with relevant timelines and input from other participants. Users can filter projects that are linked to their own neighborhood or area.

Under *Projects* there is a customizable section that can be filled with additional information. This section often includes reasons to participate, the objectives of the platform, which policymakers are listening, or interesting upcoming activities.

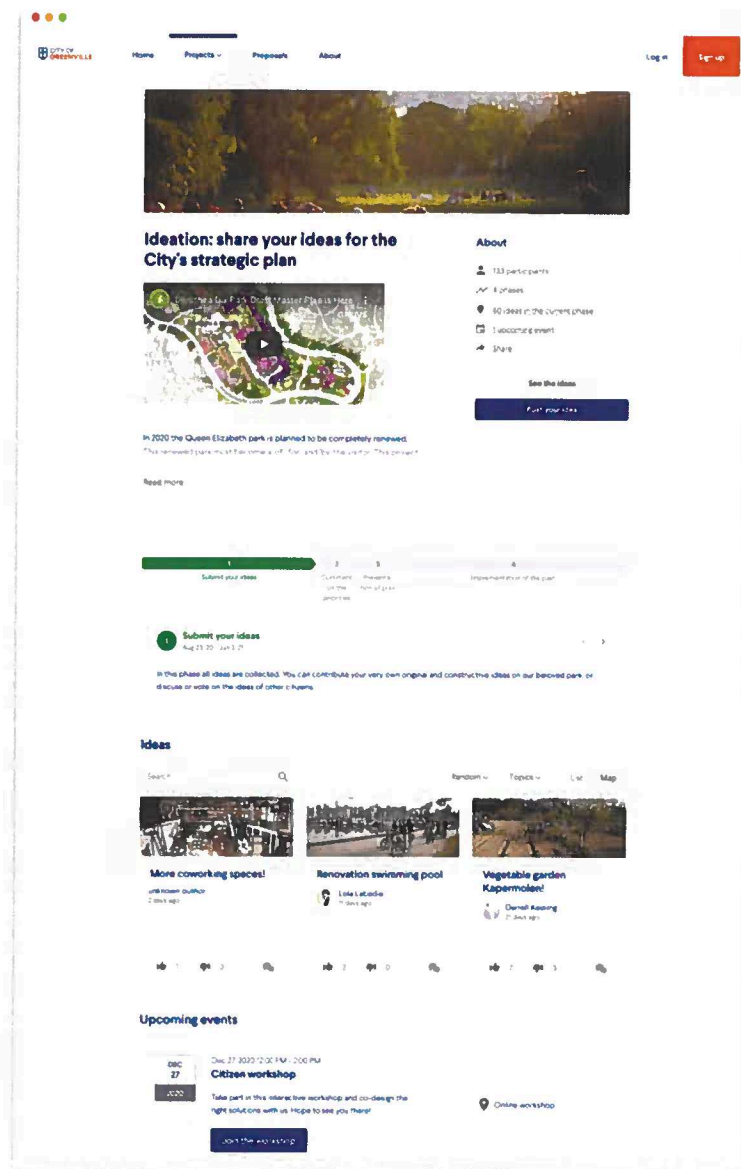


Platform home page

Projects

When users select a specific project, they will be taken to that project's page. There, users can learn about the project in detail, see the number of other users who have voted or suggested ideas, learn about the number of phases and timelines, and register for upcoming (in person or virtual) events.

- A project can have a set timeline or be *continuous* (without a timeline). The **timeline** shows the complete project broken down into phases from beginning to end. Each phase can have its own description, method of engagement, and start and end dates. For projects that request user-generated ideas, these ideas can be found below the timeline.
- By clicking on "read more", users can learn more about the project itself. It is in this section where admins can attach documents and embed photos and videos.
- In the "upcoming events" section, users can discover any in-person or virtual events linked to the project. Users can also register for these events directly through the platform.



Project overview example

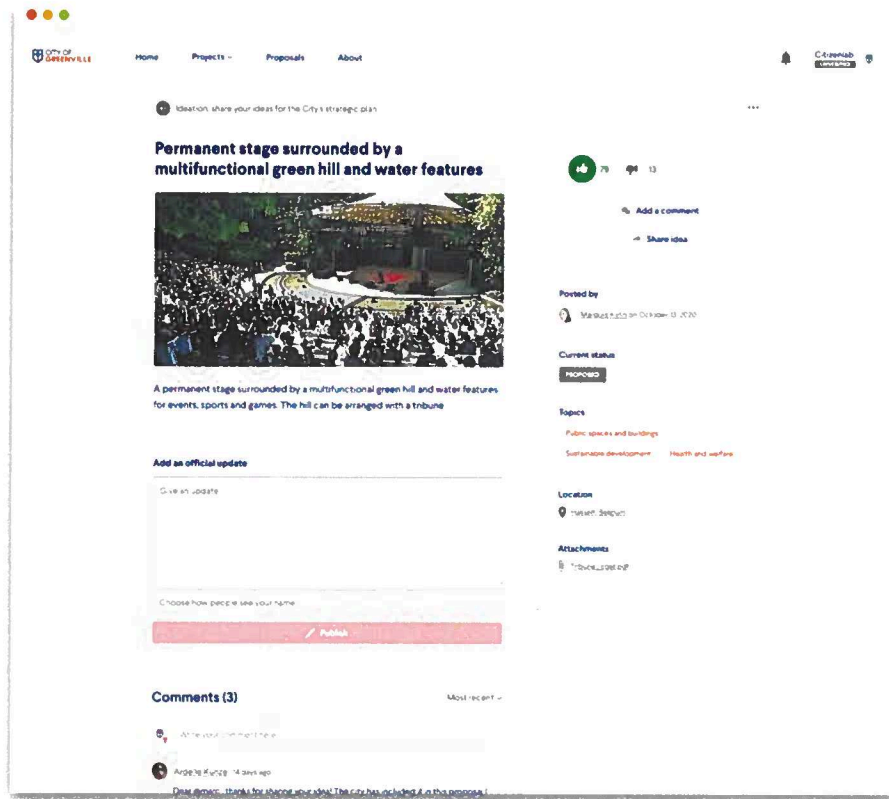
Ideas

Ideas are at the core of the platform. They are where community members and admins can suggest, discuss, and vote on various recommendations and plans. On a project page, the ideas are shown as “cards” with their title, image, author name, and the number of comments and votes (see above image).

Users can filter the list of ideas by area or topic, or even search for specific content or keywords. Additionally, users can sort ideas by date added, most popular (most votes), and trending (a combination of the two aforementioned), or at random. This limits biases against early ideas receiving more attention and engagement.

Every idea has its own individual page as well, one that mirrors the structure of a project's page. Like a project page, users can read a description, see the idea's status, cast an

upvote for downvote, share it on social media and interact with the author or users who have already commented. Similar ideas (based on keywords) are shown. Administrators can also provide official updates, which stand out from regular user-generated comments.



Idea page example



3.3. Engage



Collect new ideas, receive feedback on your plans, gather votes to gauge support, or organize online workshops.

3.3.1. Create participation projects (back-office)

On the platform, the term 'project' is a relatively broad concept and can range from one-way information dissemination to full-blown policy co-creation, and everything in between.

When signed in, admins can create, edit, and manage projects on the platform's back-office, or management panel. The order on the homepage can be defined *automatically* (based on the participation context of the active phase) or can be adjusted manually by simply dragging the project titles.

Project definition and status

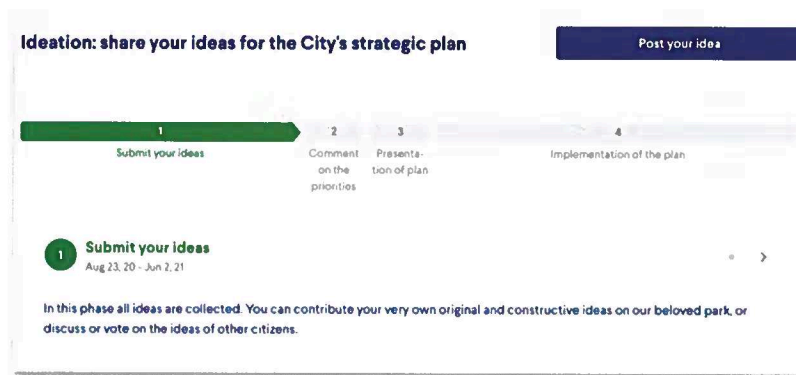
Each project has at least a name, images and a description. The name and description must briefly explain the project's purpose. The use of images aids visual recognition for the citizen and stimulates interaction. A project can have three different statuses:

1. **Draft:** For internal collaboration, or projects that are not ready to be publicly viewed. These are only accessible through the back-office.
2. **Published:** Projects are "live", or visible and accessible to the public on the platform's front-end (for those who have permission to view and participate).
3. **Archived:** For finished projects. These projects will be stored in a public archive, but it is clearly indicated that participation is no longer possible.

Timeline

If a project is not continuous, it has a timeline that describes the different steps within the project. The timeline primarily determines the duration of a project and provides community members with transparency about the process and progress. It's a visual way of telling them what will be done with the project results, and how your team will achieve and implement their feedback.

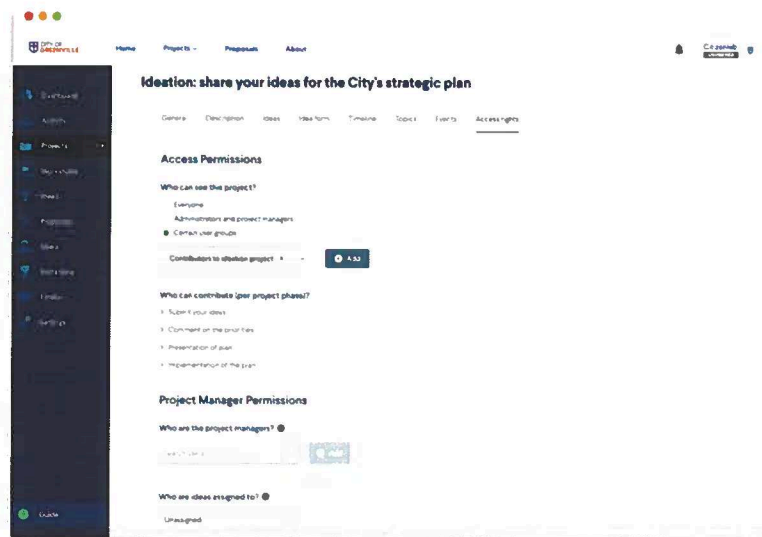
A project and its timeline consist of consecutive project phases. Each phase can be individually configured. They have their own description and participation method.



Timeline example – various phases

Permissions

Admins can define what users are able to see and do within a phase or a given project. These permissions make use of the 'groups' functionality. Ideally, each project is assigned a project moderator. This person does not need to have access to the whole platform, but can oversee their project, including moderating user ideas and comments.



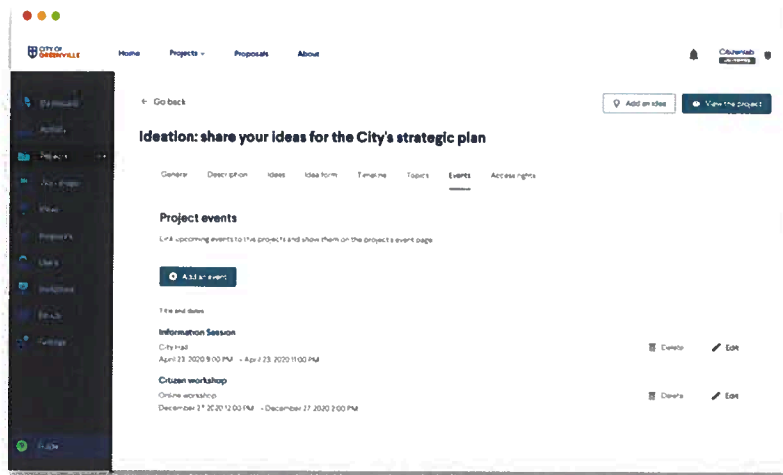
Project permissions

Events

Admins can add relevant events to a project. By doing so, they ensure that citizens are made aware of other opportunities to engage both within and outside of the platform, and thereby help provide a more complete overview of the project.

Attachments

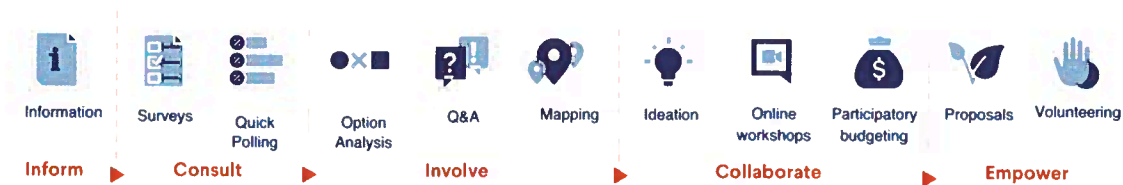
Admins can also add documents and all kinds of content to a project. This can include legal information, a statement from the mayor, project results, research, etc. The aim is to make information accessible to interested users.



Events linked to a project

3.3.2. Participation methods

Depending on the context and the stage in the process, the right participation method can be used for any given project phase. Below is detailed overview of all available participation methods:



Inform

 Similar to the *About* page mentioned in Section 3.2, a project or project phase can be set up solely with the goal of informing the community. Here you can add images, rich text and attachments to explain the project or phase. This method is inherently one-way, and while community members can read and learn, they cannot actively participate.

Consult

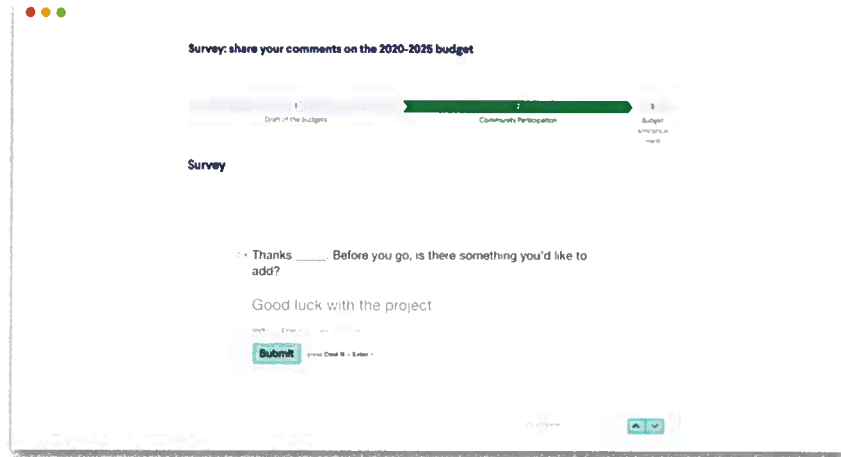
Surveys

 The platform integrates seamlessly with *Typeform*, *Google Forms*, and *Enalyzer*. Admins should identify relevant questions and possible answers before setting up a survey.

All data can be exported at any time at the touch of a button. When using *Typeform*, admins can download the survey results directly from the platform and link them to users. Admins can set up an unlimited number of surveys and include following components: short text field, paragraph text field, multiple choices, dropdown choice, Likert scale, and various

prioritization options. Furthermore, the form can be designed in a conditional manner and contain validation rules on fields.

A survey is usually only visible to registered users to ensure that each user only participates once. Upon request, it may be possible to integrate your preferred tool (e.g., Qualtrics, SurveyMonkey), but this may be subject to additional development costs.)



Integrated survey on the platform

Quick polling

For shorter surveys, called “polls”, CitizenLab has developed our own module for the platform. A poll consists of one or more yes/no questions, (dis)agree statements, or any other multiple-choice question (e.g., “Would you rather spend all funds on the new park, allocate it to the renovation of older parks, or do a mix of both?”).

Admins can make the poll available for a limited number of hours, days, or weeks. A poll can for instance support a digital referendum if integrated with official identity verification systems. Anonymity in answering the poll and in referendums is guaranteed by our system. The totals of the non-digital votes can also be manually added to the platform by an admin. In doing so, the distinction is made between digital and non-digital votes.

Poll: car-free city center on every 1st Sunday of the month?

Poll

1 Do you agree with a car-free city center on the 1st Sunday of each month?

☐ Yes

☐ No

☐ I don't know

2 I am a...

☐ Resident of the city center

☐ Resident living outside the city center

☐ A local business operating on Sunday

☐ Other

Send

Did you find what you were looking for? **YES** **NO**

[About](#) • [Terms and conditions](#) • [Privacy policy](#) • [Cookie policy](#) • [Cookie settings](#) • [Site Map](#)

Powered by citizenlab

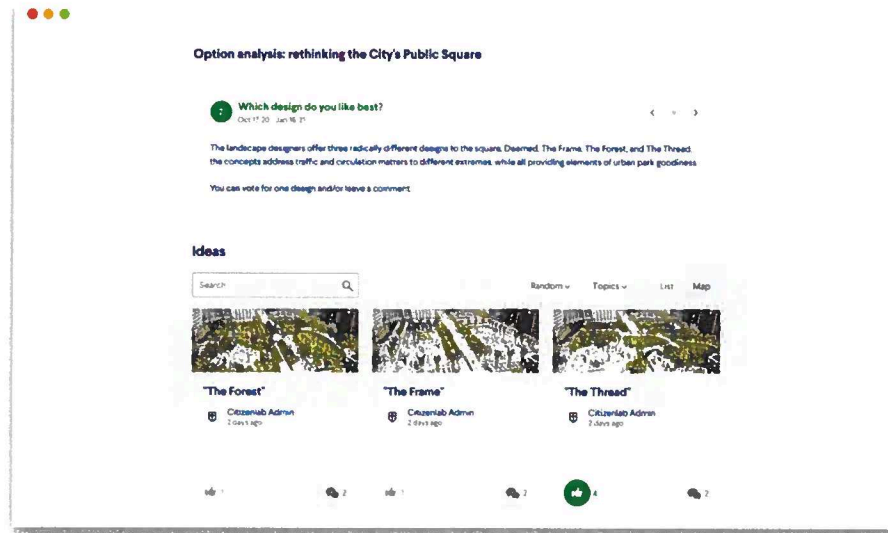
Quick poll questions

Involve

Option analysis

 With option analyses, admins can provide a limited number of options, ideas, or scenarios on which citizens can vote and/or comment (e.g., "Which of these park designs is your favorite?"). This method allows admins to start a discussion using a predetermined (and preapproved) set of choices and learn which option is most aligned with the community's preferences. Under this method, the community cannot add their own ideas, scenarios or options. They can only comment and vote in favor or against an option. Comments can either be standalone or in response to an existing comment.

Additionally, users are given the possibility to vote on comments. This allows both users and admins to quickly identify the strongest/weakest arguments. Users can also directly address or involve other users and admins using the "@" sign.



Ideas up for selection within an option analysis

Q&A

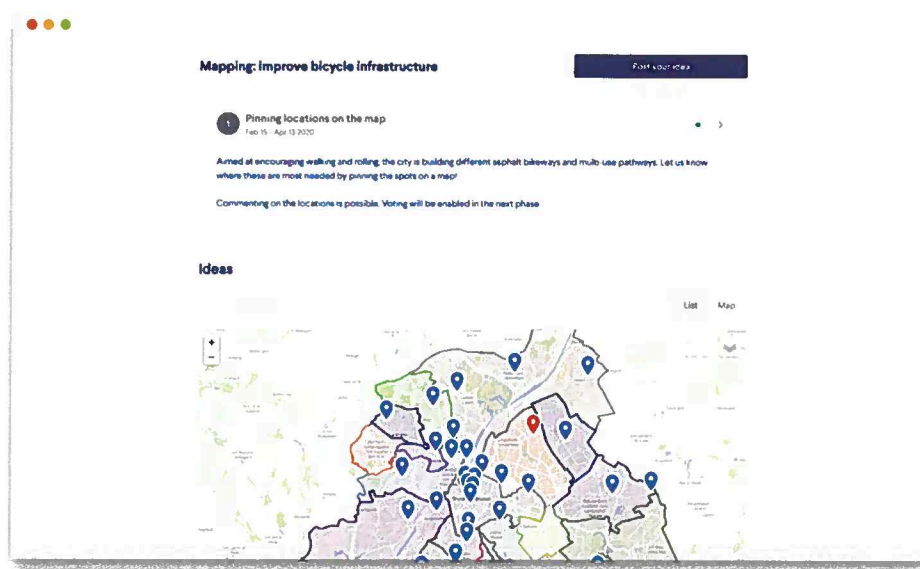


The Q&A methods helps your team gather to-the-point answers to your questions. This is a fairly basic method to engage your community interactively.

Mapping



Similar to *Ideation* (discussed below), admins can use customized local maps to collect ideas and feedback. This method is particularly useful for planning and mobility projects. Like the idea cards, map markers start with a title and a description, and users can then add a topic, image or attachment. Markers are customizable and can represent multiple types points of interest (e.g., restaurants, parks, etc.). Admins can configure whether other users can comment and vote on the markers.



Mapping feature

Collaborate

Ideation / Ideas Wall



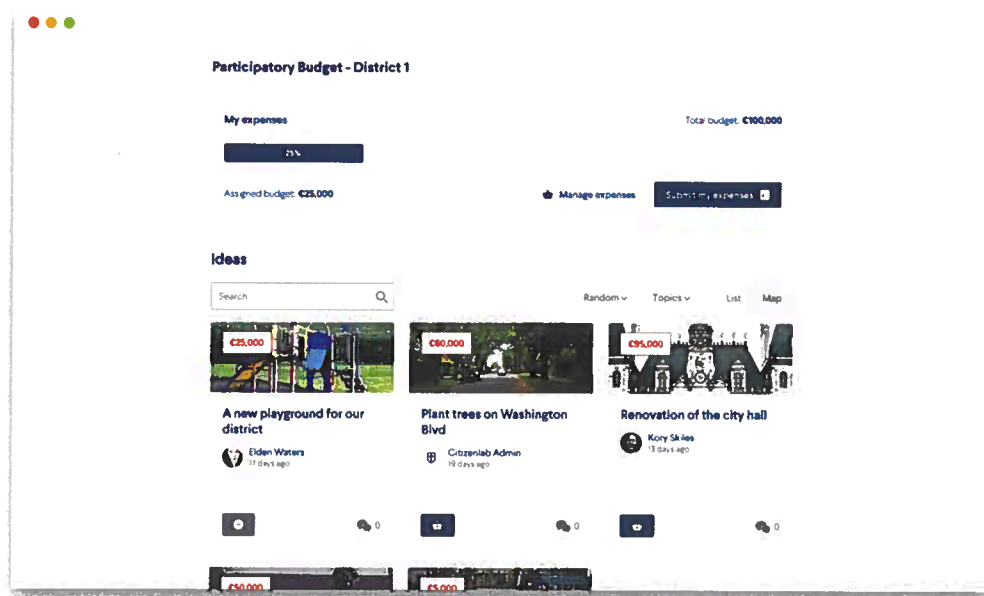
Through this method, admins can ask users for more detailed input in the form of *Ideas*. These ideas can be answers to narrow or broad questions. They can be suggestions about proposed legislation, the future of your community or any other topic.

Users create an idea with a title and description, and are given the option to add a topic, image, or attachment. Users can also add the idea as a pin on the map or link it to a specific location. Admins decide whether or not other citizens can vote and comment on other user ideas. Voting and commenting allows admins to identify the ideas that are popular or resonate with the community.

Participatory budgeting



Using our participatory budgeting tool, community members can build their ideal budget with admin- or community-generated ideas until the total estimated costs reaches a predefined budget. This budget—expressed in either the local currency or in points—and the estimated cost of every idea is set by admins. This method allows your team to distribute a certain budget according to real community needs. The participatory budgeting feature also illustrates the cost trade-offs, and helps locals better understand how governments and organizations actually create a budget.



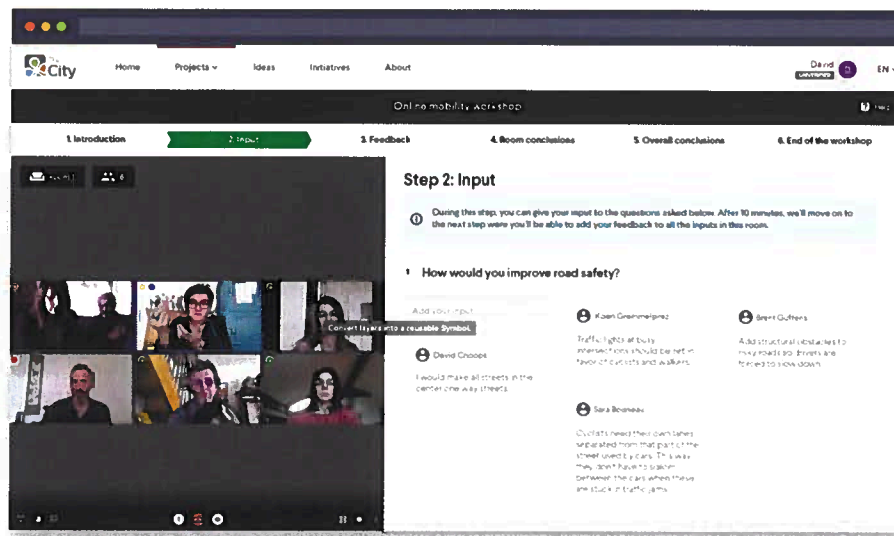
Participatory budgeting basket and ideas

Online workshops

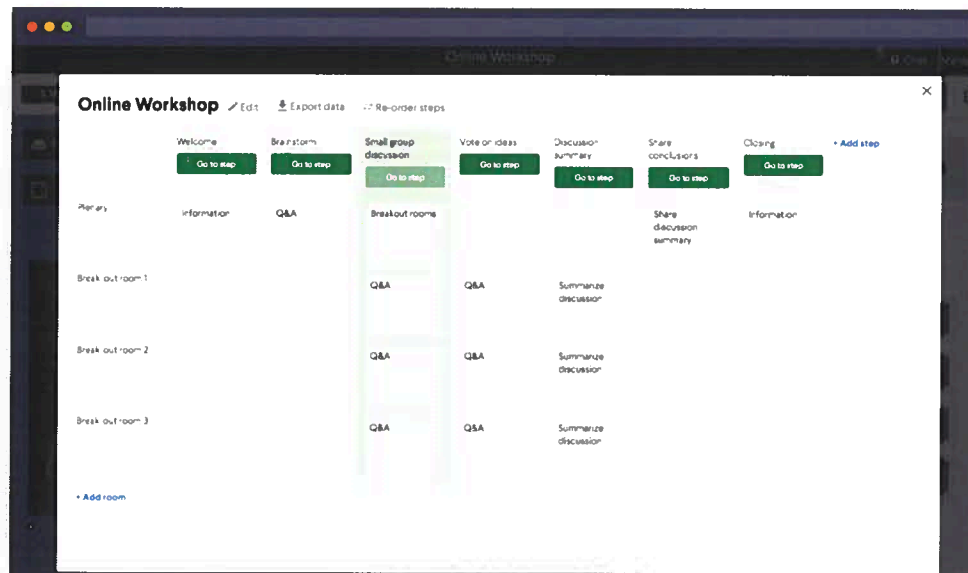


The 'online workshops' module helps merge asynchronous and live community engagement. Our custom-built tool allows for a combination of presentation, small group video chat and written input. Instead of using separate videoconferencing tools, this module keeps everything within the platform, and enables admins to

- Integrate workshops as part of an existing *Project* on the platform
- Run everything through one user system. Registered platform users can also take part in your workshop. Your team can keep all things participation in one central place
- Have all data and information collected and stored, to be able to process it or share the output of the workshop



Workshop interface user-side



Empower

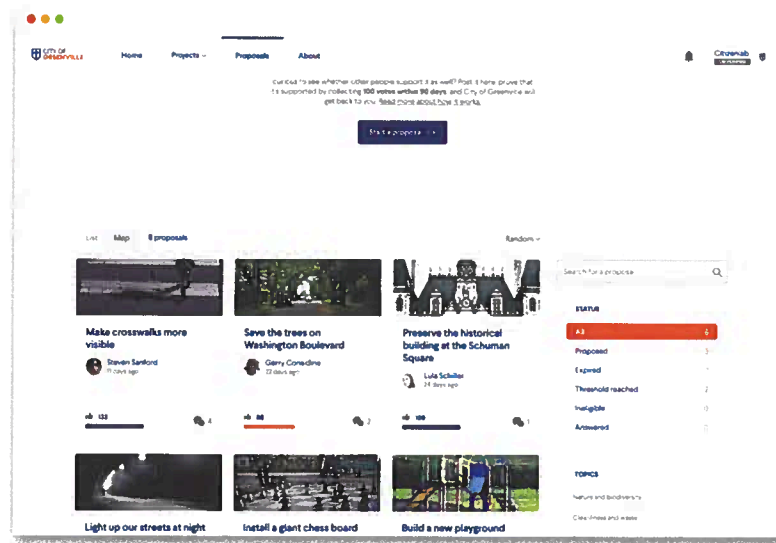
Proposals

 Proposals ensure continuous 'bottom-up' participation. Proposals differ from 'ideas' in the sense that they do not fit within an existing *Project* (and have their own tab on the main toolbar) but are initiated by the users themselves. The feature allows users to propose their own initiative, gather support and make their voice heard to decisionmakers at any time. Proposals take many forms and range from simple requests, where users expect the City of Biddeford to take action (e.g., creating a new bus route), to more open-ended and collaborative projects based on broad needs (e.g., reducing traffic).

Our proposals feature provides a way to stay up to date with the concerns of the community. Proposals provide a clear indication of what issues or topics might be missing on a comprehensive plan or policy agenda. They also act as a dedicated space for users to provide input on themes or topics that are not addressed by one of the existing projects on the platform. In contrast to initiatives on other (social) media, these proposals can easily become formal projects or part of a larger existing process already on the platform.

However, admins still retain plenty of control throughout the process. They can determine the scope of proposals and rules of the proposal process, including how proposals are handled once they receive a minimum number of votes. For example, admins can set:

1. Number of votes needed to move an idea forward (often a percentage of the population)
2. A timeframe in which this minimum number of votes should be reached (to prevent initiatives from dragging on)
3. The conditions which have to be taken into consideration (e.g., benefit the community, not conflict with recently established policy, not harm certain groups in society, etc.)

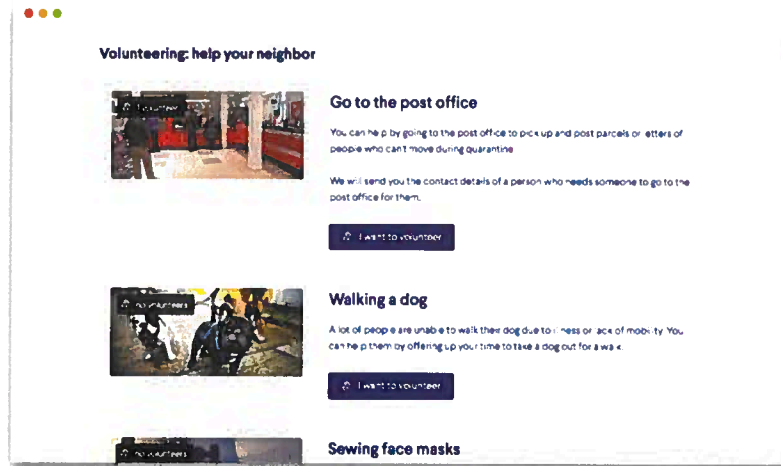


Proposal tab on the platform

Volunteering



This feature gives users the option to coordinate on volunteering actions or mutual aid networks and can be used to help implement current or active projects. Once volunteers have signed up, admins can easily communicate next steps via the platform.

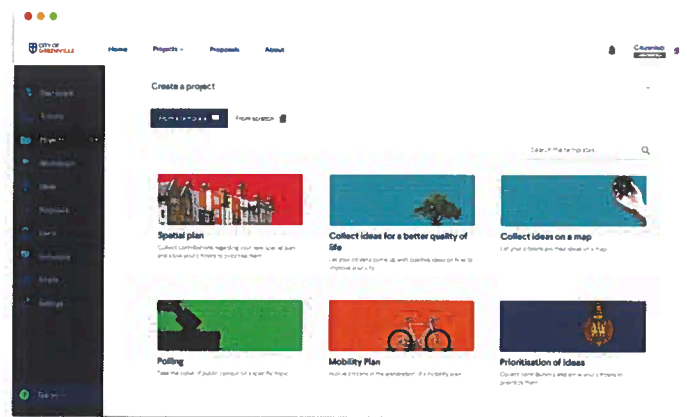


Various volunteering ideas

3.3.3. Templates

Having worked with 275 cities, municipalities, and local organizations, our team has identified dozens of recurring trends and patterns in successful participation projects. We have translated this knowledge into 26 relevant project templates (e.g., strategic planning, spatial planning, mobility plans, participatory budgets per neighborhood, etc.). These templates are continuously updated based on partner needs and new insights.

Admins can share templates with colleagues from other departments and organizations, as well as with policymakers without giving them full access to the platform. Templates are a simple and visually attractive tool for internal discussions about planned projects and make launching new projects quicker and easier, so no one needs to “reinvent the wheel.”



Various project templates

3.3.4. Communication tools

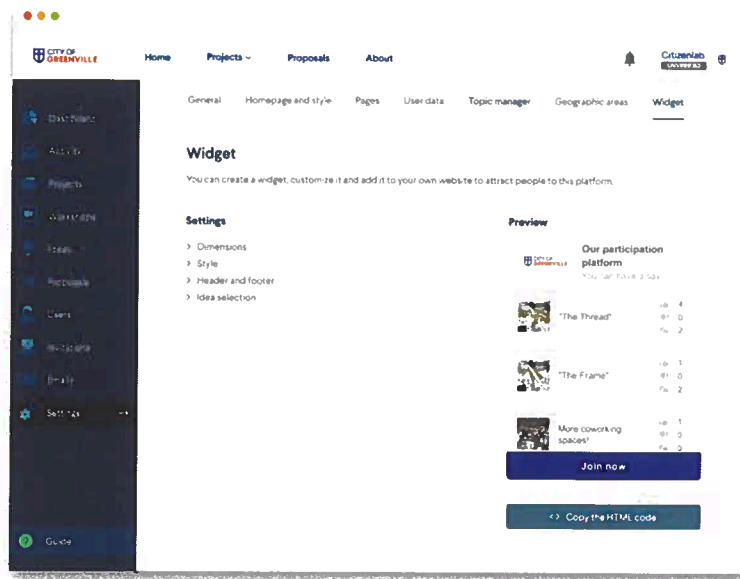
In addition to traditional engagement efforts, such as communication campaigns and offline events, the platform contains different mechanisms to reach out to users and encourage them to participate.

Invitations

To maximize platform adoption, admins can invite individuals and groups of users via email and SMS. Admins can input email addresses and phone numbers manually or import a large batch all at once. Much like creating a project, the platform allows for custom email creation, as well as the option to use existing templates. For future correspondence, admins can segment users, adding them to specific groups or providing them with admin or moderator rights (see below). Once users receive their invitation by SMS or email, they can register in with a few clicks. Admins can also see and follow up on the accepted and pending invitations from the back-office.

Widget

CitizenLab offers a widget that easily integrates on websites, including any existing City of Biddeford's websites. The widget is a small frame that always shows a selection of ideas or a specific project with a call to action. Well-placed widgets have been shown to help drive traffic to the platform, and only require a single line of HTML on any existing sites to set up.



Customizable widget

Widgets can be customized from the back-office, allowing admins to align colors, typography, and images as needed. Widget content can be customized as well, and admins can create and link as many widgets as needed (e.g., one widget per project).

Sharing content

Social media sharing is incentivized on the platform. The share buttons are always visible on the main pages. Users are also encouraged to share their own ideas once published, further driving engagement to and on the platform.

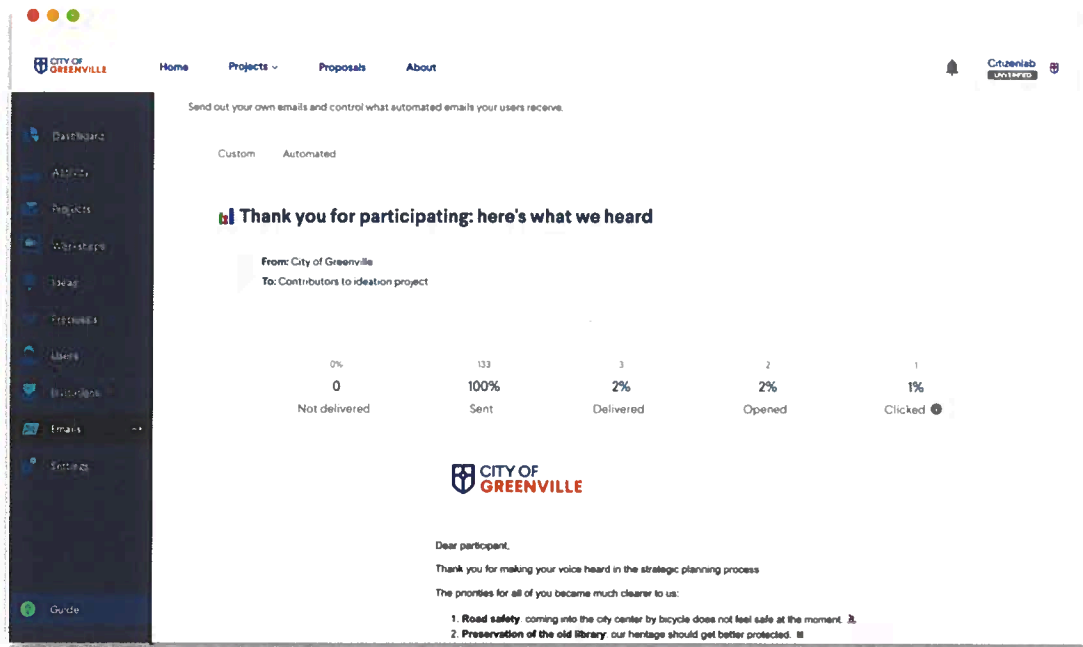
Notification system

The platform's smart notification system keeps users informed of their activities and the projects where they have participated. By default, notifications are shown on the navigation bar at the top, but they can also be sent to users by email. Both users and admins can decide which notifications and e-mails are generated.

Newsletters (automated and manual)

Many admins decide to send out manual outreach campaigns. These emails can be used to announce events or new projects or communicate the final results of an existing participation process. Admins have complete control over who does and does not receive emails, and if they have the data available, can segment users by geographic region, user group, or based on past behavior (e.g., if they commented or voted on a specific project). Like many popular email platforms, admins can view their campaign results within the platform (e.g., number of opens, number of clicks, etc.).

Additionally, admins can auto-generate a weekly newsletter to keep registered users informed about the latest activity. In this newsletter, users can see which ideas are popular and/or relevant to them. Admins can also configure these automated emails in the back-office.



Newsletter analytics

3.4. Manage



Our software is flexible to your needs, alerting you to only the most relevant and important activities, while minimizing time spent on moderation.

3.4.1. Users

Roles

In order to maintain control over the data visible to different types of users, the platform employs a role-based system where users can be assigned to one or more roles. A role describes a function that a user exercises on the platform and determines their ability to perform actions and view content.

Role	Description
Visitor	Any visitor of the platform that does not register and log in has the rights of a visitor. By default, a visitor can see public projects and the corresponding ideas. Visitors cannot vote or comment without being logged in. To lower the threshold for visitors, they can initiate an idea, but will finally be asked to register in order to publish it - also known in design terminology as 'lazy log-in'.
User	By default, users can interact - vote, discuss and propose ideas - in all projects they are granted access to (see the <i>Groups</i> feature, below).
Verified user (premium)	A community member whose identity has been verified by the platform.
Project moderator	The role of project moderator is always linked to one or more specific projects. The project moderator can adjust the configuration of the project and manage the ideas within the project. The project moderator can also contact the project's participants and explore the dashboards with the project data. This role is crucial to allow for internal collaboration on the platform without creating dozens of admins and opening up access to all settings.
Platform admin	Platform admin is the most powerful role in the software and is intended only for staff members who need to manage the entire platform. Platform administrators can take all actions of all previous roles. Additionally, they can change the overall platform's settings, manage projects, groups, neighborhoods, and users, and assign project moderators.

Verification

CitizenLab has built an open platform that allows, and even encourages, every visitor to register, so that they can participate in their community's discussions. However, in certain cases, it makes sense to retain more control over the users who are granted access and/or voting rights in certain phases or projects (e.g., participatory budgeting, online referenda, etc.)

You can use the platform to generate codes if you want to verify and invite a predetermined list of people. You can choose to send the codes via e-mail or use them physically on invitation letters.

If admins are unsure as to who might have the right to participate, CitizenLab offers integrations with external identity verification systems. Choosing the most relevant system depends largely on location and context. These systems allow for a 100% certainty that people are who they say they are and do fulfil your conditions to participate (e.g., age or domicile).

Groups

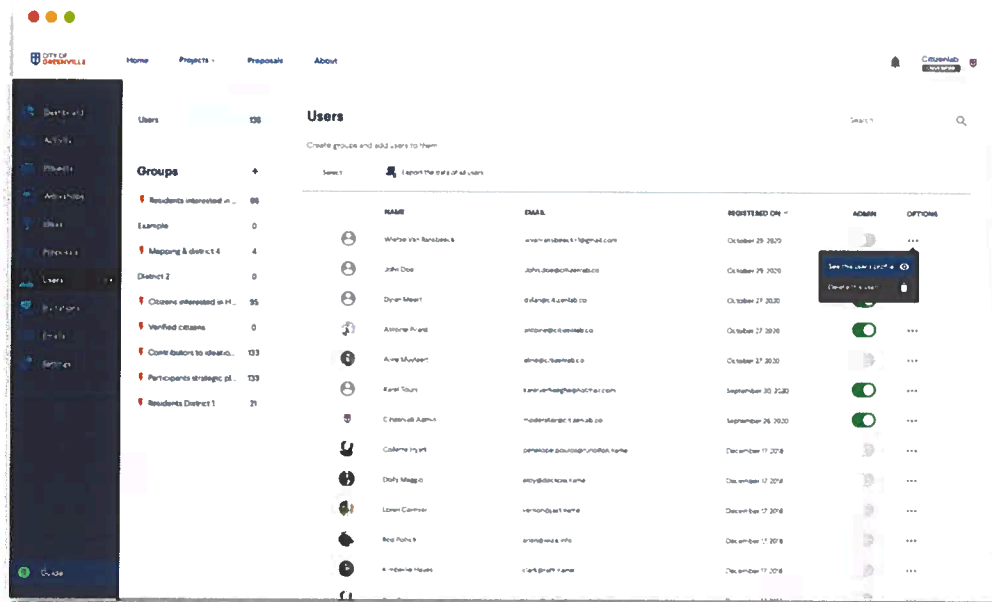
A group is a collection of registered users on the platform.

In a **manual group**, administrators manually indicate which users are part of the group. These groups are ideal for bringing (and creating dedicated spaces for) existing groups (e.g., advisory panels, known community leaders) onto the platform.

In a **smart group**, users are automatically assigned to a group based on one or more conditions. Conditions can be set based on users' data or their actions on the platform. This feature allows for admins to create precise and granular groups based on demographic (e.g., specific neighborhoods or age groups) or user behavior (e.g., users who have participated in a related project.)

With *Groups*, admins can:

- **Create dedicated projects or online spaces for specific groups**
The access and voting rights of a project or project phase can be determined at group level.
- **Reach specific groups with targeted messages based on interests and platform activity**
Admins can create and send out custom emails to specific groups based on whether they have participated in a project, live in a particular neighborhood, demographic information, etc. This feature is also great for keeping those who participated in one phase of a project up to date on that project's latest developments.
- **Understand how opinions differ between different groups within the community**
Admins can filter dashboard data for more granular insights.



User management interface

3.4.2. Input

A large part of a participation platform is managing and monitoring user-generated content. The platform contains various mechanisms to reduce the moderation effort needed and to prevent manipulation or inappropriate behavior.

Automated reports

One of the mechanisms the platform provides to reduce moderation effort is a weekly email report sent to admins. It gives every administrator or project moderator insights on activities from previous week. If required, admins can even opt in to receive email notifications for every new idea or comment on the platform. *CitizenLab will work with your team to determine the right frequency of notifications.*

Add (offline) input

Not every part of every participation process can take place on the platform. Therefore, as an administrator or moderator you can also easily import ideas that have been collected elsewhere (e.g., at an offline event) and integrate them into existing projects on the platform.

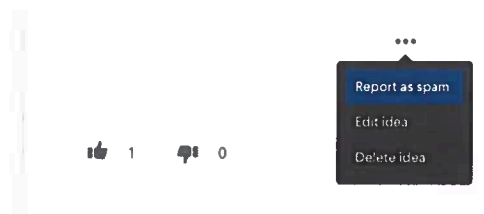
Prevent duplicates

In order to prevent duplicates, users are shown similar ideas already posted onto the platform before publishing their own. We use our in-house natural language processing (NLP) technology to do this. If we detect a very similar idea, the user will be invited to join the discussion on one or more suggestions.

Avoid inappropriate content

Although in practice, we see very little inappropriate content on our platforms, the following mechanisms help keep the platform spam free:

- **Page description and clear guidelines** for participation per project are important and can be set by admins themselves
- **Language filter:** While writing an idea or comment, users receive a warning if their draft contains sensitive content or language. If the user decides to submit it as such, the administrator will automatically receive a notification.
- **Bot detection:** The platform has a built-in system that detects *throttling*. That means that the software detects when someone tries to add too much content in a short period of time.
- **Report unwanted content:** Users can report or flag inappropriate content and indicate a reason why they believe so. The administrator receives a notification by email and can immediately decide to delete the content.



Report spam functionality

3.4.3. Collaboration & feedback

Input assignment

Specific projects, ideas, or comments can be assigned to an admin or moderator via the platform's back-office. This person will be notified and can easily and timely follow up on the ideas assigned to him or her. This feature works well when multiple offices, departments, or organizations are using the platform during the same period of time.

Giving feedback

Giving personal feedback is the single most important way of keeping community members continuously engaged and showing that they are being heard. Administrators and project moderators can provide official updates on ideas using a clear name and role. These updates are visible to all users.

Change idea status

Every idea is linked to a status. Through a status update, admins can indicate what happened to the idea (e.g., accepted, pending or rejected). This allows a user to easily distinguish between different ideas. Admins can also create custom context-specific statuses in addition to pre-installed, standard ones.

EditDelete

By unknown author on October 27, 2020



Vote counts: 100% 100% 0

Current status: under consideration

Assignee: Citizenlab Admin

Hi,

We are a very creative community here, with a vibrant culture of artists, musicians, actors etc. What we lack, however, is a common spot where we can express our creativity. What I envision would be a spot where people can play their music, work on arts and crafts etc. This project would have a lot of supporters in this community.

Neukölln, Berlin, Germany

Add an official update

Idea management interface for administrators/moderators

3.5. Decide



One of the platform's defining features, is the ability to help your team make informed decisions with your new community feedback. Our dashboards and NLP tools help you answer specific questions, gauge current sentiment, and identify new or emerging gaps.

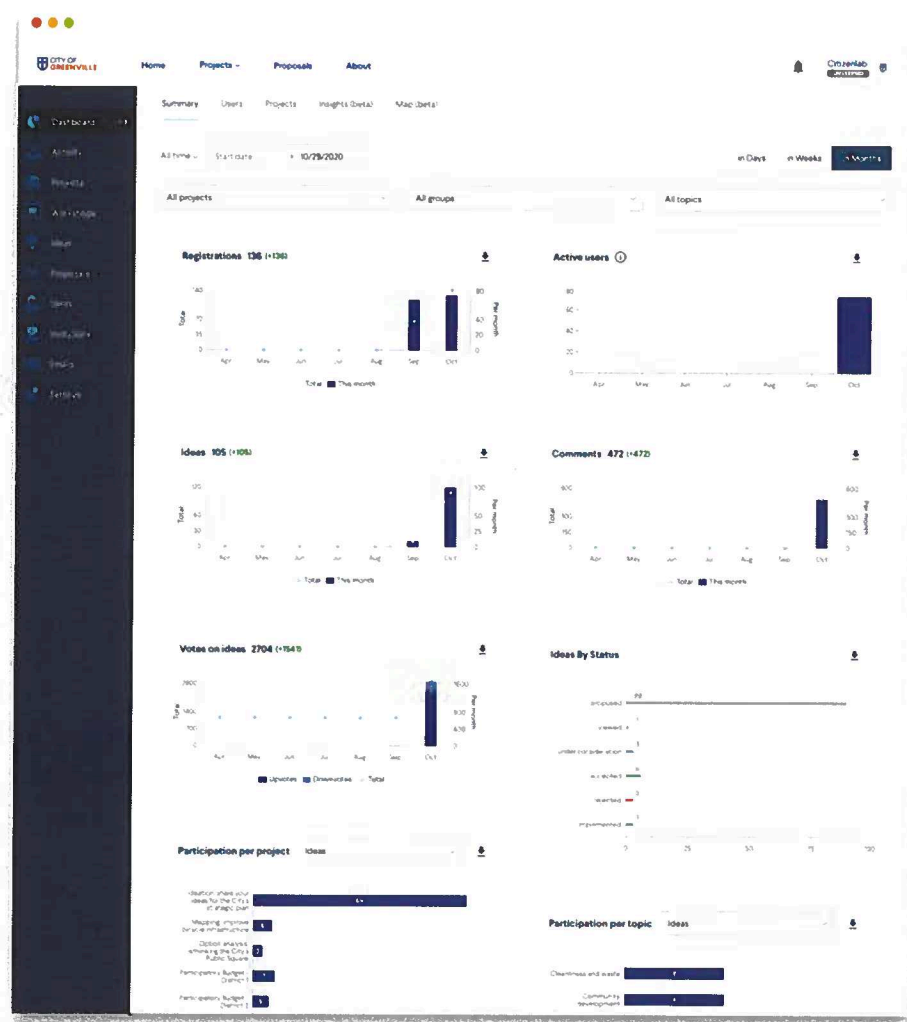
3.5.1. Dashboards

All the essential metrics are displayed in four different dashboards: summary, users, clustering and maps.

Summary

This dashboard can be filtered by time period and content. Admins can select a predetermined period of time or select custom dates and level of detail (day, week, month). Content can be filtered by project, group or theme. The summary dashboard provides the following insights:

- **Platform Adoption:** Number of registrations and number of active users
- **Platform Behavior:** Number of published ideas, comments posted and votes casted

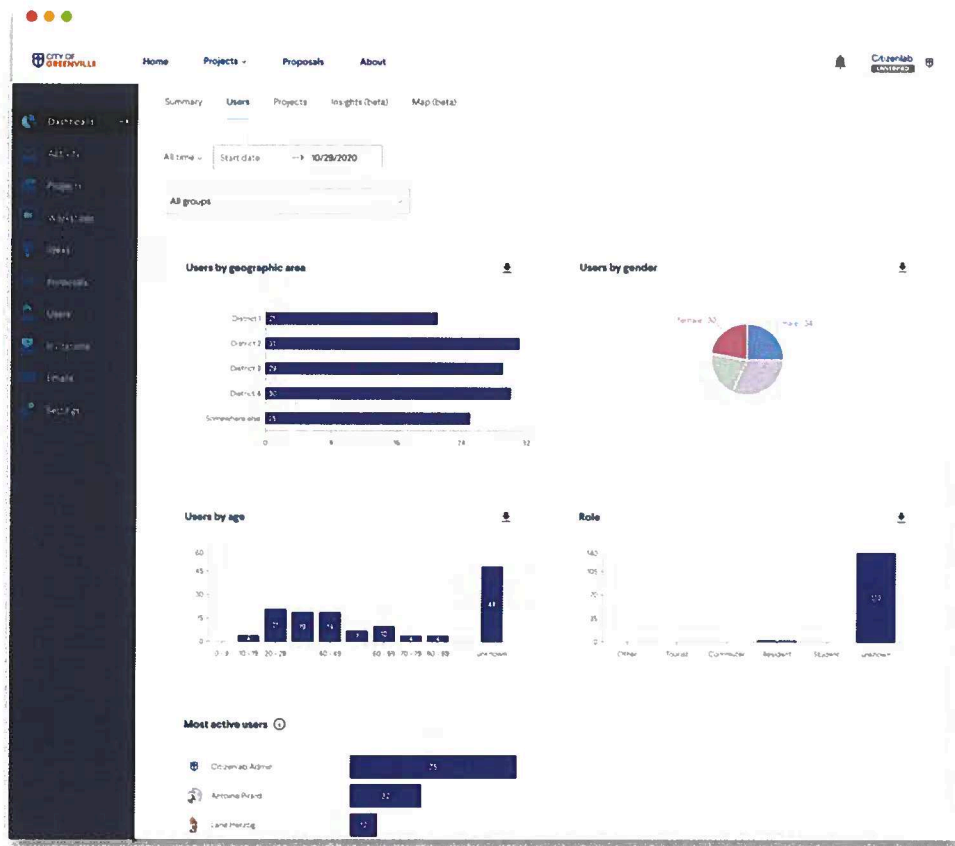


Summary dashboard

Users

This dashboard allows admins to select a custom date range and filter on user group(s). It provides the following insights:

- Number of users by age, gender, domicile, and by any custom registration fields (if applicable)
- A leader board with the most active users in the chosen period



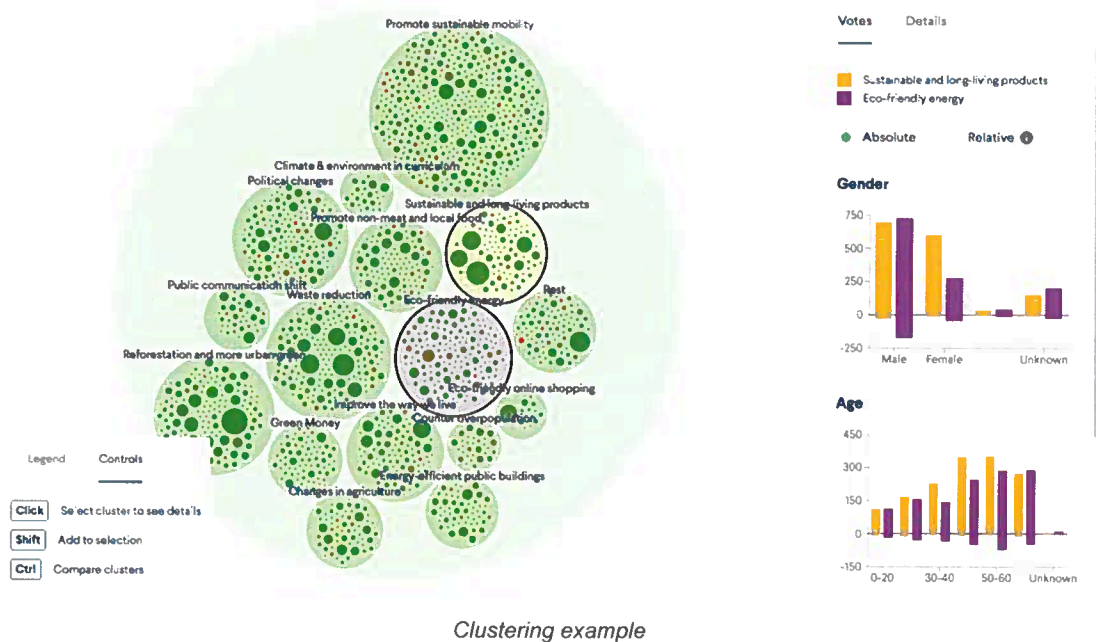
Dashboard with information on users

Clustering

Developed in-house, our Natural Language Processing (NLP) technology allows for a clear dashboard with clustering capabilities. Admins can cluster each subset of ideas on the basis of content-similarity. NLP 'reads' the content of each idea and determines its 'distance' from the content of all other ideas. Combining all these calculated distances makes it possible to create groups of ideas with similar content. A group, or cluster of ideas, offers the following insights:

- The popularity of ideas within a topic
- The demographics of the users who voted for these ideas
- The keywords of the ideas within a topic, allowing for easy identification of bigger trends

You can work interactively by creating subgroups and moving individual ideas from one group to another. This way, the insights dashboard can really be used as a starting point for mass processing of ideas, before moving to reporting and using the ideas as input for decision-making.



Maps

Based on our NLP technology, the map dashboard plots all ideas that contain a location or a location-based item (e.g., a point of interest such as a local church or hospital) on a map. Using the NLP techniques, the ideas are 'interpreted' again and, when a location or location-based item is identified, geo coordinates are added to the idea together with a pin on the map.

This dashboard offers spatial insights and answers on questions such as "Which topics are hot in which neighborhoods?", "Which areas seem to have a lot of concerns or ideas?", "Which neighborhoods are underrepresented?".

3.5.2. Reporting

At any time, all dashboards and data analyses can be exported to Microsoft Excel or PDF format. In addition, the following reports are automatically sent by the platform to your email:

- **Weekly reports for admins:** overview of all new ideas, including the most active ideas
- **Monthly reports for moderators:** activity reports with key numbers on the last period such as number of visitors, new users, new ideas, comments and votes, within a specific timeframe
- **Summary report after participation phase of your project:** an automatic substantive report offering a summary of collected ideas once a project has ended, including NLP-clustering

Reporting results can also be done outside of the platform, e.g., via Excel. The back-office of the platform allows to export data to Excel or read it via the API at any time.



4. Technical Specifications

4.1. Platform compatibility and accessibility

Browser compatibility

As a user or administrator, you can use the platform on any device – on the road via your smartphone, on the couch via your tablet, or at work via your desktop. Also, in terms of browser compatibility, our platform software works perfectly on **all common browsers**: Google Chrome, Mozilla Firefox, Safari and Microsoft Edge.

If you still use *Internet Explorer 11*, we cannot assure that everything will work fluently. Users who are still using this browser, will get a message to inform them about this. Since Microsoft itself is no longer updating Internet Explorer 11, and also recommends upgrading to their new browser **Microsoft Edge**, we advise our clients to do the same.

Accessibility

CitizenLab complies with international standards on accessibility. The CitizenLab platform is fully compliant with **WCAG 2.1 AA guidelines**, as certified by the AnySurfer Label.



In order to continuously ensure that we are meeting this standard when updating the platform and building new functionalities, we have included automatic tests in our development environment, using the testing tool 'pa11y'.

In practice, this means the following, amongst others:

- The platform is **fully navigable by keyboard**. This is important for people with a motor disability for whom navigating with a mouse is difficult or impossible.
- We provide images with a so-called '**alt-attribute**', a self-selected word-by-word description of the image that can be read by screen readers, computers for the visually impaired.
- We add a description to each button, label and all fields, for these same **screen readers**.
- In addition, we work with **strong color contrasts** to make the text easy for everyone to read. On our platforms, we offer platform owners the ability to choose colors to match their own branding. However, if this compromises the readability of the platform, they will receive an accessibility warning. *If necessary, our team can help admins choose the right colors.*

4.2. Data management



Unlike many other participation platforms, **the government or client organization retains 100% ownership** of the data and can thus export all data at any time with a single click or via API. CitizenLab takes on the role of data processor, while the government or client organization is the data owner.

Export data

Administrators and project moderators can, at any time, export excel files containing users' ideas and comments via the administrator interface. The export can contain either all or a subset of the data, depending on the selected filters. In the same way, user data can also be exported only for administrators.

If you use Typeform as a survey service within your platform, the survey results will also be accessible. Like all native functionality, admins can link survey results to specific platform users, as well as export results as needed.

API

In addition to the manual export of data, CitizenLab has a well-documented Application Programming Interface (API) so that other applications can exchange data with the software. This API is open so that the data in the platform can be offered in the form of open data (e.g., for displaying data on map).

The authentication uses the JWT standard and login data can easily be obtained from CitizenLab. The documentation contains a complete list of possible operations, with examples. The API is constantly being expanded to unlock new functionalities. The documentation is also consistently kept up to date.

Read data

All data – from ideas, comments, projects and users – is made available for processing by external tools via our REST API.

Write data

Aside from reading data, the API also offers opportunities to create ideas and verify community members' identities. This also allows for integration of content and data from other government-run systems. For example, admins could integrate any existing agenda software to automatically publish agenda items (e.g., from a recent town hall) or follow-up reports of the government council or advisory councils on the platform. *The idea here is to build a single online hub where community members can learn and weigh in on the latest and most relevant issues that matter to them.*

As long as the contract is in force, both the accessible export functionality and the API can be used freely. After the termination of the contract, a one-time copy of the application database can be obtained in textual SQL format, compatible with the open-source database software PostgreSQL.

4.3. Privacy & data processing

Conformity with GDPR

CitizenLab is fully compliant with the GDPR, which exceeds most, if not all, US-based privacy and data protection standards. The main aspects of this compliance are explained below:

Rights of the user

Right to transparent information	The privacy policy specifies the purpose of the use of personal data in easily understandable language.
Right of access	Users can view their platform contributions at any time via their user profiles.
Right to rectification	Users can change personal data at any time via their user profiles.
Right of data erasure	Users can delete their profile and all associated data via their user profiles.
Right to restrict processing	Users can restrict, in detail, which processing systems they will or will not allow via the cookie manager.
Right of data transferability	Users can contact CitizenLab to request their contributions on the platform in a common spreadsheet format, or manually copy their contributions from their user profile.
Right to object to processing	Users can restrict in detail which processing systems they will or will not allow via the cookie manager. Users can delete their profile and all data associated with it via their user profile on the platform.
Right to object to profiling	CitizenLab does not use profiling to influence platform content.

Consent

Users can determine in detail which processing systems and purpose they will or will not allow via the cookie manager.

Users can specify in detail which emails they wish and wish not to receive, for both automated and manual email campaigns.

Data retention, data minimization

The government has full control over the personal data requested from users when creating a profile. The CitizenLab platform requires only name and email address as standard fields.

The data is stored with the government for the duration of the contract.

Audit trails

If the user gives permission, all interactions with the platform are recorded in order to establish a clear audit trail of the operation of the platform.

4.4. Security

CitizenLab is developing its **Information Security Management System (ISMS)** in accordance with the ISO 27001 guidelines. The ISO 27001 certification process will be completed in Q2 2021.

Below, we discuss the widely used **OWASP** top 10-2017 application security risks as a guideline to explain which technical security measures are in place.

Safety risk	Technical measure to mitigate
A1:2017 Injection	Consistent use of a mature object relationship mapping (ORM) layer for database access prevents the occurrence of potential SQL injections. Consistent use of data validation and automatic cleaning of rich text fields prevents JavaScript injections.
A2:2017 Broken authentication	By using as many widely distributed industry-standard components and software libraries as possible to build authentication and authorization, such as applying JWT tokens, we avoid introducing our own errors in these domains.
A3:2017 Sensitive data exposure	All communication between the end user and the application servers is encrypted under an HTTPS TLS 1.2+ connection with strong cyphers. The encryption is terminated at the application layer, from where all communication between the application servers take place over private virtual networks that are not publicly accessible. All databases store their data encrypted on physical media (encryption at rest). Technical logging is filtered for sensitive data before being executed.
A4:2017 XML external entities	The platform does not use XML anywhere. It mainly uses simpler, less easily exploitable JSON format for serialized data.
A5:2017 Broken access control	CORS is set to be as restrictive as possible – the web application communicates with our internal APIs via its own domain.

The application layer applies a separate, almost declarative software layer to define so-called policies. Policies determine which user roles are authorized to perform which actions on the platform. Static code analysis is used to check, as far as possible, that the policies are effectively applied in the application code. The policies have a very high coverage in terms of automated tests.

**A6:2017 Security
misconfiguration**

Our staging and production environment use exactly the same configuration, yet with separate accesses. The software libraries we use are on a regular basis re-evaluated in order to make sure that they are actively used and add value to the overall solution—if not, they will get removed.

**A7:2017 Cross-site
scripting**

The back-end application layer cleans all user input from content that could lead to an XSS attack. By default, all user input is displayed without HTML support in the front-end layer, this is only active for those elements on which richer text formatting is supported.

**A8:2017 Insecure
deserialization**

We mainly use simple serialized formats (JSON). We use software libraries to de-serialize these formats that are industry standard and have already proven their robustness to scale.

**A9:2017 Using
components with known
vulnerabilities**

Our continuous integration process and software library management system automatically alert us when used libraries contain known vulnerabilities so that we can take immediate action. On a monthly basis, we upgrade the libraries to the latest version.

**A10:2017 Insufficient
logging and monitoring**

All logs of the different application servers & services are aggregated in real-time in a centralized logging system. Dashboards and query functionality allow for easy detection of anomalies.

4.5. Hosting & maintenance

The various principles that are used in the maintenance of the CitizenLab platform are described below.

Hosting

CitizenLab offers a SaaS cloud solution and takes care of the technical implementation, maintenance and improvement of the cloud solution. This means that we set up the server instances as well as the database. The DNS configuration and associated SSL configuration are also provided by CitizenLab, unless the government wishes to use its own domain,

CitizenLab uses the services of Amazon Web Services to host the application servers and databases.

CitizenLab guarantees that third-party services have undertaken to comply with the provisions of the General Data Protection Regulation (GDPR) and to comply with the technical requirements for the processing and security of the data in question. A daily backup of the application database is generated. Daily backups are kept for 30 days. File storage (images and attachments) are stored on a versioned cloud file storage system with high redundancy.

Guarantees

The services will be **available for more than 99.9%**, measured monthly, with the exception of scheduled maintenance. If the customer requests maintenance during these hours, any “uptime” or “downtime” calculation periods affected by such maintenance will be excluded. Furthermore, any downtime due to failure of third-party connections or utilities or other reasons beyond the control of CitizenLab will also exclude from any such calculation.

The sole and exclusive remedy for the customer, and the full liability of CitizenLab in connection with the availability of the service is the amount that for any period of downtime exceeding one hour, CitizenLab shall refund to the customer 5% of the service fees for any period of 60 or more consecutive minutes of downtime and for any cumulative period of 60 minutes or more with a time span of 24 hours; provided that only one credit per day (consecutive or cumulated) may apply. Downtime begins when the customer demonstrates that the server is down (e.g., by monitoring or reporting an end user), and continues until the availability of the server is restored.

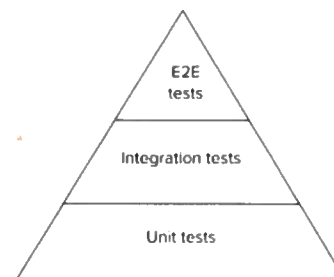
In order to obtain downtime reimbursement, the customer must notify CitizenLab in writing within 10 calendar days from the moment of the downtime.

Quality control

In order to guarantee the quality of the solution as much as possible, we use different methods.

1) **Tests:** The various software components are provided with extensive test suites. These tests are part of the continuous integration pipeline, which means that they are carried out with every code change to the software and immediately alert the developers to any functionality that is not functioning as expected, before it is rolled out.

For this we use the principle of the test pyramid, where a limited number of end-to-end tests simulates users, a larger number of tests collaborate between the different software components via integration tests and a large number of unit tests to ensure the proper functioning of the software components in isolation. The server application layer has a coverage of more than 85% of the source code.



2) **Error detection:** If errors do occur in the production application, they are detected and centrally aggregated by a runtime error tracking system. In addition to the description of the

error itself, the error report also contains extensive information about the context in which the error occurred, so that the developers can easily reproduce and solve the problem.

3) Monitoring: All servers and application containers are equipped with **individual monitoring of memory usage, processor load and general system load**. This data is centrally available in dashboards, with the ability to dig deeper into the data to detect and analyze suspicious patterns.

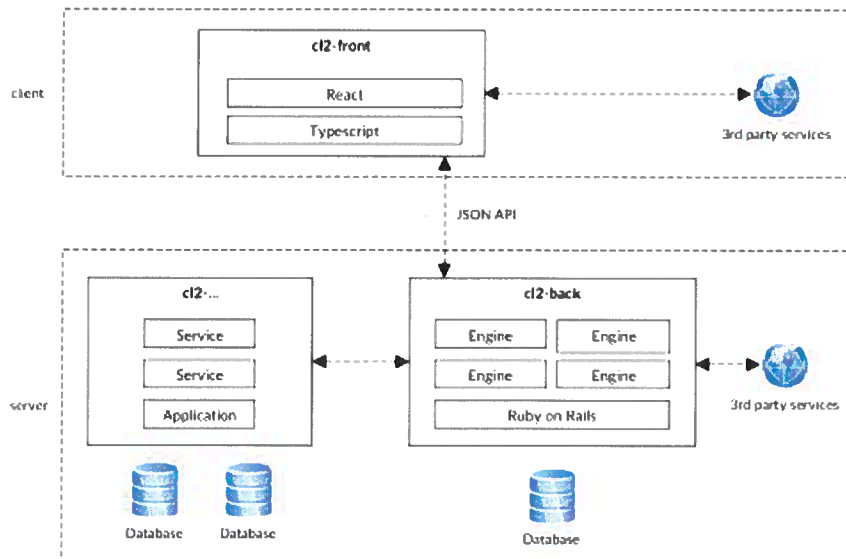
In addition, uptime monitoring is also applied. Every minute, each individual platform is approached to see if the homepage returns the expected data. In case of inaccessibility, the support team is immediately alerted.

Performance

In order to meet a **high level of availability**, the software solution has been built redundantly. The delivery, application and database layers provide multiple servers that dynamically distribute the work and can take over from each other. To reduce the risk of multiple servers becoming inaccessible at the same time they are physically located in different zones of the data center.

The application servers apply auto-scaling in order to stay afloat at **heavy peak times**. This means that in the event of a high load, for example due to an abundance of users, the number of servers is expanded fully automatically in order to reduce the global load to a level that offers an optimal user experience. Thanks to this technique, the platform can serve thousands of users at the same time without delay.

4.6. Technical architecture



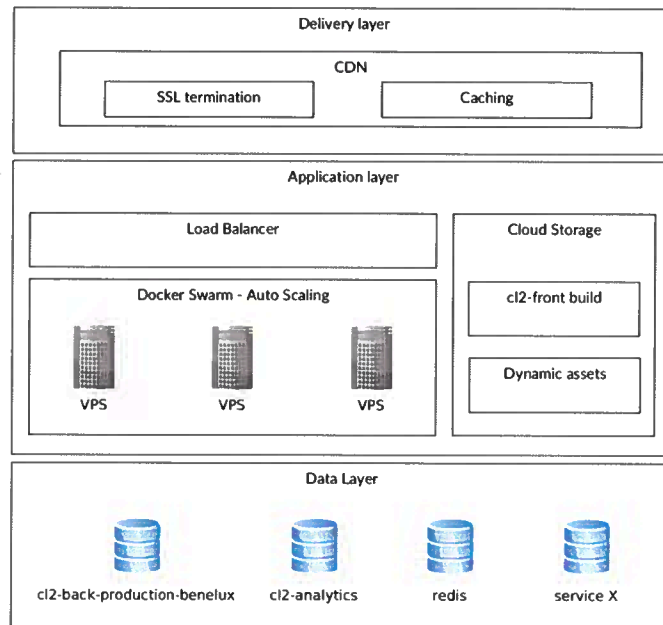
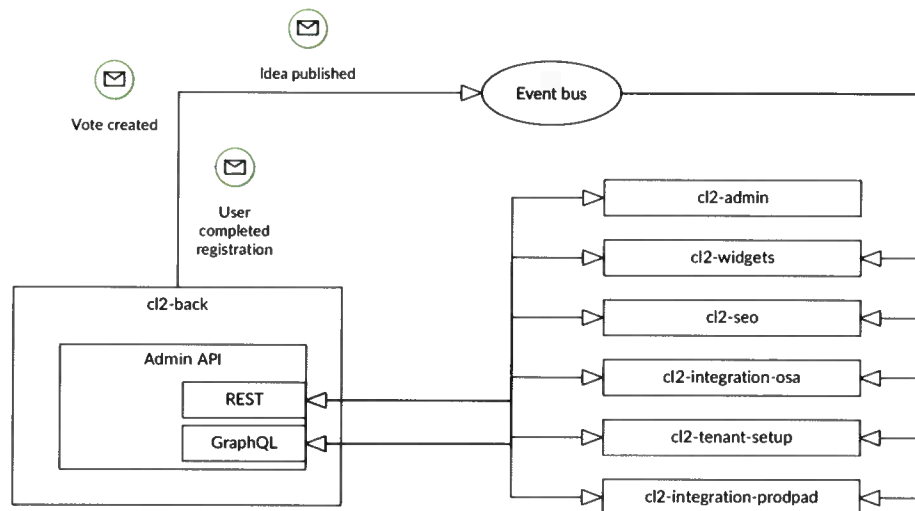
The high-level architecture of the application layer of the CitizenLab platform is depicted in the image above.

The user interface is composed out of a Single Page Application which runs in the user's browser. Written in Typescript, the views and render state are managed by React. RxJS is used to manage data streams and load the data from the back-end. The front-end uses Webpack to compile into static source files, served to users by the CDN.

The core backend service is a ruby application that allows for fast paced development by leveraging the rich qualitative eco system of ruby web libraries. The monolith is composed out of various, functionality-centered engines. Background jobs are queued to Redis and processed in parallel by an auto scaling group of servers that scale on demand.

Apart from the main back-end monolith, various small and larger web services provide completely separated functionalities like SEO, automate platform setup, emailing and various 3rd party integrations.

The main back-end service publishes domain events to an event bus backed by RabbitMQ, as depicted in the image below. The various services subscribe to the events that interest them. They communicate over JSON API or GraphQL with the main backend, if needed.



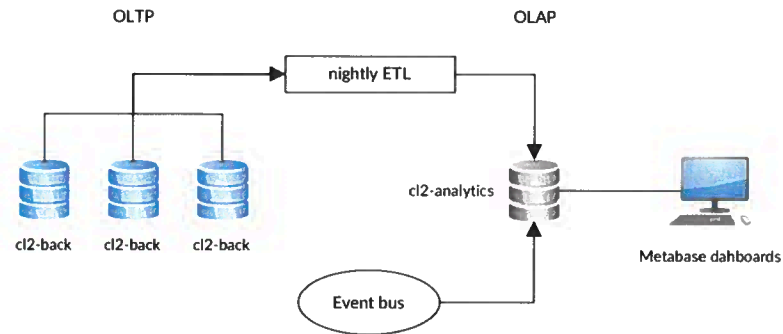
In terms of infrastructure, all services run containerized in Docker and are orchestrated over multiple virtual servers using Docker Swarm. The servers are auto scaling to respond to traffic peaks. A CDN layer and load balancer provide low latency and robustness. Applications are permanently health checked and in case of problems, drained from traffic and restarted. Some services have their own data store, but the main application is backed by an AWS managed PostgreSQL database, where every customer is stored in a completely separate schema. Scaling out is supported through master/slave replication and geographical sharing of customers. Memcached is used to share application cache between application containers.

Each tenant is living in an isolated PostgreSQL "schema", which you can see as a lightweight database within the database. Data from one schema cannot be mixed with data

in another schema on the database level. Multiple customers are sharing the same database server, but their data is stored separately.

Very strong test coverage across the board (85%+ for back-end, 50%+ in e2e tests) allows for frequent releases through continuous integration with very limited production issues as a result. CI also manages processing new UI translations, accessibility tests, performance tests, static code analysis, security vulnerability warnings and deployment.

System and application runtime logs across all services are aggregated and consumable through the ELK stack. Sentry is used to monitor and analyze production errors.



In terms of reporting, application databases are processed and aggregated across all customers in an internal data warehouse, converted by the nightly ETL into a dimensional schema that's consumable by business. Event data from the event bus is added in real time. Metabase is used as a dashboarding tool on top of the data warehouse database.

5. Action plan

5.1. Your dedicated government success manager



Amanda Rotella
Government Success Manager

Contact: amanda.rotella@citizenlab.co

Availability: 10am – 5pm EST (the US team, based in New York (Ben) will handle urgent morning questions before 10am)

Role

As Government Success Manager, Amanda will oversee your team's training and onboarding, advise on engagement strategy, and be your primary point of contact. Amanda will work closely with your team at the start, and provide strategic support leading up to and during periods of heavy engagement throughout the duration of the contract. The role can be broken down as follows:

Setup

Onboard your team and perform technical setup

Training & coaching

Demonstrate usage, share use cases & best practices

Communication

Periodic reviews, explain new features and share better product usage

Monitoring

Continuously track customer health and reach out proactively

Reviewing

Evaluation of performance and presentation of results

Support

Solve issues and answer your product questions

Driving usage

Make sure that you seize the full potential of the platform

At CitizenLab, we understand that technology only represents part of a successful community engagement strategy. As such, we provide your team with a dedicated Government Success Manager, someone who has run dozens of engagement projects around the world and who can help guide your team throughout the process. We front-load these services to ensure your team is able to work comfortably and independently with the software, and act as a strategic resource to support specific engagement initiatives. In addition to your very own Government Success Manager, your team will have access to our support team (technical and otherwise) and library of resources, which will help you answer quick questions and make adjustments to the platform as needed. The services offered with this license are described below. The training and support are part of the project plan.

5.2. Project timeline and approach

We have developed a thorough onboarding process in three phases to enable a successful launch of the platform and your first participation project(s): a strategy phase, a preparation phase and a launch phase. **We recommend at least 4 weeks (can start as fast as 2 weeks) between contract start (kickoff meeting) and the public launch of your platform.**



5.2.1. Project overview

The CitizenLab platform will help City of Biddeford achieve engagement goals by providing the community with a central online hub for all things engagement, and a suite of back-end tools for City of Biddeford staff and stakeholders to manage and make sense of community feedback. The CitizenLab team will work with City of Biddeford to design a series of engagement projects, some region-wide and others within specific communities, over the course of the first contract year.

5.3. Project deliverables and schedule

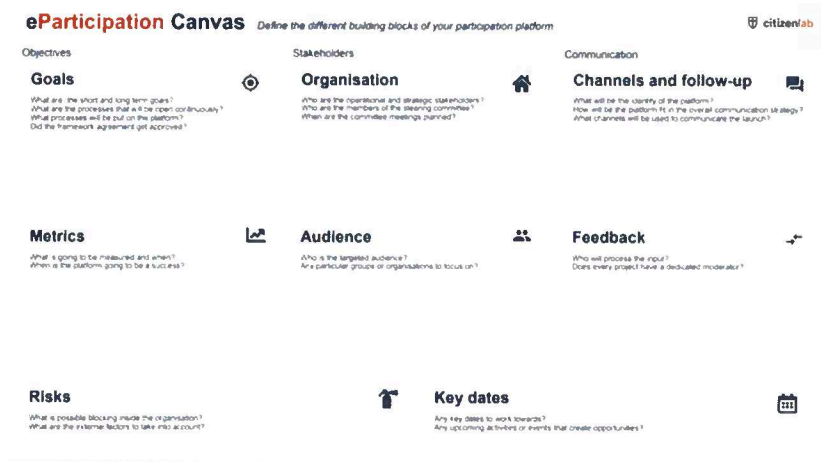
The timeline below describes the estimated milestones and corresponding deliverables and CitizenLab's understanding of City of Biddeford's needs, which include two distinct periods of community engagement, each focused on one or more communities within the greater Treasure Valley region. This schedule is flexible and will be finalized during the kick-off meeting currently slated for early May 2022. *Please note this schedule assumes City of Biddeford selects the Standard or Premium implementation plan.*

Milestone (estimated)	Project deliverable
May 2 - May 16 (2 weeks)	Platform strategy: Project kick-off and participation strategy workshop
April 16 – May 30 (2 weeks)	Platform preparation: - Coordination with City of Biddeford web services (as needed) - Platform training, design workshops, and other preparation meetings
May 31 - June 1	Platform launch

5.4. Implementation

Intake / Kick-off Meeting Overview

During this meeting, members of the CitizenLab team will meet with City of Biddeford's core team (and additional stakeholders as needed) to discuss the objectives and use of the platform. City of Biddeford's core team will include a mix of City of Biddeford employees and other stakeholders (as needed), and this team will oversee the training, launch, and implementation of the platform from City of Biddeford's side. During the kick-off meeting, the Government Success Manager will guide attendees through CitizenLab's *eParticipation Canvas* to map out the different elements of the implementation. This meeting provides the necessary input for the technical set-up of the platform.



CitizenLab's e-participation canvas used in engagement project design

Technical set-up

The technical set-up is an integral part of the SaaS cloud solution offered by CitizenLab. The columns below indicate the roles and responsibilities of City of Biddeford and the CitizenLab team in order to configure and prepare the platform for a public launch. If needed, CitizenLab can also provide support to ensure City of Biddeford's responsibilities are met.

By CitizenLab

The technical implementation of the CitizenLab platform:

- Establishment of hosting server & database
- DNS configuration and associated SSL configuration for enhanced security
- Technical integration configuration: social logins (e.g., Facebook, Google), surveys (e.g., Typeform, Google Forms), data enrichment (Google Analytics)

By City of Biddeford

City of Biddeford's role is minimal and requires no additional technical knowledge. Instructions are written out in detail in our *Knowledge Center*. Depending on City of Biddeford's needs, the following actions may be required:

- Personalized domain name: configure DNS settings to refer to the IP address of the CitizenLab server
- Installation of the CitizenLab widget on the website

5.4.1. Strategy

During this phase, CitizenLab oversees the technical set-up of the platform. The actions required from City of Biddeford are minimal and will be articulated during the kick-off meeting.

Kick-off meeting (90min video call): Together with your team of relevant stakeholders, the Government Success Manager will map out the onboarding process, introduce the *eParticipation Canvas*, clearly define various roles, prepare next steps, and finalize the platform handover. The Government Success Manager will also help determine the best way

to organize the City of Biddeford team, which will become increasingly important as more stakeholders use, and projects take place on, the platform. We recommend appointing one member of the City of Biddeford team to oversee all communication your Government Success Manager at CitizenLab.

Participation strategy workshop (60min video call): Together with your participation workgroup and senior leadership (as needed), your Government Success Manager will help define how the platform fits into City of Biddeford's overall participation strategy and short- and long-term objectives. This process will be highly collaborative and will help City of Biddeford set goals and expectations for the contract year.

5.4.2. Preparation

The sessions below represent a framework and baseline for onboarding and training services provided. CitizenLab anticipates that the process will be more fluid in practice (i.e., quick calls as needed, messaging the Government Success Manager with quick questions, etc.) *Please refer to the graphic in Section 5.2 for a full list off preparation meetings based on implementation package.*

Training session: platform build (90min video call): The Government Success Manager will onboard your team on the platform's back end (i.e., management tools), guide them through the set-up process and various platform features. The focus of this session is to learn the overall technical set-up of the platform.

Project design workshop (90min video call): The Government Success Manager will help scope and design your participation projects. Starting from the filled-in eParticipation Canvas(es) we work together to design your first project or project folder.

Platform quality & accessibility review (45min video call): The Government Success Manager will provide a thorough review of your platform, focusing on information quality and accessibility to ensure the platform is ready for public launch, meets accessibility standards, and is as inclusive as possible. *This session is limited to our Premium onboarding package but can be added for an additional fee.*

Staff training: platform use (60min video call): The Government Success Manager will do a deep dive into the best practices of all platform features. The goal of this session will be to design projects and configure the platform in a way that further increases adoption. This session can also function as an additional training on how to use and operate the platform for a broader group of stakeholders (e.g., municipal leaders, deputized community members, etc.). *This session is limited to our Premium onboarding package but can be added for an additional fee.*

5.4.3. Launch + Follow Up Reviews

City of Biddeford's platform launch is a moment to celebrate! During the kick-off meeting, CitizenLab and City of Biddeford will agree upon a review schedule that aligns with the planned participation timeline. These sessions are designed to ensure projects remain on track and to evaluate progress. They are usually held quarterly but can be adjusted as needed.

5.5. Ongoing support

Support

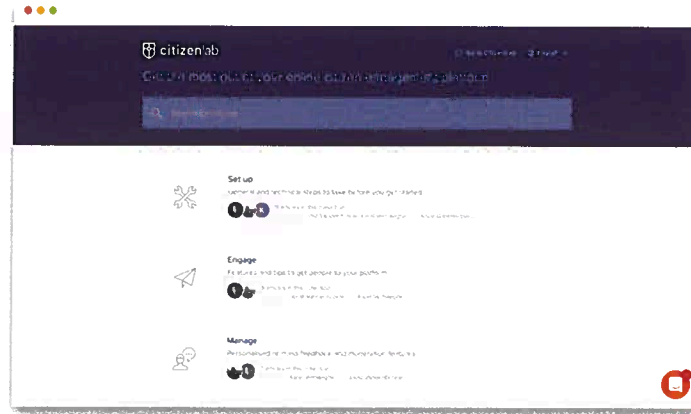
CitizenLab will provide technical support via a built-in chat system, telephone and e-mail on weekdays and Saturday during 9:00 a.m. to 5:00 p.m. MST with the exception of official U.S holidays ("support hours"). For requests outside this window, please contact Ben Gordon, who is based in New York and on EST.

COB can start a helpdesk ticket during the support hours by calling +1 650 285 2316 or emailing us at any time at support@citizenlab.co. CitizenLab will respond to all help desk tickets within one (1) working day but has an average response rate of 3 hours.

Guidance materials

City of Biddeford will also have exclusive access to the following guidance materials:

- **Knowledge Center:** The use of the CitizenLab platform is fully described in our *Knowledge Center*, so that administrators can work autonomously and easily find answers to frequently asked questions.
- **Guides and resources:** After the kick-off meeting, documents are shared with the client that help in successfully rolling out the platform. These include but are not limited to: the *Organization Guide* which provides answers on how to organize internally around online participation, and the *Communication Guide* that provides best practices around online and offline outreach, with special emphasis on reaching traditionally under-represented communities.
- **Tips per email & webinar:** Platform admins regularly receive tips and tricks via email. CitizenLab sends a monthly email that bundles practical examples from other governments and organizations, new functionalities, useful tips, invitations to attend training webinars and an annual training day.



CitizenLab support articles

Management of incidents

Platform admins always have a chat button available (at the bottom right of the screen) to report problems or give feedback. This chat is supported by Intercom. Both these reports and reports sent to support@citizenlab.co come in our customer service software and are treated as a priority. An automatic message is then sent that a reply can be expected within 24 hours by email or telephone (if phone number is available), although one usually receives an answer on the same working day

6. Pricing

6.1.1. CitizenLab Pricing Packages

	ESSENTIAL	STANDARD	PREMIUM
USAGE	Up to 2 admins ✓ No project managers ✓ Up to 3 published projects ✓ No project folders	Up to 4 admins ✓ Up to 5 project managers ✓ Unlimited published projects ✓ Unlimited project folders	Up to 8 admins ✓ Unlimited project managers ✓ Unlimited published projects ✓ Unlimited project folders
FEATURES	✓ All participation methods <i>ideation, maps, survey, poll, PB, proposals</i> ✓ Customizable design ✓ Communications: emails & widgets ✓ Manual groups & closed projects ✓ Dashboard & analytics	All Essential features + ✓ Personalized domain ✓ Online workshops ✓ Custom registration fields ✓ Smart groups ✓ Granular permissions	All Standard features + ✓ Integrated styling (font & navigation) ✓ Customizations (maps & status) ✓ Data insights: NLP clustering ✓ ID verification ✓ API access & integrations
SERVICES	✓ Essential onboarding ✓ No project design workshops ✓ Participation expert access	All Essential services + ✓ Standard onboarding ✓ Up to 1 project design workshop ✓ Project templates	All Standard services + ✓ Premium onboarding ✓ Up to 2 project design workshops ✓ Priority support

6.1.2. Pricing Table

For a community of 22,000 residents.

	ESSENTIAL	STANDARD	PREMIUM
Annual Contract License	\$4,000 / year	\$6,400 / year	\$9,600 / year
One-time Implementation Fee	\$1,200	\$2,300	\$3,300

All pricing in USD. All proposal terms, including prices, will remain in effect until 7/18/2022 (120) days after proposal Due Date of 3/18/2022.

	Essential	Standard	Premium
Annual License <i>Valid for one year. Dedicated support included throughout license period.</i>	\$4,000 / year	\$6,400 / year	\$9,600 / year
Implementation (one-time) <i>Includes technical setup, training, and ongoing support (see Slide 7)</i>	\$1,200	\$2,300	\$3,300
<i>1-Year Cost</i>	\$5,200	\$8,700	\$12,900
<i>2-Year Cost (5% license discount applied)</i>	\$8,800	\$14,460	\$21,540
<i>3-Year Cost (7.5% license discount applied)</i>	\$12,300	\$20,060	\$29,940
<i>3-Year Savings</i>	\$900	\$1,440	\$2,160

6.1.3. Full Pricing Comparison Table



Compare feature plans

Product offering		Essential	Standard	Premium
I. Usage				
Users	Participants	Unlimited	Unlimited	Unlimited
	Platform admins Project admins	2 4	4 5	8 Unlimited
Projects	Published projects	3	Unlimited	Unlimited
	Project folders		Unlimited	Unlimited
II. Functionalities				
Engage	Information	✓	✓	✓
	Surveys	✓	✓	✓
	Polls	✓	✓	✓
	Ideation	✓	✓	✓
	Mapping	✓	✓	✓
	Participatory budgeting	✓	✓	✓
	Citizen proposals	✓	✓	✓
	Online workshops	Extra	✓	✓
	Notifications	✓	✓	✓
	Email campaigns	✓	✓	✓
	Invitations	✓	✓	✓
	Interactive widgets	✓	✓	✓
	Multiple languages		✓	✓
	Manage			
	Moderation manager		✓	✓
Decide	Idea assignment		✓	✓
	Form configurations per project		✓	✓
	Manual groups	✓	✓	✓
	Smart groups		✓	✓
	Access rights & permissions		✓	✓
	Social logins (FB, Google)	✓	✓	✓
	ID verification*		Extra	✓
	Single sign-on integration*		Extra	✓
	Activity dashboard	✓	✓	✓
	Users & demographics dashboard	✓	✓	✓
Configure	Project reports		✓	✓
	NLP input clustering		Extra	✓
	NLP geo analysis		Extra	✓
	Data export to xlsx	✓	✓	✓
	API access			✓
	Data migration services			Extra
	Configurable logo, colours, visuals	✓	✓	✓
	Personalized domain		✓	✓
	Custom font			✓
	Custom navigation bar			✓
	Configurable registration fields		✓	✓
	Configurable idea fields		✓	✓
	Configurable areas		✓	✓
	Custom topics		✓	✓
	Custom map layers			✓
	Custom statuses			✓

Compare service plans

Service offering	Essential	Standard	Premium
Onboarding services			
Strategy			
Platform handover (milestone)	✓	✓	✓
Kick-off meeting	✓	✓	✓
Participation strategy workshop		✓	✓
Organizational adoption workshop		Extra	Extra
Community adoption workshop		Extra	Extra
Preparation			
Self-directed platform build (milestone)	✓	✓	✓
Training session: platform build	✓	✓	✓
Project design workshop		Up to 1	Up to 2
Platform quality & accessibility review			✓
Launch			
Platform launch (milestone)	✓	✓	✓
Staff training: platform use			✓
Continuous services			
Government success manager			
Product updates	✓	✓	✓
Support			
	Standard	Standard	Priority
Email	✓	✓	✓
Chat	✓	✓	✓
Phone	✓	✓	✓
Knowledge center	✓	✓	✓
Training			
Blog & email digest	✓	✓	✓
Resources	✓	✓	✓
Webinars		✓	✓
Project templates		✓	✓
Advisory			
Annual review session	✓	✓	✓
Quarterly review call		✓	✓
Project design workshop*		Up to 1	Up to 2
Operations			
		Extra	Extra

Reference Projects

City of Carlisle, PA - Population 19,000 - <https://carlisle.citizenlab.co/en/>

City of Rexburg, ID Population 28,000 - <https://rexburgid.citizenlab.co/>

City of Struthers, OH Population 11,000 - <https://discover.cityofstruthers.com/en/>

Appendix A

RFP for Community Engagement Platform

The City of Biddeford, Maine, is looking to proactively engage its 22,000 residents on specific programs, projects and city events. The City of Biddeford is searching for a municipal government focused engagement platform that will be a user-friendly portal for both city staff and residents to engage and provide two-way resident feedback across multiple languages. The city outlines its ideal requirements for a vendor partner below:

Requirements for Engagement Tool				
A		Usage		
		Yes	No	Partial
		Comments		
1	Provide numerous methods for participation during each project/survey/engagement.	☒	☐	
2	Provide Biddeford the ability to create multiple simultaneous engagement initiatives on specific goals, ideas, programs and projects.	☒	☐	
3	Provide Biddeford access to content/outcomes/platform on a variety of devices.	☒	☐	
4	Provide options to re-engage past participants on new government related activities.	☒	☐	
B		Function & Features		
		Yes	No	Partial
		Comments		
1	The software solution should be able to:	☒	☐	
2	Provide survey/feedback functionality with varying configuration of questions for both quantitative and qualitative capture: rank ordering, multiple choice, prioritization, images, check boxes, drop downs, numeric, design by logic, open and closed ended questions.	☒	☐	
3	Allow for questions to be demographic-focused.	☒	☐	
4	Provide options for offering visual/graphical depictions of projects, plans, policies, programs.	☒	☐	
4	Provide ability to upload documents, pictures, videos, images.	☒	☐	

5	A tool to moderate language to encourage mindful feedback.	✓			
6	Mapping features that offer participants options for identifying geographic specific locations.	✓			
7	Offers options for participants to add comments directly to a posted document or picture or map.	✓			
8	Mapping geographic locations in scope of Bidderdorf projects and plans to gather specific input about these areas.	✓			
9	Timeline feature to track project progress.	✓			
C Data and Analysis		Yes	No	Partial	Comments
1	Offers a variety of data collection/reporting methods for both quantitative and qualitative analysis.	✓			
2	Tagging or AI functions to assist qualitative analysis.	✓			
3	Provides visual representation of quantitative data fields.	✓			
4	Ability to import/export data into other formats (e.g. CSV, Excel) to visualize and interpret resident feedback.	✓			
D Access and Language Translation		Yes	No	Partial	Comments
1	Offers an online, web-based tool that is accessible across a variety of platforms (computers, tablets, and smartphones); and compatible with a variety of browsers (Edge, Firefox, Safari, Chrome).	✓			
2	Content can be easily translated in multiple languages to better ensure segments of the community are not excluded.	✓			
3	Compliant with requirements outlined in Americans with Disabilities Act (ADA) and Section 508 of the Rehabilitation Act.	✓			
4	Provides options for required and/or anonymous registration/sign-up.	✓			yes; survey can be filled anonymously
5	Can be used via desktop/laptop computer, tablet, mobile phone, kiosk to broaden audience.	✓			

6	Offers social media links built into the interface to promote easy sharing amongst friends and family.	☒	☐	☐	
7	Provides options for turning on or off registration requirements.	☒	☐	☐	

Customer Service & Support					
Training:		Yes	No	Partial	COMMENTS
A	The selected vendor must onboard, set-up and provide training to staff and must include an electronic or paper operation manual, discussion of technical support, and user guides.	☒	☐	☐	
Technical Assistance:		Yes	No	Partial	
A	Assistance between 9:00 a.m. to 5:00 p.m. Eastern Standard Time (EST) Monday – Friday	☒	☐	☐	
B	Direct support and assistance with registration, access issues, or functionality issues.	☒	☐	☐	

Additional Value Add					
Focus		Yes	No	Partial	COMMENTS
A	Vendor should be a municipal government-focused entity, providing guidance and feedback that is specific for local government needs.	☒	☐	☐	
B	Vendor should be able to provide guidelines, best practices and benchmarks for other local cities as part of its customer service.	☒	☐	☐	
C	Platform should demonstrate capacity to integrate with existing Civic Plus brand website.	☒	☐	☐	



Community Engagement & Analysis Platform

A Proposal For:

The City of Biddeford, ME

March 18, 2022



Danica Lamontagne, Communications Coordinator
205 Main Street
Biddeford ME 04005
City of Biddeford, ME

Dear Ms. Lamontagne,

We are excited at the opportunity to support the City of Biddeford in its public engagement efforts, and are grateful for your consideration of our proposal. The following pages will outline how you and Tim can leverage the PublicInput platform to engage and measure participation with residents in every corner of the community.

When most local governments define "public engagement," it is often as a transactional process, accompanied by a printed report, and managed separately depending on it taking place online or in-person. However, that's not how we see it. Engaging the public requires a foundation in metrics for equity and representation, and a wide range of communication tactics to engage every audience, no matter their geography, demography, or even access to the internet. The PublicInput Platform is built to facilitate this approach and allow communities to move beyond a baseline understanding of 'What' is being said, toward the next evolution of engagement that is knowing 'Who' had the opportunity to participate, 'How' those groups preferred to participate, and 'Who' said 'What' in the context of these important criteria.

As the world continues to elevate equity and representation as a foundation of democracy, PublicInput exists to give those in the most impactful form of government (local), the tools to measure and improve their understanding of the people they serve.

We are excited for this opportunity to implement and integrate a system that facilitates a complete spectrum of engagement tools and allows for your team to easily report on who they reach and what residents in every corner of the community have to say.

Sincerely,



Graham Stone
Vice President of Government Relationships
Cityzen Solutions, Inc. DBA PublicInput.com
2409-107 Crabtree Blvd, Suite 303
Raleigh, NC 27604
graham@publicinput.com

Despite a proliferation of engagement platforms, tools remain siloed and access remains inequitable

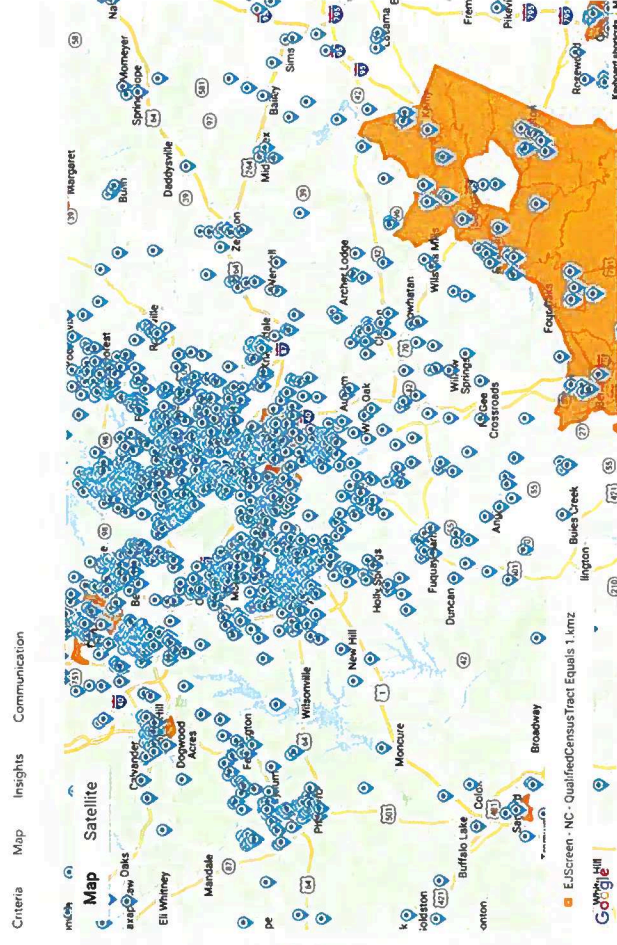
Philosophy and Introduction

We believe most engagement platforms miss the mark by only addressing unique aspects of the broader public engagement process. Understanding that online-only or piecemealed solutions leave organizations on the hook for demonstrating equity and maintaining a manageable process, we've focused our efforts on facilitating every format for communication from a single admin-dashboard.

We also believe this simplifies adoption of best practices across more initiatives or projects of every scope and scale, and allows for elected leaders to see through the louder voices and make decisions truly on behalf of their constituents.

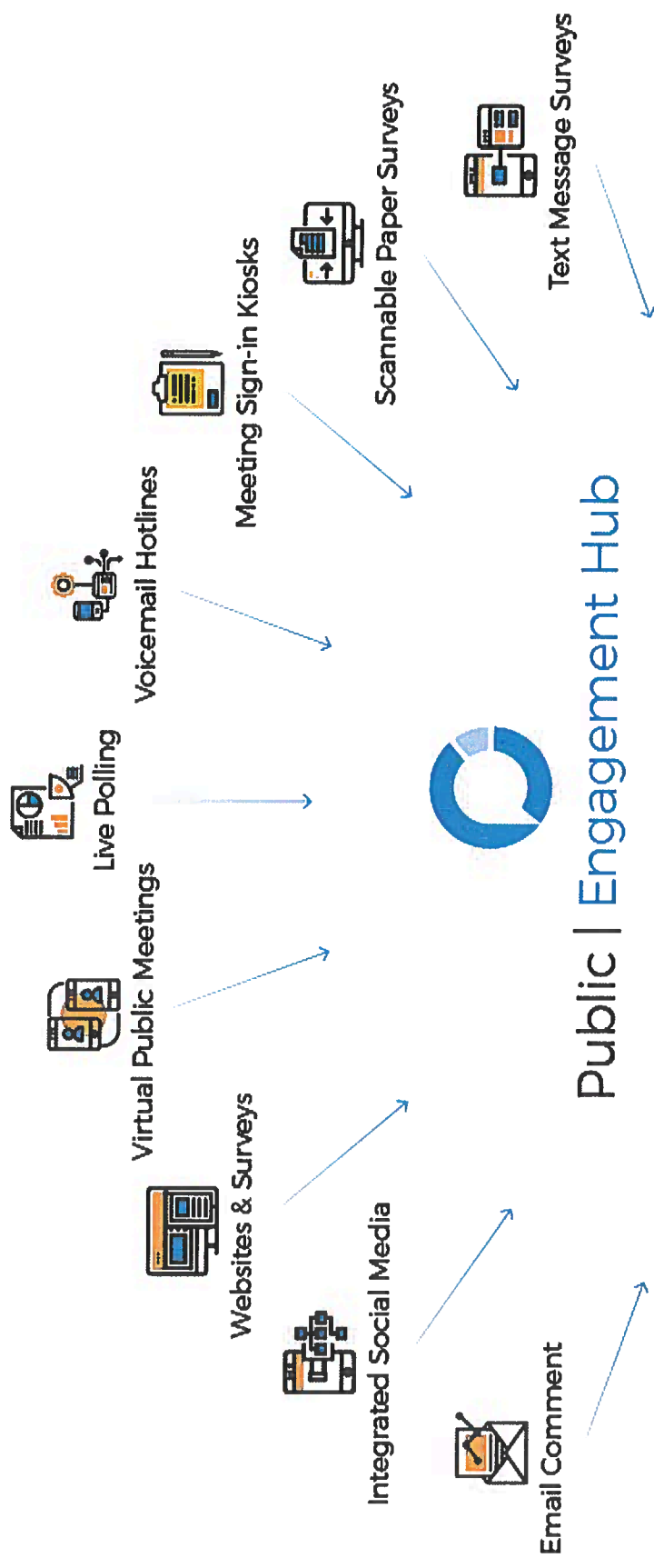
Representative decisions depend on evolving systems and process

Participants	Show 10 ▼ entries	1f	Email	Phone	Segments
				541-852-9198	Connect Pilot
				541-232-3894	Connect Pilot
				541-514-6393	Connect Pilot
				541-563-5942	Connect Pilot
				541-953-5130	Connect Pilot
				541-731-6299	Connect Pilot
				503-449-4128	Connect Pilot
				541-936-5067	Connect Pilot
				541-501-0886	Connect Pilot
				541-767-5400	Connect Pilot



PublicInput facilitates and manages the entire spectrum of public engagement

The City is searching for a user-friendly portal for both city staff and residents to engage and provide two-way resident feedback across multiple languages. We believe this is an opportunity to fulfill this requirement and expand on it by meeting residents 'where they are' via the right tactic for their unique needs, and installing a central system of record to better understand not only what we hear but who we hear from.



About PublicInput

PublicInput is a Software-as-a-Service (SaaS) solution that manages the complete public engagement process. Founded in 2013, the firm employs approximately 40 employees whose expertise range from software development to communications to customer support and success, and even city management. Based in Raleigh, NC, three departments comprise the makeup of the team, with a small number dedicated to new contracts, and the rest focused on Customer Support/Success and New Product Development.

Our core values embody the type of relationship you can expect from PublicInput:



- Listen Obsessively
- Put Relationships First
- Think Critically
- Respect All People
- Test and Iterate
- Love To Learn

Relevant Experience

Local governments in the United States represent some of the most diverse populations on earth. Officials and Staff in these amazing communities are tasked with addressing challenges that range from wealth gaps to racial equity, to environmental justice, to accessibility, all of which require more than just acknowledgement. They require understanding, and they require relationships.

With a population of more than 20,000 important and diverse residents, a lack of tools to reach these individuals and measure their participation risks the more vulnerable residents of Biddeford going underserved. This is why PublicInput exists, and we have a strong resume of serving these types of communities, with more than 200 government clients representing all sizes and every corner of the United States, including Rockingham NH, Washington D.C., King County WA, Asheville, NC, and Rochester, NY.

Reaching a representative audience in such diverse communities requires dedicated tools built with a knowledge of our country's unique challenges, and a team to support it that knows these places. Success Director, Mike Lee, and the rest of the team members assigned to Biddeford's success have worked with all of these organizations to not only assist in technical operations of the platform, but also to share strategies and best practices garnered from experience in peer agencies.



Project Example: City of Austin, TX

Our Parks Our Future

Every 10 years the City of Austin, TX engages in a long-range planning effort that is designed to guide the development and growth of the city's park system.

The most recent plan, Our Parks, Our Future, was honored by the American Planning Association (APA) with the 2021 National Excellence in Planning Award for their efforts in creating "equitable open space and community engagement in the planning process."

Austin's plan was also awarded last year's APA Excellence in Sustainability award as well as the Honor Award from the Texas Chapter of the American Society of Landscape Architects.

The long-range planning team at the City of Austin leveraged their PublicInput Engagement Hub to reach and engage the community, and "dive deeper into community engagement and analysis than ever before."

OUR PARKS OUR FUTURE

AUSTIN PARKS & RECREATION
LONG RANGE PLAN



2020-2030

"PublicInput gives you the Ferrari of engagement technology. It is robust, agile, and allows local governments to laser-focus on underrepresented communities of color, residents with limited English proficiency, and people with disabilities..."

Contact: Marion Sanchez - Community Engagement Consultant
City of Austin, TX
512-974-2955 | Marion.Sanchez@austintexas.gov
Contract date: 2017-Ongoing

--Justin Schneider, City of Austin
Community Engagement Specialist

Project Example: City of Raleigh, NC



Raleigh

Affordable Housing Bond

The City of Raleigh is committed to ensuring equitable access to housing and, in support of this commitment, sought to include an affordable housing bond on the November 2020 ballot. City staff planned on gathering input from the public about the bond's feasibility, but in place of planned public forums, which were canceled due to COVID-19, the survey instead had to be conducted virtually to hear from the public.

Live for a couple of months, by integrating the survey in local media, using PublicInput's integrated translation tools to host a Spanish language version, offering a phone-in option, and investing in social media marketing efforts, the effort engaged more than 4,800 residents. This effort involved combining online survey tools with an additional layer of accessibility through phone-in options with a focus on marketing throughout the community.

Without data scientists or Excel experts on staff, the Planning Department relied heavily on built-in Dynamic Reporting and the Insight Builder within their PublicInput dashboard. Through this, one of the most important insights generated by the system demonstrated that of the respondents who strongly agreed with supporting the initiative, 96% were planning to vote in the upcoming election, giving City officials the confidence needed to include the bond on the ballot.

As the feedback predicted, Raleigh voters gave overwhelming support to the city's \$80 million affordable housing bond, with nearly 72% supporting it.

Contact: Sharon Felton - Planning
Communications Manager
City of Raleigh, NC
919-996-3010 |
Sharon.Felton@raleighnc.gov
Contract date: 2015-Ongoing



Of participants who selected "Strongly Agree" to "The City should continue to support the buying of land for future development of affordable housing.", 96% answered "Yes" to "Are you planning to vote in the November 2020 election?"

Explore the data ▼



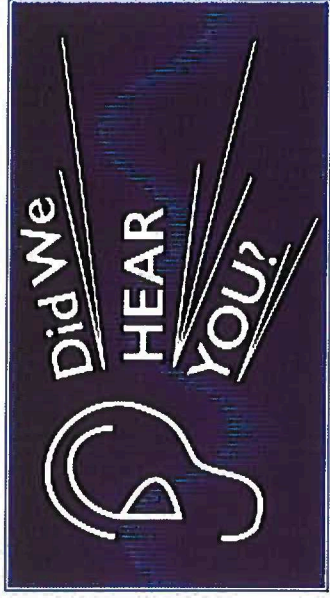
PublicInput.com

Project Example: City of Asheville, NC

Noise Ordinance Public Comment



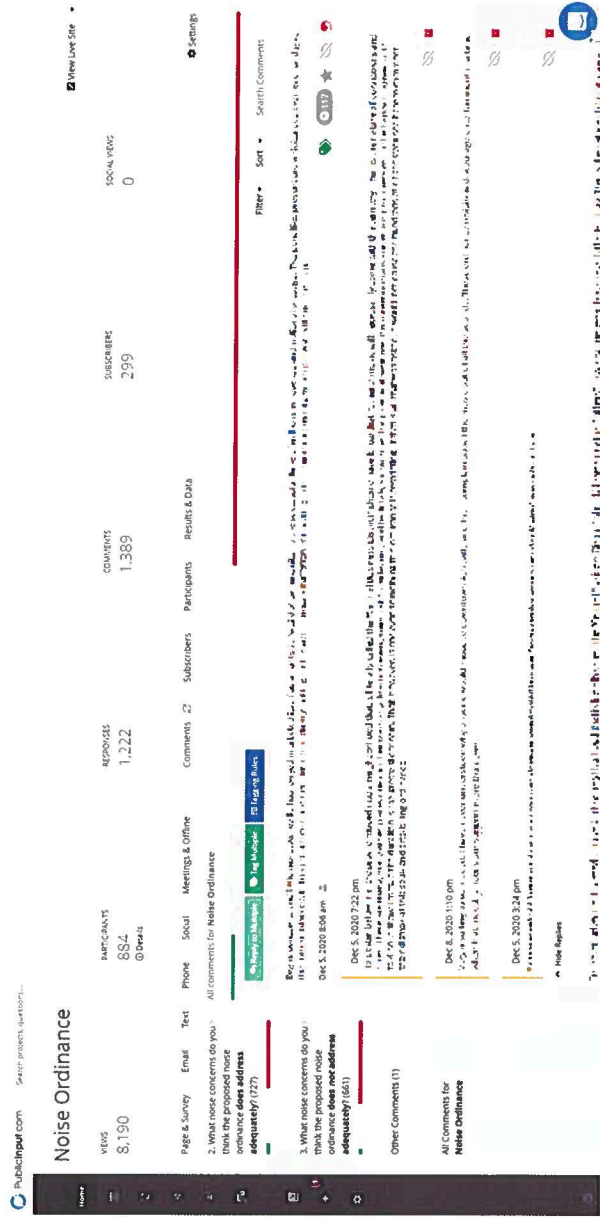
The City of Asheville has tackled immense issues from their PublicInput Platform over the course of the past year, including Police Reform, Confederate Monuments, and Reparations.



A slightly less polarizing but still important issue being reviewed is the City's noise ordinance. Facilitated from within their PublicInput Engagement Hub, the City leveraged an online survey and custom email address to gather feedback from residents. Still hosted at <https://publicinput.com/noise>, the initiative gathered feedback from 883 residents totaling 1,388 comments.

Data was aggregated in the Dynamic Reports builder and submitted to Council for consideration. Staff took advantage of the comment coding abilities of the system and the automated sentiment analysis tools to gain quick insights into the public's opinion on the state of noise in Downtown Asheville.

Contact: Brenda Mills - Director,
Equity and Inclusion
City of Asheville, NC
828.712.2324 |
bmills@ashevillenc.gov
Contract date: 2020-Ongoing





King County

Project Example: King County, WA

Lake Swimming Beaches Survey Language Accessibility

King County is home to one of the most diverse populations in the Country and places an outsized priority on accessibility and equity in their engagement efforts. A long-standing PublicInput customer, King County has informed numerous software development efforts within the platform over the years, and continues to be a close resource in ensuring industry-leading translation capabilities.

The recently launched Swimming Beaches Survey represents how communities utilize the translation functionality within the Engagement Hub. Google Translate is not an adequate accommodation as it is rarely accurate, and more importantly does not allow for independent review of different language response sets. Every language represented in the survey was given a unique URL to track participation and segment participants, and the Last-Mile Translation editor within the PublicInput Platform ensured accurate translation across each group.

Warren Kagarise - Digital Engagement Manager
King County, WA
206-263-0992 | wkagarise@kingcounty.gov
Contract date: 2018-Ongoing

King County, WA CRM

 New Segment  New Activity

Beaches

217 Custom Segments	17	Est. Members
 Beaches-Amharic		578
 Beaches-Chinese		381
 Beaches-English		3,385
 Beaches-Korean		178
 Beaches-Punjabi		454
 Beaches-Russian		204
 Beaches-Somali		435
 Beaches-Spanish		619
 Beaches-Ukrainian		396
 Beaches-Vietnamese		371

Showing 1 to 10 of 10 entries (filtered from 217 total entries)

Previous 1 Next



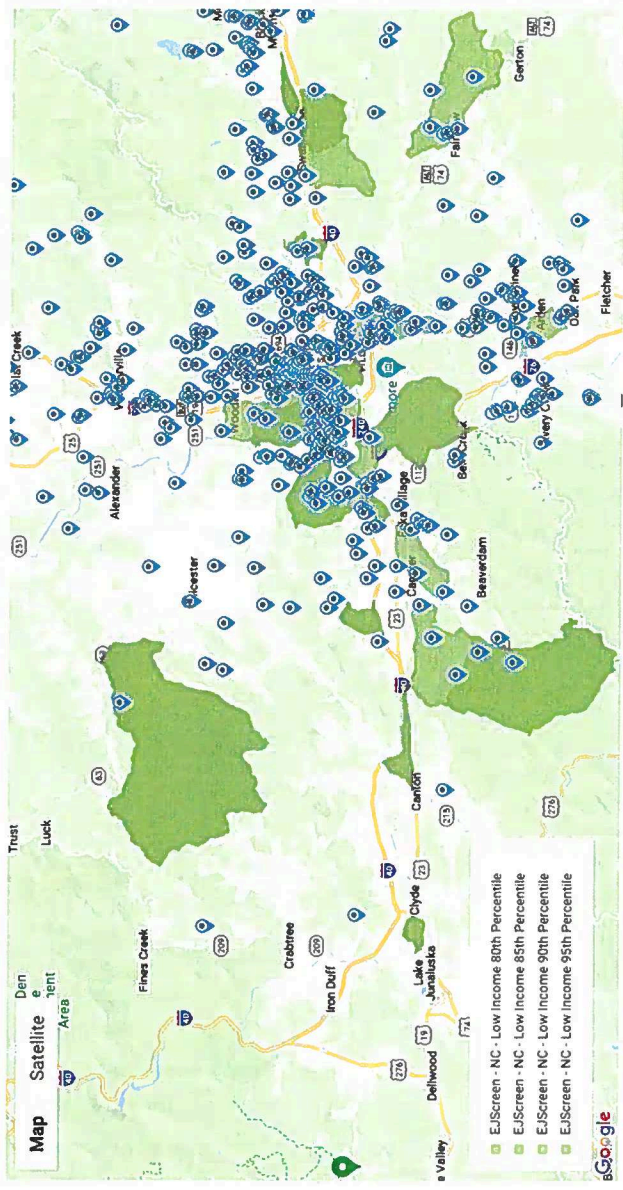
Project Example: Buncombe County, NC

Equity Mapping - engage.buncombecounty.org

Buncombe County encompasses the greater Asheville area of western North Carolina and is home to an intersection of blue collar and white collar workforces, as well as rural communities. A new PublicInput customer, the County launched their PublicInput license to support their comprehensive planning effort, but have rapidly broadened their use to more than 20 departments within the agency.

The County's Public Portal represents the online 'front door' to engagement with the county across projects, commission meetings, various boards and committees, and general opportunity to submit public comments. Since its launch in the winter of 2021, more than 5,000 residents have utilized the portal to participate in the public process, and the county has adopted the platform's built in Equity Mapping layers to demonstrate and improve representation in their decision making.

Lillian Govus - Director of
Communications & Public
Engagement
Buncombe County, NC
(828) 250-4140 |
Lillian.Govus@buncombecounty.org
Contract date: 2021-Ongoing



Appendix A

Usage	Yes	No	Partial	Comments
Provide numerous methods for participation during each project/survey/engagement.	✓			16 different data gathering tools include quantitative, qualitative, and interactive formats. All industry standard survey and geospatial formats supported.
Provide Biddeford the ability to create multiple simultaneous engagement initiatives on specific goals, ideas, programs and projects.	✓			Unlimited number of engagements supported at any time. Regularly support 100+ concurrent projects within larger organization customers.
Provide Biddeford access to content/outcomes/platform on a variety of devices.	✓			Administrative access supported on all platforms, content accessible online and offline formats, and reports can be shared to non-administrative users.
Provide options to re-engage past participants on new government related activities.	✓			Public CRM (participant database) records and segments all participants and contact information to reengage on new activities. Taxonomic tags allow for automated alerts based on past participation in associated initiatives, or subscribed lists. Communication managed from within the platform is associated with each project's database and associated with the participant profile for transparency and public records retention.

Functions and Features				
Provide survey/feedback functionality with varying configuration of questions for both quantitative and qualitative capture: rank ordering, multiple choice, prioritization, images, check boxes, drop downs, design by logic, open and closed ended questions.	✓			Quantitative and qualitative capture: rank ordering, multiple choice, prioritization, images, check boxes, drop downs, numeric, design by logic, open and closed ended questions all supported.
Allow for questions to be demographic-focused.	✓			Demographic pop-up prompts participants to contribute demographic data, which is synchronized to census data within the Census tract, and can be visualized in reports as a spider graph relative to community data.
Provide options for offering visual/graphical depictions of projects, plans, policies, programs.	✓			Content builder allows for comprehensive visual/graphical depictions of projects, plans, policies, programs, via video, dynamic maps, static imagery, and supplemental files.
Provide ability to upload documents, pictures, videos, images.	✓			All file uploads also scanned for content and viruses

A tool to moderate language to encourage mindful feedback.	✓			Moderation is automated and fully customizable to allow or disallow for specific words/phrases. Admins can override automated moderation which is managed by the open source Google Perspective API (perspectiveapi.com). Comments flagged for toxicity or profanity first trigger a prompt to notify the participant that it may be flagged as unconstructive and encourage a more tempered approach, and then automatically flagged and hidden from the discussion if the prompt is ignored. Admins are alerted via email of the need to review the comment and either allow it to be visible, or keep it hidden (but still stored for records retention and analysis).
Mapping features that offer participants options for identifying geographic specific locations.	✓			Map pins and geographic selections allow for uploading comments and photos, attached to latitudinal / longitudinal coordinates, as well as filtering by comment type, pin type, or geolocation.
Offers options for participants to add comments directly to a posted document or picture or map.	✓			In-app capability to comment on picture or maps. If desired, native Konveio (document commenting) integration allows for integration of participant data when posted documents require comment directly within.
Mapping geographic locations in scope of Biddeford projects and plans to gather specific input about these areas.	✓			Project locations are captured and portray on the Public Portal to allow for contextual engagement from relevant communities. Geographic boundaries can be layered on project maps to allow or confine specific input on those areas.

Timeline feature to track project progress.	✓			Project timeline tool allows for creation and updating of current stage.
Data and Analysis				
Offers a variety of data collection/reporting methods for both quantitative and qualitative analysis.	✓			16 question types are available, including advanced data gathering such as ranking, budget allocation, consensus, and visual preference Geo-ip of participant collected by default to record location, project location can be identified to show on the public-facing hub, and infinitely customizable pins with optional comment and file upload can be dropped on maps by participants within any engagement initiative

Tagging or AI functions to assist qualitative analysis.	✓			Manual comment coding includes keyword search and sentiment analysis, and is supplemented by AI-assisted sentiment analysis and keyword recognition to create visualizations of qualitative feedback (noun clouds) and efficient filtering of comments to add to reports or export. All formats for communication automatically aggregate in the qualitative analysis suite to allow for central storage, coding, and reporting. Online, SMS text message, email, voicemail, public meeting and social media sourced comments populate automatically and in the same analysis tool featuring tags documenting the source, and photos or pdfs can be uploaded and reviewed within the same system.
Provides visual representation of quantitative data fields.	✓			Comment clouds are automatically generated during comment coding with common themes displaying larger, and positive sentiments appearing from red to green in color. Clouds can be embedded to reports or exported as PDFs to include in other content.
Ability to import/export data into other formats (e.g. CSV, Excel) to visualize and interpret resident feedback.	✓			Yes, but a fully integrated reports builder allows for visualization and interpretation without the need for robust excel capabilities. Suite includes project-level dynamic reports with filters and format customization for presentation ready export to pdf or online read-only sharing. Insights Builder allows for Question:Question comparisons to glean deeper data insights and visualizations ("of the participants who answered X question this way, X% answered Y question this way").

Access and Language Translation				
Offers an online, web-based tool that is accessible across a variety of platforms (computers, tablets, and smartphones); and compatible with a variety of browsers (Edge, Firefox, Safari, Chrome).	✓			PublicInput is fully mobile responsive on both front and backend UX, and is a web-based platform accessible on any commercially available browser.
Content can be easily translated in multiple languages to better ensure segments of the community are not excluded.	✓			All project pages, text messaging, email, and public meeting closed captions allow for automatic translation in real time. Proprietary 'Last-Mile Translation' tool allows for tailored translation of web content by third party contractor without administrative access to PublicInput, and comprehensive translation web forms allow for translation of alt text of images for screen readers. All translated project pages aggregate and automatically translate foreign language responses into english and synchronize in the same report for simplicity, but can be turned into audience segments for filtered report production.
Compliant with requirements outlined in Americans with Disabilities Act (ADA) and Section 508 of the Rehabilitation Act.	✓			WCAG AA 2.1 and Section 508 compliant - regularly reassess via third party WAVE testing.

Provides options for required and/or anonymous registration/sign-up.	✓			Participation options range from gated access (authorization required) to registration required (email and password required) to contact info required (no password, but required email or phone) to anonymous (Geo-IP captured) to fully anonymous (no PII stored, only response data)
Can be used via desktop/laptop computer, tablet, mobile phone, kiosk to broaden audience.	✓			PublicInput is fully mobile responsive (all devices) on both front and backend UX, and is a web-based platform accessible on any commercially available browser.
Offers social media links built into the interface to promote easy sharing amongst friends and family.	✓			Social media sharing enabled on all projects. Associated social posts aggregate comments made within them (i.e. on Facebook) with the comment analysis suite in the platform.
Provides options for turning on or off registration requirements.	✓			Can be overall, project based, or by question.
Customer Service and Support				
Training				

The selected vendor must onboard, set-up and provide training to staff and must include an electronic or paper operation manual, discussion of technical support, and user guides	✓			See onboarding section of proposal
Technical Assistance				
Assistance between 9:00 a.m. to 5:00 p.m. Eastern Standard Time (EST) Monday – Friday	✓			8am to 8pm EST Monday - Friday staffed online help desk (to ensure support during public meetings when transcribing meeting comments to project database)
Direct support and assistance with registration, access issues, or functionality issues.	✓			Support SLA incorporates response times under 20 minutes and level 2 technical support elevation as determined by ticket type.
Additional Value Add				
Focus				

Vendor should be a municipal government-focused entity, providing guidance and feedback that is specific for local government needs.	✓			PublicInput provides engagement software to more than 200 government agencies solely in the US and Canada and has zero commercial customers.
Vendor should be able to provide guidelines, best practices and benchmarks for other local cities as part of its customer service.	✓			Each agency is assigned a dedicated Customer Success Manager trained in best practices for public engagement. The Success team also acts as a conduit to other PublicInput customer agencies and routinely brings admins together for group trainings to facilitate stronger user-networks.
Platform should demonstrate capacity to integrate with existing Civic Plus brand website.	✓			PublicInput is engaged in a collaborative working relationship with CivicPlus and is piloting ways to further improve integration beyond iframe embeds.

Software Solution Overview



Public | Engagement Hub

The Engagement Hub is the heart of the PublicInput Platform, where public engagement strategies and tactics are facilitated and managed. Designed to bring accessibility, equity, and efficiency to your projects and programs, the Engagement Hub is a comprehensive platform built to power synchronous or asynchronous participatory initiatives, aggregate data, and analyze it so that you can make decisions that represent every corner of your community.

Within the Engagement Hub, you will find three interconnected solutions:

Surveys: Go beyond standard survey toolkits and collect deep insights by instantly publishing stepped surveys or quick poll formats online, synced to built-in reports and analysis tools, and even SMS text message surveys. Specific question types include Quick Polls, Budget Allocations, Mapping Exercises, Skip-Logic functions, Census-synced demographics, and more than a dozen robust data-gathering question formats Public | Meetings The expectation of flexible, equitable, and safe ways for resident participation is here to stay.

Meetings: Help public organizations provide more flexible engagement options for public meetings, public hearings, councils, boards, and commissions by allowing participation during virtual and hybrid meetings to transcribe in the same place as all other engagement. Track attendance by, embedding RSVP and public calendars, and offering contactless sign-ins.

Comments: Comments for public engagement projects are time-consuming to manage because they are received through dozens of feedback formats. PublicInput provides the industry's most comprehensive comment management platform that is designed to aggregate comment sources, streamline comment coding and response workflows. It includes features such as online comment forms, discussion forums, idea walls, voicemail hotlines, text message commenting, automated social media comment capture, and custom project email addresses.



Public | CRM and Equity Mapping

The CRM is a living dashboard that stores historical data over time and across projects. Designed to help governments move past data collection to actionable tactics, the CRM automatically synchronizes to develop a deeper understanding as initiatives progress. There is no need for database expertise in the agency or any kind of export to excel for deeper analysis.

With this module you are able to easily:

- Measure equity with participation maps overlaid with environmental justice boundaries from the EPA
- Upload shape files to create segments for ongoing reporting
- Create and format dynamic (real-time) reports for sharing among stakeholders
- View attribution and segmentation of participants by demography and other criteria
- See a 360 view of participant history

Staffing, Training, and Technical Support

The PublicInput team is composed of individuals with a wide range of backgrounds and experiences to ensure that each agency has access to timely support as well as resources specific to their outreach and engagement needs.

Graham Stone - Vice President, Government Relationships



Mr. Stone is a co-founder of PublicInput and serves as Vice President overseeing Sales, Marketing, and Customer Success. On a day-to-day basis he applies his past experience in consulting planning and engineering for state and local governments to research and share best practices for gathering representative feedback and data-driven decision making. He works as an integrator between the company's various teams to ensure smooth transitions for new customers, and he also coordinates with the Product Team in their development priorities to ensure PublicInput continues to provide the highest value for agencies utilizing the platform.

Mike Lee, PMP - Director of Customer Success



Mr. Lee brings twenty-eight years' experience to Public Input as our Director of Customer Success leading the entire post-sale team including Customer Success, Customer Support, Onboarding, Renewals Management, and Training. The focus of his team is building value-driven relationships, application adoption planning, and subscription renewal engagements.

Mike has served on the Durham Public Schools, Board of Education for 8 years, and has great knowledge of the inner workings of local governments, budgets, and public engagement. In 2011 Mike completed his MBA at the University of Massachusetts at Amherst with a focus on Information Technology Management and Strategic Planning. Mike is currently pursuing a Doctor of Business Administration at the University of North Carolina at Charlotte and plans to focus his DBA research on how the mediating effect of Customer Success and the construct of consumer intentions of renewal.

Maggie West - Customer Success Manager



Ms. West keeps projects on track through relentless support of her clients' needs. A graduate of Appalachian State University, Maggie brings 8 years in Customer Success to the team as well as international experience in humanitarian aid and community building. While communicating with clarity is one of Maggie's top skills, she focuses on anticipating challenges and looking for opportunities for her clients to better leverage the PublicInput platform on behalf of their communities.

Project-based Onboarding & Implementation

Project-based onboarding and implementation include comprehensive training courses and documentation that will allow users to learn at their own pace while ensuring that all team members can develop engagement activities and measure their impact. Admin hands-on training in the early weeks of implementation are rigorous, with continuing real-time support throughout the partnership.

Please note: All training is performed remotely, recorded and provided at no additional fee. These recordings allow users to review the material at their own pace and time.

To ensure the proper training of PublicInput users and administrators, we recommend adherence to the following guidelines:

- We recommend a minimum of two Administrators are initially designated. Administrator trainees should be prepared to attend all training sessions to gain a deep understanding of all users will be interacting with the platform
- For in-person training, we recommend not more than two people per workstation during training classes to ensure adequate levels of hands-on experience for each participant
- Customers shall choose an upcoming or current project to use as the basis of their training program

Implementation Timeline		Format	Est. Timeline
Kickoff meeting to scope system use and raining schedule • Hosted by Success Manager • Attended by agency contract owner & department heads (if applicable) Led by Success Manager and attended by Principal and Success Director		Video conference, 30 min	Week 1
Initial "Power User" Admin training and opening of Biddeford's "Public Engagement Dashboard" Led by Success Manager		Virtual Webinar, 90 min	Week 1-2
Contact list import and social media connection		Email Coordination	Weeks 1 to 3
Construct / Build any tailored templates or APIs, develop Segmenting Rules Led by Product Team		Email Coordination	Weeks 2 to 4
Additional Admin training on data management & reporting Led by Success Manager		Virtual webinar, 30 min	Weeks 3 to 6
Post deployment support and utilization audit Led by Success Manager		Call, 60 min	Ongoing bi-monthly
Engagement strategy training and consulting* Led by Success Director		Call, as needed	Ongoing up to 2 hours / mo

Key Differentiators

The PublicInput Platform is the only engagement platform built to facilitate and manage engagement across all forms of communication. Fundamentally, we believe that effectiveness in reaching all residents, and equity in access to participation, can only be measured when the comprehensive process is centralized in a single dashboard. Without this aggregation, information silos prohibit a complete understanding of who has been engaged, and Staff is forced to inefficiently manage myriad processes and systems.

Online engagement is important, but PEW research shows that in order to reach underrepresented and environmental justice communities, offline, analog, and other channels must be available to supplement those efforts. PublicInput offers the industry's only Comprehensive Offline and Online Engagement Solution that also incorporates Public Meeting participation - Featuring multiple online and offline methods that ensure the City can engage residents in every corner of the community.

Highlighted features include:

- Facilitation and simultaneous management of in person, virtual, and hybrid meetings are managed through integrations with Teams, WebEx, and/or Zoom. Synchronous meeting management makes interactions more equitable.
- A focus on resident experience to build trust - No login or registration is required to participate unless deemed required by the City, and residents can log in to their profiles and see or update what personal information has been gathered.
- Project location mapping provides ability to highlight projects based on geographic area for increased resident relevance and ease of use.
- Last Mile Translation allows staff to write over auto-translated content (Google Translate is insufficient for more complex languages). SMS/Text surveys can be translated in over 100 languages, and voicemail comments submitted in other languages are transcribed in both the original language and english for ease of reporting.
- Offline and Online Analytical and Reporting Suite - Data and open comments gathered through online surveys, emails, text/SMS surveys, voicemail lines, and Facebook post comments all live in one central reporting and analytics suite.
- Segment, track and analyze groups based on participant responses without requiring login to participate or have a profile grow as they progressively engage
- Text/SMS Surveys - Other platforms offer text /SMS communication, but lack the ability to turn surveys into SMS format for low-mobile data access participants.
- Unlimited Voicemail Lines offer another offline method that catalogs the number dialed from, transcribes the comment, timestamps the voicemail, and provides an audio file to play for others or share
- Scannable Paper Surveys ensure no feedback format lives in a silo outside of the analytics suite.
- Equity Mapping - PublicInput can automatically overlay EPA EJScreen data into project and CRM participant maps to examine, track and analyze participation across EJ communities.



THANK YOU FOR YOUR TIME AND CONSIDERATION

On behalf of the entire PublicInput team, thank you for the opportunity to present our software and team as a potential fit for the critical needs of the City of Biddeford. We're excited to work together.

Together, our mission is to provide communities with the Operating System that powers their ability to make representative decisions, and we are committed to a relationship with each and every customer that reflects our Core Values.

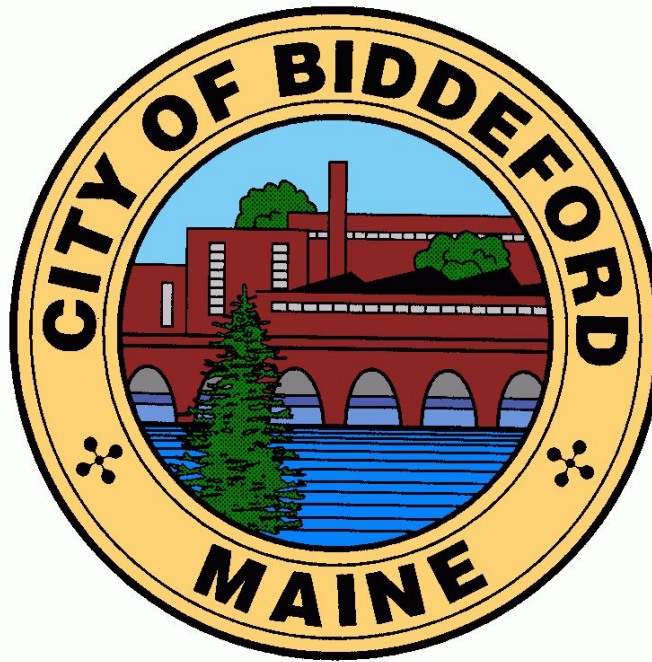
Throughout our relationship you can hold us accountable for:

- Listening Obsessively
- Putting Relationships First
- Thinking Critically
- Respecting All People
- Testing and Iterating
- Loving To Learn

Pricing Overview:

	Year 1	Year 2
Initial purchase and implementation cost	\$2,500	\$0
Annual maintenance and support cost	\$8,100	\$8,343
Optional costs - (services, training, and/or support)	\$150/hr for additional training beyond included 2 hrs/mo	

City of Biddeford, Maine
Request for Proposal (RFP): Community Engagement Platform



Submitted By: Mike McInerney
Company Name: Bang the Table Canada Ltd.
Date: 18/03/22

Table of Contents

Letter of Introduction	3
Executive Summary	4
Proponent Profile	5
Project Team	6-7
Summary of Functionalities	8-13
Offeror Experience & Qualifications	14-17
Technical Approach & Onboarding	18-24
Training & Technical Assistant Services	25-30
Critical Success Factors/ Integrations	31-32
Technical Requirements/ Data Management	33-35
Moderation	36
Summary	36
Pricing	37
Appendix A	(see separately attached)

Letter of Introduction

Through technology and deep industry knowledge, our aim is to continuously innovate and add value to the public participation industry. Our experience with online community engagement aims to empower organizations and their communities by providing them accessible opportunities to learn about and contribute to the decisions that affect their daily lives.

Bang the Table was established because, no matter how well-designed the off-line consultation process, inevitably it only reaches a small segment of a community. The online space provides the opportunity to give vastly more people access to information and enable them to have their say. It drives inclusive, transparent, and measurable community engagement processes that empower collaborative learning, discussion, and debate.

EngagementHQ (eHQ) is a community engagement platform that provides capacity and support for focused consultation and engagement in a safe, information-rich environment through an integrated range of online community engagement feedback tools. A diverse approach extends inclusiveness and gives the community better opportunities to have their say on issues that are important to them.

Our proposed EngagementIQ (eIQ) service packages will ensure you're partnered with the right levels of support, training and strategic advice to help you achieve your goals.

We are confident that our online engagement solution will give The City of Biddeford an immediate and engaging online presence that will produce exceptional results and that can be effectively measured through reports and analytics. It will support project communication plans while providing a convenient, welcoming, safe, and fun experience for the community.



Executive Summary

Our mission is to enable public participation as a fundamental pillar of well-functioning 21st century democracies by forging constructive relationships between communities and the institutions of government.

Bang the Table is a privately held company established in Australia in 2007 with 3 principle shareholders. Now based in Boulder Colorado with Canadian offices in Vancouver, Toronto and Ottawa. Bang the Table employs approximately 130 people globally. We operate using a distributed model, with development, administrative, sales and support teams operating in Canada, Australia, the United Kingdom, the United States, and India. Having this distributed footprint, we can provide our clients with responsive support, every day, around the clock 24/7/365. Across the United States and around the world, we have worked with over 500 different Federal, Provincial and Municipal governments since 2007. On average, we launch 100 new online engagement projects every week.

Bang the Table are global leaders in the field of online stakeholder & community engagement. The team has extensive skills in communications, government relations, public policy, strategic planning, data analysis, conflict management and community engagement and provide an integrated and robust service supported by sound methodological and strategic advice. We support our clients from the very beginning kick-off meeting through the lifetime of the relationship in regard to software and industry best practice support.

We pride ourselves on our experience and practice expertise which is led by our Chief Practice Officer and co-founder, Dr. Crispin Butteriss: <https://www.linkedin.com/in/crispinbutteriss/>. Crispin co-founded the International Association of Public Participation's (IAP2) Australasian Chapter and has a doctorate in philosophy, stakeholder engagement and public policy. Due to our history with the IAP2 we have become their online engagement supplier: <https://www.letstalkiap2.org/>.

We have a proven implementation process and lead our clients through the onboarding experience by providing training and online engagement best practice support. Following implementation, we continue to help our clients build knowledge and internal capacity around how to achieve measurable success with their online space and demonstrate transparency of process and results to both internal and external stakeholders and citizens.

Proponent Profile

Bang the Table is the global leader in the field of online stakeholder & community engagement. The team has extensive skills in communications, government relations, public policy, strategic planning, data analysis, conflict management and community engagement and provide an integrated and robust service supported by sound methodological and strategic advice. We support our clients from the very beginning kick-off meeting through the lifetime of the relationship in regard to software and industry best practice support.

Bang the Table is a **GovTech100 company** and is **ISO27001 certified**. For capability demonstration and similar government work, Bang the Table:

Bang the Table has 14+ years' experience working with over 900 clients and 8,000+ active projects in local government at the Federal, State, Provincial and MPO level across the globe. In North America alone we currently obtain 242 clients in the United States, 352 clients in Canadian and 312 clients internationally. Our experience with online community engagement aims to empower local government organizations and their communities by providing them accessible opportunities to learn about and contribute to the decisions that affect their daily lives.

Project Team



Employee: Catherine Foy

Title: United States, Client Manager and Digital Engagement Practice Lead (Texas-based)

Online Profile: <https://www.linkedin.com/in/catherinefoy/>

Catherine joined Bang the Table in November 2020 as an Account Manager and transitioned into the role of Engagement Manager shortly thereafter. She brings over 15 years of experience in marketing and communications, having worked as a graphic designer, editor, and production manager in arts, government, and corporate settings. Her experiences include over five years with the Community Resources Department at the City of Lakewood, supporting projects in performing and visual arts, rental programs, older adult services, therapeutic recreation, youth sports, parks, golf, community events, public meetings, and city facilities.

Catherine enjoys lifelong learning and recently completed a Masters Program for Instructional Design. She lives in South Central Texas, and in her free time, she enjoys volunteering at her local library, exploring art, traveling, and baking.

Catherine's role includes:

- Project management
- Client onboarding services
- Digital Engagement Practice Support Services



Employee: Dan Krewson

Title: United States, Client Manager and Digital Engagement Practice Lead (St. Louis-based)

Online Profile: <https://www.linkedin.com/in/dan-krewson-stl/>

Dan joined Granicus in October 2021 as an Implementation Consultant for EngagementHQ. He brings over twelve years of experience in marketing and communications for local government. In his previous role with the City of Clayton, he managed the municipal website, as well as marketing and communication efforts for city services. He joined the Granicus EngagementHQ team to broaden his ability to enhance the relationship between governments and those that they serve throughout North America.

Dan lives in the St. Louis, Missouri area where he serves on the Parks Board for his suburban community. In his free time, he enjoys gardening, hiking and playing board games with friends and family.

Dan's role includes:

- Project management
- Client onboarding services
- Digital Engagement Practice Support Services

Summary of Functionalities

EHQ provides capacity for unlimited consultation projects each of which can incorporate the sequential or combined use of multiple feedback tools including online forum discussions, surveys and quick polls, questions and answers, formal submissions, emails, storytelling, interactive mapping and a guest book supported by project specific newsfeeds. Each consultation project is further supported with a project library, video and photo gallery, project specific FAQs, project timeline and key dates in addition to widgets for embedding rich media. EHQ includes back-end database email and newsletter capabilities in addition to the ability to manage participant records through demographics, notes, tagging and full detail of individual participant activity. EngagementHQ (EHQ) is a fully customizable community engagement platform that provides capacity and support for focused consultation in a safe, information-rich environment through an integrated range of online information sharing and community engagement feedback tools. A diverse approach that extends inclusiveness and gives the community better opportunities to have their say on issues that are important to them.

EngagementHQ Information Sharing Tools (Widgets)

EHQ incorporates a range of information sharing tools (detailed below) to support your community's online learning and the engagement objectives. Highlight your key content and information resources to make it easier for your audience to self-educate and explore the issues in depth:

- 1. Project Newsfeed:** Used for project news updates to present information about issues, or as a list to link from the homepage through to individual projects.
- 2. News Categories Widget:** Help your visitors navigate through your news articles by filtering them with your category tags.
- 3. Who's Listening Widget:** A custom list of key project team members, decision makers, community reference group members, etc. The widget includes the individual's role, organization, email, phone number and image (all optional), along with a link-through to the complete project team page.
- 4. Project Lifecycle Widget:** Outline the stages of your project to your community and communicate the progress as you move through each stage.
- 5. Photo Gallery:** The photo gallery widget displays two custom images from an unlimited capacity image gallery.
- 6. Video Gallery:** The video gallery widget displays two custom video stills from an unlimited capacity video gallery.
- 7. Documents Library:** Displays the key documents from your library as individual items or in folders.
- 8. FAQ Library:** Displays a short list of frequently asked questions about your project with a link-through to the FAQ page.
- 9. Key Dates Widget:** Displays and promotes the key dates associated with the off-line engagement process, such as public meetings.
- 10. Important Links Widget:** Displays a list of links that are important to your project.
- 11. Related Projects Widget:** Display a list of live or archived projects that are related to the current campaign for easy reference.
- 12. Sign-up Banner:** Enable the signup banner to encourage your community to register and build your participant database.
- 13. Social Media Feeds:** Allows the inclusion of project specific or organizational social media streams.
- 14. HTML Embed Widget:** Allows integration of embedded content from any third-party source.
- 15. Follow Project Widget:** Allows registered and unregistered participants to subscribe to the project.

More detailed information on Widget functionality can be found here:

- <https://helpdesk.bangthetable.com/en/articles/403176-add-new-widgets>

EngagementHQ Feedback Tools

EngagementHQ's range of eight (8) engagement feedback tools (detailed below) make it easy to marry your online and face-to-face methodologies. Through its platform approach, you can mix and match the tools you need, and turn them on or off, to best support the engagement process. Drawing on qualitative and quantitative data at each stage of the project, reporting enables you to measure your project's success criteria. Selecting the right tool for your engagement is essential if you are going to get the feedback you need. When thinking about which tools you might want to utilize, you might consider the spectrum below and first decide on the type of engagement environment you are comfortable with. As outlined below, there are three operating environments: controlled, mixed, and open. Each environment has a range of tools that are suitable for use on their own or in combination with others as part of a more robust methodology. Understanding your objectives, negotiables, and the types of information you need will be a key determining factor for your tool selection.

Controlled Environment: Participants cannot engage with each other. Data is stored in the backend and only accessible by administrators.

1. Polls: Polls are fast, easy and a great way to capture mood and sentiment towards a range of issues. Get people engaged in a range of projects with the click of a button. Gain a better understanding of community sentiment while unpacking community knowledge on issues, projects and activities. Results are available for your community instantly to show their contribution.

2. Surveys: The Surveys tool gives people an opportunity to voice their opinion in a convenient and guided way, which has historically shown higher response rates than other formats. EHQ's Survey tool can also be used as a form submission tool, an event registration tool, and an online petition tool.

Mixed Environment: Administrators can moderate the discussion and choose to display feedback publicly or to keep it private. If public, participants can see other participant contributions however there is little peer-to-peer interaction. All publicly facing comments are moderated by Bang the Table.

3. Stories: When we tell or hear a story, neuroscience tells us that we experience things on a higher and more resonant level. Stories helps your community better understand, empathize and relate to others as well as your project goals.

4. Guestbook: Guestbook keeps things simple; people are only able to upload comments, which are moderated to manage what appears publicly. No other interaction is enabled.

5. Questions: Questions is an issues management and communications risk mitigation tool. It is a managed space for your community to ask you questions and for you to respond either publicly or privately.

Open Environment: Participants can engage with each other. Comments, images and ideas are visible to the community and are moderated by Bang the Table.

6. Discussion Forums: The Forums tool creates a space for discussion, dialogue and debate. People share their experiences with others, ask questions and have conversations in a safe and interactive environment.

7. Ideas: Ideas provides "virtual" post it notes for individuals to add their ideas to a collective board. People 'like' the ideas that inspire them most, helping align your priorities with what matters most to the community.

8. Places: Places is a simple way to gather community feedback and ideas directly on a map. Participants drop a "pin" in a defined area, add photos and fill in a quick survey as an option.

More detailed information on EngagementHQ's feedback tool functionality can be found here:

- <https://www.bangthetable.com/engagementhq-community-software/>
- <https://helpdesk.bangthetable.com/en/collections/464649-use-the-right-online-engagement-tools>

Administration: There are two (2) levels of administration to provide you with user and content control while encouraging user adoption by from outside the core community engagement team. This allows for a broader team of key internal stakeholders to assist in the management and creation of content for your site. EHQ's intuitive back-end provides administrators with complete control over their sites and topics/projects. Bang the Table staff do not need to get involved with the ongoing management of your system unless you need our support or require additional resources.

Participant Registration: Participants can create a profile via a registration form configured by you. The only fields required to participate are a participant-defined username, password, and email address. Additional fields can be configured, and an unlimited number of properties can be solicited of participants. Our engagement tools allow anonymous and registered participation, as configured by administrators. EngagementHQ will also log available participant information and make it visible in the Participant Relationship Management (PRM) dashboard, and accessible via the Analytics Reporting tool. Usernames and email addresses are checked for uniqueness at create and edit points. When logged in participants can access their profile to update their preferences. Participants can reset forgotten passwords using the "forgotten or reset password" process, which can be accessed at any time with a valid and verified (by us) email address. Participant Relationship Management: Our Participant Relationship Management (PRM) system is our flagship community-building system. It makes long-term engagement easy by building a strong data and information-driven base through integration with all the EngagementHQ tools, including newsletters, blogging, and social sharing. This ensures that you don't have to rely 100% on project promotion to drive participation and ensures people are kept informed throughout a project's lifecycle to validate participation. A powerhouse relationship management system, PRM gathers and integrates data and information so that you can better understand and engage with the people who interact with you.

- **Targeted Communications:** Segmentation functionality that allows administrators to target registered participants via email. Targeting can be based on various data points such as prior interest, participation in past projects, demographic information collected during the registration process, and so on. These criteria are then used to create Groups, which are then used to target participants with topic-specific messaging via the newsletter feature.

- **E-Newsletters:** Syncing with your other EngagementHQ tools and data, our range of newsletter templates give you one easy platform to work from. The designs are simple to work with and include preview and test functions, and audience selection and filtering. As an option we provide integration with any 3rd party newsletter system.

- **Social:** Social integration makes it easy to connect your social platforms. It provides social log in (through Facebook, Twitter, and Google Connects), social network integration, simple social sharing of projects, and the ability to embed social feeds into the platform and your project pages.

Project Visibility Modes: EngagementHQ's project visibility tool gives your projects three modes of visibility: 'Public' (anyone can see and participate), 'Protected' (participation is by invite only and the project is only visible to participating members), or 'Community Panel' (participation is by invite only, but the project and conversation can be seen by anyone).

Qualitative and Quantitative Reporting: EngagementHQ incorporates a suite of analysis and reporting capabilities for each feedback tool used within a consultation project, for individual or multiple consultation projects and on a site wide basis. Following are resources to help you evaluate the platform's reporting capabilities. See chapters for areas of interest:

- <https://helpdesk.bangthetable.com/recorded-webinars-and-ehq-demos/reporting-on-your-consultation>
- <https://www.bangthetable.com/reporting-and-analytics/>

Dashboards provide real-time analytics on screen and the combination of dashboards and exportable reports can be configured across a variety of date ranges to analyze results and generate reports.

- **The Dashboard** provides an overview or snap shot of site visitation and a summary of specific interactions by participants across individual feedback tools in each live project.
- **Site-wide Activity** is accessible online and in download report formats as either a summary or full report of engagement with the option to report across either live or archived engagement projects or categories.
- **Project Activity** reports and analysis capabilities are available both online and in download formats for all individual projects in both summary and full report formats. The reports include all feedback and detailed date stamped results in graphs for surveys (including cross tabulation), submissions and quick polls. Detail of all qualitative feedback from Discussion Forums, the Guestbook, Q&A, EngagementHQ Places and Ideas is captured within the project report and can be further interrogated and analyzed via key search functions and tagging with reports available in PDF and Excel formats.
- **Engagement Tool Activity** reporting enables access to the activity and reports for each individual tool used in a consultation project or across multiple consultation projects.
- **Participant Demographics** are captured during the registration process. Reporting and analysis of captured data allows analysis of participation by demographic identifiers for individual, multiple and consolidated consultation projects and/or for each feedback tool or by participant.
- **Traffic Sources:** The EngagementHQ dashboard provides exportable graphs of traffic to your site or consultation project from Direct URLs, Social, Email, Referrals and Search Engines. EngagementHQ incorporates a key matrix of Aware-Informed-Engaged (AIE) visitor typology providing detail of site or project visitation and how informed and engaged your community is with your site and individual engagement projects.
- **Aware:** A visitor is considered to be 'aware', if they have made one single visit to your site or project.
- **Informed:** A visitor is considered to be 'informed' if they have taken the next step and sought to find out more information by accessing information resources within a consultation project. This is generally information included within resources such as you document library, FAQs, key dates, video and images galleries or project news feed.
- **Engaged:** A visitor is considered 'engaged' if they contribute or provide feedback to an active tool on your consultation project.

Comment Tagging and analysis functionality allows qualitative data to be interrogated within the EngagementHQ content management system by key words, sentiment or combination of key words from Forums, Storyteller, the Guestbook, Q&A, Ideas, Places and Survey and Submission tools, with capacity to categorize, tag and download qualitative analysis reports in Excel or CSV formats for further interrogation of reporting.

Reporting Features

- **The dashboard** shows a high-level overview of your engagement site. This dashboard is a hub to quickly review site visits, registration numbers and active participants. From here you can easily access recent community responses for review.
- **Project reports** summarize visitor insights and participation for a project. Understand which projects are driving contributions and easily download the data in multiple formats.
- **Tool reports** show how participants interact with a tool across all projects. Layer in demographic data to see who is represented and who is being missed.
- **Custom dashboards** provide a visual way to close the loop with participants and stakeholders. They can also be embedded into a project as a [service addition](#).

Analytics

Easily extract meaningful insights from a large number of text-based responses. EngagementHQ allows for fast data analysis with the help of artificial intelligence, demographic filtering, and comment tagging.

Analytics Features

- **Keyword tagging** can be applied to text-based comments to easily identify key themes within a project or across engagement tools.
- **Demographic filtering** can be used with demographic details collected during registration. Filter data by demographic to identify trends within your community or action areas for further outreach.
- **Sentiment analysis** uses Artificial Intelligence to assign sentiment labels to written responses. Review individual feedback or see a summary of community sentiment around a particular topic.
- **Survey analysis** create customizable reports for survey responses. Break these out by each question, overlay registration questions or download the data as easily digestible graphs or charts.
- **Comment Tagging and analysis** functionality allows qualitative data to be interrogated within the EngagementHQ content management system by keywords, sentiment, or a combination of keywords from Forums, Storyteller, the Guestbook, Q&A, Ideas, Places, and Survey and Submission tools, with capacity to categorize, tag, and download qualitative analysis reports in Excel or CSV formats for further interrogation of reporting.

Branding and Website Integration: EngagementHQ (EHQ) can be structured and branded to support your corporate identity. Website design, information architecture, and visual branding are all critical elements of your community's online experience. With EHQ you can brand your site to match your corporate look and feel. Custom theme options can be created to comply with policy requirements. EHQ is delivered as an 'unbranded' website. You choose your colours, add your corporate logo, header banners, and any images. EHQ comes with the choice of five homepage layouts suitable for different organizational needs straight out-of-the-box. With a little extra work, EHQ can be integrated with your corporate website. The header, footer, fonts, colours, and other design elements can be configured to create a seamless experience. This requires additional development work and a consultation process with the product manager. This branding is then applied to all additional projects. If you're after something completely unique, we can either take your designs or work with you to develop a brand new look and

Community Engagement Platform RFP



feel for your EHQ site. For more detailed information on the EngagementHQ platform functionality please refer to the following resources:

- <https://www.bangthetable.com/wp-content/uploads/prospectus-ca.pdf>
- <https://www.bangthetable.com/engagementhq-community-software/>

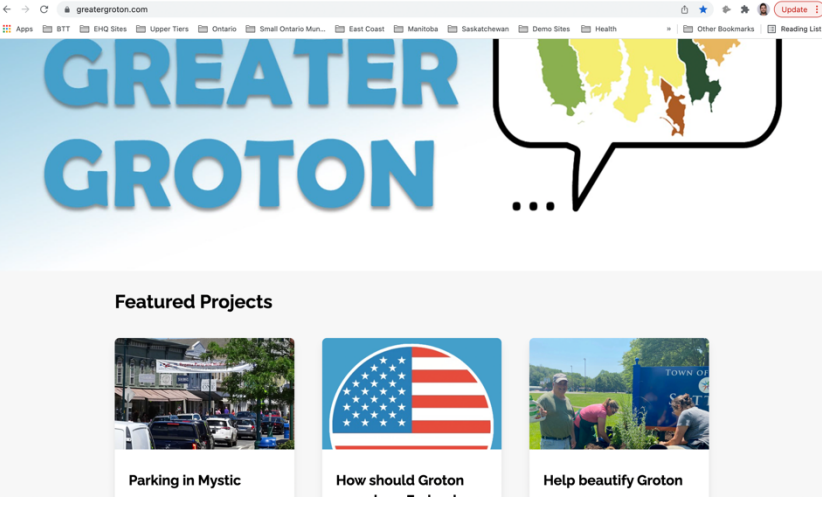
For an overview of New EngagementHQ platform features and functionality:

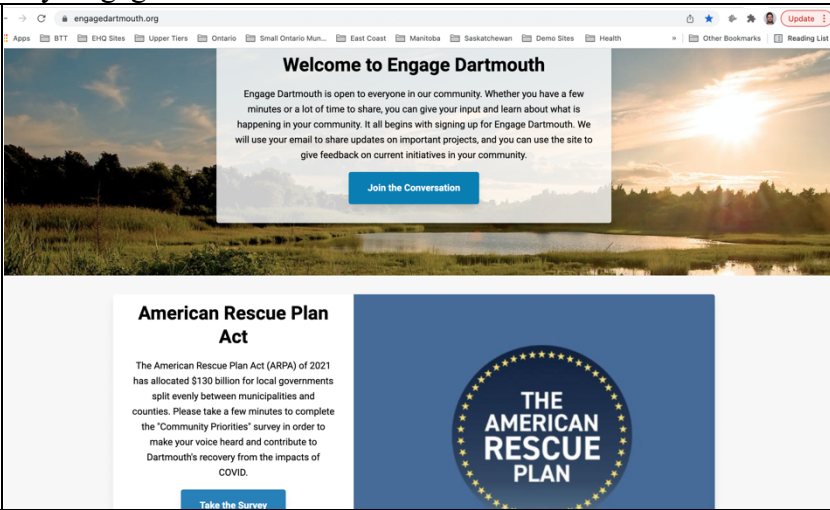
- <https://www.bangthetable.com/engagementhq-whats-new/>

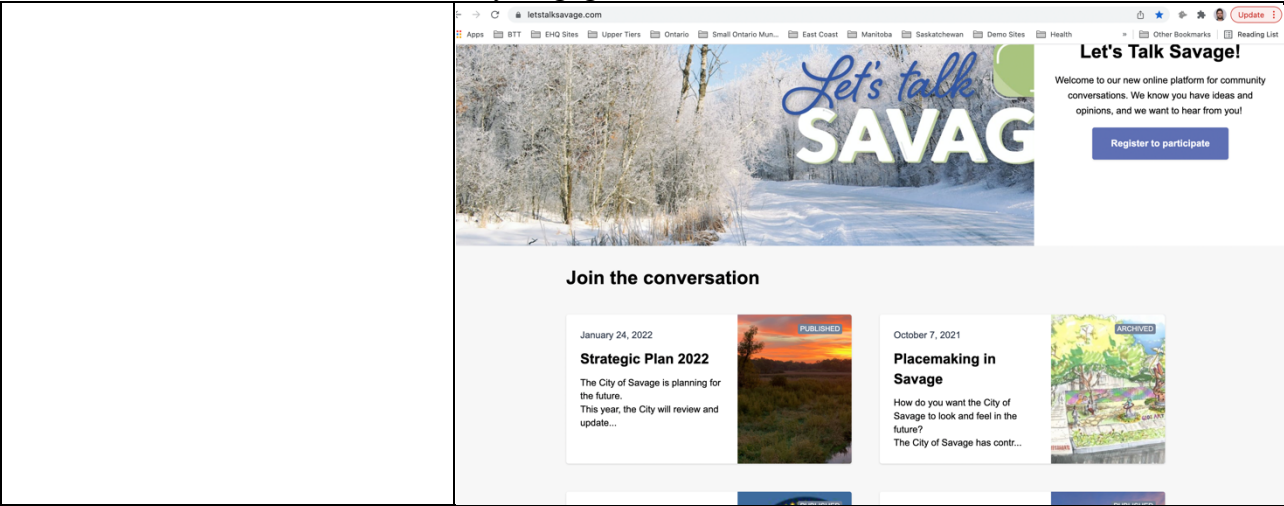
Offeror Experience & Qualifications

Bang the Table has 14+ years' experience working with over 900 clients and 8,000+ active projects in local government at the Federal, State, Provincial and MPO level across the globe. In North America alone we currently obtain 242 clients in the United States, 352 clients in Canadian and 312 clients internationally. Our experience with online community engagement aims to empower local government organizations and their communities by providing them accessible opportunities to learn about and contribute to the decisions that affect their daily lives.

Client Name # 1	Town of Groton, CT – Greater Groton (population: 38,600) https://www.greatergroton.com/
Address (City and Country)	45 Fort Hill Road, Groton, Connecticut, 06340
Contact Name	Same Eisenbeiser
Title of Contact	Economic Development Specialist
Telephone No.	860-446-5981
E-mail Address	seisenbeiser@groton-ct.gov
Year Completed	August 2021- ongoing
Description of Services provided to this Client	In August 2021, the Town of Groton launched Greater Groton. The Town implemented Bang the Table's EngagementHQ to support their public engagement policies/framework and all engagement projects (ARPA Funding in particular). The aim was to provide a blended (offline/online) community engagement strategy to ensure all stakeholders and citizens have the ability and opportunity to learn about and participate (when appropriate) in projects and decisions that impact their lives. It has been a great way to get more involvement from the community and to be more transparent about processes. Deliverables: • EngagementHQ Annual License (unlimited projects) • Standard Onboarding package • Core level Support Package

	
Client Name # 2	Town of Dartmouth, MA- Engage Dartmouth (Population: 34,300) https://engagedartmouth.org/
Address (City and Country)	400 Slocum Road, Dartmouth, Massachusetts, 02747
Contact Name	Cody Haddad
Title of Contact	Director of Development
Telephone No.	508-910-1883
E-mail Address	chaddad@town.dartmouth.ma.us
Year Completed	June 2021- ongoing
Description of Services provided to this Client	In June 2021, the Town of Dartmouth launched Engage Dartmouth. The Town implemented Bang the Table's EngagementHQ to support their public engagement policies/framework and all engagement projects. The aim was to provide a blended (offline/online) community engagement strategy to ensure all stakeholders and citizens have the ability and opportunity to learn about and participate (when appropriate) in projects and decisions that impact their lives. One of the main projects was around education and the use of ARPA Funding. It has been a great way to get more involvement from the community and to be more transparent about processes. Deliverables: • EngagementHQ Annual License (unlimited projects) • Standard Onboarding package • Core level Support Package

	
Client Name # 3	City of Savage, Minnesota- Let's Talk Savage https://letstalksavage.com/
Address (City and Country)	600 McColl Drive, Savage, Minnesota, 55378
Contact Name	Emily Gunderson
Title of Contact	Communications Manager
Telephone No.	612-708-8285
E-mail Address	egunderson@ci.savage.mn.us
Year Completed	August 2021- ongoing
Description of Services provided to this Client	In August 2021, the City of Savage launched Let's Talk Savage. The City implemented Bang the Table's EngagementHQ to support their public engagement policies/framework and all engagement projects (ARPA Funding & Strategic Plan in particular). The aim was to provide a blended (offline/online) community engagement strategy to ensure all stakeholders and citizens have the ability and opportunity to learn about and participate (when appropriate) in projects and decisions that impact their lives. It has been a great way to get more involvement from the community and to be more transparent about processes. Deliverables: • EngagementHQ Annual License (unlimited projects) • Standard Onboarding package • Core level Support Package



Technical Approach & Onboarding

We are proposing the following implementation process that will take anywhere between 2-6 weeks. The project timeline is dependent on The City of Biddeford's resource availability and approved site and project content. The timeline can also be influenced by any development requirements should the City of Biddeford choose website branding integration. We can have your site and initial engagement projects ready for launch (i.e., publish to the public) in as little as 10 business days following contract execution.

Our onboarding processes helps you start off on the right note with rigorous site scoping, EngagementHQ platform training as well as quality assurance testing before launching your site and initial engagement projects. The kick-off meeting (first step in the onboarding process) provides the following deliverables:

- Clarify engagement objectives and approach, establish internal buy-in.
- Discuss the organizations broader objectives and their alignment with EngagementHQ.
- Introduce key staff and clarify scope and required support levels.
- Identify requirements for launch.
- Discuss options and validate understanding.
- Schedule site delivery and training date.

Included in our commercial proposal for The City of Biddeford is both our recommended 'Standard Onboarding', and our 'Essential Level Support' packages which are both optional and include the following deliverable and optional add-ons:

Standard Onboarding Strategy and Training (Included)

- Kick-off meeting (as described above) with your engagement team to discuss the organizations objectives.
- Site scoping session for strategy development and to provide engagement practice-related recommendations.
- Two (2) online accelerators providing EngagementHQ platform training for all administrators.
- Regular progress check-ins and support (online or in-person).
- Access to online site setup help desk resources that includes online chat.
- Pre-launch quality assurance and testing: Rigorous testing of your site, engagement tool setup, projects, and settings. We'll make suggestions, fix errors, and provide you with a checklist report so you have confidence your site is ready to launch.

Resources Used for Onboarding

- Site scoping documents (upon request)
- Project Planning documents (upon request)

Both of these resources are given to your team prior to onboarding. This allows your team to set expectations and hit the ground running.

Essential Level Support Package (Recommended)

Advice:

- Work with us as your strategic Partner, with up to 10 hours of support and advice from a dedicated EngagementIQ

Team member who can assist your team with:

- Strategies for driving participation
- Utilizing different methodologies
- Best-practice planning & tool selection
- Organizational buy-in
- Support for major projects
- Design & layout Annual Benchmarking Report with strategic recommendations for improving practice.

Training:

- Up to 2 60-minute online training sessions for advanced product training.

Support:

Prioritized SLAs for first-in queue support:

- 24/5 chat & email support
- 5min first response chat
- 2hr first response email

Project Timeline with Milestones

We are proposing the following implementation process that will take anywhere between 2-6 weeks. The project timeline is dependent on the City of Biddeford's resource availability and approved site and project content. The timeline can also be influenced by any development requirements should the City of Biddeford choose optional add-ons like website branding integration. We can have your site and initial engagement projects ready for launch (publish to the public) in as little as 10 business days following contract execution. Please refer to the graph below for a summary of the various tasks/milestones following contract execution prior to site launch for both our **Standard Onboarding Package** and our **Site Build & Accessibility Package (optional)**.



EngagementHQ Onboarding Packages

Our standard onboarding process helps you start off on the right note with rigorous site scoping, EngagementHQ platform training as well as quality assurance testing before launching your site.

STANDARD ONBOARDING PROCESS



Our onboarding processes helps you start off on the right note with rigorous site scoping, EngagementHQ platform training as well as quality assurance testing before launching your site and initial engagement projects. The kick-off meeting (first step in the onboarding process) provides the following deliverables:

- Clarify engagement objectives and approach, establish internal buy-in
- Discuss the City's broader objectives and their alignment with EngagementHQ
- Introduce key staff and clarify scope and required support levels
- Identify requirements for launch
- Discuss options and validate understanding
- Schedule site delivery and training date

Design and Development Services

Theme Selection

EngagementHQ can be structured and branded to support your corporate identity. Website design, information architecture, and visual branding are all critical elements of your community's online experience. With EngagementHQ, you can brand your site to match your corporate look and feel. Custom theme options can be created to comply with local policy requirements. We also have an API that lets you integrate EngagementHQ with your internal systems, websites, and apps.

Clean Skin Delivery

EngagementHQ is delivered as an 'unbranded' website. You choose your colors, add your corporate logo, header banners, and any images.

Homepage Templates

EngagementHQ comes with the choice of six homepage layouts suitable for different organizational needs straight out-of-the-box.

Brand Integration

Integrated navigation: With a little extra work, EngagementHQ can be integrated with your corporate website. The header, footer, fonts, colours, and other design elements can be configured to create a seamless experience. This requires additional development work and a consultation process with the product manager. This branding is then applied to all additional projects.

Custom Theme Options

If you're after something completely unique, we can either take your designs or work with you to develop a brand-new look and feel for your EngagementHQ site.

Project Page Layouts

Project pages are designed to be the one stop shop for all your ongoing conversations. The layout allows your team to educate your community through the built-in content management system and educational tools, while also collecting their feedback. Project pages can handle rich media embedded, including videos and photos, making it easy to educate your different audiences. Tools are turned on or off with single-click functionality, and the content management system will walk you through the creation of new project spaces. Flexible page layouts: Each EngagementHQ project page can be structured to meet your specific project needs with the choice of multiple engagement tools and information widgets.

Solution Installation, Configuration & Implementation of Software

EHQ is cloud based software and can be implemented in under 15 business days. Please refer to the EHQ onboarding timeline above.

Training of the Arlington County Project Team**Package Options**

Our annual support packages are carefully crafted to provide the right mix of support, training, and strategic advice. Choose the package option that best fits your needs or mix and match service options for any one of your engagement projects.

Community Engagement Platform RFP



BANG THE TABLE engagementIQ	CORE Included	PARTNER Best Mix	STRATEGIC Most Support
Engagement Manager	Yes	Yes	Yes
Practice Lead		Yes	Yes
Moderation 24/7	Yes	Yes	Yes
First Response	2 Hrs	2 Hrs	1 Hr
Multi-Language Moderation ¹	Yes	Yes	Yes
Support 24/5 Chat and Email	Yes	Yes	Yes
First Response Chat	15 mins	10 mins	5 mins
First Response Email	2 Hrs	2 Hrs	1 Hr
Access to Help Desk Resources	Yes	Yes	Yes
Invitation to Client Meetups	Yes	Yes	Yes
Quick Phone Support (business hours)	Yes	Yes	Yes
Training			
Regular Webinars and Podcasts	Yes	Yes	Yes
Online Accelerators		2	4
Advisory		Yes	Yes
Annual Coaching Planning Session		Yes	Yes
Annual Coaching Sessions		4	6
Annual Coaching Summary		Yes	Yes
Digital Engagement Project Planning Sessions		2	6
Digital Engagement Site Review and Benchmarking Report		Annual	Annual
Site Review Staff Capacity Survey			Yes
Site Review Community Capacity Survey			Yes

1. Bang the Table moderators have natural language in English, French and Spanish. Comments received outside these are moderated using language translation technologies.

Following is a link to all the available Support Services which includes videos and detailed service descriptions: <https://www.bangthetable.com/engagementiq/>

Administration

There are two types of administrators in EHQ - Site, and Project. It is advisable to know your level of access, to be able to determine what actions you can perform.

The below list summarises the activities that can be performed by each of these administrators.

Site Administrator

Has complete site access to perform all actions on EHQ:

- Manage the entire EHQ site
- Add other site administrators
- Create a hub and add hub administrators
- Create a project and add project administrators
- Can clone, publish, and archive a project
- Edit the homepage
- Edit the sign-up form
- Add/edit static pages
- Add to/edit the navigation
- Edit site-wide text and font colors
- Send Newsletters
- Manage the participant database
- View the site-wide reports
- Access the Marketplace section
- View the audit trail for the entire site

Project Administrator

Has access restricted at a project level:

- Can access and manage projects assigned to them
- View the list of projects assigned to them
- Create and configure the tools in their projects
- View the dashboard of activity for the projects assigned to them
- Work with the text analysis and survey analysis tool for their projects
- View the reporting page for the projects assigned to them
- Access to the help tool and content
- View the audit trail for the projects assigned to them
- Cannot send newsletters and
- Cannot view participant details

Test Plan

From the start date to the date of launch, we do not anticipate any issues given the scope of the City of Biddeford's RFP. Given the onboarding/site build and essential level support packages we feel that the City will be more than equipped to engage with purpose, driving better results.

Onboarding Resource Allocation and Support

City of Biddeford: We suggest involving a Project Manager, the County's engagement and communication leads (Business Leads), and a Solution Architect during the kick-off and site scoping exercises as well as during the quality assurance and testing session(s) prior to launch. Nominated Site and Project Administrators should be involved in the EngagementHQ platform training sessions.

Bang the Table: Our Practice Lead (Catherine Foy) or Practice Lead (Dan Krewson) will be the primary contacts during the onboarding process and will be managing any issues, decisions, and project change requests. The Practice Lead will work with your Project Manager, Solution Architect, Business Leads, and nominated EngagementHQ Site and Project Administrators during the onboarding process. Our Practice Lead will be available as a first point of contact during working hours (Pacific Time) and will escalate any issues by creating a support ticket. Although our support team is available 24 hours a day to help with user, technical issues, or quick advice, we recommend that all communication be directed to the Practice Lead during the onboarding process.

Training & Technical Assistance Services

Advice, Support, Learning

While most software companies leave you to muddle through, Bang the Table provides everything you need to ensure success in online community engagement. EngagementIQ is the collective knowledge, skills, and passion of a team of professionals with decades of experience in digital engagement working across four continents. Together our Practice Leads, Engagement Managers, Moderators and Support Managers bring unrivalled expertise to your doorstep.

EngagementIQ includes:

- Professional mentoring and account management by our team of experienced Engagement Managers; all of whom have worked for many years in roles beside or within government agencies in engagement, communications and marketing, and public policy.
- Continuous learning about leading practice community engagement with our face-to-face training, webinar series, on-demand video, online learning portal, and regular newsletters. Software training and continuous support, either online or in person, with our Engagement Managers, Learning & Practice Manager, or Client Success team members.
- 24/5 helpdesk from our incredibly responsive chat and email support team if you ever get stuck, find a bug, or just need some quick advice. With an initial response time of less than three minutes, and an average client satisfaction score of 96%, our helpdesk team sets the benchmark for global online support across all sectors.
- 24/7 content moderation by our global network of experienced and mature moderators keeps any public facing conversations safe and on-topic for participants and protects you from any risks associated with inappropriate content.

Engagement Manager

Your primary contact at Bang the Table. Every EngagementIQ package includes a dedicated Engagement Manager (EM) as your central point of contact. Your EM will ensure you get the most value from EngagementHQ, helping you work through priorities, set goals, and assist with any technical support queries you may have.

Practice Lead

Add strategic support to any project. Our team of Practice Leads around the world have years of experience leading engagement projects and developing targeted strategies. They are here to provide tailored coaching and strategic advice to help you consistently produce best-practice digital engagement for your community.

Onboarding

Set your organization up for success. Our onboarding packages help you start off on the right note with rigorous site scoping and planning, online engagement, and EngagementHQ platform training as well as quality assurance testing before your site launches.

Digital Engagement Site Review (included)

Take a deeper look at your engagement practice to identify gaps, opportunities and set benchmarks to measure future performance against. Our team will conduct a detailed review of your engagement site and activities over the last year, so you know how to continuously improve results. Our detailed report will include insights about your levels of engagement and site behaviors, tool selection and project execution,

closing the loop as well as project evaluation practices. We'll present findings to your executive team so they are informed about successes and can buy-in to your growth plans.

Project Finder (included)

We are excited to announce the release of Project Finder, a new integration that allows you to share and display engagement projects on any website you choose. Project Finder creates a visual display of your engagement projects directly on your council or corporate website and helps ensure the information you display about your project is always up to date for participants. Dynamic filtering gives you the control to promote the projects you choose so your website visitors can easily access the most important information. Configure Project Finder's embeddable code and updates will get posted across all your Project Finder displays automatically, eliminating the need to make updates to multiple locations.

Moderation

Protection for you and your community. Moderation protects you and your community against bullying, heckling, and inappropriate behavior as well as ensuring that your forums and discussions are on-topic and privacy is protected.

Support

Available via email, chat, and phone. Utilize our 24/5 support services via chat and email for expert help, project setup, and quick advice. Access our comprehensive help desk library for video tutorials and help articles to support your use of EngagementHQ.

Training

Capacity building for your teams. Our ongoing training programs will help you develop your team, learn more about EngagementHQ functionality and accelerate your online community engagement skills.

Advisory

A range of strategic and coaching services. Develop a plan for ongoing coaching and mentoring with a Practice Lead, utilize our project planning services for help scoping your next consultation.

Concierge

Get extra help running your projects. We understand that resources are hard to come by. If your team is looking for someone to build your engagement project or help set up and maintain engagement tools, we can do the work for you.

Advisory

Sometimes you need a little help with the heavy lifting. Our EngagementIQ advisory services offer just that, - extra support, strategy, or training to help you achieve the best results from your community engagement efforts.

Online Coaching

Work with our Practice Leads to develop your organizational capacity and professional skills. Our coaching service is designed to ensure you have the right advice for delivering best-practice community engagement. Online coaching can be used to help you with organizational buy-in, developing internal processes, reviewing current practices and for learning more about community engagement. Develop a professional learning plan for you and your team and continue to improve your digital engagement capacity.

Project Planning

Every successful engagement project starts with a detailed project plan. Going beyond our regular client advice, our team of Practice Leads will help you prepare a fully-scoped digital engagement project plan. Starting with project scoping sessions, we'll work with you to define objectives and build a path for execution. We'll identify your audience, scope the project, manage risk, and determine the right mix of tools for your project methodology. We'll even help you craft engaging questions to get the right feedback and ensure you are set-up for effective analysis and reporting of your project.

Site Scoping Session

Map out a comprehensive plan to build your online engagement site. We'll help you decide on the best approach to reach your objective, create an initial site map, and identify your rolling engagement techniques. We'll help ensure you have the necessary brand elements to make your site launch process faster and more impactful.

Premium Project Support

Need help with staff transitions or filling in capacity gaps with your team? Our premium project support gives you assistance in planning, project creation, site content review, managing your administrator and participant database, as well as premium technical support when you need it most.

Staff Capacity Survey

Want to explore your staff's capacity and better understand their digital engagement skills and knowledge? We'll conduct an anonymous survey of key staff and personnel to help you understand the resource constraints or needs to help take your engagement practice to the next level. You'll receive the raw feedback data and an analysis of the survey findings will be added to your site review.

Community Survey

Gain insights from your community to include in your report. We'll facilitate a community survey of a sample of your database, focusing on your most active, average, and least active participants. You'll receive the raw feedback data and an analysis of findings will be added to your site review for future consideration.

Training

Practical and hands-on learning experiences for your team. Choose from a range of programs or a tailored training program that meets your specific needs.

Getting Started with EngagementHQ

As our most popular session for new users, this program covers the key areas to help you get the most from EngagementHQ. Learn best practice approaches for setting up a project and choosing the right tools; managing participants via the PRM; communicating and promoting your consultations; generating reports and managing site settings.

Reporting on your Consultation with EngagementHQ

Take an in-depth look at EngagementHQ's inbuilt reporting tool to ensure you are generating the right reports for your consultation. By knowing which reporting features are available you can better plan and execute your next engagement with reporting already in mind.

Building a Strategic Approach to Community Engagement

This session focuses on the development of a consistent and strategic approach to planning and implementing a successful community engagement project. Take a cohesive look at planning for online engagement and walk away with skills to help you deliver thoughtful online engagement projects.

Facilitating Online Dialogue

Learn how to effectively use dialogue principles to run an effective online forum as part of your next consultation. This session focuses on overcoming risks, understanding and identify different types of dialogue, the importance of moderation the need to have an active facilitator in an online deliberative dialogue space.

Tailored Training

Let us design a program specifically tailored to your needs. Our team can help you with designing better surveys and facilitating online dialogue, planning for qualitative analysis and best practice reporting on your consultation, strategies for inclusivity and accessibility, managing risk in online engagement and much more.

Online Accelerators

Rapidly increase your knowledge of digital community engagement and the EngagementHQ platform. Delivered via our online webinar software, these sessions go beyond normal group training to provide targeted and personalized online training for your organization, when you need it the most. Sessions are available on-demand and can be tailored to your specific needs.

Concierge (add on)

We're here to help get the job done. Whether it's implementation or execution, our team can step in where you need us.

Comment Tagging

Qualitative analysis is a powerful way to report results but requires some front-end work to make it impactful. Our team can help tag your feedback using our comment tagging tool. Simply provide us with your themes and tagging instructions and we'll tag all comments for you in preparation for your qualitative analysis.

Site Build (add on)

A perfect option for organizations who need a fast turn-around to launch their new EngagementHQ platform. On receipt of your approved content, we'll build your site for you, work with you on iterations and changes and offer a full quality assurance process to make sure you're ready to launch.

Project Page Build (add on)

Want us to put together a project for you? Our project page build service helps you get your projects built and published with ease. Use this service with our project planning sessions and let us help you develop and publish a best practice online consultation.

Survey Build (add on)

Launch your next survey with ease. Our team can help build your digital survey in EngagementHQ, offering suggestions on how best to structure and build your new survey to maximize features in the platform and responses from your community.

Accessibility Audit

Improve accessibility of your digital project so it feels inclusive for all residents. Our accessibility audit will review your site for missing alt text, correct usage of heading structures, color contrasts and complexity of your project copy to ensure your site is accessible for all audiences.

Pre-Launch Quality Assurance and Testing

Rigorous testing of your site, engagement tool setup, projects, and settings. We'll make suggestions, fix errors, and provide you with a checklist report so you have confidence your site is ready to launch.

24/7 Moderation

Expert moderation protects you and your community against bullying, heckling, and inappropriate behavior as well as ensuring that your forums and discussions are on-topic and privacy is protected. It is an essential solution for any government department or organization with a legal obligation to protect the right to free speech. The service is designed to protect you and your community. Our moderation policy can be found at the bottom of all client sites. Read Forum Etiquette and Moderation.

EngagementHQ first filters all posts to remove spam and to look for high-risk language. Comments containing bad language do not appear on the site and are instead routed to a moderator to check if they are permissible. All other content on Ideas, Places, Discussion Forum, and Guestbook tools are reviewed by our expert moderators within 2 hours of posting, 24/7. Comments found to be contrary to the moderation rules are removed with a clear reason being emailed to the participant who posted the comment, giving them the option to repost in a way that does not violate our moderation rules. You can always access removed content on request, and if you ever disagree with our moderators, you can request to have content reinstated. Thankfully, our moderators remove less than 1% of all content because we have found that timely and independent intervention can prevent a discussion going off the rails. Posts to the Stories and Q&A tools are moderated by our clients in the administrative interface. For these tools, nothing appears on the site without your team giving it the green light first. Questions to the Q&A tool require an answer, and Stories can contain rich media, which is why we leave moderation of these elements to your team.

24/5 Technical Support Live chat, in-application support, and helpdesk EngagementHQ delivers more than just an online engagement platform. It is serviced by real people who answer the phone and respond to live chats and email. EngagementHQ is also the product of nearly a decade of community best practice, and our knowledge base reflects that. Communicate directly with a human to discuss and identify issues, and to receive updates on process and resolution.

Help Desk

Our customer experience team can be contacted for user, technical, and practical support.

- **Email:** support@engagementhq.com
- **Web:** helpdesk.bangthetable.com

Account Management

Account Management runs parallel with services and support: You can call or email the assigned project manager or client manager during regular business hours (EST and PST), and either email or submit a trouble ticket to the helpdesk all other hours of the day. An account management strategy is generally defined by client needs. Bang the Table provides a software platform to support online engagement, and therefore our responsibility is to the efficient use and performance of the platform.

Feature Updates Management

EngagementHQ is a web-based software platform offered by Bang the Table as a Software as a Subscription (SaaS). The platform receives regular and continuous updates using our SaaS DLC which features zero downtime and agile deployment processes. We have robust automated testing, build process, and application monitoring in place to ensure high-quality and successful deployments of regular features/functionality. Change management processes are facilitated by using feature toggles to control significant feature releases to coincide with appropriate communication and training.

Critical Success Factors/ Integrations

Bang the Table is the only Online Engagement company that provides local in-person support. We also provide 24-hour user support with a 5-minute response time. Bang the Table is continually looking to improve the platform for end users. We have created a **Marketplace** to enhance our package offerings.

Bang the Table was also purchased by Granicus in 2021. We now offer seamless integrations with GovDelivery (for email), Open Cities (for websites) and Konveio (for PDF edits). These suite of tools offer any municipality the best options to grow and target your audience.

Marketplace

The EngagementHQ Marketplace offers a variety of integrations that make it easy to connect with your current systems and create a seamless user experience for participants and administrators. Brand integration, project finer, workforce single sign on, as well as various email clients and content management systems can all be managed via API and make EngagementHQ a customizable and powerful solution to support your organization's objectives.

Integrations Available:

- MailChimp
- Constant Contact
- Emma
- envoke
- Vision 6
- Campaign Monitor
- Konveio
- Workforce Single Sign-On
- Granicus
- Balancing Act (budget simulator)
- Project Finder
- Brand Integration

Reporting and Analytics

Our proprietary A-I-E analytical framework lets your benchmark your project against industry standards. Automated weekly email reports identify project interests, critical issues, and important community stakeholders. Sophisticated reporting lets you analyze or export the results of single feedback process, an entire project, or your entire project history.

Insights and Dashboards

Break down your data per question surveyed and showcase the insights visually through pie, bar, and other charts. See all activity across one, select, or all projects. Demographics, site and project visitation and activity reports, along with all feedback tool reports are available on-screen.

Summaries

The summaries report on-site visitation and participation levels - aware, informed, and engaged - which are available for one, all, or any combination of campaigns for any data range.

Demographics

Receive reports on the demographic breakdown of your registered participants. This can be cross tabulated against community feedback.

Exportable Formats

Export all demographic, summary, detailed and feedback tool reports in PDF, Excel and CSV formats.

Comment Analysis

Comment analysis helps you to understand which issues are important to your community, with keyword tagging of qualitative feedback including forum comments.

Analytics Integration

Plug in your Google Analytics code or your preferred analytics package for more detailed reports about your site visitors.

Exportable Charts and Benchmarking

Use various formats: PNG, JPEG, PDF, SVG. Compare engagement outcomes between your projects to quickly identify critical issues and improve strategies.

Emailed Reports

Use various formats: PNG, JPEG, PDF, SVG. Compare engagement outcomes between your projects to quickly identify critical issues and improve strategies.

A-I-E

Our unique Aware, Informed, Engaged (A-I-E) reporting framework can be used to identify how projects are being received, for example generating outrage, ambivalence or excitement.

Detailed Reports

For individual feedback tools, holistic project reports, multi-phased project or for your entire site, detailed reports provide necessary insights

Technical Requirements/ Data Management

AODA compliance

Accessibility

EngagementHQ is compliant with version 2.0 of the Web Content Accessibility Guidelines (WCAG 2.1) to Level AA standards.

An independent third-party carries out a comprehensive accessibility audit of EngagementHQ quarterly. Results of the latest audit are available upon request from our [support desk](#).

While the guidelines set out in WCAG 2.1 recognize that it is not possible to conform for some types of content, we have undertaken a commitment to continually work on this and leverage new technology to further improve accessibility.

We keep up to date with the latest advances in accessibility techniques and acting on recommendations from the quarterly audits. We also treat any issues identified by clients or participants as a matter of urgency and remain responsive to address the issues.

Device Compatibility

EngagementHQ is designed for all screen sizes providing an accessible and full functionality experience for the community.

EngagementHQ supports the full range of major browsers including:

- Microsoft Edge 86 and above
- Chrome 86 and above
- Firefox 78 and above
- Safari 14 and above

Compliance

ISO 27001 Compliance

We have successfully passed external audits for ISO 27001, a global standard for information security management. All compliance aspects have been tested, reviewed, and we received formal recognition in March 2018.

EU GDPR

We comply with the European Union's General Data Protection Regulation (GDPR).

The GDPR protects the fundamental right to privacy and the protection of personal data for people living in the European Union. It enforces robust requirements that have raised the standards for data protection, security, and compliance.

Security

Our applications are continually monitored and tested for security weaknesses by our Engineering team. We perform regular and ongoing internal application security assessments to discover and mitigate

potential weaknesses based on OWASP rating and methodology. We use automated tools as well as manual testing processes to ensure we are always as secure as possible.

Application Security and Database

The operating systems and databases running our servers are continually monitored and patched with the latest security fixes. The web framework is continually monitored and patched by our internal development teams. An independent third-party carries out comprehensive Vulnerability Assessment and Penetration Testing (VAPT) of EngagementHQ once a quarter. Results of the latest VAPT are available upon request.

Data Disclosure

We have strict data access rules in place with detailed logging to prevent theft and misuse.

Access is limited to key personnel involved in maintaining our services and support. Interaction with client data is only at the request of the client. EngagementHQ provides role-based access controls with unique usernames and one-way password encryption to help clients manage their own logins.

SSL certificates and Single Sign-On integration are available for further protection. Data is stored within a MySQL database on AWS RDS with attachments stored within AWS S3. Amazon RDS has multiple features that enhance reliability for critical production databases, including automated backups, DB snapshots, automatic host replacement, and Multi-AZ deployments.

Network Security

Our application is secured through world-class security infrastructure provided by Amazon Web Services (AWS). AWS's networks are multi-homed across several providers to achieve Internet access diversity.

The AWS network uses proprietary mitigation techniques providing significant protection against traditional security issues such as Distributed Denial of Service (DDoS) Attacks, Man in the Middle (MITM) Attacks, IP Spoofing, Port Scanning, etc. Additionally, our inbound firewalls are configured to permit only the absolute minimum connectivity required to provide service to our clients. Any changes to these access rules require authorization.

Hosting

Hosting Infrastructure

All EngagementHQ sites are hosted on Amazon Web Services (AWS) infrastructure. AWS is the leading cloud services provider in the world. Their suite of products and services, security controls, scalability, reliability, astonishing number of data centres, flexibility and continued innovation make them the absolute best choice for hosting in the cloud.

AWS Cloud infrastructure meets the requirements of an extensive list of global security standards, including ISO 27001 and SOC. See the [AWS Compliance](#) page for more information.

Our key hosting jurisdictions are listed below:

- **Australia** - AWS, Asia Pacific (Sydney)
- **Canada** - AWS, Canada (Central)
- **United Kingdom** - AWS, EU (London)
- **United States of America** - AWS, US West (Northern California)

Availability and Disaster Recovery

We guarantee 99.75% availability and our up-times have historically remained above “three 9s” (99.9%). Our guarantee is backed by our Service Level Agreements (SLAs). Even though we take all conceivable measures to ensure our service to you is uninterrupted, as with life, major events completely beyond our control can interrupt our service. We take nightly backups and have a well-tested recovery plan in place to minimize potential disruption from major events. Our Disaster Recovery Plan is tested annually or when there is a major change in our environment, either to our infrastructure or application.

Service and Issues Response

Our Client Experience Team acts as your first point of contact for service issues and software bugs and fixes will be provided by our development team. When we are notified of faults the following minimum service standards are in place:

- For issues critical to the core functions of the site (e.g., website is unavailable), a response will be immediate and a fix will be implemented within four hours.
- For minor critical issues to the core functions of the site (e.g., part of the website is unavailable or not operating efficiently for more than four hours), a response will be within two hours and a fix will be implemented within one business day.
- For non-critical issues to the core functions of the site (e.g., part of the website is unavailable or not operating efficiently with only a material impact on the promotion of your engagement projects), a response time is not mandated but a fix will be implemented within two business days.
- For minor non-critical issues to the core functions of the site (e.g., a problem which has little or no impact to the efficiency of users), a response time is not mandated but a fix will be implemented as soon as practical but no later than 10 business days.

The Moderation Process

Our trained moderators follow a standardized process to ensure your public consultations are fair and transparent.

Automatic screening when a post is submitted. [EngagementHQ](#) instantly filters all contributions to remove spam and search for high-risk language. Flagged comments are routed to moderators and checked before they ever show up on a community engagement site.

24/7* human moderation keeps your community safe. All contributions to the [Ideas](#), [Places](#), [Forums](#), and [Guestbook](#) tools are reviewed by our expert moderators within 2 hours of posting, 24/7. All posts will remain available to site administrators.

A transparent process for posts that breach the rules. If a comment violates our moderation policy, it will be removed, and a clear reason will be emailed to the participant who posted the comment. They may then update their comment and repost.

** English and French 24/7, Spanish 24/5.*

Moderation and administration

The EngagementHQ moderators work alongside site administrators to provide security as an impartial safeguard for participants.

The importance of third-party moderators. Bang the Table has no financial interest in the results of consultations it hosts, which allows us to moderate in a fair and unbiased way. It is an essential solution for any organization with an obligation to protect free speech.

Review removed posts at any time. Administrators can access all removed content and can request to have the content reinstated on their site. Moderators remove less than 1% of all content, as timely intervention can prevent discussions from going off the rails.

The exceptions. [Polls](#), [Surveys](#) and [Q&A](#) are not moderated because contributions are either not public or need a response before making them public. Administrators can choose to have [Stories](#) moderated by Bang the Table or accepted by their own team before publishing.

Summary

EngagementHQ allows the City of Biddeford to involve anyone locally that is relevant in delivering projects or initiatives. This gives you the ability to bring in consultants on a project basis and provide them with training and support. The City of Biddeford staff will be fully involved in the delivery of the site and the individuals and organizations they want to bring in based on internal capacity. We are confident that our platform and support levels will allow your team to attain the best results both internally and externally to make the best decisions in the future for the community and residents. We look forward to working with you!

Pricing

Item (included in cost above)	Year 1 / Initial	Ongoing
EngagementHQ License • Unlimited project capacity • Branded homepage and choice of layouts, custom domain name, SSL • Access to all Information Sharing Tools, Feedback Tools, Participant Relationship Management, Analytics (including sentiment analysis), Comment Tagging, Summary and Detailed Reports • 2 site administrator and 10 project administrator accounts	\$12,000	\$12,000+ CPI
Standard Onboarding • 30 minute kickoff meeting • 2 x 90-minute online sessions • 60-minute training and quality-assurance review before launch	\$2,500	NA
EngagementIQ Support – Partner (optional) • Up to 10 hrs of Advice from a dedicated Practice Lead • Annual Site Review and benchmarking report • Up To 2 x 60 min refresher training • Priority SLA's for Chat (5 mins) Email (1 hr) + 24/7 Moderation	\$2,500	\$2,500
Add Ons: Project Finder (Usually \$2,000)	\$0	\$0
Total:	Year 1: \$17,000	Year 2: \$14,500 + CPI

Signing multiyear deals will lock in your license price

Appendix A

RFP for Community Engagement Platform

The City of Biddeford, Maine, is looking to proactively engage its 22,000 residents on specific programs, projects and city events. The City of Biddeford is searching for a municipal government focused engagement platform that will be a user-friendly portal for both city staff and residents to engage and provide two-way resident feedback across multiple languages. The city outlines its ideal requirements for a vendor partner below:

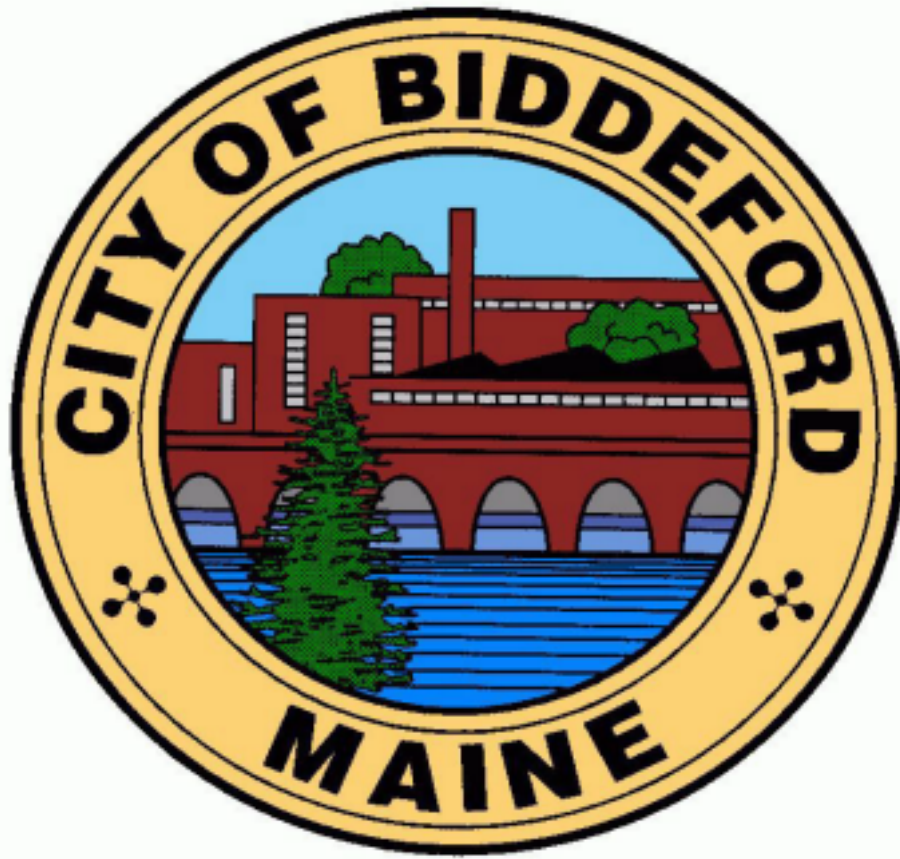
Requirements for Engagement Tool					
A	Usage	Yes	No	Partial	Comments
	Resident engagement tool can:				
1	Provide numerous methods for participation during each project/survey/engagement.	X			
2	Provide Biddeford the ability to create multiple simultaneous engagement initiatives on specific goals, ideas, programs and projects.	X			
3	Provide Biddeford access to content/outcomes/platform on a variety of devices.	X			
4	Provide options to re-engage past participants on new government related activities.	X			
B	Function & Features	Yes	No	Partial	Comments
	The software solution should be able to:				
1	Provide survey/feedback functionality with varying configuration of questions for both quantitative and qualitative capture: rank ordering, multiple choice, prioritization, images, check boxes, drop downs, numeric, design by logic, open and closed ended questions.	X			
2	Allow for questions to be demographic-focused.	X			
3	Provide options for offering visual/graphical depictions of projects, plans, policies, programs.	X			
4	Provide ability to upload documents, pictures, videos, images.	X			

5	A tool to moderate language to encourage mindful feedback.	X			
6	Mapping features that offer participants options for identifying geographic specific locations.	X			
7	Offers options for participants to add comments directly to a posted document or picture or map.	X			
8	Mapping geographic locations in scope of Biddeford projects and plans to gather specific input about these areas.	X			
9	Timeline feature to track project progress.	X			
C	<i>Data and Analysis</i>	Yes	No	Partial	Comments
1	Offers a variety of data collection/reporting methods for both quantitative and qualitative analysis.	X			
2	Tagging or AI functions to assist qualitative analysis.	X			
3	Provides visual representation of quantitative data fields.	X			
4	Ability to import/export data into other formats (e.g. CSV, Excel) to visualize and interpret resident feedback.	X			
D	<i>Access and Language Translation</i>	Yes	No	Partial	Comments
1	Offers an online, web-based tool that is accessible across a variety of platforms (computers, tablets, and smartphones); and compatible with a variety of browsers (Edge, Firefox, Safari, Chrome).	X			
2	Content can be easily translated in multiple languages to better ensure segments of the community are not excluded.	X			
3	Compliant with requirements outlined in Americans with Disabilities Act (ADA) and Section 508 of the Rehabilitation Act.	X			
4	Provides options for required and/or anonymous registration/sign-up.	X			
5	Can be used via desktop/laptop computer, tablet, mobile phone, kiosk to broaden audience.	X			

6	Offers social media links built into the interface to promote easy sharing amongst friends and family.	X			
7	Provides options for turning on or off registration requirements.	X			

Customer Service & Support					
	Training:	Yes	No	Partial	COMMENTS
A	The selected vendor must onboard, set-up and provide training to staff and must include an electronic or paper operation manual, discussion of technical support, and user guides.	X			
	Technical Assistance:	Yes	No	Partial	
A	Assistance between 9:00 a.m. to 5:00 p.m. Eastern Standard Time (EST) Monday – Friday	X			
B	Direct support and assistance with registration, access issues, or functionality issues.	X			

Additional Value Add					
	Focus	Yes	No	Partial	COMMENTS
A	Vendor should be a municipal government-focused entity, providing guidance and feedback that is specific for local government needs.	X			
B	Vendor should be able to provide guidelines, best practices and benchmarks for other local cities as part of its customer service.	X			
C	Platform should demonstrate capacity to integrate with existing Civic Plus brand website.	X			



City of Biddeford

Request for Proposals

Community Engagement Platform

City of Biddeford
Communications Division
205 Main Street
Biddeford, Maine 04005
(207) 282-8423

Community Engagement Platform

INTRODUCTION

The City of Biddeford, Maine, is looking to proactively engage its 22,000 residents on specific programs, projects and city events. The City of Biddeford is searching for a municipal government focused engagement platform that will be a user-friendly portal for both city staff and residents to engage and provide two-way resident feedback across multiple languages.

PROPOSAL REQUIREMENTS

- Provide an overview of the platform being offered
- Complete the feature checklist attached in Appendix A
- Provide a quote that includes all costs for onboarding, setup and first year of service. If costs are less for subsequent years of service, or if multi-year discounts are available, please provide a quote for those costs.

REFERENCES

Provide a minimum of three projects of like size and scope

PRELIMINARY CALENDAR

Request for Proposal Issued by City of Biddeford – 02/24/2022

Questions Due to RFP Coordinator – 03/08/2022

Proposals Due and Proposal Opening – 2:00 PM, 03/18/2022

The City reserves the right to change any or all of the dates above, with due notice posted on the City website at <http://www.biddefordmaine.org/rfp>

RFP COORDINATOR

Upon release of this Request for Proposal (RFP), all vendor communications concerning this acquisition must be directed to the RFP Coordinator listed below:

Danica Lamontagne, City of Biddeford Communications Coordinator

205 Main Street

Biddeford ME 04005

Phone: (207) 282-8423

danica.lamontagne@biddefordmaine.org

Unauthorized contact regarding the RFP with other City of Biddeford employees may result in disqualification. Any oral communications will be considered unofficial and non-binding on the City of Biddeford. Vendors should rely only on written statements issued by the RFP Coordinator.

PROPOSAL QUESTIONS

All questions must be submitted in writing via mail and/or e-mail to the RFP Coordinator named above. Questions must be received in writing by 10:00 AM on 03/08/22.

GENERAL CONDITIONS

PROPOSAL RESPONSE DATE AND LOCATION

The Communications Coordinator must receive the vendor's proposal, in its entirety, no later than 2:00 PM Eastern Time in Biddeford, Maine on 03/18/2022. Proposals arriving after the deadline will not be considered. All proposals and accompanying documentation will become the property of the City of Biddeford and will not be returned.

Vendors assume the risk of the method of dispatch chosen. The City of Biddeford assumes no responsibility for delays caused by any delivery service. Postmarking by the due date will not substitute for actual proposal receipt. Late proposals will not be accepted or considered nor will additional time be granted to any vendor. Proposals may not be delivered by facsimile transmission or other telecommunication or solely by electronic means.

PROPOSAL CERTIFICATION

The vendor must certify in writing that all proposal terms, including prices, will remain in effect for a minimum of ninety (90) days after the proposal Due Date.

SINGLE RESPONSE

Receipt of fewer than three proposal responses may, at the City's sole discretion, be deemed a failure of competition. In such instance, the City of Biddeford may elect to cancel the RFP.

FEES AND SURCHARGES

Proposed pricing will include all fees, surcharges and other items of extra cost that are required to be collected through standard billing. All such requirements that are in effect at the time of bidding must be included in the proposal. The City will not pay any additional charges not so noted unless vendor can demonstrate that the additional charge was mandated by regulatory authority after the date of the proposal. The City is exempt from Maine Sales Tax and Maine Service Provider Tax. An exemption certificate will be furnished to the vendor at the time of proposal award.

PROPOSAL REJECTION

The City of Biddeford reserves the right at its sole discretion to reject any or all proposals at any time prior to award without penalty.

WITHDRAWAL OF PROPOSAL

Vendors may withdraw a proposal that has been submitted at any time up to the proposal closing date and time. To accomplish this, a written request signed by an authorized representative of the vendor must be submitted to the RFP Coordinator. The vendor may submit another proposal at any time up to the proposal closing date and time.

NON-ENDORSEMENT

As a result of the selection of a vendor to supply products to the City of Biddeford, the City of Biddeford is neither endorsing nor suggesting that the vendor's product is the best or only solution. The vendor agrees to make no reference to the City of Biddeford in any literature, promotional material, brochures, sales presentation or the like without first providing a factual and exact copy of the literature, promotional material, brochures, sales presentation or the like and second, receiving the express written consent of the City of Biddeford, which consent maybe withheld at the City's discretion without cause.

RESPONSE PROPERTY OF THE CITY OF BIDDEFORD

All materials submitted in response to this request become the property of the City of Biddeford. Selection or rejection of a response does not affect this status.

NO OBLIGATION TO BUY

The City of Biddeford reserves the right to refrain from contracting with any vendor. The release of this RFP does not compel the City of Biddeford to purchase.

COST OF PREPARING PROPOSAL

The City of Biddeford is not liable for any costs incurred by vendors prior to award, which may include, but not be limited to, preparation and presentation of proposal, response to questions, and demonstrations submitted in response to this RFP.

NUMBER OF PROPOSAL COPIES REQUIRED

Vendors will submit (2) two original proposal copies.

CITY REQUESTING CLARIFICATIONS

The City reserves the right to request clarification of information submitted and to request additional information from any bidder. Any such request shall be in writing and will identify the method and time limit for responses.

ADDENDA

Bidders are responsible for checking the City of Biddeford website for the issuance of any addenda prior to submitting a proposal. The address is <http://www.biddefordmaine.org/rfp>

PROPOSAL AWARD AND EXECUTION

The City will select the proposal that, in its sole discretion, is the most advantageous to the City. The City reserves the right to make an award without further discussion of the proposal submitted; there may be no best and final offer procedure. Therefore, the proposal should be initially submitted on the most favorable terms the vendor can offer. The specifications may be altered by the City of Biddeford based on the vendor's proposal and an increase or reduction of products with the proposer may be negotiated before contract signing, award, and execution or purchase order issuance.

PROPOSAL OPENING

The (2) two original proposals should be submitted to the Communications Coordinator.

All proposals must be submitted to: Danica Lamontagne, City of Biddeford Communications Coordinator, 205 Maine Street Biddeford, Maine 04005 no later than 2:00 PM, March 18, 2022, and must be clearly marked: Proposal for Community Engagement Platform. Proposal will be opened at 2:00 PM on March 18, 2022 at the following location:

Biddeford City Hall, Room 105
205 Main Street
Biddeford, Maine 04005

PROPOSAL REQUIREMENTS

- **Provide an overview of the platform being offered**

Overview of Zencity Civil Space

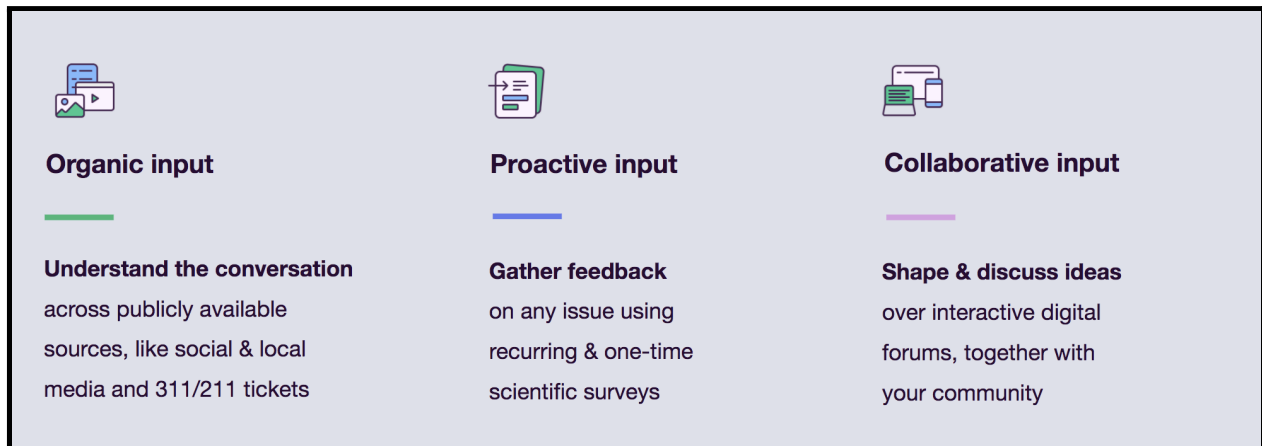
Zencity Technologies US Inc. is a Delaware corporation, and a fully owned subsidiary of Zencity Technologies Ltd. Zencity Technologies, Ltd., from Tel Aviv, Israel, is the parent company of Zencity Technologies US Inc. and was founded in 2015 and led by its two co-founders Eyal Feder and Ido Ivry.

The company's platform is currently used daily by over 300 local governments across the world including 4 out of 5 top US cities - Los Angeles CA, Phoenix AZ, Chicago IL, Houston, TX, and other major cities such as Pittsburgh, Austin, New Orleans, Long Beach, Memphis & Philadelphia, as well as more local entities including Portland, ME.

As a company working solely with the local government sector, for the sole purpose of understanding citizen feedback in depth and making it useful to different decision makers across the city for shaping policy and messaging, we have built a platform tailored to the needs of cities based on AI.

Currently, Zencity employs over 150 staff located throughout Israel, Canada & USA, with offices in each respective country.

On a company level, Zencity was formed on the basis of improving communication lines between residents and government officials. On a staff level, many of Zencity's senior leadership team and customer success managers have joined Zencity from government focussed backgrounds including public policy, service and community engagement.



Zencity Holistic Platform

The Zencity platform is multi-faceted. We look to serve local governments through a myriad of different public engagement and survey tools. Our combined approach of collecting organic publicly available resident feedback and analyzing this discourse, allows us to feed insights to our partners on how to best educate and engage the public on specific projects and topics.

Zencity Civil Space

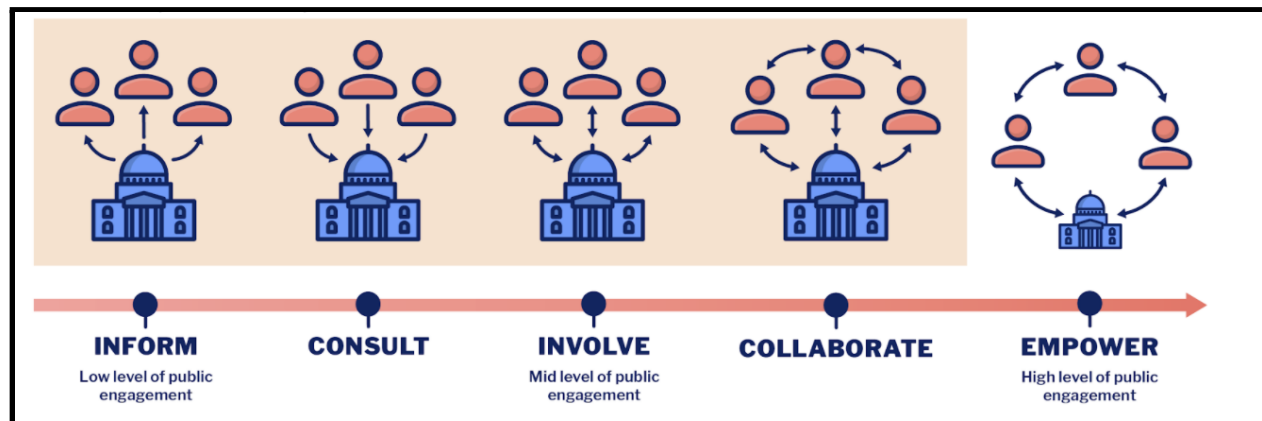
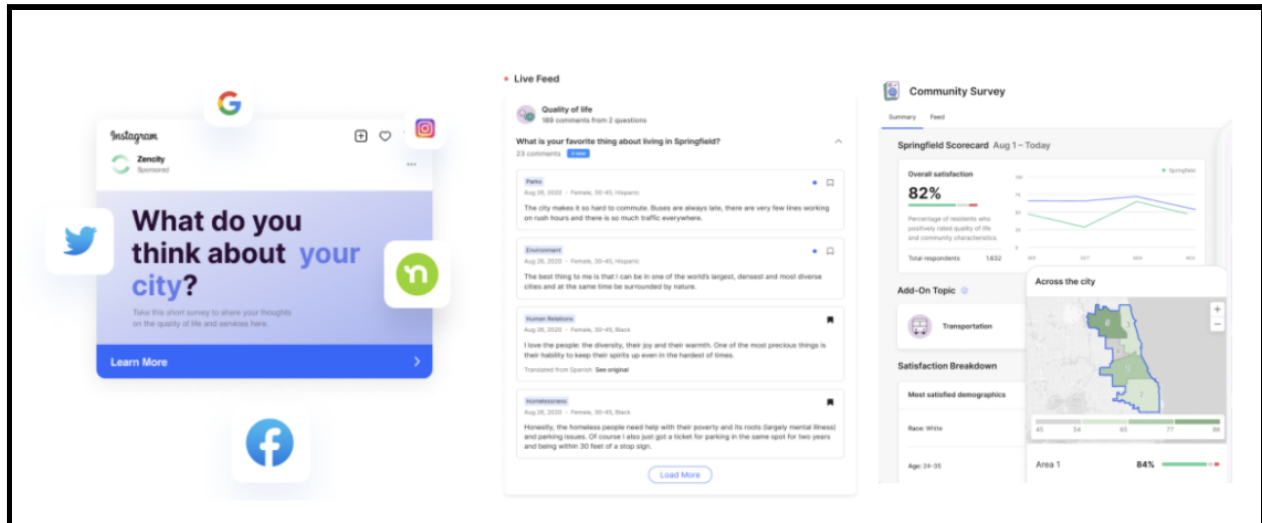
As part of Zencity's proactive resident outreach approach, in 2021, Zencity acquired and fully incorporated Civil Space into the Zencity family.

Civil Space looks to create pages and project sites where our residents can learn, interact and participate in City initiatives through polls, surveys, preferences, prioritisations, images, video content etc.

Our main mission is to assist your community better hear from the voices that are hard to reach, and not just the 'same ten people' ("STPs"). As such, our Civil Space platform for public engagement is available for all residents and

encompasses up to 27 languages as well, to ensure we are leaving no stone unturned to connect and engage with our residents.

As part of our anticipated partnership, we look forward to learning more about Biddeford's community goals, plans for 2022/23 and beyond, and following this, begin to share our best practices of how to leverage the holistic Zencity platform to achieve such goals. Further, as part of our partnership, we kindly share examples and evidence from other local communities to ensure your efforts and outcomes are maximized.



REFERENCES

Provide a minimum of three projects of like size and scope:

1. City of Portland ME: Jessica Grondin, Director of Communications & Digital Services - jgrondin@portlandmaine.gov - <https://portland.civilspace.io/>
2. City of Bainbridge WA: Kristen Drew, Communications Coordinator - kdrew@bainbridgewa.gov - <https://cityofbainbridgeisland.civilspace.io/>
3. City of Beaufort SC: Kathleen Williams, Communications and Marketing Manager - kwilliams@cityofbeaufort.org - <https://cityofbeaufort.civilspace.io/en>

Appendix A

RFP for Community Engagement Platform

The City of Biddeford, Maine, is looking to proactively engage its 22,000 residents on specific programs, projects and city events. The City of Biddeford is searching for a municipal government focused engagement platform that will be a user-friendly portal for both city staff and residents to engage and provide two way resident feedback across multiple languages. The city outlines its ideal requirements for a vendor partner below:

	Requirements for Engagement Tool				
A	Usage	Yes	No	Partial	Comments
	Resident engagement tool can:				
1	Provide numerous methods for participation during each project/survey/engagement.	X			Biddeford would work directly with our customer success team to create templates and projects that best engage residents
2	Provide Biddeford the ability to create multiple simultaneous engagement initiatives on specific goals, ideas, programs and projects.	X			There is no limit to the amount of engagement initiatives the city can run at any given time.
3	Provide Biddeford access to content/outcomes/platform on a variety of devices.	X			Zencity Civil Space's holistic platform is accessible by Biddeford on desktop and mobile web
4	Provide options to re-engage past participants on new government related activities.	X			Zencity's Civil Space offering has subscriber lists per project that citizens can opt into, and a simple invitation workflow that includes a single checkbox administrators can use to ensure that all subscribers receive an invite to participate.
B	Function & Features	Yes	No	Partial	Comments
	The software solution should be able to:				

1	Provide survey/feedback functionality with varying configuration of questions for both quantitative and qualitative capture: rank ordering, multiple choice, prioritization, images, check boxes, drop downs, numeric, design by logic, open and closed ended questions.	X			Each option + others are available
2	Allow for questions to be demographic-focused.	X			This is available and encouraged
3	Provide options for offering visual/graphical depictions of projects, plans, policies, programs.	X			This is available and encouraged
4	Provide ability to upload documents, pictures, videos, images.	X			This is available and encouraged

5	A tool to moderate language to encourage mindful feedback.	X			This is available and encouraged
6	Mapping features that offer participants options for identifying geographic specific locations.	X			This is available and encouraged
7	Offers options for participants to add comments directly to a posted document or picture or map.	X			This is available and encouraged
8	Mapping geographic locations in scope of Biddeford projects and plans to gather specific input about these areas.	X			This is available and encouraged
9	Timeline feature to track project progress.	X			This is available and encouraged
C	<i>Data and Analysis</i>	Yes	No	Partial	Comments
1	Offers a variety of data collection/reporting methods for both quantitative and qualitative analysis.	X			This is available
2	Tagging or AI functions to assist qualitative analysis.	X			This is available
3	Provides visual representation of quantitative data fields.	X			This is available

4	Ability to import/export data into other formats (e.g. CSV, Excel) to visualize and interpret resident feedback.	X			This is available
D	Access and Language Translation	Yes	No	Partial	Comments
1	Offers an online, web-based tool that is accessible across a variety of platforms (computers, tablets, and smartphones); and compatible with a variety of browsers (Edge, Firefox, Safari, Chrome).	X			This is available
2	Content can be easily translated in multiple languages to better ensure segments of the community are not excluded.	X			Civil Space supports 27 languages, including right-to-left languages.
3	Compliant with requirements outlined in Americans with Disabilities Act (ADA) and Section 508 of the Rehabilitation Act.	X			
4	Provides options for required and/or anonymous registration/sign-up.	X			This is available
5	Can be used via desktop/laptop computer, tablet, mobile phone, kiosk to broaden audience.	X			This is available

6	Offers social media links built into the interface to promote easy sharing amongst friends and family.	X			This is available
7	Provides options for turning on or off registration requirements.	X			This is available

	Customer Service & Support				
	Training:	Yes	No	Partial	COMMENTS
A	The selected vendor must onboard, set-up and provide training to staff and must include an electronic or paper operation manual, discussion of technical support, and user guides.	X			As part of our partnership, we include set-up, onboarding and constant training.

					We encourage many users at the start, and of course, can periodically add more users over time. We have a full knowledge base as well
	Technical Assistance:	Yes	No	Partial	
A	Assistance between 9:00 a.m. to 5:00 p.m. Eastern Standard Time (EST) Monday – Friday	X			Technical assistance is available during these hours via online. More importantly, your dedicated customer success manager will schedule routine check-ins at mutually agreed times.
B	Direct support and assistance with registration, access issues, or functionality issues.	X			The Zencity Civil Space customer success team will provide direct coaching and support where needed.

	Additional Value Add				
	Focus	Yes	No	Partial	COMMENTS
A	Vendor should be a municipal government-focused entity, providing guidance and feedback that is specific for local government needs.	X			Zencity is a local government exclusive vendor. The design and coaching of the Civil Space platform is meant for local government users, and end outcomes are designed for residents
B	Vendor should be able to provide guidelines, best practices and benchmarks for other local cities as part of its customer service.	X			This is available and is encouraged.
C	Platform should demonstrate capacity to integrate with existing Civic Plus brand website.	X			This is available and is encouraged.

ZENCITY ORDER FORM

Order form #: 112912

Order form prepared for: City of Biddeford, Maine

Order form expiration date: June 30, 2022

This Order Form ("Order Form") is entered into between the Zencity entity detailed below ("Zencity"), and the entity identified below ("Customer", and jointly with Zencity the "Parties"), as of the Effective Date (as defined below) which shall remain in effect for the duration of the Initial Term as defined below and any renewal term (the "Term") unless agreed otherwise explicitly and in writing between the Parties. This Order Form includes and incorporates the Zencity Terms and Conditions attached hereto as Appendix A (the "T&Cs"). In the event of any conflict between this Order Form and the T&Cs, the terms of this Order Form shall prevail. All prices are quoted in USD.

ZENCITY	
Entity (legal) name:	Zencity Technologies US, Inc.
Full address:	1313 N Market St, Suite 5100 Wilmington, DE 19801
Contact:	Jonathan Shafir
Phone:	347-354-1807
Email:	jonathan@zencity.io

CUSTOMER	
Entity (legal) name:	City of Biddeford, Maine
Full address:	205 Main Street Biddeford, ME 04005
Contact:	Danica Lamontagne
Phone:	207-282-8423
Email:	danica.lamontagne@biddefordmaine.org

RECURRING FEES						
Name	SKU	Product Description	Unit Price	QTY (units)	Discount	Net Price
Engagement Platform (Pro Collaborative Product)	ZC- EGMP	Community engagement interface to share essential project context and invite resident collaboration and input.	\$18,000 Per Year	2 Years	(\$3,000) Per Year	\$30,000
Total Gross List Price						\$36,000
Total Initial Term Discounts						\$(6,000)
Total Fees						\$30,000

Any additional modules, quantity increases or other custom development and integration work requested by Customer during the Term shall require an Order Form executed by the Parties, and shall be subject to the prevailing Zencity rate card subject to amendment from time to time.

ORDER FORM TERMS	
Effective Date:	
Initial Term:	24 months, commencing on the Effective Date.
Fees:	The Fees are exclusive of any applicable taxes (including sales tax) and withholdings, which will be added to the Fees and paid by Customer, to the extent applicable.
Payment Terms:	The Fees shall be payable on annual basis within 30n days of the Effective Date and on each annual anniversary thereof.
Customer Billing Contact:	Name: Phone: Email:
Customer PO # (if applicable):	

CUSTOMER

Signature: _____

Name: _____

Title: _____

Date: _____

ZENCITY

Signature: _____

Name: _____

Title: _____

Date: _____

Appendix A

Zencity Terms and Conditions

1. SOFTWARE LICENSE & SUPPORT SERVICES

- 1.1. Subject to the terms and conditions of these Zencity Terms and Conditions and of the applicable Order Form (collectively, the "**Agreement**"), Zencity hereby grants to Customer a personal, non-exclusive, non-transferable limited license to use the products and services licensed by Zencity to Customer (the "**Licensed Program**") identified in the applicable Order Form entered into by Zencity and Customer and the documentation and user manuals for the Licensed Program supplied by Zencity to Customer throughout the Term (the "**Documentation**").

For the purposes of this Section 1.1, the term "use" shall be only in accordance with the confidentiality provisions of this Agreement and shall include the rights to use the Licensed Program only for the use of the Customer's organization, company or institution.

For the purposes of this Section 1.1 the term "use" shall not include: (i) the right to make, use, or sell products incorporating the Licensed Program, or (ii) the right to sub-license the Licensed Program.

No right is granted to the source code of the Licensed Program or to create derivative works thereof or to transfer ownership of the media containing such software except as a part of, or with, or for use in the equipment with which it operates.

- 1.2. Routine customer support is available via email. Any claim will be answered within 24 hours of the report. On or before the Effective Date, Customer and Zencity shall each designate a liaison as a respective point of contact for technical issues. Each party may change such liaison upon written notice from time to time at reasonable intervals. Zencity will not be obligated to provide support to any person other than the Customer's designated liaison.
- 1.3. During the Term, Customer may have access to Updates upon request at no additional cost. "**Updates**" shall mean certain new features as determined by Zencity, or fixes of minor errors in the Licensed Program which are incorporated in a new release of the Licensed Program.
- 1.4. Certain upgrades can be delivered to Customer upon commercial terms and conditions to be agreed upon. "**Upgrades**" shall mean enhancements, new functionalities that are added into the Licensed Program.

2. RESTRICTIONS AND RESPONSIBILITIES

- 2.1. Customer agrees not to, directly or indirectly: reverse engineer, decompile, disassemble, or otherwise attempt to discover the source code, object code, or underlying structure, ideas, or algorithms of the Licensed Program, Documentation or data related to the Licensed Program, except to the extent such a restriction is limited by applicable law; modify, translate, or create derivative works based on the Licensed Program; or copy, reproduce, rent, lease, distribute, assign, sell, or otherwise dispose of the Licensed Program, in whole or in part, or otherwise commercially exploit, transfer, or encumber rights to the Licensed Program; or remove any proprietary notices.
 - 2.2. Customer will use the Licensed Program only in compliance with all applicable laws and regulations (including, but not limited to, any export restrictions, surveillance and monitoring restrictions, and any privacy and data protection requirements).
 - 2.3. Customer shall be responsible for obtaining and maintaining any equipment and other services needed to connect to, access, or otherwise use the Licensed Program and Customer shall also be responsible for (a) ensuring that such equipment is compatible with the Licensed Program, (b) maintaining the security of such equipment, user accounts, passwords and files, and (c) for all uses of Customer user accounts with or without Customer's knowledge or consent. To the extent Customer provides any Personal Data (as defined below) of personnel for registration purposes, Customer represents and warrants that it has any right, license, consent, and power and it has provided any notice, all as required under applicable law, to provide Zencity with such Personal Data and will be fully and solely responsible for providing only Personal Data of personnel related to the Customer. Zencity will handle such Personal Data in accordance with its Privacy Policy available at: <https://zencity.io/privacy-policy/>.
3. **PROPRIETARY RIGHTS.** Zencity retains all right, title, and interest in the Licensed Program, Documentation and any future modifications and enhancements thereof, and all intellectual property rights (including all past, present, and future rights associated with works of authorship, including exclusive exploitation rights, copyrights, and moral rights, trademark, and trade name rights and similar rights, trade secret rights, patent rights, and any other proprietary rights in intellectual property of every kind and nature) therein. Customer is granted only a limited right of use to the Licensed Program and Documentation as set forth herein, which right of use is not coupled with an interest and is revocable in accordance with the terms of this Agreement.
 4. **CONFIDENTIALITY.** Each party (the "**Receiving Party**") agrees not to disclose (except as permitted herein) any Confidential Information of the other party (the "**Disclosing Party**") without the Disclosing Party's prior written consent. "**Confidential Information**" means all confidential business, technical, and financial information of the disclosing party that is marked as "Confidential" or an equivalent designation or that should reasonably be understood to be confidential given the nature of the information and/or the circumstances surrounding the disclosure (including the terms of the applicable License Agreement). Zencity's Confidential Information includes, without limitation, the software underlying the Licensed Program and all Documentation. The Receiving Party agrees: (i) to use and disclose the Confidential Information only in connection with this Agreement; and (ii) to protect such Confidential Information using the measures that Receiving Party employs with respect to its own Confidential Information of a similar nature, but in no event with less than reasonable care. Receiving Party shall, before receipt or usage of such Confidential Information inform its personnel of Receiving Party's confidentiality obligations under this Agreement. Notwithstanding the foregoing, Confidential Information does not include information that: (i) has become publicly known through no breach by the Receiving Party; (ii) was rightfully received by the Receiving Party from a third party without restriction on use or disclosure; or (iii) is independently developed by the Receiving Party without access to such Confidential Information. Notwithstanding the above, the Receiving Party may disclose Confidential Information to the extent required by

law or court order, provided that prior written notice of such required disclosure and an opportunity to oppose or limit disclosure is given to the Disclosing Party.

5. DATA AND MATERIALS LICENSE.

- 5.1. Customer grants Zencity a non-exclusive, transferable, perpetual, worldwide, and royalty-free license to use any data or information provided by Customer for use in, by, or in connection with the Licensed Program, any information collected, and/or any analysis of any such information conducted by the Licensed Program.
- 5.2. Any content created by Customer and provided to Zencity for use in connection with the Licensed Program or other services provided by Zencity ("**Customer Materials**") shall be the sole property of the Customer. Customer hereby grants Zencity and its successors and assigns a perpetual, irrevocable, transferrable, worldwide, royalty-free, fully paid-up, and non-exclusive license under any of Customer's intellectual property, moral or privacy rights to use, copy, distribute, display, modify and create derivative works of any Customer Materials for the provision of the services in accordance with the terms of this Agreement. The parties acknowledge that Zencity does not require any Personal Data to be provided in order to provide the Licensed Program and Customer undertakes that it shall not provide Zencity with any Personal Data as part of the Customer Materials. To the extent the Customer Materials shall include any Personal Data it shall be incidental and Customer shall be fully liable for such Personal Data in accordance with the terms of this Agreement and applicable law.

6. FEES.

- 6.1. The fees for the Licensed Program ("**Fees**") are set forth in the applicable Order Form. Properly submitted invoices for which payment is not received within fourteen (14) days of the invoice due date shall accrue a late charge of 1.5% interest per month, compounding annually. The Fees are exclusive of any applicable taxes, which, if payable by Zencity, shall be billed to and paid by Customer, including any bank fees related to the Customer's wire transfer. Customer may not withhold or set-off any amounts from the Fees. For the avoidance of doubt, discounts or credits relating to any term defined in any Order Form shall apply to said term only and shall not carry over to any Renewal Term.

7. TERM & TERMINATION

- 7.1. This Agreement shall commence on the Effective Date and continue for the period of the Licensed Program purchased pursuant to any applicable and outstanding Order Form, including any renewal term, unless earlier terminated in accordance with this Section 7. In the event of any Renewal Term, the Fees payable for the Licensed Program shall be updated as specified in the Order Form. Either party may terminate this Agreement immediately by giving written notice to the other party if: (i) the other party breaches a material provision of this Agreement and fails to cure the breach within seven (7) days after being given written notice thereof; or (ii) the other party is judged bankrupt or insolvent, makes a general assignment for the benefit of its creditors, a trustee or receiver is appointed for such party; or any petition by or on behalf of such party is filed under any bankruptcy or similar laws.
- 7.2. The Initial Term shall be automatically extended for successive renewal terms of 12 months each (each, a "**Renewal Term**" and collectively with the Initial Term, the "**Term**") unless either party provides written notice of non-renewal to the other party at least 90 days before the end of each applicable term.
- 7.3. Upon termination, Customer will pay in full for the Licensed Program up to and including the effective date of termination. Upon any termination of this Agreement: (a) the license of the Licensed Program hereunder shall immediately terminate; and (b) each party shall return to the other party or, at the other party's option, destroy all Confidential Information of the other party in its possession.
- 7.4. All sections of this Agreement which by their nature should survive termination will survive termination, including, without limitation, accrued rights to payment, confidentiality obligations, warranty disclaimers, and limitations of liability.

8. WARRANTY AND DISCLAIMER

- 8.1. Zencity represents and warrants that: (i) it has all right and authority necessary to enter into and perform this Agreement; and (ii) the Licensed Program shall perform in accordance with generally prevailing industry standards.
- 8.2. Customer represents and warrants that (i) it has all right and authority necessary to enter into and perform this Agreement; (ii) it owns all right, title, and interest in and to all data, including without limitation, any Personal Data that may be included therein, provided to Zencity (if any) for use in connection with this Agreement, or possesses the necessary authorization thereto; and (iii) Zencity's use of such data or materials including Customer Materials as contemplated hereunder will not violate the rights of any third party; (iv) it has all right, license and consent required to provide Zencity with the Customer Materials, including Personal Data contained therein, if and to the extent provided in accordance with Section 5.2 above; (v) the Customer Materials and Zencity's use thereof in accordance with the terms of this Agreement does not and will not infringe upon any third party's right; and (vi) it shall at all times use the Licensed Program in compliance with applicable law. "**Personal Data**" have the definition ascribed to it by the General Data Protection Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 ("**GDPR**") or any parallel term in the jurisdiction in which the Licensed Program is being used.
- 8.3. ZENCITY DOES NOT WARRANT THAT USE OF THE LICENSED PROGRAM WILL BE UNINTERRUPTED OR ERROR-FREE; NOR DOES IT MAKE ANY WARRANTY AS TO THE RESULTS THAT MAY BE OBTAINED FROM USE OF THE LICENSED PROGRAM. EXCEPT AS SET FORTH IN THIS SECTION 8, THE LICENSED PROGRAM IS PROVIDED "AS IS" AND ZENCITY DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, IMPLIED WARRANTIES OF MERCHANTABILITY, TITLE, FITNESS FOR A PARTICULAR PURPOSE,

AND NON-INFRINGEMENT. ZENCITY DOES NOT WARRANT THAT ANY OR ALL FAILURES, DEFECTS OR ERRORS WILL BE CORRECTED, OR WARRANT THAT THE FUNCTIONS CONTAINED IN THE LICENSED PROGRAM WILL MEET CUSTOMER'S REQUIREMENTS.

- 8.4. To the extent the Licensed Program or any services provided by Zencity hereunder are provided through or in connection with any third-party services, Zencity shall not have any responsibility for any technical issues or limitations resulting from the use of such third-party service, including actions of Zencity on such third-party service taken on behalf of and at the instruction of Customer. Customer acknowledges and agrees that use of any third-party service shall be in accordance with such third party's terms and privacy policy.
9. **LIMITATION OF LIABILITY.** NEITHER PARTY, NOR ITS SUPPLIERS, OFFICERS, AFFILIATES, REPRESENTATIVES, CONTRACTORS, AND EMPLOYEES, SHALL BE RESPONSIBLE OR LIABLE WITH RESPECT TO ANY SUBJECT MATTER OF THIS AGREEMENT OR RELATED TERMS AND CONDITIONS UNDER ANY CONTRACT, NEGLIGENCE, STRICT LIABILITY, OR OTHER THEORY: (A) FOR ERROR OR INTERRUPTION OF USE OR FOR LOSS OR INACCURACY OF DATA (EXCEPT AS OTHERWISE SET FORTH IN SECTIONS 2.3 AND 5.2) OR COST OF PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES OR LOSS OF BUSINESS; (B) FOR ANY INDIRECT, EXEMPLARY, PUNITIVE, INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES; OR (C) FOR ANY MATTER BEYOND SUCH PARTY'S REASONABLE CONTROL, EVEN IF SUCH PARTY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH LOSS OR DAMAGE. IN NO EVENT SHALL EITHER PARTY'S AGGREGATE, CUMULATIVE LIABILITY FOR ANY CLAIMS ARISING OUT OF OR IN ANY WAY RELATED TO THIS AGREEMENT EXCEED THE FEES PAID BY CUSTOMER TO ZENCITY (OR, IN THE CASE OF CUSTOMER, PAYABLE) FOR THE LICENSED PROGRAM UNDER THIS AGREEMENT IN THE 12 MONTHS PRIOR TO THE ACT THAT GAVE RISE TO THE LIABILITY.
10. **MISCELLANEOUS.** Capitalized terms not otherwise defined in these Terms and Conditions have the meaning set forth in the applicable License Agreement. Neither party shall be held responsible or liable for any losses arising out of any delay or failure in performance of any part of this Agreement, other than payment obligations, due to any act of God, act of governmental authority, or due to war, riot, labor difficulty, pandemic, failure of performance by any third-party service, utilities, or equipment provider, or any other cause beyond the reasonable control of the party delayed or prevented from performing. Zencity shall have the right to use and display Customer's logos and trade names for marketing and promotional purposes in connection with Zencity's website and marketing materials, subject to Customer's trademark usage guidelines (as provided to Zencity). If any provision of this Agreement is found to be unenforceable or invalid, that provision will be limited or eliminated to the minimum extent necessary so that this Agreement will otherwise remain in full force and effect and enforceable. This Agreement is not assignable or transferable by either party without the other party's prior written consent, provided however that either party may assign this Agreement to a successor to all or substantially all of its business or assets. This Agreement (including the License Agreement) is the complete and exclusive statement of the mutual understanding of the parties and supersedes and cancels all previous written and oral agreements, communications, and other understandings relating to the subject matter of this Agreement. All waivers and modifications must be in a writing signed by both parties. No agency, partnership, joint venture, or employment is created as a result of this Agreement and neither party has any authority of any kind to bind the other party in any respect. In any action or proceeding to enforce rights under this Agreement, the prevailing party will be entitled to recover costs and attorneys' fees. All notices under this Agreement will be in writing and will be deemed to have been duly given when received if personally delivered; when receipt is electronically confirmed, if transmitted by facsimile or e-mail; the day after it is sent if sent for next day delivery by recognized overnight delivery service; and upon receipt, if sent by certified or registered mail, return receipt requested. This Agreement shall be governed by the laws of the State of New York without regard to its conflict of laws provisions and the competent courts of New York City shall have exclusive jurisdiction to hear any disputes arising hereunder.

Intro to Civil Space



Nice to meet you



Tim Booker

Director of Product
Head of Civil Space
tim.booker@zencity.io

More ways to be heard



Organic input

Understand the conversation

across publicly available
sources, like social & local
media and 311/211 tickets



Proactive input

Gather feedback

on any issue using
recurring & one-time
scientific surveys



Collaborative input

Shape & discuss ideas

over interactive digital
forums, together with
your community

More resident voices

Civil Space is differentiated by being:

Highly Visible & Findable

Citizens can easily see that the city/county/state is listening on key topics



Self-Serve

City staff can easily set up everything on their own



Collaborative

Residents can ideate, question, and converse with city staff and other residents



Educational

Civil Space helps cities easily and flexibly share key project info & media

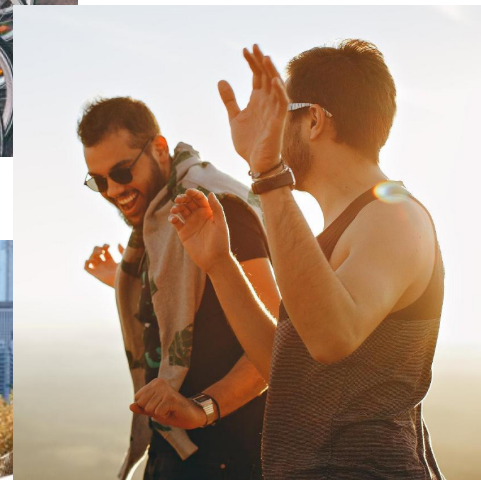


Our Value

Because we want to see diverse communities well equipped with data to thrive sustainably

We help governments simply and intuitively create

Inclusive digital project spaces to inform, consult and collaborate



Automating and Simplifying Best Practices

PLANNING / PROTOTYPING

PREVIEWING

LAUNCHING

INVITING

REAL TIME RESULTS REVIEW

CLOSING

ANALYSIS

REPORT PUBLISHING



1. Amplifying diverse voices
2. Being accessible by design
3. Deepening trust through transparency
4. Getting more actionable insights that are higher quality

AMPLIFY DIVERSE VOICES

- Constituents can participate in any language, from any device
- Create participant safety with inclusive AI moderation
- Track who you're hearing from and who you're not
- Mobile first and old browser friendly to reduce digital divide
- Embed lived experience and media into the process



ACCESIBLE BY DESIGN

- Simple, powerful interface for admins to create and citizens to participate
- Extendable with technical depth
- Automate building, translating, moderating and reporting
- Connect your website and subscribers with Civil Space with ease
- Integrate with CP Integration Hub, Facebook, Google Analytics



DEEPEN TRUST THROUGH TRANSPARENCY

- Close the loop with report publishing in hours/days NOT weeks/months
- Open collaborative spaces with idea boards, Q&A sessions and discussion forums
- Easily articulate process and context
- Encourage deeper connection with sharing and subscribing



GET MORE ACTIONABLE INSIGHTS THAT ARE HIGHER QUALITY

- Raise the quality of feedback through flexible media, contextual content and storytelling
- Ensure that those who start, finish through the most intuitive, accessible, mobile UX
- Get to discoveries and insights in data more quickly with reporting tools



Our Clients



And dozens more governments all over North America

Who we work with:



Engagement
Firms



Para government



Planning Departments



PIOs and
Communications
teams

And more...



School Boards



Health Departments



IT Departments



Marketing
Departments

Goals Our Users Have

Admins

- Increase Compliance with Engagement Legislation (ie ARPA)
- Be Timely in responding to important events/issues with engagement
- Increase citizen participation and inclusivity
- Collect broad feedback for data driven decision making
- Close the loop with citizens quickly
- Increase subscriber bases and repeat engagees

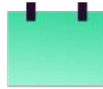
Participants (Citizens)

- Short/concise background information on the issues
- Ability to go deeper (reports, drawings, etc)
- Opportunities to ask questions / hear from subject matter experts
- Time outside of live meetings to participate
- Collaborate with other participants transparently
- Easily participate on a mobile device

Most Common Use Cases



**Construction
Transportation
IT
Parks & Rec
Projects**



**Long-term /
Strategic Planning,
Zoning
Decision Making**



**Policy
Making and
By-laws**



**Citizen
Satisfaction and
Ideation**



Key Features



Project Hubs

Easy to build information zones



Advanced Consultations

Budget, Map, Image, Rank,
Quantitative and Qualitative



AI-Moderated Collaboration

Conversation Threads, Group
Ideation with images, Q&A Boards



Automated Report Publishing

Mobile friendly, loop closing, get back
to the public on what you learned

Product roadmap

In the works / Recently completed

- Interactive Q&A between participants and admins
- Number questions (star rating, slider, statistical reporting)
- Duplicate reduction in analysis and report publishing
- Support for Hindi
- Light rebranding to integrate better with Zencity

Coming up in 2022

- Integration with Zencity SSO (sooner) and UI (later)
- Scaling Enhancements
- Infrastructure Migration
- Integration with Zencity AI-powered qualitative analysis engine
- Representation analysis (diversity reporting)
- Right-to-left language support
- Polling / Embeddable Widgets
- Enhance Reporting/Budgeting



Product Collaboration

Zencity organic and surveys listen and compile for you (passively)

Civil Spaces adds the capability for cities to set up intentional, active, collaborative engagement hubs



AI Capabilities



Award-winning AI technology for cities.



Classification



Sentiment



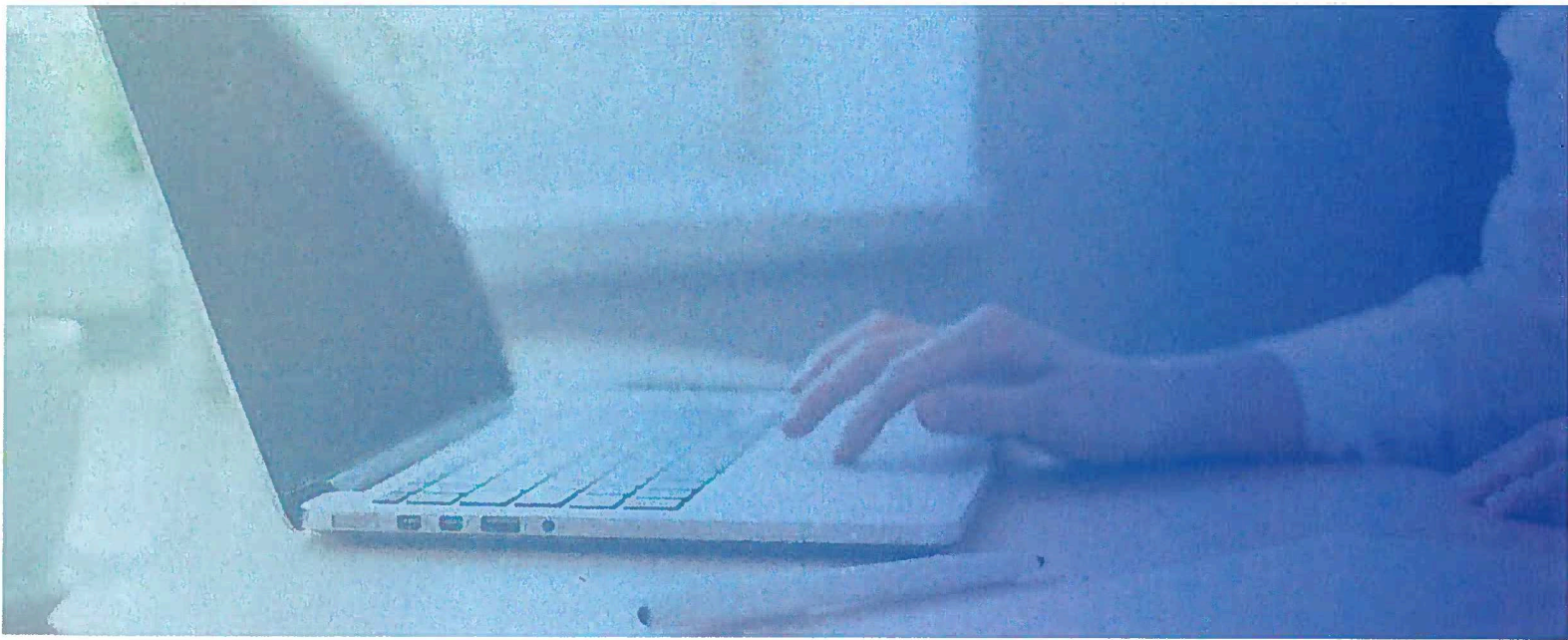
Anomaly Detection



Geolocation



Thank you!



XM FOR **Response to City of** **Biddeford**

qualtrics.^{XM}

YASMINE SYED
Account Executive
ysyed@qualtrics.com



TABLE OF CONTENTS

Overview of the Platform Being Offered	3
References of 3 Projects of Similar Size and Scope	7
Quote	10
Appendix A	15

Overview of the Platform Being Offered

The mission of Qualtrics is to transform the experiences that citizens have with their governments by bringing the voice of the citizen and resident to agencies in actionable ways.

Qualtrics has more than 450 government customers in the US, including every federal executive department, and state/local/tribal and territorial governments across the country.

Qualtrics pioneered Experience Management (XM) and powers the Customer Experience (CX) and Employee Experience (EX) programs of government organizations across the country and around the world. Government agencies are well versed in gathering and analyzing quantitative operation information ("O-data") from a range of policy, program and service delivery data systems. Experience data ("X-data") enhances and deepens insights into the human experience. X-data from citizen feedback, service satisfaction, and employee engagement helps governments listen, understand, and act to increase equity and inclusion for diverse population segments. Combining X-data and O-data gives governments the necessary information for faster, deeper insights into the contexts, behaviors, and interactions of residents.

Qualtrics is a publicly traded company, based in Utah and with offices around the world, providing technology and services to improve the interactions people have with services, products, and brands. Qualtrics is the largest Experience Management vendor in the market. We have 16,750+ customers globally, including 85 of the Fortune 100 companies, 90+ federal agencies, 800+ State and Local Governments, and 99 of the top 100 US business schools. We understand that governments face unique challenges in applying CX approaches from the commercial sector to their missions.

For a range of reasons, citizens and residents cannot be analyzed as "customers" in the same way that commercial organizations do. As one obvious example, customers of commercial firms can (and do) switch brands and products quickly and easily. Citizens and residents have a much more complex, multi-dimensional relationship with their governments, which must meet every individual's needs regardless of their backgrounds. Our work with over 450 state, local and Tribal governments enables us to surface insights on the unique experiences of the diverse population of the United States. Qualtrics has been serving the Federal market since 2010: Agencies like CMS (Healthcare.gov), General Services Administration (GSA), and the US Federal Reserve are using Qualtrics to:

- **Seamlessly capture experience data** from citizens, residents, service recipients and employees
- **Empower multiple roles in the organization** to view data analysis that generates intersectional insights on the drivers of experience across demographic population segments
- **Automate the actions that drive improvement** across citizen, resident, service recipient and employee experiences.

The Census Bureau, for example, was able to leverage Qualtrics to respond to COVID-19 by implementing, in a matter of days, a household pulse survey that gathered data from millions of residents across the country on their experiences during the pandemic. Insights from the household pulse were used by Congress, HHS

and the Department of Commerce to formulate the government's response. Census is now planning to expand its use of this powerful approach to gathering timely input from residents on their experiences.

Our unique differentiators are why over 45 organizations have recently chosen to migrate off of other platforms and onto Qualtrics. Our unique differentiators are as follows:

Ability to Execute: Qualtrics was rated as the overall leader in the recent 2021 Gartner Magic Quadrant for Voice of the Customer, and is the **highest-rated vendor with regards to the Ability to Execute**. This means that government organizations can be confident with Qualtrics' speed and agility. In addition, Qualtrics was awarded a top rank in Forrester's 2020 New Wave Report for Employee Experience Management and earned the maximum rating in more categories than any other experience management vendor. Qualtrics received the highest possible score for the following criteria: vision, market approach, customization, recommendations and workflow, tooling and ease of use, validity, and correlation, and surveying methods.

A native SaaS architecture: Qualtrics is the only company of our size with a platform that was built by our own engineers. We call this a “natively built” or “built in-house” platform. Our clients enjoy the advantages of new features and functionality without costly re-platforming or upgrades. Qualtrics customers have found that the platform is **quick to implement on the back end, and easy to manage on the front end**. Changes can be made directly in the platform by any government team. With Qualtrics, there is also no need to “build” a specific client environment for each unique program, which reduces costs and resource utilization as government teams are not required to support any re-implementation. This means agencies can quickly leverage Qualtrics for a range of uses - from a large program to an individual research project - with the unique capabilities that are required for the success of each initiative. Agencies can have this data available in a single XM platform instance versus stove-piped implementations and integrations. This is further supported by our RESTful API and numerous out-of-the-box integrations with leading platforms like Salesforce, ServiceNow, Microsoft Dynamics, Facebook, Adobe, and more.

Built-in Analytics: Qualtrics has invested in building artificial intelligence (AI) and advanced analytics capabilities directly into our platform. Our AI and analytics suite (branded as “iQ suite”) empowers all agency team members to **run predictive and statistical analysis in real-time**. With the iQ suite, there's no need for data scientists, analysts, Excel spreadsheets, or additional service contracts.

Data Science and Research Capabilities: Qualtrics attracts social science researchers from around the world to design and execute rigorous data collection and analysis methods in support of public outcomes. Our **XM Institute** conducts independent, global research on human experiences to understand how governments can build public trust.

Ease of Use: Qualtrics provides an intuitive, easy-to-use platform to support these needs, while Gartner points out that our closest competitor lags in this regard. Qualtrics believes in **configuration over customization**—we deliver a powerful workflow engine that helps automate tasks within Qualtrics and in agencies' operational systems, with no coding required. **Our customers have not needed to pay for a services contract or wait for service resources to be available**. Unlike competing alternatives, unplanned service costs are not part of our business model.

Gold Standard Security: Qualtrics provides one of the **most secure XM platforms available**. The XM

platform is FedRAMP Authorized at the Moderate Level, and we are continuing our dedication to client security with our announced plans to support DoD IL4 and FedRAMP High designations. Qualtrics also maintains security and compliance with ISO 270001, HITRUST, SOC2 Type 2 and HCAHPS.

Robust Services Capabilities: Government organizations will get the right combination of services and support needed for success through our professional services team, Qualtrics' advisory services, thought leadership from our XM institute, best practice guidance from our local account team, 24/7 customer support, and online training and support resources. Qualtrics can also leverage any number of Qualtrics Partners, many of which are under contract today (e.g., Booz Allen, Deloitte, Accenture, EY, and PwC), to support specific public sector programs. This means fielding a simple survey won't unnecessarily require implementation support, and that **each government program can become as self-sufficient as desired without reliance on contractor or vendor support.**

Governance: We provide agencies with a **robust set of governance tools** that can be leveraged for cost accounting, role, and access permissions, and other aspects that are critical to an organization providing centralized oversight and best practice support to a large and diverse enterprise.

Scalability: Governments can benefit from a platform that can grow and adjust with evolving program and organizational needs. With Qualtrics, governments don't need to pay exorbitant customization and implementation fees and spend unnecessary time to implement a single solution upfront that can address every potential permutation of requirements.

Total Economic Impact: Organizations need to be aware that software licensing models can be deceiving, especially as it relates to our competitors that rely heavily on services for customization and delivery. The 2019 Total Economic Impact study conducted by Forrester Consulting found that Qualtrics customers saw a return on investment of **"633% over three years, equaling benefits of \$384 million, with a net present value of \$33.2 million... also saw a payback period in fewer than three months."** Gartner also cites that, "Qualtrics has strong abilities to measure and deliver positive ROI from a VoC program."

Recognition by Industry Analysts as Innovation Leaders: The Qualtrics team currently includes **over 800 engineers focused on platform development, nearly twice that of our next biggest competitor.** Code updates are pushed every two weeks to release new features, new integrations, and ongoing improvements. Qualtrics is a recognized leader in the Experience Management Platform category today by the G2 Grid for Experience Management, the Forrester New Wave, and Gartner's Magic Quadrant for Voice of the Customer. We were specifically highlighted for:

Strongest ability to execute

Completeness of vision

Most comprehensive offering

Best product vision and strategy

Deepest functionality for collecting structured & unstructured feedback data

Qualtrics is the only XM platform that is uniquely positioned to help governments quickly collect, analyze, and act on feedback to measure and improve community engagement while providing agencies with the greatest ability of any provider to consolidate feedback platforms. With Qualtrics, governments can

make experience management a priority to truly meet the needs of constituents and drive positive citizen interactions with their government.

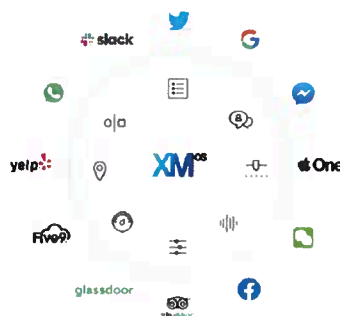
Understand and improve resident experiences at scale

Connect residents to the right services and uncover service gaps with Experience ID - a single system that brings all signals and, in the future, end-to-end experience journeys, into a unified and intelligent profile to help you understand residents like never before

- + Identify root causes of pain points for every resident touchpoint
- + Automate actions to personalize and optimize every experience at scale
- + Soon, see the end-to-end resident journey at an individual, demographic, and community level

Hear every signal, and build individual experience profiles

- + Combine direct and indirect feedback in a single system of record to create rich experience profiles for every resident
- + Soon, identify signals in conversations, social media posts, survey feedback, voice calls and more
- + Uncover sentiment, emotion and intent to truly understand what your residents need next



CONNECT WITH YOUR COMMUNITY

Create easier ways to engage with residents, whether you're conducting outreach activities, inviting collaboration on policy decisions, or developing shared leadership models.

INCREASE STAFF CAPACITY FOR ENGAGEMENT

Improve the ability and efficacy of staff to truly engage with the community. Develop, evaluate, and monitor the quality and stickiness of training and other developmental opportunities.

INCORPORATE BEST PRACTICES FOR EQUITY AND INCLUSION

Generate targeted content that enables residents to find what they need quickly. Optimize digital self-service channels to reduce cost and time to serve for both residents and employees.

References of 3 Projects of Similar Size and Scope

Reference 1: The City of Orlando



The City of Orlando, Florida partnered with Qualtrics to deploy a custom citizen outreach program with the intention to improve 300+ City services.

Pre-Qualtrics, the City of Orlando experienced the following challenges:

- Dozens of City services were slow and ineffective, with requests getting lost with insufficient follow-up
- There were frequent complaints from residents about unanswered requests and there existed a backlog of resident requests that were marked as "closed" when, in fact, they were incomplete
- The City needed to cut costs and save time
- There was an overall lack of trust in the City government on behalf of the residents

The Qualtrics designed program utilizing website feedback and closed-loop resident action flow:

- Automated a citizen feedback survey for all key City services
- Deployed closed-loop follow-up ensuring immediate follow-up for negative feedback or incomplete services
- Implemented an aggregate dashboard driving systemic improvements in services

With Qualtrics:

- Citizen trust in government increased
- Service satisfaction increased across the board to an average of 4.2/5
- There existed the new ability to prioritize services based on trust impact
- The City of Orlando identified which services were most important to meet the needs of citizens and that built public trust vs. which services were not essential
- Over 300+ city services were fully digitized as a result of the COVID-19 pandemic

Trust in local government is tied to the experience that residents have when using city services and it's our job to make sure every experience we provide meets and exceeds each citizen's expectations.

By moving beyond operational data and measuring residents' experiences with government, we are able to gather real-time feedback from residents across Orlando and use that feedback to improve city services and increase trust in government."

MATT BROFFMAN
DIRECTOR OF INNOVATION



Reference 2: The City of Miami



City of
Miami

The City of Miami, Florida partnered with Qualtrics to deploy a custom citizen outreach program with the intention to improve their permitting and licensing process.

Pre-Qualtrics, the City of Miami experienced the following challenges:

- The City needed to review a backlog of approximately 1,000 business license and building permit applications
- The City's online tools were outdated, the issuance process took too long was, oftentimes, faulty
- There was no organized way of collecting feedback of prioritizing improvements

The Qualtrics designed program utilizing a proprietary custom citizen feedback dashboard:

- Automated a citizen feedback survey via website, text and email post-permit/license application and post-permit/license issuance
- Automated alerts for low citizen satisfaction scores and other related issues
- Aggregated, in realtime, insights for senior leadership through easy to use dashboards

With Qualtrics:

- The City dramatically reduced the time to permit/license issuance
- The City systematically improved processes through garnering specific customer feedback
- City leadership gained real-time insight into the permitting and licensing process and progress in addition to other perviously unknown issues and concerns

Reference 3: Maricopa County



The County of Maricopa, Arizona partnered with Qualtrics to deploy a custom citizen outreach program with the intention to accurately gauge public opinion on current and proposed initiatives.

Pre-Qualtrics, Maricopa County experienced the following challenges:

- Vocal fringes were drowning out the majority's voice on online platforms
- Inexperienced elected officials were placed under great scrutiny and had trouble deciphering the vocal fringe from the majority opinion
- The County had nothing in place to accurately gauge the public's opinion and validate initiatives

The Qualtrics designed program utilizing a proprietary custom citizen engagement dashboard:

- Identified a relevant 1,500 household panel and deployed a public opinion survey to that panel 8x/year
- Implemented role-based dashboards whereby only selected leadership could view results/opinions
- Deployed QR code surveys in public parks to gauge the satisfaction with or need for park improvements

With Qualtrics:

- The County was able to employ effective decision-making through an agile understanding of public opinion
- The County implemented received detailed tracking of public opinion over time across issues
- The County was able to place the social media detractors' critical opinions in context with, and balanced by, the larger share of positive opinions.

Quote

SOFTWARE: CUSTOMER EXPERIENCE

Based on our understanding of your requirements, we are proposing the below costs on an annual pricing model. This offer will remain valid for 90 days from the reception of this proposal.

Features	DesignXM	CX Digital
Email & SMS Distribution	✓	✓
Role-based Dashboards	✓	✓
XM Solutions	✓	✓
XM Directory	✓	✓
Text IQ	✓	✓
Driver iQ	✓	✓
Advanced Stats iQ	✓	✓
Expert Review & Sensitive Data Handling	✓	✓
Language Translation	✓	✓
CRM Integration		✓
Help Desk & Support Integrations		✓
xFlow / Workflow Engine	✓	✓
Action Planning		✓
API Developer Tools		✓
Offline App	✓	✓
Experience Journeys		✓
Product specific XM Solutions		✓
Website Feedback		✓
In-app feedback (Mobile SDK)		✓
Cost: 1 year - 5 users 5,000 responses	12,000	
Cost: 1 year - 10 users unlimited responses		28,000
Cost: Implementation (year 1 only)	3,625	9,563
Total Cost 1-year (See Pgs 12,13 for Multi-year)	15,625	37,563

IMPLEMENTATION

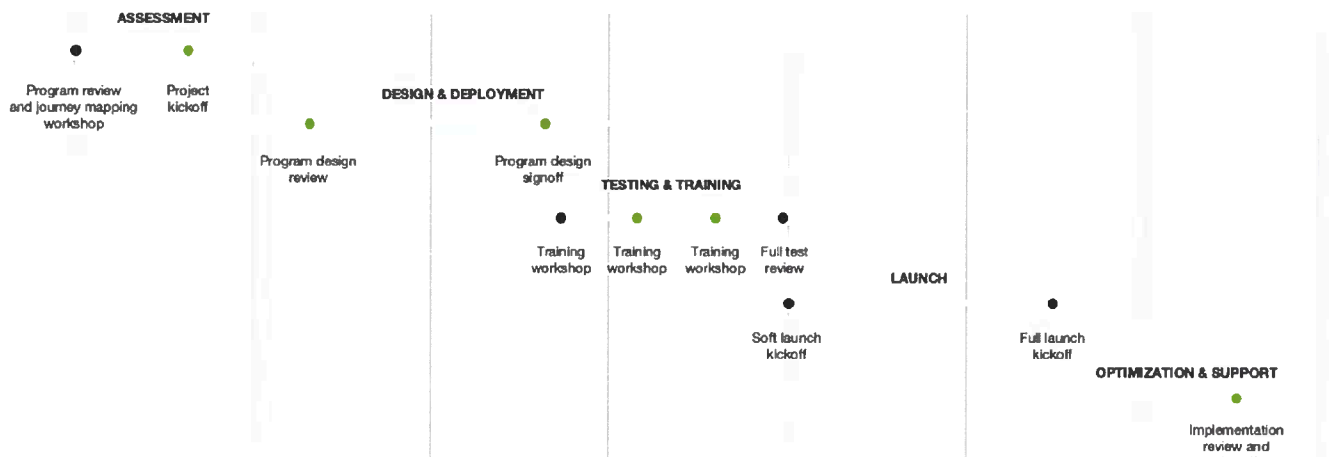
Implementation includes the following delivered over 8-12 weeks (see example timeline below). **Implementation is a year 1 only cost** and is typically fulfilled by a certified member of the Qualtrics Partner Network (QPN). An in-depth Statement of Work will be provided and agreed upon before contract execution.

Project Management: management of the entire implementation process to ensure all work streams are completed in the agreed upon time frame.

1 Standard Survey Support: advise on survey creation, final survey review and validation, and survey mapping to dashboard.

1 Standard Dashboard Build: advise on dashboard build and perform dashboard review and validation.

Basic Feature Training: training and set up of functionality included in your Qualtrics license.



OPTION 1: 3-YEAR PLAN

DESIGN XM / 5 USERS / 5,000 RESPONSES

	DesignXM - 15% Discount Implementation
Year 1	\$13,825
	DesignXM - 10% Discount
Year 2	\$14,425
	DesignXM - 5% Discount
Year 3	\$15,025
TOTAL	\$43,275
TOTAL SAVINGS	\$3,600

*Costs shown do not include reseller markup (if applicable)

**Additional scoping may be required

OPTION 2: 3-YEAR PLAN

CX DIGITAL / 10 USERS / UNLIMITED RESPONSES

Year 1	CX Digital - 15% Discount Implementation \$33,363
Year 2	CX Digital - 10% Discount \$34,763
Year 3	CX Digital - 5% Discount \$36,163
TOTAL	\$104,288
TOTAL SAVINGS	\$8,400

*Costs shown do not include reseller markup (if applicable)

**Additional scoping may be required

DEFINITIONS

Action Planning: Functionality built directly into the dashboard that allows users to create action plans based off project data. In addition to action plans, managers can view reports for their teams and the teams that roll up to them.

Admin Users: A login to create surveys, manage projects, analyze/report on data, etc. Does not include user seat for role-based dashboards (see Dashboard Viewers).

API Developer Tools: Access to Qualtrics Open API using api.qualtrics.com

Basic Stats iQ (Describe, Relate, Regression):

Describe: Describes, visualizes and summarizes a variable, enabling you to get a feel for how your data is structured, examine any issues with your data, and think up hypotheses to explore later. If you have multiple variables selected when you Describe, one analysis will be produced for each variable, and they'll be ordered as they are on the left-side variable pane.

Relate: Explore the relationships between variables by choosing the appropriate statistical test based on the structure of the data and allow the program to run that test, then translate the results into plain English. Dozens of variables can be selected at a time.

Regression: Estimates a mathematical formula that relates one or more input variables to one output variable.

Digital / Website Feedback + In-App: A tool that allows the user to embed links and surveys on your visitors' website or mobile app experience, including popovers, feedback bars, etc.

Discover: Qualtrics Discover is a way to run analytics on call center recordings and uncover X-data without ever sending a survey.

Driver iQ: Explains trends in data by analyzing patterns and surfacing the experience and operational factors that matter most.

Experience Journeys: Experience Journeys empower you to visualize, measure, and monitor the cumulative customer journey across multiple touchpoints so you can better understand where to take action to improve customer satisfaction and loyalty.

ExpertReview: Suggests best practices in surveys, turning first-time survey-builders into survey methodology experts based on the cumulative knowledge of 1,000+ experts. Helps to ensure a better user-experience with the survey and help with a better response.

ExpertReview – Compliance Assist: Builds on ExpertReview and helps in identifying if your question will collect highly sensitive or personal data, as outlined by your organization, as well as tracking patterns to ensure that you are collecting the highest quality of data and warning if the data may be from a bot.

Frontline Feedback: Frontline feedback activates employees to provide customer experience feedback in structured ways

Professionally Developed Theme: Qualtrics' engineering team will develop a survey theme specific to a company

Role-Based Dashboards: Ability to filter and slice and dice operational and experience data and assign different views based on role.

Single Sign-On (SSO): Allows users to log into Qualtrics using their organization's internal login system. (requires paid configuration service for the customer to be activated)

Text iQ: Qualtrics' text analysis tool that measures qualitative data by applying advanced natural language processing over raw text to transform thoughts and conversations into meaningful and actionable insights.

Vanity URL: A feature that allows the user to rebrand their URL, removing Qualtrics' name entirely

Website Feedback: A tool that allows the user to embed links and surveys on your visitors' experience. Also users can help users navigate to services more efficiently.

xFlow / Workflow Engine: Receive alerts and notifications for key events and integration with Actions framework, that help you understand what is important and take relevant action. The ability to raise alerts and send email / in-app notifications when important events occur.

XM Directory: A single system of record for every interaction. Qualtrics iQ Directory is an easy way to see all your respondents' interactions, opinions and contact information in one place. It makes it easier than ever to customize their experience, control global opt outs, contact frequency and automate rewards for engagement.

XM Solutions: Pre-built and validated surveys and dashboards allowing you to be an “editor” rather than an “author” of projects.

Appendix A

Requirements for Engagement Tool:

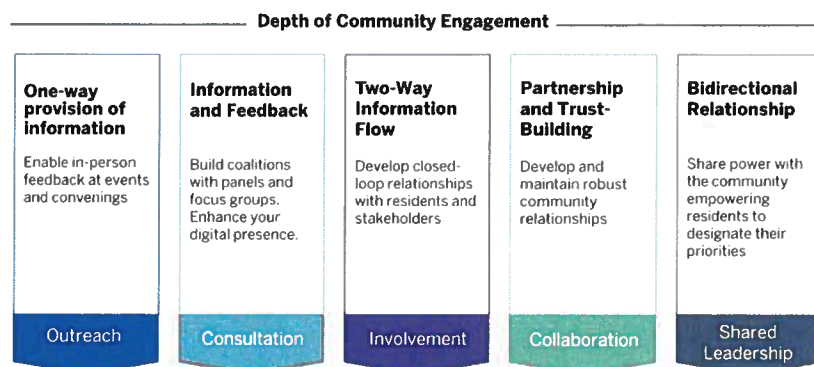
A) Usage:

1. Provide numerous methods for participation during each project/survey/engagement.

Qualtrics provides a variety of methods for participation during each project/survey/engagement including email invitation, in-page popup, offline surveys, social media, QR codes, and polls.

- Email Invitation: The Qualtrics mailer provides an easy and convenient way to distribute evaluations to large groups of people. By using the mailer, City of Biddeford users can send customized email invitations to participants, schedule invites track progress by linking your database, and prevent fraud and abuse of the survey.
- Web Intercepts: Web intercepts or page pop-ups allows users to dynamically target website visitors with the right information at the right time, improving visitor experience and conversion. These web intercepts do not require any IT assistance.
- SMS: Easily capture feedback via text message. This distribution method allows City of Biddeford to engage its audience during an event, after a transaction, and other personalized times.
- Mobile: All features and benefits of the Qualtrics platform are available on smartphones and tablets. This means that participants have access to clean, branded surveys no matter where they are; it also increases response rates.
- Social Media: Social media distribution makes it easy to engage City of Biddeford's target audience on a more personal level. Post and gather more followers on sites such as Facebook, Google+, and Twitter.
- QR Codes: QR codes enable City of Biddeford to capture immediate survey responses. When a participant takes a picture of the code with their smartphone, they will be directed to City of Biddeford's survey. This is a convenient distribution option for magazines, billboards, and other print media.
- GeoFencing: Trigger surveys through SMS or Email based on visitor location.

**Increase community engagement and public trust with
the only platform aligned to inclusive best practices.**



2. Provide Biddeford the ability to create multiple simultaneous engagement initiatives on specific goals, ideas, programs and projects.

Qualtrics' Experience Management platform is designed to leverage multiple surveys across an organization for greater analytic power and strategy-driven decision-making. Multiple surveys can be run and gather data simultaneously, and reports and dashboards can display data from multiple surveys as needed.

3. Provide Biddeford access to content/outcomes/platform on a variety of devices.

Being a fully online hosted solution, Qualtrics content/outcomes/platform are accessible at any time, anywhere, and on any device (computer, tablet, or smartphone).

4. Provide options to re-engage past participants on new government related activities.

The City of Biddeford will have complete control over who receives survey invites, how they receive them, and when. The invites can be based on past survey responses, or be re-sent if no responses are received. The Qualtrics platform will also enable the City of Biddeford the ability to build citizen profiles and segments, control the frequency of feedback prompts and delivery personalized engagement across every channel.

B) Function & Features:

1. Provide survey/feedback functionality with varying configuration of questions for both quantitative and qualitative capture: rank ordering, multiple choice, prioritization, images, check boxes, drop downs, numeric, design by logic, open and closed ended questions.

Qualtrics offers several interactive question types including card sorting, drag-and-drop ranking, draggable sliders, sliding bars, sliding scales, star ratings, heat maps, and hot spot question types. Multiple-choice questions also feature the ability to use images as the choices and to add in "other" text boxes and "N/A" options.

Qualtrics also offers select boxes, multi-select boxes, and drop-down options. Qualtrics can categorize choices into groups for easier selection. We offer more than a dozen varieties of matrix table question types. Users also have access to a full array of matrix table question types, including specific properties that they can set at the question level.

Other properties included going from a Likert to bipolar-scale with a single click. Multiple types of text entry are available, including single line, multi-line, essay, password, and form. Users can set individual properties in each text box when using the form field option. Resizing text boxes is available on the user interface, using simple mouse dragging. Constant sums allow users to choose to show a total to respondents or have it hidden. Users can also use images as the responses to be ranked. Qualtrics features a pick, group, and rank question type that allows responses to be categorized, and then ranked within categories. Drill down question allows the use of a .csv file to upload fields corresponding to each level.

Questions available in side-by-side include open end, single, multi, dropdown, and scale. MaxDiff matrix tables are available out of the box with Qualtrics. Qualtrics has out of the box heat map and hot spot questions, allowing for both random pinpointing on images, and for designating specific regions within an image. Stars are also available, out of the box. Qualtrics features an out of the box gap analysis question type.

Survey designers can use audio/video elements in the body of a survey. Qualtrics features an out of the box

Captcha and a file upload question type. When a survey is accessed via a mobile device, the onboard mobile camera can also be used to upload photos/videos. Beyond rich text editing, the look and feel of any survey can also be controlled with HTML and CSS. Various media can be used in the Qualtrics survey, being stored either locally, within the organizational library, or directly accessed from the web.

Branching and Other Features

Qualtrics is designed to allow our clients to conduct sophisticated research, simply. Our easy to use interface enables clients to leverage 100+ question types, embedded data, branching, display logic, quotas, email tasks, mobile and offline compatibility, randomization, and all the advanced features you'll ever need to capture the insights you need to move the needle. Some more common methods of customization of complex surveys include:

- Skip Logic allows you to send respondents to a future point in the survey based on how they answer a question. For instance, if a respondent indicates that they don't agree to your survey's consent form, they could immediately be skipped to the end of the survey.
- You can use Display Logic to create a survey that is customized to each respondent. When a specific question or answer choice pertains only to certain respondents, you can set Display Logic on it so that it shows conditionally, based on previous information. Through Display Logic, you can create surveys that dynamically adapt to your respondents' answers.
- Branches are useful when you want to send respondents down different paths in the survey. You can use Branch Logic to branch respondents to different Survey Flow elements based on variables like question responses or Embedded Data. It's a bit like a choose your own adventure novel. Depending on how your respondents answer certain questions, they will take different routes through your survey.
- Carry Forward allows you to copy specific answer choices from one question and bring them into a future question in your survey. For instance, you can first show your respondents a question that asks which products they have bought from your company in the last six months. You can then carry forward the choices they selected into the next question and ask the respondents to rank their preference from those previously selected choices only.

Embedded Data is any extra information you would like recorded in addition to the question responses. Once Embedded Data has been added to your survey, it can be used in a number of ways; including Piped Text, Branch Logic, Display Logic, Quotas, Email tasks, XM Directory tasks, Salesforce Integration, Data & Analysis, and Reports.

2. Allow for questions to be demographic-focused.

Qualtrics allows for the use any associated demographic information to create questions, reports and filters or drill down by hierarchy based on those demographic data. The City of Biddeford can use multiple demographic cuts in a single survey or report. Administrators can control what level of group-level variables that can be included to create reports. Survey invitation and reminder emails can also be sent by demographic groups.

Common variables that are used (but certainly not limited to) include location, region, country, department, function, job title, tenure, full time/part time, language, city, office, etc.

3. Provide options for offering visual/graphical depictions of projects, plans, policies, programs.

Visualizations are interfaces you can use to view your data through graphs or tables. Qualtrics uses ten main types of visualizations for reports and dashboards:

- Bar Chart
- Line Chart
- Pie Chart
- Gauge Chart
- Simple Table
- Statistics Table
- Paginated Table
- Breakdown Bar
- Word Cloud
- Heat Map

Data Sources

A data source is the specific response information you want your visualization to display, whether it be the dates responses that have been recorded or the answers from a survey question. There are three main types of data sources you can represent in a visualization: survey metadata, question answers, and Embedded Data. Depending on the particular type of information you select, you'll have different visualizations available to use. You can add up to 50.

4. Provide ability to upload documents, pictures, videos, images.

In addition to conventional survey question types, Qualtrics supports the following specialty multimedia feedback capabilities:

- Image submission (tap-to-capture or file upload)
- File upload capabilities (users can drag and drop a file into the survey on their desktop browser, or locate a file when on their mobile device)
- Video submission (tap-to-record or file upload) – possible via third-party integration, but not included herein
- Audio submission (tap-to-record or file upload) -- possible via third-party integration, but not included herein

In an omni-channel analysis, we can combine all these feedback sources in a single dashboard view to understand the top opportunities that will improve constituents' experience.

5. A tool to moderate language to encourage mindful feedback.

There is an auto-moderation tool available to flag for offensive language, hate speech and trolling.

6. Mapping features that offer participants options for identifying geographic specific locations.

Qualtrics allows for surveys to be triggered based on a number of variables, including geo-location. While not mapping, specifically, the respondent's location would be stored. Additionally, QR codes and kiosks can be placed in geo-specific areas for geo-specific feedback.

Qualtrics does, as an added feature, have the ability to integrate with ArcGIS software for mapping. Further scoping is required.

7. Offers options for participants to add comments directly to a posted document or picture or map. Through the inclusion of a QR code to any posted document, picture or map, participants can register comments directly about each.

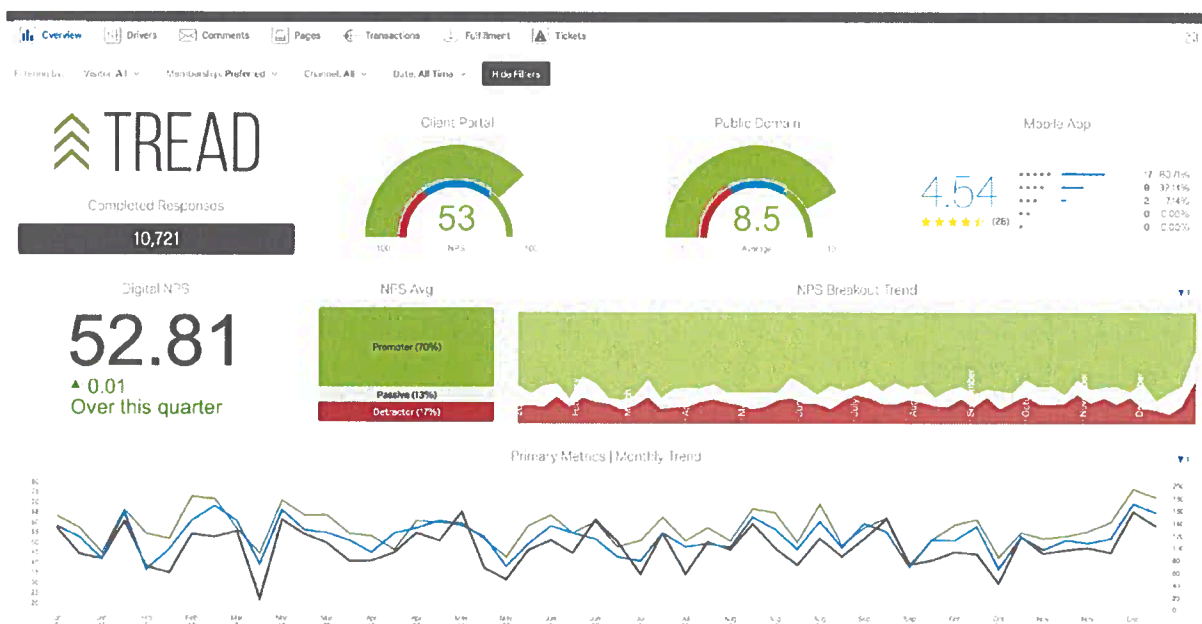
8. Mapping geographic locations in scope of Biddeford projects and plans to gather specific input about these areas.

Our Piped text function allows you to customize question-and-answer choice wording for each respondent, allowing each of them to have a customized, dynamic, and personal survey experience. Piped text is a line of code added to a survey that pulls information from different sources and displays that information to the respondent (or can be used in Display Logic, Embedded Data, and other areas. Embedded Data is any extra information you would like recorded in addition to the question responses. It can be used to store information such as the social media site a respondent has come from, the condition a respondent was assigned to in a research study, and previously gathered information, such as their location/address, from a contact list so that data will be available for analysis.

Additionally, branch and skip logic allow you to customize your respondents' experience based on captured metadata and how they answer different questions. Branches are useful for sending participants down different paths in the survey. Skip logic allows you to send respondents to a future point in the survey or straight to the end of the survey based on specific conditions, for instance, if the survey taker's address/location/neighborhood was not relevant to the project or plan specified.

9. Timeline feature to track project progress.

Many visualizations in the Qualtrics platform are available to allow for time-over-time trending to see how the City of Biddeford's plans/projects and the behavior of customer segments have changed with new initiatives implemented. Below is an example dashboard from one of our clients.



C) Data and Analysis:**1. Offers a variety of data collection/reporting methods for both quantitative and qualitative analysis.**

Qualtrics has the ability to aggregate both quantitative and qualitative feedback for analysis. Dashboards allow for visualizing data trends and include statistical significance indicators on changes that occur over time. Qualtrics' TextIQ platform uses machine learning to analyze qualitative feedback, creating new quantitative variables for topic and sentiment, to trend changes in qualitative feedback over time.

Qualtrics empowers governments to bring together both solicited and unsolicited data into one place, both feeding from real-time collection and/or scheduled data pulls.

While our CX platform can enable you to capture information from all channels (especially from difficult-to-reach populations), our dashboarding and analysis tools (iQ tools) can empower you to find meaning in collected data. Our statistical packages automatically detect the type of analysis being done and recommend specific methods that should be applied.

Once this analysis is done, our platform summarizes the key findings in easy to understand language with no statistician needed. This empowers you to then report your program outcomes in public, interactive dashboards without a need to translate or transfer data into another platform.

2. Tagging or AI functions to assist qualitative analysis.

Qualtrics topic analysis allows for automatic tagging and categorization of responses, making it easy to understand the themes (or topics) that citizens are talking about, without any manual coding.

As part of Qualtrics' text analytics capabilities, both a frequency and probabilistic model are run against open-ended responses to identify not only the most commonly used terms, but also terms that are used in a similar manner (e.g., "services", "complaint", and "escalate"). Responses are then flagged with these topics. Topics can then be used as filters, not only when viewing the opened-ended text responses but when viewing any data within the dashboard, allowing for rich exploration of all qualitative and quantitative data by topic.

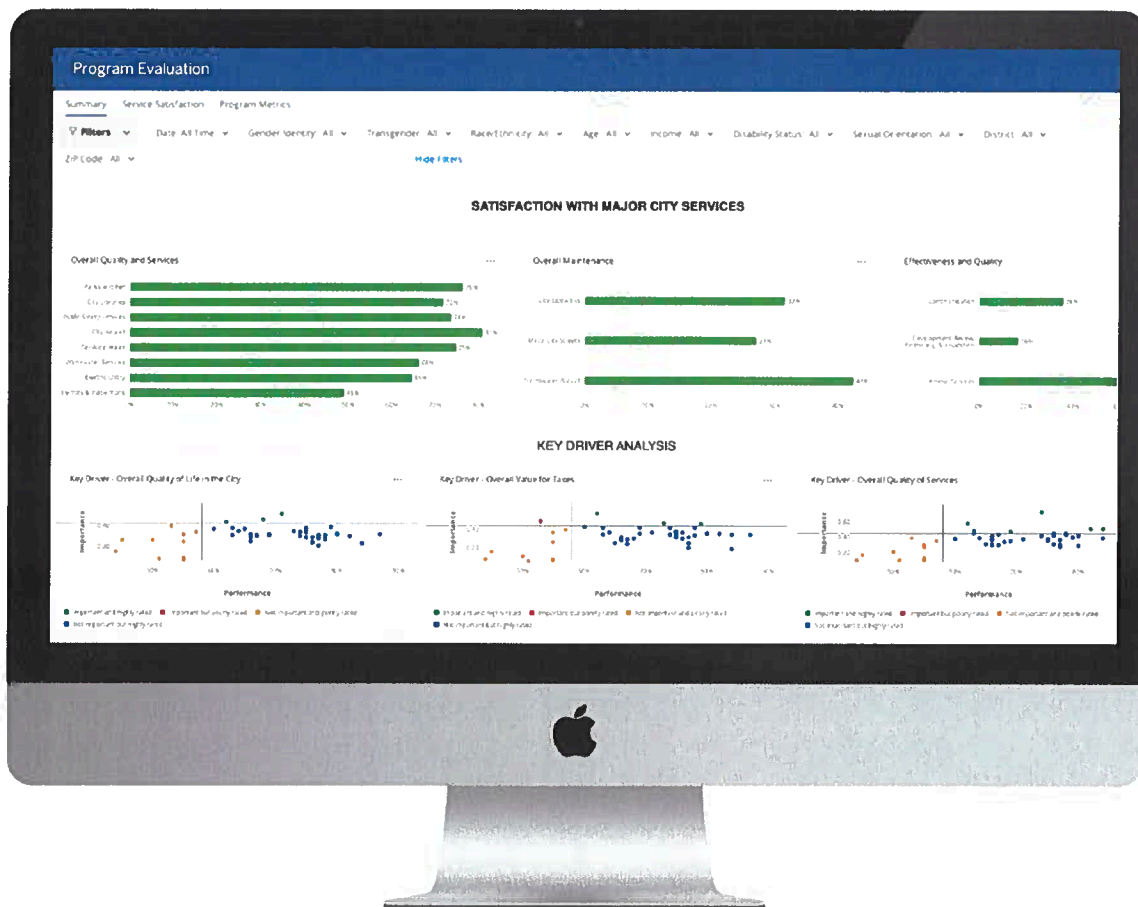
Qualtrics uses a VADER (Valence Aware Dictionary and Sentiment Reasoner) lexical approach with over 7,500 words, which distinguishes:

- Lexicon - "Great", "Terrible", "OK"
- Intensifiers - "Extremely good", "Marginally good"
- Negation - "Not good", "Isn't really all that great"
- Exclamation - "TERRIBLE!" "It's totally AMAZING!"
- But - "It's great, but..."

The sentiment score (a label of positive, negative, neutral, or mixed) is based on a lexical analysis of each comment, using a database of sentiment-laden words and rules to handle intensifiers, negations, and common idioms within the English language. A mixed label is applied when there are significant amounts of both positive and negative sentiment within the comment, while a neutral label is applied when there is a lack of sentiment within the comment.

3. Provides visual representation of quantitative data fields.

See below for an example of the Qualtrics reporting dashboard's visual representation of quantitative data:



4. Ability to import/export data into other formats (e.g. CSV, Excel) to visualize and interpret resident feedback.

The City of Biddeford can download survey results directly from the Qualtrics database into the following formats:

- **PDF & MS Word**
- **Excel**, available for data table exports only
- **CSV** (Comma Separated Values)
- **TSV** (Tab Separated Values), available for data table exports only
- **XML** (Extensible Markup Language)
- **SPSS** (Statistical Analysis Package)
- **HTML** (Hypertext Markup Language), available for legacy exports only
- **Fixed Field Text** (Plain Text), available for legacy exports only
- **Tableau**, available only if you have the Tableau Integration turned on for your account
- **JSON** (Javascript Object Notation) and Open Data Protocol, available only with the API Integration

D) Access and Language Translation:

1. Offers an online, web-based tool that is accessible across a variety of platforms (computers, tablets, and smartphones); and compatible with a variety of browsers (Edge, Firefox, Safari, Chrome).

Qualtrics is a cloud-based platform that can be used on any internet-connected device such as computers, tablets and smartphones and from any internet browser including Edge, Firefox, Safari and Chrome.

2. Content can be easily translated in multiple languages to better ensure segments of the community are not excluded.

The Qualtrics platform supports multiple languages for surveys. We have designed the platform to automatically recognize and load the survey language that corresponds to the default browser language of the survey taker, so long as that language has been selected for translation by the survey creator/administrator. There is also a language selector for the respondent if for any reason the displayed language needs to be adjusted. Our functionality supports more than 70 languages including French, Spanish, Arabic, Chinese, Korean, and more.

By default, the dashboards are provided in English with translation to other languages available. Qualtrics can scope dashboard translations for the City of Biddeford once we have a more detailed understanding of your content, metrics, and other reporting requirements.

In addition to surveys and dashboards, our platform also supports translated email messages (survey invitation, survey reminders, and dashboard invitations).

3. Compliant with requirements outlined in Americans with Disabilities Act (ADA) and Section 508 of the Rehabilitation Act.

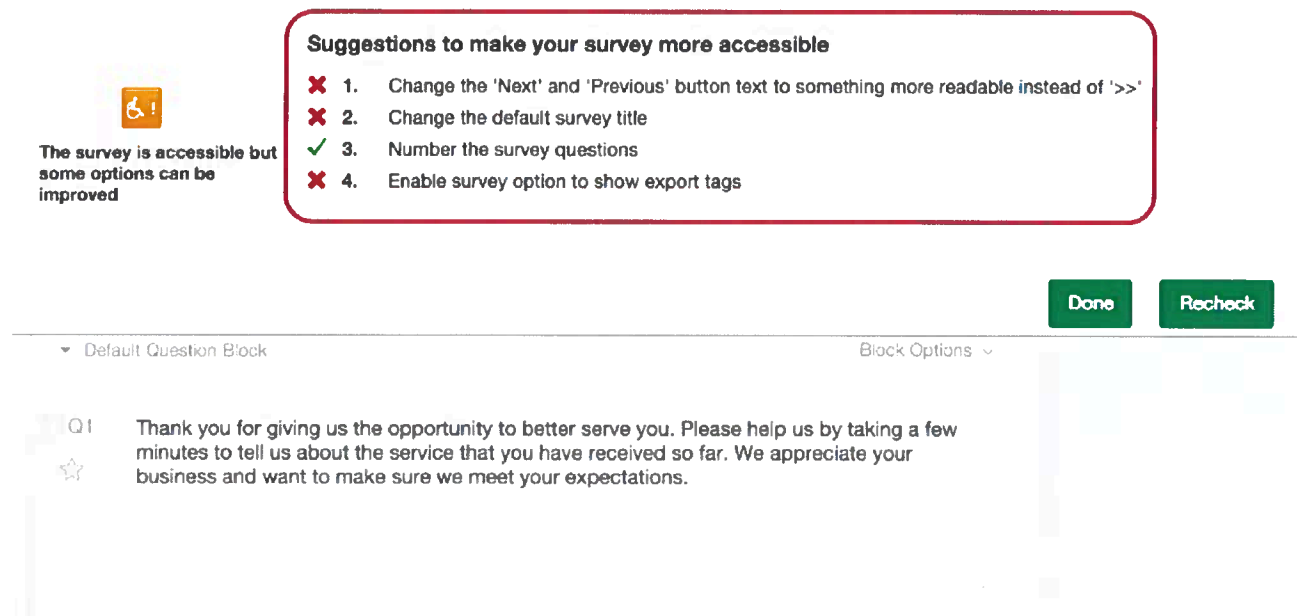
Qualtrics is committed to providing on-demand enterprise applications accessible to all individuals, including users working with assistive devices, such as speech recognition software and screen readers.

To help meet our goal of universal design, we follow the internationally recognized best practices in Section 508 of the Rehabilitation Act and the Web Content Accessibility Guidelines (WCAG) 2.0 Level AA to the extent possible.

To ensure compliance, Qualtrics has developed an accessibility checker in-platform to help the survey builder know where to make changes, if necessary.

When you have respondents who use third-party screen readers (like JAWS) and you need to meet accessibility standards, it's important to make sure your survey is as accessible as possible. Our **Check survey accessibility** feature diagnoses your survey, indicates which questions are inaccessible, and gives other recommendations for increased accessibility to help you work towards WCAG 2.0 AA (and Section 508) compliant surveys.

See the example below:



The screenshot shows the Qualtrics survey editor interface. On the left, there is a status message: "The survey is accessible but some options can be improved" next to an accessibility icon. A red-bordered box titled "Suggestions to make your survey more accessible" contains a list of four items:

- ✗ 1. Change the 'Next' and 'Previous' button text to something more readable instead of '>>'
- ✗ 2. Change the default survey title
- ✓ 3. Number the survey questions
- ✗ 4. Enable survey option to show export tags

At the bottom right of this box are "Done" and "Recheck" buttons. Below the suggestions box, the survey editor shows a "Default Question Block" with a question titled "Thank you for giving us the opportunity to better serve you. Please help us by taking a few minutes to tell us about the service that you have received so far. We appreciate your business and want to make sure we meet your expectations." The question is marked with a star icon.

4. Provides options for required and/or anonymous registration/sign-up.

Qualtrics provides the survey owners with the ability to assign survey questions with data entry requirements. For instance, if a required field is left blank, the survey will not progress further until the required field is populated by the survey taker.

Conversely, Qualtrics provides the survey owners with the ability to send an anonymous link to a survey by which no personal information is collected. The platform also offers the option of anonymizing responses collected through other channels, effectively disabling the collection of personal information.

5. Can be used via desktop/laptop computer, tablet, mobile phone, kiosk to broaden audience.

The Qualtrics platform will give the City of Biddeford the ability to create surveys compatible with a variety of devices, including smartphones, tablets, laptops, kiosks, and more. The City of Biddeford can also tailor the survey based on the device type. In addition, the survey administrator can modify survey length and question type based on device type. For example, if a respondent opens the survey on a smartphone, the survey could include fewer questions than if a respondent opens the survey on a laptop. Additionally, Qualtrics offers a mobile application that allows for surveys to be completed offline and their responses synced with the Qualtrics platform once a reliable connection is available. The platform also captures device type and information with each survey response.

All major web browsers are supported, including Apple Safari, Google Chrome, Microsoft Edge/Internet Explorer, and Mozilla Firefox.

6. Offers social media links built into the interface to promote easy sharing amongst friends and family.

Out of the box, Qualtrics has the ability to provide distribution channels on social media using our social media distribution module. This module makes it easy to post your survey to social media websites and allows survey takers the ability to share the survey as well.

Qualtrics currently supports the following sites:

- Twitter
- Facebook
- Reddit
- LinkedIn
- Google+
- Pinterest

7. Provides options for turning on or off registration requirements.

Yes, as stated in the answer to Question 4 above, Qualtrics provides the survey owners with the ability to assign survey questions with data entry/registration requirements and also provides the survey owners with the ability to send an anonymous link to a survey by which no personal information is collected or registration is required. The platform also offers the option of anonymizing responses collected through other channels, effectively disabling the collection of personal information.

Customer Service and Support:

Training:

A) The selected vendor must onboard, set-up and provide training to staff and must include an electronic or paper operation manual, discussion of technical support, and user guides.

Qualtrics offers an extensive digital support environment with support pages, walk-throughs, and even a section containing recorded webinars. We also have an active community where users can collaborate on tough problems, answer each other's questions, network, and share best practices.

<https://www.qualtrics.com/support/>

<https://www.qualtrics.com/community/>

Training Overview

Qualtrics offers robust training services throughout the lifecycle of the license. Upon selection, City of Biddeford will be assigned an Implementation Consultant. Live trainings will take place to successfully train users on Qualtrics functionality for creating, distributing, and analyzing actionable data. The implementation occurs in a phased approach, and each phase will include training opportunity as City of Biddeford users work with the Qualtrics account team to build survey questions, dashboards, etc.

Pre-Launch Training

Prior to organizing live training sessions, Qualtrics asks that all participants watch pre-recorded training webinars which cover the following topics:

Getting Started

Basic Building and Distributing

Advanced Survey Building

Responses and Results

The Qualtrics Customer Success Consultant and Implementation Consultant will work with City of Biddeford to co-create a training plan relevant to the program that City of Biddeford will establish.

"Train the Trainer" Model

Qualtrics will provide training based on a "Train the Trainer" model. Under this model, Qualtrics would provide high-quality training directly to the lead administrators and trainers at City of Biddeford. These leaders would then provide training for additional City of Biddeford personnel and external clients. The training program content will be determined by Qualtrics and City of Biddeford upon selection as the final vendor, as it will be dependent on the unique needs of the City of Biddeford organization.

On-Demand Training

In addition to live trainings, users will have access to Qualtrics University. This site is designed to give best practices, step-by-step tutorials, recorded web trainings, and free webinars. The Qualtrics University site is available on-demand 24/7/365. Qualtrics University is available to all users at no additional cost.

Additional live training sessions can be arranged for an additional fee.

Post Implementation Training

The Qualtrics platform is extremely user-friendly, and users quickly become competent and confident using the many features and functionality the system offers. To fast track this process and ensure the system is optimized for usage soon after launch, online post-implementation training will take place.

Qualtrics trainers who have specific experience in dealing with Customer Experience programs will deliver the training. The training will be adjusted around the needs of each client so that the time is spent wisely.

The goals of the training are to:

Offer practical advice on how to apply Qualtrics best around the needs of each business unit

Answer all questions which arise after the new users have had time to explore the system

Identify additional training and learning opportunities for the future and highlight what City of Biddeford needs to be focusing on next.

Inform a training roadmap

Best Practice Sharing

Qualtrics are at the leading edge of Customer Experience design and development and can make available to City of Biddeford a host of resources and knowledge around best practice. Not only is Qualtrics exposed to the latest thinking and techniques while working with our clients around the world, but also we invest heavily in best practice research and thought leadership. This best practice knowledge extends beyond Customer Experience and includes advanced research/survey techniques and employee engagement.

Technical Assistance:

A) Assistance between 9:00 a.m. to 5:00 p.m. Eastern Standard Time (EST) Monday – Friday

All users can reach our support team 24/7, through phone, chat, or email. We keep logs to give context for any recurring issues and ensure immediate help. We provide support in English and 8 other languages, including French, German, Spanish, and Portuguese.

Chat, email, and phone support can be accessed through the Support Site by clicking **Contact Us**. All support is authenticated so only legitimate users receive assistance. This ensures data security for your municipality.

Our support team has divisions located in our Provo, Dublin, and Sydney offices, meaning clients can call in and get a trained technical specialist on the phone to immediately troubleshoot issues or learn aspects of the tool, at any time of the day or night. Most support requests made over the phone are resolved within the first call.

B) Direct support and assistance with registration, access issues, or functionality issues.

Our 24/7 live support is one of our key differentiators as a company, and clients often comment on how this is one of the most valuable aspects of the Qualtrics relationship. All users have access to live support from our world-class support team, at no additional cost, to assist with registration, access or functionality issues. Our customer satisfaction has always excelled, generally averaging 97% satisfaction.

Qualtrics does offer, as an optional add on, a dedicated Technical Account Manager (TAM) as a resource to assist with any product issues, new configurations, advisory on program design and product changes. A TAM is available in options for as few as 5 hours to as much as 30 hours per week.

Additional Value Add:**Focus:****A) Vendor should be a municipal government-focused entity, providing guidance and feedback that is specific for local government needs.**

Qualtrics offers an experience management platform to 800+ State of & Local Government entities and has an XM solution tailored for Government entities called "Community Pulse". Qualtrics also has a team of experts to provide guidance and to help clients design and improve experiences that build community engagement, trust and satisfaction.

Qualtrics helps governments reach relevant goals and increase trust by enabling you to do the following:

Gather representative and valid direct, indirect, and frontline feedback from residents by making it easy for them to tell city leaders about their experience with city services;

Get real-time insights with dashboards, machine learning, text analytics, predictive modeling, and statistics to provide insights into employee and customer pain points; and

Use feedback from city residents to prioritize focus areas, make budgeting decisions, and reward departments providing excellent service, effectively **improving trust by taking action**.

Improving trust impacts all levels of government such as:

- Voting Participation
- Community Engagement
- Safety
- Education Outcomes
- Economic Growth

B) Vendor should be able to provide guidelines, best practices and benchmarks for other local cities as part of its customer service.

Qualtrics can provide guidelines and best practice information to current clients through white papers and case studies from our internal library of use cases from municipal clients or through the XM Institute that is a proprietary hub comprised of the XM Library of research and strategic tools, a blog, on-demand training courses and an exclusive experience management certification course.

C) Platform should demonstrate capacity to integrate with existing Civic Plus brand website.

Qualtrics does have the ability to integrate with an existing Civic Plus brand website through the use of code snippets. Code snippets display Qualtrics web feedback surveys into your website.

The project code can be placed on any page where you may want to display a Website Feedback Project to track or collect information. For the easiest implementation, we recommend placing the code in a global header or footer, so it loads on all pages of the website. This is the most flexible and useful implementation because it allows you to run Intercepts on any page of your site.

Another option for implementing Website Feedback projects on your site is to add it to a Tag Management system instead of applying it directly to the site code. Code can be copied and pasted from the Qualtrics interface right into a Tag Manager.

After Project Deployment Code has been placed on your website, you can continue to edit and create as many additional components as you want. You also have control when these components go live. Any time you update a survey and would like to go live on your site, click Publish on the desired Intercept. An Intercept is the graphic, survey and targeting criteria to display the graphic/survey.

1. Cover Letter and Company Overview

We would like to commend you for your work on community engagement and to offer you a state-of-the-art online public engagement tool to ensure the continuation of this work in the future. We are thrilled about the potential opportunity to assist in your vision of creating a new outlet for which the inhabitants of the city of Biddeford can engage in dialogue.

Mapita Oy (est. 2011) is a Finnish company that emerged from the Land Use Planning and Urban Studies Group at Aalto University, which conducts research into online geographic questionnaires and citizen engagement. Today, the world-leading SaaS service that we provide is widely used for community engagement in urban and transportation planning and research. Mapita North America, Inc. was established in 2018, to better serve our growing customer base in USA and Canada.

We specialize in community engagement and creating map-based questionnaires and other engagement tools that bring together resident insight and planning expertise. Our proprietary Maptionnaire® software is an essential ingredient of modern community development: it makes it easy to gather and analyze local knowledge. We are passionate about helping people to shape and co-create their living environments.

The founders and staff of Mapita are experts in the fields of urban planning, public participation, and IT. Our founders' academic background provides deep understanding of the community engagement sphere and is supplemented with unique experience of commercializing research results on digital public participation within the information technology and services industry in the past 10 years. Our experience and training in research drive us and our tools to utilize and visualize data in meaningful ways.

Cities and consultancies around the globe trust Maptionnaire's map-based surveys and other online public engagement solutions to engage thousands of people in creating input that can be turned into planning insights. Maptionnaire's highly visual and easy-to-use interface increases transparency and trust for all parties involved in the process, resulting in better plans and environments. We will gladly demonstrate Maptionnaire via online conference should we be short-listed. Cities like Stockholm, Helsinki, Denver, Copenhagen, San Francisco and London have used Maptionnaire in their public engagement projects.



2. Description of Tools: Online Stakeholder Engagement Tools

The Maptionnaire Community Engagement Platform is one of the leading online public engagement solutions on the market. Our customers attest that Maptionnaire has enhanced participation in cities by making it easier for people to participate, and for planners to facilitate the engagement. Maptionnaire's highly visual and easy-to-use surveys and discussion pages increase transparency and trust, which in turn results in better urban planning.

Maptionnaire offers a wide variety of tools, all included on the same platform

Maptionnaire Community Engagement Platform is a modular online platform (SaaS) with map-based engagement at its core (See Picture 1), offering a variety of tools for your online stakeholder engagement. Maptionnaire enables the creation of community engagement activities, systematic and comprehensive data collection, analysis and reporting of data and activities. It is a flexible tool for variable planning projects and phases, allowing both collection of public input, and informing and educating the public through clever use of maps, interactive overlays, and other visual or textual material, such as tables, charts and lists. It is possible to build the questionnaire on a map or on a normal background picture and alter both within one questionnaire.

Maptionnaire offers a complete engagement process under one platform. Apart from our Core module, the product includes the following modules: Gamified Decision Making, Webpage Builder, Automated PDF Creator and Real-time feedback map.



Picture 1. Maptionnaire – Community Engagement Platform modules

1. Core – Design, Collect and Analyze

The main module (CORE) includes map-based questionnaires (or interactive mapping), polls, voting tools, surveys, picture-based surveys, and more conventional survey elements, as well as analysis tools and data management functionalities. It is designed for:

- Extensive reach – collect representative survey data that is based on a map or a picture
- Improve interaction – use for collecting location-based feedback during events
- Easy – citizens can respond when it suits them best
- Enriched answers – overlay your own maps for more in-depth understanding of respondent needs
- Quick & visual analysis – interpret questionnaire results with easy-to-use built-in analysis tool
- Minimize translation errors – view original text and translated text side-by-side

Try out the demo questionnaire: <http://mpt.link/demo-questionnaire>

Try out the voting tool: <http://mpt.link/demo-poll>

2. Gamified Decision Making

Allow people to decide together (e.g. participatory budgeting) how to spend the resources. You can ask people to allocate the resources also on a map. Gamified Decision making is designed for:

- Engage citizens – let people decide together how to spend allocated resources (e.g. budget, CO2 emissions, other resources)
- Customer centricity – trust that your budgets reflect actual citizens' opinions
- Co-creation – allow your citizens to really engage with all the options and trade-offs in planning decisions

Try out the Gamified Decision Making demo: <http://mpt.link/demo-budgeting>

3. Webpage Builder

Create and publish your materials and engagement activities on a project website. Draw timelines and allow discussion forums. Enable social sharing. Webpage Builder is designed for:

- Communicate your up-to-date plans & projects conveniently on a website
- Click and drag – design and manage website content on your own
- More feedback and discussions – the website creates an organic setting for engaging citizens to give feedback or discuss particular themes.
- Integration – bring marketing & city planning departments closer to each other

Try out demo website: <http://mpt.link/demo-website>

4. Automated PDF Creator

The Automated PDF Creator enables the respondents to download their responses on a uniquely designed PDF and to deliver the PDF to the selected person (email). The use cases are multiple for this functionality. In effect the goal is to:

- Save time – focus registry time on more important tasks with an automated documentation process
- Standardization – make e.g. plan statutory commenting easier to understand & handle by having it in the same format & layout
- Customize – modify the template & process based on your organizations' needs
- Increase transparency – make documentation process transparent for citizens and give them a copy of their answers

5. Real-time Feedback Map

Get ongoing feedback linked to locations and integrate the data into your maintenance system. Real-time Feedback Map is designed for:

- Easy & fast – citizens can provide feedback on the spot, without the need to queue
- Real-time – collect real-time feedback and deliver it to service providers automatically
- Save resources – free time for more important tasks when less people need to be handling calls

The editor interface of Maptionnaire is intuitive and enables various organisations to design and implement engagement projects in-house. The editor enables the user to design and manage their engagement activities, be it traditional surveys, interactive map-based questionnaires, or themed webpages with discussion forums. Maptionnaire is a SaaS service specifically designed to give access for various users to create, host and maintain their engagement activities on a joint platform. Maptionnaire enables user to design and host the questionnaires in their own Maptionnaire workspace. User can use the workspace to fit their own purposes and needs.

The Maptionnaire survey editor includes a broad range of question types: Map point, Map line, Map area, Choose one, Choose multiple, Single checkbox, Polls, Budgeting, Geo-budgeting, Multiple choice grid, Open question, File upload, Slider, Range and Number question. The editor enables you to collect, manage and archive quantitative and qualitative data through various question types as map-based data.

The website editor allows opening up forums where people can discuss and leave their comments on a clear and concise project page, including materials such as project timelines, videos, pictures and other planning material.

The questionnaire owner can decide to show the map responses of the other respondents and optionally also allow commenting on these responses. The comments visible to the public can be moderated within the editor, or by allowing the respondents to report uncivil comments, which can then be removed by the questionnaire owner.

Visual look and feel and other integrations

The visual look and feel are easy to adjust in Maptionnaire to fit to the user's visual appearance. You can bring in the logos and other picture-based material your organisation uses. In addition, in the Maptionnaire editor's style settings you can design the visual appearance of your questionnaire and other tools. Here you can choose a layout for your questionnaire, set a color or image background for your questionnaire, choose whether to show progress bar, page number and page titles. You can also write and test your thank you message, which will be shown to respondents when they have completed the questionnaire.

Maptionnaire hosts different kinds of relevant planning content and allows linking to outside sources, such as user organization's website. Links to questionnaires produced with Maptionnaire can be shared on the external webpages. Embedding the questionnaires with the use of iFrame is also possible, while the responsiveness of the framing site should be taken into account. Each Maptionnaire questionnaire is identified by a unique URL, which can be shared on social media platforms, such as Instagram, Twitter or Facebook, both by the questionnaire creator or by an individual who has answered the survey.

Usability across different respondent groups, multilingual engagement

Maptionnaire is easy to use, and its usability has been tested across different user groups, including children and elderly people. We always aim for ease of use and clarity, and Maptionnaire makes every effort to ensure that the tool is easy to use and available on both mobile and desktop devices.

We have also developed the tool in a way that allows adding plenty of visual cues to the surveys to help people with limited language skills to participate.

The respondent / public interface to the service is always responsive, allowing a seamless usability on different devices (computers, tablets, phones, touchscreens etc.). We always make sure that the respondent interface works on two most recent versions of any browser.

By default, the stakeholders (respondents) can answer a Maptionnaire survey without registering or logging in. Maptionnaire consists of an interface for survey respondents through which they can register accounts and review, manage and track their input to surveys. To be able to comment and discuss on forums (the project websites), a registration is needed. If needed, the user can require all respondents to create a free Maptionnaire user account and log in to answer the survey. The user may require account creation on a per-survey basis.

Every questionnaire and a project website have a default language and can be translated to additional languages by the customer. Customer can also use the translation tool which allows another person to create the translations within the tool without gaining access to any other part of the Maptionnaire editor. Maptionnaire's respondent interface is available in 27 languages, including English and Spanish.

Reporting on data and exporting data

Maptionnaire includes a graphic analysis dashboard where the collected map-based and other data can be easily analyzed and visualized. Analysis dashboard allows users to query, analyse, and visualize the map-based data, and also provides ready-made graphs drawn from the data. Apart from using the built-in analysis tool, it is also possible to export the complete answer data as a Microsoft Excel file. The data downloaded from Maptionnaire can be easily used in other GIS and statistical analysis software.

Maptionnaire allows gathering spatial data (points, lines and polygons and additional non-spatial data related to these) and non-spatial data that is linked to each respondent (e.g. traditional online survey data). As the use of maps and geographic information forms the heart of Maptionnaire, the map-based data and information related to geographic locations can be easily stored, managed, analyzed and exported from Maptionnaire to other software.

Additionally, Maptionnaire collects metadata of the participation, such as the length of the response time, the width of the device used to respond. All of this data is in an easily readable and analyzable form.

The customer owns the data that is collected with Maptionnaire, while it is stored in a secure Amazon cloud. We never sell our customer's data or their response data to third parties. The stakeholder (respondent) information will be retained for the duration of the valid contract period and 90 days thereafter removed from our database. However, the length of the information retainment period can be modified according to the users' requirements and needs.

Onboarding, support, and trainings

Our passion is improving community engagement across sectors and disciplines. Along the Maptionnaire SaaS, we offer consulting services and training to help you with creating outstanding map-based surveys that make the engagement feasible for both the user organisation and its users like residents. For each new subscribing customer, we offer an online training session (onboarding), during which a member of our team will help your staff to get started using Maptionnaire. We also provide comprehensive support and training materials that staff can return to whenever they wish and provide in-person support through our support channel.

Maptionnaire's support is available through several different channels. We appreciate all kind of feedback and development ideas and offer technical support via an electronic manual, as well as a contact box on Maptionnaire web pages and in the e-manual (in Zendesk). Our team is also available (across multiple time-zones) through direct e-mail and phone.

In Maptionnaire's general terms, we promise to contact customers who have sent a support request within 48 hours. In reality, the last 30-day report from our case management system shows that we have replied to 56 % of questions within the first hour, and that the median time for solving any question has been 1.9 hours.

Most of the residents' questions are about the content of the project and engagement effort, and therefore the first contact to respondents is the organization's project manager. If the

customer cannot answer the question or if it concerns Maptionnaire's technical functions, the request can be sent to Mapita, and then it is traded as a regular question from a customer.

The Maptionnaire manual is available at the address: <https://support.maptionnaire.com>

Questions to the Maptionnaire teams can be emailed to support@maptionnaire.com or sent through Zendesk : <https://maptionnaire.zendesk.com/hc/en-us/requests/new>.

Maptionnaire use cases

There have been more than 10 000 projects done with Maptionnaire during the last 9 years. Cities and institutions from all over the world like the cities of San Francisco, London, Stockholm, Denver, and Helsinki, the New Zealand Transportation Agency, Sydney Institute of Marine Science, University of Copenhagen, and more, are using Maptionnaire for their work. Our customers are onboarded soon after the agreement has been signed, and then the tool can be deployed rapidly in the community. We are adding new language versions of the citizen facing service as needed to allow accessing diverse communities.

Maptionnaire has been used for General Plan Updates in many cities. Ideally, the tool could be used in funnelling the themes and level-of detail in the engagement down, as the process proceed. Helsinki has used Maptionnaire in its Master Plan update between years 2013 and 2018 in this way. Also the City of Denver began their planning effort by launching a kick-off survey on Maptionnaire to ask residents about their neighborhood. They were asked about what they love in their neighborhood, what concerns they have, and what ideas they have for improvement. Respondents were able to indicate their likes, concerns, and ideas by dropping pins on the map. Later in the project, Denver conducted surveys on preliminary recommendations for the neighborhood and again received feedback on a final draft of the plan by using Maptionnaire.

Maptionnaire has been used to capture the social aspects of sustainability in projects aimed at building more sustainable and climate change resilient cities and regions. The themes questioned have been related to energy transitions, mobility choices and especially walkability, as well as on a more strategic level to the acceptability of different alternative scenarios to adaptation and mitigation.

Apart from being used as an online tool to be used individually by the citizens, Maptionnaire can also support the discussions and collaboration happening in online meetings. We see the integrations with meeting software from a process perspective. The contents of the broader community engagement efforts could be collaboratively planned in an online meeting with stakeholders, while later on in the process, the data collected from a broad range of citizens could be jointly viewed and queried in a smaller online meeting setting. Depending on the way the organisation decides to use Maptionnaire, it can be used as a tool to inform, consult and involve the citizens and other stakeholders, and can also support collaboration.

Read more on this here:

<https://maptionnaire.com/blog-list/how-to-use-maptionnaire-in-community-engagement-workshops>)

3. Biddeford package

Maptionnaire proposed Hillsboro subscription fees is based on the Advanced product level:

	Maptionnaire Product Levels		
	ADVANCED Design, Collect & Analyze (including e.g. polls/surveys & interactive mapping)	ADVANCED Gamified decision making Website builder (including e.g. forums/written feedback & budget balancing and prioritization)	
Package size (questionnaire projects per year)		Price / Annual	
Unlimited		\$20,000 USD	
Onboarding	Onboarding included, approximately 2 hours		
Support	Online/email support and online support materials included		
Teams	Maptionnaire group and user access management service included		

Price for annual Biddeford licence (12 months) increases by 5% each year.

Should Biddford require additional consulting this can be provided on an hourly basis through our partnership with MIG, Inc. The hourly rate is a maximum of \$200/ hour. Consultations can include with our in-house experts co-designing map based surveys, aiding in the conversion of your datasets into result reports and data visualisation ready and usable for effective in-depth analysis.

4. Standard Licensing Agreement

MAPTIONNAIRE - Community Engagement Platform is a modular online platform with map-based engagement at its core. Maptionnaire enables the creation of community engagement activities, systematic and comprehensive data collection, analysis and reporting of data and activities. The main module includes map-based questionnaires, polls, voting tools, surveys, picture-based surveys, and more conventional survey elements, as well as analysis tools and data management functionalities.

Maptionnaire offers a complete engagement process under one platform. Other modules include: Automated PDF creator, Real-time feedback map, Gamified decision making, 3D Collaboration, Reporting dashboard, and Website builder.

MAPTIONNAIRE - Community Engagement Platform is a modular online platform with map-based engagement at its core. Maptionnaire enables the creation of community engagement activities, systematic and comprehensive data collection, analysis and reporting of data and activities. The main module includes map-based questionnaires, polls, voting tools, surveys, picture-based surveys, and more conventional survey elements, as well as analysis tools and data management functionalities.

Maptionnaire offers a complete engagement process under one platform. Other modules include: Automated PDF creator, Real-time feedback map, Gamified decision making, 3D Collaboration, Reporting dashboard, and Website builder.

Copy of our standard agreement is attached as an Annex, and General terms and conditions can be found through the links below.

General Terms And Conditions And Terms For Data Processing:

<http://mpt.link/customer-terms>

Privacy policy:

<http://mpt.link/customer-privacy>

Appendix A

RFP for Community Engagement Platform

The City of Biddeford, Maine, is looking to proactively engage its 22,000 residents on specific programs, projects and city events. The City of Biddeford is searching for a municipal government focused engagement platform that will be a user-friendly portal for both city staff and residents to engage and provide two-way resident feedback across multiple languages. The city outlines its ideal requirements for a vendor partner below:

	Requirements for Engagement Tool				
A	Usage	Yes	No	Partial	Comments
	Resident engagement tool can:				
1	Provide numerous methods for participation during each project/survey/engagement.				You have complete autonomy of the tool to decide which method suits the project best
2	Provide Biddeford the ability to create multiple simultaneous engagement initiatives on specific goals, ideas, programs and projects.				Our offer provides an unlimited amount of initiatives you can produce with our platform
3	Provide Biddeford access to content/outcomes/platform on a variety of devices.				
4	Provide options to re-engage past participants on new government related activities.				
B	Function & Features	Yes	No	Partial	Comments
	The software solution should be able to:				
1	Provide survey/feedback functionality with varying configuration of questions for both quantitative and qualitative capture: rank ordering, multiple choice, prioritization, images, check boxes, drop downs, numeric, design by logic, open and closed ended questions.				
2	Allow for questions to be demographic-focused.				
3	Provide options for offering visual/graphical depictions of projects, plans, policies, programs.				
4	Provide ability to upload documents, pictures, videos, images.				

DocuSigned by:

 88EF8D1886A647F...

3/18/2022

5	A tool to moderate language to encourage mindful feedback.	X			
6	Mapping features that offer participants options for identifying geographic specific locations.	X			
7	Offers options for participants to add comments directly to a posted document or picture or map.	X			
8	Mapping geographic locations in scope of Biddeford projects and plans to gather specific input about these areas.	X			
9	Timeline feature to track project progress.				
C	Data and Analysis	Yes	No	Partial	Comments
1	Offers a variety of data collection/reporting methods for both quantitative and qualitative analysis.	X			
2	Tagging or AI functions to assist qualitative analysis.	X			
3	Provides visual representation of quantitative data fields.	X			
4	Ability to import/export data into other formats (e.g. CSV, Excel) to visualize and interpret resident feedback.	X			
D	Access and Language Translation	Yes	No	Partial	Comments
1	Offers an online, web-based tool that is accessible across a variety of platforms (computers, tablets, and smartphones); and compatible with a variety of browsers (Edge, Firefox, Safari, Chrome).	X			
2	Content can be easily translated in multiple languages to better ensure segments of the community are not excluded.	X			
3	Compliant with requirements outlined in Americans with Disabilities Act (ADA) and Section 508 of the Rehabilitation Act.	X			
4	Provides options for required and/or anonymous registration/sign-up.	X			
5	Can be used via desktop/laptop computer, tablet, mobile phone, kiosk to broaden audience.	X			

DocuSigned by:

 88EF8D1886A647F...

3/18/2022

6	Offers social media links built into the interface to promote easy sharing amongst friends and family.	X			
7	Provides options for turning on or off registration requirements.	X			

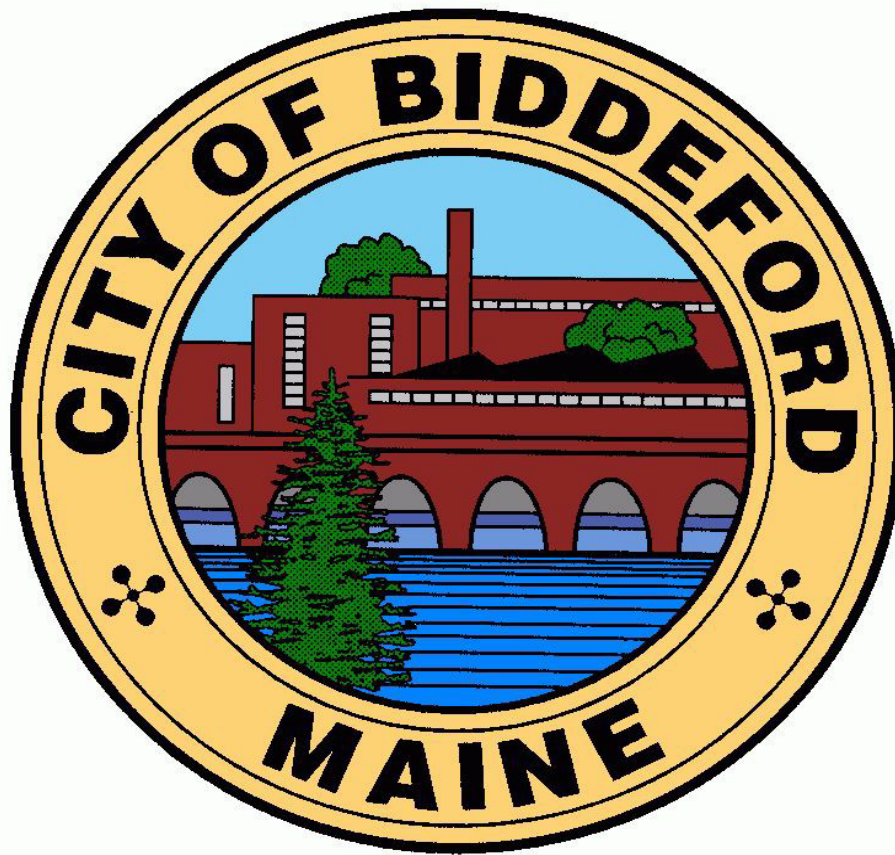
Customer Service & Support					
	Training:	Yes	No	Partial	COMMENTS
A	The selected vendor must onboard, set-up and provide training to staff and must include an electronic or paper operation manual, discussion of technical support, and user guides.	X			
	Technical Assistance:	Yes	No	Partial	
A	Assistance between 9:00 a.m. to 5:00 p.m. Eastern Standard Time (EST) Monday – Friday			X	Support is available 24hr via mail. Live in-person assistance during EST is negotiable
B	Direct support and assistance with registration, access issues, or functionality issues.	X			

Additional Value Add					
	Focus	Yes	No	Partial	COMMENTS
A	Vendor should be a municipal government-focused entity, providing guidance and feedback that is specific for local government needs.	X			
B	Vendor should be able to provide guidelines, best practices and benchmarks for other local cities as part of its customer service.	X			
C	Platform should demonstrate capacity to integrate with existing Civic Plus brand website.	X			

DocuSigned by:

 88EF8D1886A647F...

3/18/2022



City of Biddeford
Request for Proposals

Community Engagement Platform

City of Biddeford
Communications Division
205 Main Street
Biddeford, Maine 04005
(207) 282-8423

Community Engagement Platform

INTRODUCTION

The City of Biddeford, Maine, is looking to proactively engage its 22,000 residents on specific programs, projects and city events. The City of Biddeford is searching for a municipal government-focused engagement platform that will be a user-friendly portal for both city staff and residents to engage and provide two-way resident feedback across multiple languages.

PROPOSAL REQUIREMENTS

- Provide an overview of the platform being offered
- Complete the feature checklist attached in Appendix A
- Provide a quote that includes all costs for onboarding, setup and first year of service. If costs are less for subsequent years of service, or if multi-year discounts are available, please provide a quote for those costs.

REFERENCES

Provide a minimum of three projects of like size and scope

PRELIMINARY CALENDAR

Request for Proposal Issued by City of Biddeford – 02/24/2022

Questions Due to RFP Coordinator – 03/08/2022

Proposals Due and Proposal Opening – 2:00 PM, 03/18/2022

The City reserves the right to change any or all of the dates above, with due notice posted on the City website at <http://www.biddefordmaine.org/rfp>

RFP COORDINATOR

Upon release of this Request for Proposal (RFP), all vendor communications concerning this acquisition must be directed to the RFP Coordinator listed below:

Danica Lamontagne, City of Biddeford Communications Coordinator

205 Main Street

Biddeford ME 04005

Phone: (207) 282-8423

danica.lamontagne@biddefordmaine.org

Unauthorized contact regarding the RFP with other City of Biddeford employees may result in disqualification. Any oral communications will be considered unofficial and non-binding on the City of Biddeford. Vendors should rely only on written statements issued by the RFP Coordinator.

PROPOSAL QUESTIONS

All questions must be submitted in writing via mail and/or e-mail to the RFP Coordinator named above. Questions must be received in writing by 10:00 AM on 03/08/22.

GENERAL CONDITIONS

PROPOSAL RESPONSE DATE AND LOCATION

The Communications Coordinator must receive the vendor's proposal, in its entirety, no later than 2:00 PM Eastern Time in Biddeford, Maine on 03/18/2022. Proposals arriving after the deadline will not be considered. All proposals and accompanying documentation will become the property of the City of Biddeford and will not be returned.

Vendors assume the risk of the method of dispatch chosen. The City of Biddeford assumes no responsibility for delays caused by any delivery service. Postmarking by the due date will not substitute for actual proposal receipt. Late proposals will not be accepted or considered nor will additional time be granted to any vendor. Proposals may not be delivered by facsimile transmission or other telecommunication or solely by electronic means.

PROPOSAL CERTIFICATION

The vendor must certify in writing that all proposal terms, including prices, will remain in effect for a minimum of ninety (90) days after the proposal Due Date.

SINGLE RESPONSE

Receipt of fewer than three proposal responses may, at the City's sole discretion, be deemed a failure of competition. In such instance, the City of Biddeford may elect to cancel the RFP.

FEES AND SURCHARGES

Proposed pricing will include all fees, surcharges and other items of extra cost that are required to be collected through standard billing. All such requirements that are in effect at the time of bidding must be included in the proposal. The City will not pay any additional charges not so noted unless vendor can demonstrate that the additional charge was mandated by regulatory authority after the date of the proposal. The City is exempt from Maine Sales Tax and Maine Service Provider Tax. An exemption certificate will be furnished to the vendor at the time of proposal award.

PROPOSAL REJECTION

The City of Biddeford reserves the right at its sole discretion to reject any or all proposals at any time prior to award without penalty.

WITHDRAWAL OF PROPOSAL

Vendors may withdraw a proposal that has been submitted at any time up to the proposal closing date and time. To accomplish this, a written request signed by an authorized representative of the vendor must be submitted to the RFP Coordinator. The vendor may submit another proposal at any time up to the proposal closing date and time.

NON-ENDORSEMENT

As a result of the selection of a vendor to supply products to the City of Biddeford, the City of Biddeford is neither endorsing nor suggesting that the vendor's product is the best or only solution. The vendor agrees to make no reference to the City of Biddeford in any literature, promotional material, brochures, sales presentation or the like without first providing a factual and exact copy of the literature, promotional material, brochures, sales presentation or the like and second, receiving the express written consent of the City of Biddeford, which consent maybe withheld at the City's discretion without cause.

RESPONSE PROPERTY OF THE CITY OF BIDDEFORD

All materials submitted in response to this request become the property of the City of Biddeford. Selection or rejection of a response does not affect this status.

NO OBLIGATION TO BUY

The City of Biddeford reserves the right to refrain from contracting with any vendor. The release of this RFP does not compel the City of Biddeford to purchase.

COST OF PREPARING PROPOSAL

The City of Biddeford is not liable for any costs incurred by vendors prior to award, which may include, but not be limited to, preparation and presentation of proposal, response to questions, and demonstrations submitted in response to this RFP.

NUMBER OF PROPOSAL COPIES REQUIRED

Vendors will submit (2) two original proposal copies.

CITY REQUESTING CLARIFICATIONS

The City reserves the right to request clarification of information submitted and to request additional information from any bidder. Any such request shall be in writing and will identify the method and time limit for responses.

ADDENDA

Bidders are responsible for checking the City of Biddeford website for the issuance of any addenda prior to submitting a proposal. The address is <http://www.biddefordmaine.org/rfp>

PROPOSAL AWARD AND EXECUTION

The City will select the proposal that, in its sole discretion, is the most advantageous to the City. The City reserves the right to make an award without further discussion of the proposal submitted; there may be no best and final offer procedure. Therefore, the proposal should be initially submitted on the most favorable terms the vendor can offer. The specifications may be altered by the City of Biddeford based on the vendor's proposal and an increase or reduction of products with the proposer may be negotiated before contract signing, award, and execution or purchase order issuance.

PROPOSAL OPENING

The (2) two original proposals should be submitted to the Communications Coordinator.

All proposals must be submitted to: Danica Lamontagne, City of Biddeford Communications Coordinator, 205 Maine Street Biddeford, Maine 04005 no later than 2:00 PM, March 18, 2022, and must be clearly marked: Proposal for Community Engagement Platform. Proposal will be opened at 2:00 PM on March 18, 2022 at the following location:

Biddeford City Hall, Room 105
205 Main Street
Biddeford, Maine 04005

Appendix A

RFP for Community Engagement Platform

The City of Biddeford, Maine, is looking to proactively engage its 22,000 residents on specific programs, projects and city events. The City of Biddeford is searching for a municipal government focused engagement platform that will be a user-friendly portal for both city staff and residents to engage and provide two-way resident feedback across multiple languages. The city outlines its ideal requirements for a vendor partner below:

Requirements for Engagement Tool					
A	Usage	Yes	No	Partial	Comments
	Resident engagement tool can:				
1	Provide numerous methods for participation during each project/survey/engagement.				
2	Provide Biddeford the ability to create multiple simultaneous engagement initiatives on specific goals, ideas, programs and projects.				
3	Provide Biddeford access to content/outcomes/platform on a variety of devices.				
4	Provide options to re-engage past participants on new government related activities.				
B	Function & Features	Yes	No	Partial	Comments
	The software solution should be able to:				
1	Provide survey/feedback functionality with varying configuration of questions for both quantitative and qualitative capture: rank ordering, multiple choice, prioritization, images, check boxes, drop downs, numeric, design by logic, open and closed ended questions.				
2	Allow for questions to be demographic-focused.				
3	Provide options for offering visual/graphical depictions of projects, plans, policies, programs.				
4	Provide ability to upload documents, pictures, videos, images.				

5	A tool to moderate language to encourage mindful feedback.				
6	Mapping features that offer participants options for identifying geographic specific locations.				
7	Offers options for participants to add comments directly to a posted document or picture or map.				
8	Mapping geographic locations in scope of Biddeford projects and plans to gather specific input about these areas.				
9	Timeline feature to track project progress.				
C	<i>Data and Analysis</i>	Yes	No	Partial	Comments
1	Offers a variety of data collection/reporting methods for both quantitative and qualitative analysis.				
2	Tagging or AI functions to assist qualitative analysis.				
3	Provides visual representation of quantitative data fields.				
4	Ability to import/export data into other formats (e.g. CSV, Excel) to visualize and interpret resident feedback.				
D	<i>Access and Language Translation</i>	Yes	No	Partial	Comments
1	Offers an online, web-based tool that is accessible across a variety of platforms (computers, tablets, and smartphones); and compatible with a variety of browsers (Edge, Firefox, Safari, Chrome).				
2	Content can be easily translated in multiple languages to better ensure segments of the community are not excluded.				
3	Compliant with requirements outlined in Americans with Disabilities Act (ADA) and Section 508 of the Rehabilitation Act.				
4	Provides options for required and/or anonymous registration/sign-up.				
5	Can be used via desktop/laptop computer, tablet, mobile phone, kiosk to broaden audience.				

6	Offers social media links built into the interface to promote easy sharing amongst friends and family.				
7	Provides options for turning on or off registration requirements.				

Customer Service & Support					
	Training:	Yes	No	Partial	COMMENTS
A	The selected vendor must onboard, set-up and provide training to staff and must include an electronic or paper operation manual, discussion of technical support, and user guides.				
	Technical Assistance:	Yes	No	Partial	
A	Assistance between 9:00 a.m. to 5:00 p.m. Eastern Standard Time (EST) Monday – Friday				
B	Direct support and assistance with registration, access issues, or functionality issues.				

Additional Value Add					
	Focus	Yes	No	Partial	COMMENTS
A	Vendor should be a municipal government-focused entity, providing guidance and feedback that is specific for local government needs.				
B	Vendor should be able to provide guidelines, best practices and benchmarks for other local cities as part of its customer service.				
C	Platform should demonstrate capacity to integrate with existing Civic Plus brand website.				



Finance Committee

Meeting Date: April 5, 2022

Meeting Time: 5:00 pm

Agenda Item No: 4.2

Item Description: Recommendation: Fire Department Assessment Consultant/Center for Public Safety Management, LLC

Submitted by: Brian S. Phinney, COO

Supporting Information/Documentation:

Center for Public Safety Management – Biddeford Fire Department Assessment Statement of Qualifications

Center For Public Safety Management – Fee Proposal

Center for Public Safety Management – Revised Fee Proposal Letter

Matrix Consulting Group – Biddeford Fire Department Statement of Qualifications

Key Terms:

N/A

Executive Summary:

The City released a request for qualifications (RFQ) for an assessment of the Biddeford Fire Department and received two responses. After review of the submittals, interviews, and reference checks, Center for Public Safety Management (CPSM) was selected as the preferred vendor. Staff recommends award to CPSM.

Detailed Review:

The City release a request for qualifications for firms interested in performing an assessment of the Biddeford Fire Department. The general scope of services included evaluation and subsequent recommendations relative to the effectiveness and efficiency of fire department's operations including, but is not limited to, analyzing the department's organization, programs and services, operating policies and procedures, training, budget, and staffing. Two firms submitted proposals – Center for Public Safety Management, LLC (CPSM), and Matrix Consulting Group (Matrix).

A review committee comprised of Assistant Fire Chief Ed Dexter, Councilor Doris Ortiz, Councilor William Emhiser, and COO Brian Phinney, reviewed the statements of qualification and interviewed the candidates. Individual rankings unanimously identified CPSM as the preferred qualified contractor. Assistant Chief Dexter proceeded to perform the reference checks. All the references confirmed CSPM's work and otherwise checked out. In

accordance with our RFQ process and upon completion of the reference check, the pricing sheet was opened and reviewed. CPSM proposes a not to exceed price of \$53,500, which includes \$5,000 in travel expenses. After review of the fee proposal CPSM was asked to provide a revised fee statement clarifying the applicable scope of work, which was submitted.

Upon signing an agreement the work is expected to take upwards of 180-days to complete.

Funding Source:

The funds for this assessment were not budgeted for in FY22. The expense will be covered within the expected end of year surplus.

Staff Recommendation:

Staff recommends award of the project to Center for Public Safety Management, LLC in the amount of \$53,500.



Center for Public Safety Management, LLC

March 24, 2022

Mr. Brian Phinney, Chief Operating Officer
City of Biddeford, Maine
205 Maine Street
Biddeford, Maine

Mr. Phinney:

The *Center for Public Safety Management, LLC, (CPSM)* as the exclusive provider of public safety technical assistance for the International City/County Management Association, is pleased to submit this project scope to conduct a fire administrative and operations analysis for the City of Biddeford, Maine.

CPSM, is pleased to confirm the project methodology and timeline identified in Sections 3 & 4 of the January 14, 2022 Statement of Qualifications (SOQ)".

Fees

CPSM will provide consulting services to conduct a Fire Administrative and Operational Analysis for the City of Biddeford, Maine as described herein, for a total fee not to exceed **\$53,500**, unless otherwise authorized by the City. A breakdown of fees for each study is as follows:

CPSM completes public safety analyses in tangible project segments. Accordingly, CPSM proposes this project be structured for fee invoicing and payments as outlined in the Task Order table below.

CPSM Project Task	% Fee Invoicing for Task Completion
Project Kick Off Meetings	10% of Total Contracted Fire Study Fees
Completion and Submittal of Draft Fire Data Analysis Report	40% of Total Contracted Fire Study Fees
Completion and Submittal of Draft Fire Operational Analysis Report	40% of Total Contracted Fire Study Fees
Submittal of Final Fire Report; Council Presentation	10% of Total Contracted Fire Study Fees

Hourly Work

Should additional work be requested by the client following the completion of this study, CPSM hourly rates may be selected or a "not to exceed" price can be created for such activity.

CPSM's hourly rates are as follows:

Principals (Wieczorek, Matarese, Chelst):	\$300.00 per hour
Team leads/SME's:	\$225.00 per hour
Data analysts:	\$120.00 per hour

Please let me know if I can provide any additional services.

Sincerely,

A handwritten signature in blue ink, appearing to read "Thomas J. Wieczorek".

Thomas J. Wieczorek
Director
Center for Public Safety Management. LLC
616-813-3782
twieczorek@cpsm.us

Statement of Qualifications for

Biddeford Fire Department Assessment Fee Statement Volume

City of Biddeford, Maine

January 14, 2022, 11:59 am Eastern



CPSM[®]

CENTER FOR PUBLIC SAFETY MANAGEMENT, LLC
475 K STREET NW STE 702 • WASHINGTON, DC 20001
WWW.CPSM.US • 800-998-3392

Exclusive Provider of Public Safety Technical Services for International City/County
Management Association

ICMA

Contents

1.	Fee Statement	1
----	---------------------	---

1. Fee Statement

CPSM's lump sum price to perform the required Biddeford Fire Department Assessment is \$53,500. This includes \$5,000 for travel associated with performing the required services.

CPSM's payment terms are based on the following three installments: 40% upon signing the contract; 40% with delivery of the draft data analysis; and 20% with delivery of the draft final report.

Statement of Qualifications for

Biddeford Fire Department Assessment

City of Biddeford, Maine

January 14, 2022, 11:59 am Eastern



CPSM[®]

CENTER FOR PUBLIC SAFETY MANAGEMENT, LLC

475 K STREET NW STE 702 • WASHINGTON, DC 20001

WWW.CPSM.US • 800-998-3392

Exclusive Provider of Public Safety Technical Services for International City/County Management Association

ICMA

Contents

1.	Letter of Transmittal	1
2.	Qualifications	3
2.A.	Summary of CPSM Experience Relevant to Scope of Services	3
2.B.	CPSM Project Experience	4
2.C.	Individuals Assigned to Biddeford Fire Department Assessment Project	13
2.C.1.	Key Personnel Resumes	14
2.D.	References for Similar Projects with Cities of Similar or Greater Size Performed in Last Five Years	20
3.	Project Methodology	23
3.A.	Work Plan	23
3.A.1.	Gather Pertinent Data and Information in Collaboration with City and Fire Department.	23
3.A.2.	Staffing Analysis and Operational Assessment.....	23
3.A.3.	City and Proposer Resources Required	25
3.A.4.	Presentation of Data and GIS Mapping	26
3.B.	Examples of Anticipated Survey Tools	29
3.C.	Process for Identifying Key Stakeholders for Soliciting Input.....	29
3.D.	Description of Anticipated Interview Process.....	29
3.E.	Other Major Methodologies or Tools Used to Obtain Understanding of Current Operations.....	29
3.F.	Proposed Benchmark for Measuring Results/Outcomes	30
3.G.	Project Deliverables.....	30
3.G.1.	Draft and Final Reports	30
3.G.2.	Presentations	30
4.	Timeline	31
5.	Supporting Data	33

Figures

Figure 1. CPSM’s Principals offer significant experience in similar studies.....	3
Figure 2. Project Organizational Chart	14
Figure 3. Excerpt from Sample Document Request.....	24
Figure 4. Density of Fire Calls	27
Figure 5. 240-Second Travel Time Bleed Map, City-wide Analysis	28
Figure 6. Call Demand by Hour of Day	29

Tables

Table 1. CPSM List of Relevant Past and Current Projects.....	5
Table 2. Key Personnel Summary	15
Table 3. References for Similar Projects Within Past Five Years.....	20
Table 4. Call Types.....	26
Table 5. 90th Percentile Response Time of First Arriving Unit, by Call Type (Minutes)	28
Table 6. Study Time Frame.....	31

1. Letter of Transmittal



January 14, 2022

Mr. James Bennett, City Manager
City of Biddeford
205 Main Street, Suite 107 (physical address)
P.O. Box 586 (mailing address)
Biddeford, Maine 04005

Dear Mr. Bennett:

Statement of Qualifications for Biddeford Fire Department Assessment

The Center for Public Safety Management, LLC (CPSM) is pleased to submit this proposal to the City of Biddeford, Maine for its Request for Qualifications for a Biddeford Fire Department Assessment.

Firm History, Size, and Expertise

CPSM offers more than 14 years of experience performing comprehensive assessments of municipal fire, rescue, EMS, and police departments nationwide using our unique methodology and industry subject matter expertise. The firm was started as part of the International City/County Management Association (ICMA), a non-profit organization founded in 1914 and dedicated to assisting local governments and their managers in providing services to its citizens in an efficient and effective manner. ICMA launched the Center for Public Safety in 2007 to provide support to local governments in the areas of fire, EMS, and police services. In 2014, as part of a restructuring at ICMA, CPSM was spun off as a separate company and is now the exclusive provider of public safety technical assistance for ICMA.

With our team of 30 fire, rescue, and EMS subject matter experts, police subject matter experts, and data analysts, we evaluate existing operations, identify current and future needs, make recommendations that will optimize operations and increase efficiencies, assess the associated budgetary impacts, and assist municipalities and public safety agencies in strategic planning. Our experience includes completing more than 329 similar studies in 44 states and provinces and 264 communities ranging in population from 8,000 (Boone, Iowa) to 800,000 (Indianapolis, Indiana).

The CPSM approach to conducting assessments of fire, rescue, EMS, and police departments and agencies is unique and comprehensive in that we link operational information and service delivery systems with a review of the department's response workload. We utilize this approach to establish the current state of the department's service delivery. We will use this approach to perform the required assessment of the Biddeford Fire Department.

This proposal is designed to provide the City of Biddeford with a comprehensive study of its fire department. CPSM offers a proven approach developed by combining the expertise of our fire, rescue, and EMS subject matter experts with our experience performing hundreds of similar studies and planning assistance for municipalities nationwide.

Our project team has been selected specifically for the City of Biddeford project and offers hundreds of years of practical experience managing fire, rescue, and EMS departments; a record of research, academic, teaching and training, and professional publications; and extensive consulting experience completing hundreds of similar studies nationwide. Our team comprises true industry subject matter experts, not merely research assistants, interns, or generic management consultants. Our fire department assessments reflect lessons learned and best practices from the hands-on fire, rescue, and EMS experience of our leading industry experts.

Mr. James Bennett
Page 2 of 2
January 14, 2022

My colleagues at CPSM and I greatly appreciate this opportunity and would be pleased to address any comments you may have. You may contact me at 616.813.3782 or via email at twieczorek@cpsm.us.

Sincerely,



Thomas Wieczorek
Director, Center for Public Safety Management, LLC

2. Qualifications

2.A. Summary of CPSM Experience Relevant to Scope of Services

CPSM is a nationally recognized expert in fire protection and EMS service organization analysis and planning. We routinely perform comprehensive assessments of fire departments, including analyzing deployment of resources including station location, size, etc. against existing and future needs. We specialize in this work and have completed hundreds of such analyses for municipal clients nationwide and in Canada. We are able to offer our clients the kind of insight and creative options available from the broad scope of our experience, both in the field as fire service professionals and as a result of the other assessments we have conducted of fire departments nationwide. As a result of our studies, we have provided our clients with hundreds of strategic planning recommendations for enhanced service delivery and efficiencies and cost avoidance.

CPSM's business is exclusively focused on working with municipal governments and agencies responsible for the administration and/or operation of fire, EMS, or police services. The firm was started as part of the International City/County Management Association (ICMA), a non-profit organization founded in 1914 and dedicated to assisting local governments and their managers in providing services to its citizens in an efficient and effective manner. ICMA launched the Center for Public Safety in 2007 to provide support to local governments in the areas of fire, EMS, and police services. In 2014, as part of a restructuring at ICMA, CPSM was spun off as a separate company and is now the exclusive provider of public safety technical assistance for ICMA. CPSM maintains the same team of individuals performing the same level of service as when it was a component of ICMA.

The firm's principals are shown in Figure 1. All three principals have been with CPSM since its inception. CPSM's staff includes a team of 30 fire, rescue, and EMS subject matter experts, police subject matter experts, and data analysts. CPSM is headquartered in Washington, DC, with a quantitative analysis group based in West Orange, New Jersey, and subject matter experts throughout the U.S.

Director Thomas Wieczorek	Managing Partner Leonard Matarese	Managing Partner Dov Chelst, PhD
•Expert in fire and EMS operations •Served as a police officer, fire chief, director of public safety and city manager and is former Executive Director of the Center for Public Safety Excellence (formerly the Commission on Fire Accreditation International, Inc.) •Managed hundreds of studies similar to those required by the City of Biddeford	•Specialist in public sector administration with particular expertise in public safety issues •44 years' experience as a law enforcement officer, police chief, public safety director, city manager and major city Human Resources Commissioner •Managed several hundred studies of emergency services agencies	•Leads the company's quantitative analysis unit •Supported by data analysts specializing in the analysis of public safety data •Managed and performed provided data analysis for hundreds of similar municipal police, fire, and EMS studies

Figure 1. CPSM's Principals offer significant experience in similar studies.

CPSM has a record of completing its projects on time, within the established budget, and in compliance with contractual requirements. We offer client references in Section 2.D of this proposal as evidence of our performance. Many of our clients are repeat clients, coming back to us for additional studies or to update previously performed studies.

CPSM specializes in performing independent, comprehensive assessments of police, fire, rescue, and EMS services departments and organizations. Our methodology is based on nationally recognized industry standards, guidelines, and criteria, including the Commission on Fire Accreditation's Standards of Response Coverage. We follow a systematic approach to collecting, analyzing, and presenting data in an organized format. Our subject matter experts routinely review and evaluate agency budget and planning documents and provide assistance in developing strategic plans.

As part of our data collection process, we gather input from stakeholders via such means as interviews, survey tools, and stakeholder meetings. We regularly facilitate stakeholder meetings, which provide not only the opportunity to solicit stakeholder input but also to advise stakeholders of the assessment process. Through our work on hundreds of similar studies, we are very familiar with public input processes and very accustomed to presenting study objectives, methodology, findings, and recommendations to varied stakeholder audiences. Our subject matter experts are experienced in addressing and incorporating stakeholder comments into study report documents.

CPSM has provided similar fire and EMS department/agency review services for hundreds of municipal clients. Therefore, our subject matter experts are proficient in reviewing, evaluating, and working with multi-agency partnerships and cooperative problem-solving.

The breadth and depth of experience offered by CPSM's accomplished and highly regarded subject matter experts allows us to identify and offer flexible and creative alternatives for the resolution of service and policy issues and improved effectiveness and efficiencies in delivering required fire and emergency services and meeting community needs.

CPSM offers fire and emergency services subject matter experts who are not only career fire and emergency services professionals but also highly experienced in reviewing and assessing departments and agencies throughout the U.S. Our subject matter experts offer executive/management-level understanding of how fire protection services are financed and delivered. Through their experience in assessing municipal departments and agencies in their work for CPSM, they bring a broad experience that comes from understanding how different departments and agencies across the nation finance and deliver fire protection services.

CPSM is a nationally recognized expert in fire protection service organization analysis, including the financial analysis of fire protection service delivery systems. This includes evaluating agency budgets and structures, including overtime expenditures and making comparisons to industry norms and standards.

We routinely analyze deployment of resources including station location, size, etc. against existing and future needs. We specialize in this work and have completed hundreds of such analyses for municipal clients nationwide and in Canada. We are able to offer our clients the kind of insight and creative options available from the broad scope of our experience. As a result of our studies, we have provided our clients with hundreds of recommendations for enhanced efficiencies and cost avoidance.

Our subject matter experts are knowledgeable and experienced in developing performance measurement criteria and applying benchmarking techniques in the evaluation of fire protection service delivery systems. We routinely work with nationally recognized industry standards, guidelines, and criteria such as the Commission on Fire Accreditation's Community Risk Assessment and Standards of Coverage and benchmark departments/agencies against those standards and municipalities with similar demographics, issues, and constraints.

2.B. CPSM Project Experience

CPSM has conducted similar studies in 44 states and provinces for more than 300 public clients. CPSM has conducted more than 150 urban fire and EMS projects and more than 225 police/law enforcement projects with comprehensive management, operational, and staffing analyses. Studies have included report components and recommendations following the Center for Public Safety Excellence, Commission on Accreditation of Law Enforcement Agencies, and Commission on Fire Accreditation International standards. These projects have involved workload matching to staffing, review of investigations and specialized units, community risk assessments,

Standards of Cover assessments, fire and EMS consolidation analyses, analysis of emergency communications centers, fire and EMS department strategic plans, fire and EMS department staffing plans, and fiscal analyses. Table 1 provides a comprehensive list of the public clients for which CPSM has provided similar services.

Table 1. CPSM List of Relevant Past and Current Projects

Locality	State	Project
Leduc County	AB	Fire Consolidation Plan
Leduc	AB	Comprehensive Analysis of Fire Services.
Kenai	AK	Comprehensive Analysis of Fire Services
Anniston	AL	Comprehensive Analysis of Police Services
Auburn	AL	Comprehensive Analysis of Fire Services
Auburn	AL	Comprehensive Analysis of Police Services
Dothan	AL	Comprehensive Analysis of Police Services
Pelham	AL	Police Chief Selection
Casa Grande	AZ	Comprehensive Analysis of Police Services
Florence	AZ	Comprehensive Analysis of Police Services
Glendale	AZ	Fire Data Analysis
Lake Havasu City	AZ	Comprehensive Analysis of Police Services
Lake Havasu City	AZ	Comprehensive Analysis of Fire Services
Florence	AZ	Comprehensive Analysis of Police Services
Pinal County	AZ	Comprehensive Analysis of Sheriff's Office
Pinal County	AZ	Sheriff's Office Firearms Audit
Prescott	AZ	Comprehensive Analysis of Fire Services
Prescott	AZ	Comprehensive Analysis of Police Services
Queen Creek	AZ	Fire Standards of Coverage Study
Queen Creek	AZ	Police Strategic Plan
Queen Creek	AZ	Comprehensive Analysis of Fire Services
Scottsdale	AZ	Comprehensive Analysis of Police Services
Tucson	AZ	Comprehensive Analysis of Police Services
Youngtown	AZ	Comprehensive Analysis of Police Services
Alameda	CA	Comprehensive Analysis of Fire Services
Alameda	CA	Comprehensive Analysis of Police Services
Burbank	CA	Analysis of Investigations Workload / Staffing
Carlsbad	CA	Comprehensive Analysis of Police Services
El Centro	CA	Comprehensive Analysis of Police Services
El Centro	CA	Comprehensive Analysis of Fire Services
Fairfield	CA	Comprehensive Analysis of Police Services
Greenfield	CA	Comprehensive Analysis of Police Services
Hermosa Beach	CA	Comprehensive Analysis of Fire Services
Hermosa Beach	CA	Comprehensive Analysis of Police Services
Huntington Park	CA	Comprehensive Analysis of Police Services
Indio	CA	Police Patrol Workload Analysis
Kern County	CA	Comprehensive Analysis of Fire Services

Locality	State	Project
Laguna Woods	CA	Review of Sheriff's Office Service
Laguna Woods	CA	Review of Sheriff's Office Service 2017
Laguna Woods	CA	Review of Sheriff's Office Service 2019
Milpitas	CA	Comprehensive Analysis of Police Services
Morgan Hill	CA	Comprehensive Analysis of Police Services
Morgan Hill	CA	Comprehensive Analysis of Fire Services
Palm Desert	CA	Comprehensive Analysis of Fire Services
Palo Alto	CA	Comprehensive Analysis of Fire Services
Pasadena	CA	Police Patrol Workload Analysis
Placentia	CA	Comprehensive Analysis of Police Services
Placentia	CA	Fire Services Contract Analysis
Rohnert Park	CA	Comprehensive Analysis of Police Services
Salinas	CA	Comprehensive Analysis of Police Services
Salinas	CA	Comprehensive Analysis of Fire Services
San Diego County	CA	EMS Study
San Jose	CA	Fire Study Review
San Jose	CA	Police Study Review
San Mateo	CA	Dispatch Operations Review
Santa Ana	CA	Comprehensive Analysis of Police Services
Santa Clara	CA	Comprehensive Analysis of Police Services
Santa Cruz	CA	Comprehensive Analysis of Police Services
Santa Monica	CA	Police Chief Selection
Santa Rosa	CA	Performance Measurement Analysis
Stockton	CA	Comprehensive Analysis of Police Services
Stockton	CA	Comprehensive Analysis of Fire Services
Torrance	CA	Police Strategic Plan
Union City	CA	Comprehensive Analysis of Fire Services
Whittier	CA	Comprehensive Analysis of Police Services
Woodlands	CA	Police Chief Selection
Yuba City	CA	Comprehensive Analysis of Fire Services
Yuba City	CA	Comprehensive Analysis of Police Services
Federal Heights	CO	Comprehensive Analysis of Police Services
Federal Heights	CO	Comprehensive Analysis of Fire Services
Littleton	CO	Comprehensive Analysis of Fire Services
Littleton	CO	Review of Fire Consolidation Proposal
Steamboat Springs	CO	Comprehensive Analysis of Fire Services
Cheshire	CT	Police Management Review
Southington	CT	Comprehensive Analysis of Fire Services
Bethany Beach	DE	EMS Apparatus Review
Bethany Beach	DE	EMS Review
S. Bethany Beach	DE	Police Department Review
Dover	DE	Comprehensive Analysis of Police Department

Locality	State	Project
Dover	DE	Comprehensive Analysis of Fire Services
Alachua	FL	Expert Witness Law Enforcement Issues
BCCMA	FL	Review of Broward Sheriff's Office Services
Tamarac	FL	Analysis of Sheriff's Contract Services
Inverness	FL	Comprehensive Analysis of Fire Services
Citrus County	FL	Comprehensive Analysis of Fire Services
Cocoa	FL	Comprehensive Analysis of Police Services
Coconut Creek	FL	Comprehensive Analysis of Police Services
Delray Beach	FL	Comprehensive Analysis of Police Services
Delray Beach	FL	Comprehensive Analysis of Fire Services
Dunedin	FL	Police Consolidation Review
Hollywood	FL	Police Internal Affairs Review
Indian River Shores	FL	Public Safety Staffing Analysis
Indian River Shores	FL	Public Safety Study
Jacksonville Bch	FL	Police Chief Selection
Jupiter Island	FL	Public Safety Department Review
Jupiter	FL	Police and Fire Study
Hobe Sound	FL	Public Safety Consolidation
Kenneth City	FL	Comprehensive Analysis of Police Services
Miami Beach	FL	Comprehensive Analysis of Fire Services
Naples	FL	Presentation
North Port	FL	Comprehensive Analysis of Police Services
Orange County	FL	Dispatch Center Staffing Study
Parkland	FL	City Safety & Security Review
Pasco County	FL	Sheriff's Budget Review
Land O' Lakes	FL	Comprehensive Analysis of Fire Services
New Port Richey	FL	Sheriff Budget Analysis
Pompano Beach	FL	Comprehensive Analysis of Police Services
Venice	FL	Comprehensive Analysis of Fire Services
Alpharetta	GA	Comprehensive Analysis of Fire Services
Alpharetta	GA	Comprehensive Analysis of Police Services
Camden County	GA	Police Consolidation Study
Camden County	GA	Comprehensive Analysis of Fire Services
Camden County	GA	Fire Consolidation Study
Kingsland	GA	Comprehensive Analysis of Fire Services
Kingsland	GA	Fire Consolidation St Mary's
Woodbine	GA	Police Consolidation Study
Garden City	GA	Preliminary Analysis Public Safety Merger
Johns Creek	GA	Analysis of Fire Services
Kingsland	GA	Fire Consolidation Study
Roswell	GA	Comprehensive Analysis of Police Department
Roswell	GA	Police Chief Selection

Locality	State	Project
Sandy Springs	GA	Comprehensive Analysis of Police Department
St. Mary's	GA	Fire Consolidation Study
Ankeny	IA	Police Chief Selection
Boone	IA	Public Safety Consolidation
Boone	IA	Performance Measurement of Municipal
Hayden	ID	Comprehensive Analysis of Police Services
Jerome	ID	Analysis of Police Services
Algonquin	IL	Performance Measurement Analysis
Glenview	IL	Comprehensive Analysis of Police & Fire Services
Glenview	IL	Comprehensive Analysis of Police Services
Glenview	IL	Dispatch Operations Review
Highland	IL	Comprehensive Analysis of Fire Services
Highland Park	IL	Comprehensive Analysis of Fire Consolidation
Highwood	IL	Comprehensive Analysis of Fire Consolidation
Lake Bluff	IL	Analysis of Fire Consolidation
Lake Bluff	IL	Fire Data Review
Lake Forest	IL	Analysis of Fire Consolidation
Lake Zurich	IL	Comprehensive Analysis of Fire services
Naperville	IL	Workload, Staffing & Schedule Design
Roseville	IL	Comprehensive Analysis of Police Services
Skokie	IL	Comprehensive Analysis of Police Services
St. Charles	IL	Police Staffing Review
Western Springs	IL	Comprehensive Analysis of Police Services
Indianapolis	IN	Police Workload & Deployment Services
Plainfield	IN	Comprehensive Analysis of Police Services
Topeka	KS	Preliminary Review of Fire Department
Northborough	MA	Comprehensive Analysis of Police Services
Northborough	MA	Comprehensive Analysis of Fire Services
Cambridge	MD	Performance Measurement Study
Annapolis	MD	Comprehensive Analysis of Police Services
Ocean City	MD	Dispatch Operations Review
Rockville	MD	Comprehensive Analysis of Police Services
Ann Arbor	MI	Comprehensive Analysis of Fire Services
Auburn Hills	MI	Comprehensive Analysis of Fire Services
Auburn Hills	MI	Comprehensive Analysis of Police Services
Benton Harbor	MI	Public Safety Consolidation
Chesterfield	MI	Comprehensive Analysis of Police Services
Charlevoix	MI	EMS Study
Lansing	MI	Comprehensive Analysis of Police Services
Lansing	MI	Comprehensive Analysis of Fire Services
Delta Township	MI	Comprehensive Analysis of Fire Services
Delta Township	MI	Comprehensive Analysis of Police Services

Locality	State	Project
Detroit Public Schools	MI	Police Department Review
Douglas	MI	Comprehensive Analysis of Police Services
Flint	MI	Comprehensive Analysis of Fire Services
Flint	MI	Comprehensive Analysis of Police Services
Green Lake Twp.	MI	Comprehensive Analysis of Fire Services
Grand Rapids	MI	Comprehensive Analysis of Police Services
Grand Rapids	MI	Comprehensive Analysis of Fire Services
Kingsley	MI	Comprehensive Analysis of Fire Services
Hamtramck	MI	Comprehensive Analysis of Police Services
Interlochen	MI	Comprehensive Analysis of Fire Services
Grand Traverse	MI	Comprehensive Analysis of Fire Services
Grosse Pointe Park	MI	Public Safety Consolidation
Grosse Pointe	MI	Public Safety Consolidation
Hamtramck	MI	Police Study
Grand Blanc	MI	Comprehensive Analysis of Fire Services
Grand Rapids	MI	Comprehensive Analysis of Police & Fire Services
Grand Rapids	MI	Analysis of Police Services Consolidation
Kentwood	MI	Analysis of Fire Services Consolidation
Flint	MI	Comprehensive Analysis of Police Services
Flint	MI	Comprehensive Analysis of Fire Services
Mott College	MI	Comprehensive Analysis of Police Services
Novi	MI	Comprehensive Analysis of Police Services
Novi	MI	Comprehensive Analysis of Fire Services
Kalamazoo	MI	Police Workload / Contract for Services Analysis
Oshtemo Twp.	MI	Review of Sheriff's Office Contract Services
Ottawa County	MI	Sheriff's Office Staffing Study
Petoskey	MI	Public Safety Consolidation
Plymouth	MI	Fire Services Consolidation
Plymouth	MI	Fire Service Analysis
Plymouth	MI	Public Safety Department Report
Royal Oak	MI	Comprehensive Analysis of Police Services
Royal Oak	MI	Comprehensive Analysis of Fire Services
Saginaw	MI	Comprehensive Analysis of Police Services
Saginaw	MI	Comprehensive Analysis of Fire Services
Saginaw	MI	Public Safety Workload Analysis
So. Kalamazoo	MI	Fire Services Review
Vicksburg	MI	Financial Analysis of Fire Authority
Saint Joseph	MI	Public Safety Consolidation
Sturgis	MI	Public Safety Analysis
Troy	MI	Comprehensive Analysis of Police Services
Troy	MI	Review of Fire Administration and Inspections
Wyoming	MI	Comprehensive Analysis of Police Services 2012

Locality	State	Project
Wyoming	MI	Comprehensive Analysis of Fire Services 2012
Wyoming	MI	Comprehensive Analysis of Police Services 2009
Wyoming	MI	Comprehensive Analysis of Fire Services 2009
Mankato	MN	Public Safety Study
Moorhead	MN	Comprehensive Analysis of Fire Services
North St. Paul	MN	Public Safety Strategic Plan
Saint Cloud	MN	Police Strategic Planning Review
Saint Cloud	MN	Comprehensive Analysis of Police Services
Stearns County	MN	Comprehensive Analysis of Sheriff's Office
Brentwood	MO	Comprehensive Analysis of Police Services
Hazelwood	MO	Fire / EMS Analysis
Osage Beach	MO	Comprehensive Analysis of Police Services
Saint Louis	MO	Comprehensive Analysis of Fire Services
Saint Louis	MO	Comprehensive Analysis of Police Services
Saint Louis	MO	Standard of Response / Risk Assessment
Bozeman	MT	Fire Protection Master Plan
Kalispell	MT	EMS Study
Bald Head Island	NC	Public Safety Staffing Review
Bald Head Island	NC	Public Safety Consolidation
Chapel Hill	NC	Comprehensive Analysis of Police Services
Cornelius	NC	Fire Consolidation Study
Davidson	NC	Fire Consolidation Study
Greenville	NC	Comprehensive Analysis of Fire Services
Hickory	NC	Comprehensive Analysis of Fire Services
Huntersville	NC	Comprehensive Analysis of Fire Services
Matthews	NC	Comprehensive Analysis of Police Services
Oxford	NC	Comprehensive Analysis of Fire Services
Oxford	NC	Comprehensive Analysis of Police Services
Rocky Mount	NC	AED Grant Assistance
Rocky Mount	NC	Comprehensive Analysis of Police Services
Grand Island	NE	Comprehensive Analysis of Police Services
Grand Island	NE	Comprehensive Analysis of Fire Services
South Sioux City	NE	Fire Services Strategic Plan
Exeter	NH	Comprehensive Analysis of Fire Services
Exeter	NH	Comprehensive Analysis of Police Services
East Brunswick	NJ	EMS Study
Oradell	NJ	Comprehensive Analysis of Police Services
Paterson	NJ	Review of Police Services
South Orange	NJ	Comprehensive Analysis of Police Services
Westwood	NJ	Comprehensive Analysis of Police Services
Bernalillo	NM	Comprehensive Analysis of Fire Services
Las Cruces	NM	Comprehensive Analysis of Fire Services

Locality	State	Project
Las Cruces	NM	Comprehensive Analysis of Police Services
Ruidoso	NM	Comprehensive Analysis of Police Services
Boulder City	NV	Police Organizational Study
Henderson	NV	Comprehensive Analysis of Police Services
Las Vegas	NV	Comprehensive Analysis of Fire Services
North Las Vegas	NV	Fire Workload Analysis
Reno	NV	Comprehensive Analysis of Fire Services
Briar Cliff Manor	NY	Analysis of Police Consolidation
Canandaigua	NY	Regional Fire Services Study
Garden City	NY	Comprehensive Analysis of Fire Services
Garden City	NY	Comprehensive Analysis of Police Services
Garden City	NY	Patrol Workload Analysis Update
Long Beach	NY	Comprehensive Analysis of Fire and EMS Services
Oneonta	NY	Comprehensive Analysis of Fire and EMS Services
Oneonta	NY	Fire Apparatus Review
Orchard Park	NY	Comprehensive Analysis of Police Services
Ossining	NY	Analysis of Police Consolidation
Ossining Town	NY	Analysis of Police Consolidation
Rye	NY	Police Chief Selection
Watertown	NY	Comprehensive Analysis of Fire Services
Cincinnati	OH	Police Dispatch Review
Dayton	OH	Police Internal Affairs Review
Huron	OH	Comprehensive Analysis of Police Services
Huron	OH	Comprehensive Analysis of Fire Services
Independence	OH	Comprehensive Analysis of Police Services
Independence	OH	Comprehensive Analysis of Fire Services
Sandusky	OH	Fire Study
Sandusky	OH	Police Study
Broken Arrow	OK	Comprehensive Analysis of Police Services
Broken Arrow	OK	Comprehensive Analysis of Fire Services
Edmond	OK	Comprehensive Analysis of Police Services
Jenks	OK	Comprehensive Analysis of Police Services
Jenks	OK	Comprehensive Analysis of Fire Services
Muskogee	OK	Comprehensive Analysis of Police Services
Tulsa	OK	Comprehensive Analysis of Fire Services
Bend	OR	Comprehensive Analysis of Police Services
Forest Grove	OR	Police Planning Study
Grants Pass	OR	Comprehensive Analysis of Fire Services
Grants Pass	OR	Comprehensive Analysis of Police Services
Grants Pass	OR	Public Safety Strategic Plan Development
Ontario	OR	Comprehensive Analysis of Police Services
Ontario	OR	Comprehensive Analysis of Fire Services

Locality	State	Project
Medford	OR	Comprehensive Analysis of Fire Services
Cumru Twp.	PA	Comprehensive Analysis of Police Services
Cumru Twp.	PA	Police Chief Selection
Ephrata	PA	Comprehensive Analysis of Police Services
Farrell	PA	Comprehensive Analysis of Police Services
Manheim Twp.	PA	Comprehensive Analysis of Police Services
Tredyffrin Twp.	PA	Comprehensive Analysis of Police Services
Lower Windsor Twp.	PA	Comprehensive Analysis of Police Services
Wrightsville	PA	Comprehensive Analysis of Police Services
East Providence	RI	Comprehensive Analysis of Fire Services
East Providence	RI	Expert Witness Fire Issues
Beaufort	SC	Review of Fire Service Contract
Beaufort	SC	Comprehensive Analysis of Police Services
Beaufort	SC	Comprehensive Analysis of Fire Services
Walterboro	SC	Comprehensive Analysis of Public Safety Dept.
Rapid City	SD	Comprehensive Analysis of Fire Services
Germantown	TN	Comprehensive Analysis of Fire Services
Johnson City	TN	Comprehensive Analysis of Fire Services
Johnson City	TN	Comprehensive Analysis of Police Services
Smyrna	TN	Comprehensive Analysis of Police Services
Smyrna	TN	Comprehensive Analysis of Fire Services
Addison	TX	Comprehensive Analysis of Fire Services
Addison	TX	Comprehensive Analysis of Police Services
Baytown	TX	EMS Study
Belton	TX	Comprehensive Analysis of Police Services
Belton	TX	Comprehensive Analysis of Fire Services
Belton	TX	Police Chief Selection
Belton	TX	Fire Chief Selection
Bryan	TX	Comprehensive Analysis of Fire Services
Buda	TX	Comprehensive Analysis of Police Services
Cedar Park	TX	Comprehensive Analysis of Police Services
College Station	TX	Comprehensive Analysis of Fire Services
Conroe	TX	Fire Services Analysis and Standard of Response
Corinth	TX	Comprehensive Analysis of Fire Services
Frisco	TX	Comprehensive Analysis of Fire Services
Highland Village	TX	Fire Review
Hutto	TX	Comprehensive Analysis of Fire Services
Lucas	TX	Fire and EMS Analysis
Lufkin	TX	Comprehensive Analysis of Fire Services
New Braunfels	TX	Fire Study
New Braunfels	TX	Police Study
Prosper	TX	Comprehensive Analysis of Police Services

Locality	State	Project
Round Rock	TX	Comprehensive Analysis of Fire Services
Sugar Land	TX	Comprehensive Analysis of Police Services
Sugar Land	TX	Fire Department Overtime Analysis
Sugar Land	TX	Comprehensive Analysis of Fire Services
Victoria	TX	Comprehensive Analysis of Police Services
Washington City	UT	Comprehensive Public Safety Analysis
Hampton	VA	Police Chief Selection
Leesburg	VA	Comprehensive Analysis of Sheriff Services
Leesburg	VA	Comprehensive Analysis of Fire Services
Hampton	VA	Police Chief Selection
Loudon County	VA	Comprehensive Analysis of Fire Services
Loudon County	VA	Comprehensive Analysis of Sheriff's Services
Bonney Lake	WA	Comprehensive Analysis of Police Services
Lacey	WA	Comprehensive Analysis of Fire Services
Snoqualmie	WA	Police Workload & Deployment Analysis
Marysville	WA	Comprehensive Analysis of Police Services
Marysville	WA	Comprehensive Analysis of Police Services
Mill Creek	WA	Comprehensive Analysis of Police Services
Mill Creek	WA	Comprehensive Analysis of Fire Services
Spokane Valley	WA	Comprehensive Analysis of Police Services
Vancouver	WA	Comprehensive Analysis of Police Services
Vancouver	WA	Police Chief Selection
Dunn County	WI	Sheriff Office Study
Wauwatosa	WI	Comprehensive Analysis of Fire Services
Wauwatosa	WI	Comprehensive Analysis of Police Services
Casper	WY	Comprehensive Analysis of Police Services
Jackson	WY	Police Consolidation Review
Laramie	WY	Comprehensive Analysis of Police Services

2.C. Individuals Assigned to Biddeford Fire Department Assessment Project

CPSM offers the City of Biddeford a project team made up of highly capable and experienced fire, rescue, EMS, and data analysis subject matter experts with a track record of competently and efficiently performing similar projects for municipal clients. Each of our Fire and EMS operational subject matter experts are current and former fire, rescue, and EMS chief officers who have years of experience working in the local government setting to include cities and counties. This experience includes working with city and county leadership and elected officials. Our subject matter experts themselves have prior experience serving as practitioners, line officers, and middle managers. Their expertise has been applied to similar projects that CPSM has performed for its clients.

CPSM's organizational chart for the project is provided in Figure 2, which shows our project management team and reporting relationships. A summary of our key personnel's qualifications, experience, and project roles is provided in Table 2, which includes information on our staff's home base location, availability, relevant certifications, licenses, professional association memberships, and training. Resumes/bios for each of our key personnel follow the table.

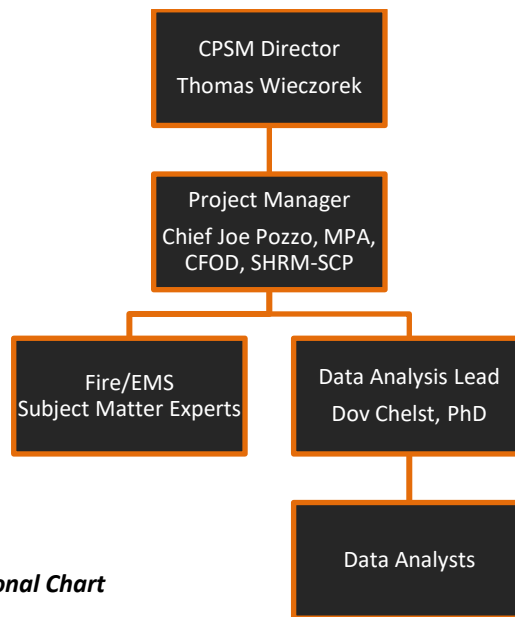


Figure 2. Project Organizational Chart

CPSM offers the City of Biddeford a project team comprising highly capable and experienced fire, rescue, EMS, and data analysis subject matter experts with a track record of competently and efficiently performing similar projects for municipal clients. CPSM utilizes current and former fire, rescue, and EMS chief officers who have prior experience serving as practitioners, line officers, and middle managers. This ensures that our staff have extensive relevant knowledge, hands-on experience, and understanding of all aspects of fire, rescue, and EMS operations. Their expertise has been applied to similar projects that CPSM has performed for its clients. Our comprehensive fire, rescue, and EMS analyses have yielded thousands of recommendations for enhancing the effectiveness and efficiency of department management, operations, staffing, training, data management, fleet management, community relations, and more.

CPSM’s proposed project professionals will be available to support the project through completion. Estimates on proposed personnel availability are included in Table 2. CPSM’s subject matter experts have a long history with the firm, which means staff turnover is not a significant concern. Based on our experience, a dedicated, consistent project team works more efficiently and effectively, ensuring both continuity of project knowledge and budget management. Because we have a stable workforce, our project team members have a history of collaborating on similar projects.

CPSM performs all work using in-house resources and does not subcontract any portion of the work scope. The firm has adequate in-house subject matter experts to perform multiple concurrent public safety studies at any time.

2.C.1. Key Personnel Resumes

For this project, CPSM has assembled a premier team of experts with hands-on experience and knowledge directly relevant to performing the Biddeford Fire Department Assessment project. CPSM assigns a project manager to each project it performs. Our project manager is responsible for all aspects of project execution and contractual compliance. Chief Joe Pozzo will be the project manager for this contract. He will lead our project team of Fire/EMS and Data Analysis subject matter experts in performing the required scope of services in accordance with the contract, CPSM’s quality standards, and the established project budget and schedule.

As project manager, Chief Pozzo serves as a principal point of contact with the City’s project team. He will ensure that CPSM performs the required study with the same exceptional quality and service for which CPSM is recognized. After contract award, at the project kickoff meeting, our project manager will solicit input on our proposed approach and schedule and document the mutually agreed upon final plan that CPSM will follow to complete the project.

Chief Joseph Pozzo is a Senior Manager for Fire and EMS for CPSM and reports directly to CPSM's Director, Thomas Wieczorek. Chief Pozzo has completed more than 50 similar studies while with CPSM. He has had a 40-year career in public service that includes serving as the Director of Public Protection for Volusia County, Florida.

Table 2. Key Personnel Summary

Name/Title/ Location/Availability	Qualifications	Relevant Experience	Project Role
Thomas Wieczorek Director, Center for Public Safety Management, LLC Washington, DC	- Current representative of ICMA on the NFPA 1710 Career Committee 2000 ICMA Award for Excellence 1999 City Manager of the Year, 2003 Person of the Year for Rural Water Association of Michigan 2005 Distinguished Service Award – Michigan Municipal League	- Former police officer, fire chief, director of public safety, and city manager - As city manager, was lead negotiator for ambulance service contracts serving City and surrounding Townships and represented City on a regional rural hospital board. - Former Executive Director of the Center for Public Safety Excellence. Taught Public Safety programs at multiple colleges and organizations - Former officer for Michigan Local Government Manager's Association and Commission of Fire Officer Designation	Corporate Oversight
Fire/EMS Operations Team			
Chief Joseph Pozzo (Ret), MPA, CFOD, SHRM-SCP Senior Manager for Fire/EMS Florida 75% availability to project	40-year career in public service - Master of Public Administration degree from Troy University, BA in Public Administration from Saint Leo University and several associate degrees including an AAS in Fire Science and Protective Services - Chief Fire Officer Designation from the Center for Public Safety Excellence - Senior Certified Professional, Society of Human Resource Management	- As CPSM's Senior Manager for Fire and EMS has completed more than 50 similar studies - Former Director of Public Protection for Volusia County, Florida where he provided executive leadership to 900-employee Fire, EMS, Emergency Management, Corrections, Animal Control, and Beach Safety divisions - Former Fire Chief Volusia County, FL, Loudoun County, VA, Portsmouth, VA	Project Manager
Chief Rondall L. Early, MPA, EFO, NREMT-P Associate North Carolina 100% availability to project	- More than 30 years of fire and EMS experience as a practitioner, middle manager, and Chief officer in the planning, organizing, delivering, and administration of fire and EMS department operations. - Master's in public administration from Troy University	Since 2008, has commanded the Wake Forest Fire Department, a combination fire department that provides fire suppression, basic life support emergency medical services first response, hazardous material response, fire prevention, and fire and emergency medical services training programs.	Fire and EMS Subject Matter Expert

Name/Title/ Location/Availability	Qualifications	Relevant Experience	Project Role
	2011 graduate of the National Fire Academy's Executive Fire Officer Program - Certification of Nationally Registered Emergency Medical Technician-Paramedic - Rank of 2nd Lieutenant with the North Carolina Civil Air Patrol in charge of Emergency Services.	- Served the Portsmouth, VA Fire and EMS Department for 20 years where he rose through the ranks from firefighter to Battalion Chief, working in all areas of this department to include engine and ladder companies, EMS transport, and training. - Final assignment in Portsmouth prior to leaving for Wake Forest was as the Division Chief for Emergency Medical Services, where he oversaw EMS transport operations, EMS billing, training, and administration.	
Mark I Piland, MPH, EFO Associate Texas 100% availability to project	- More than 35 years in Fire-Rescue service - Experience in the Fire Administration, Fire Prevention, Fire Operations, Emergency Management and CERT, Training, Special Operations, Fire Accreditation, emergency response with local, state, and federal governments, and executive level management, and budget - MPH from Eastern Virginia Medical School, and a bachelor's degree in psychology from Old Dominion University - Graduate of the National Fire Academy's Executive Fire Officer Program, The Executive Leaders Program at the Post Naval Graduate School, Center for Homeland Defense, and Senior Executives in State and Local Government from The Kennedy School at Harvard	- Fire Chief and Emergency Management Coordinator for the City of Frisco, Texas - Previously, served as Fire Chief for Volusia County Fire Services in Volusia County, FL and as Shift Commander in Operations for the Virginia Beach Fire Department in Virginia Beach, VA - Served as a Principal Member on NFPA Technical Committee 1981 Standard on Open Circuit Self Contained Breathing Apparatus for seven years - Served with FEMA as a Task Force Leader with Virginia Task Force 2 (VATF-2) a FEMA Urban Search and Rescue Team as well as the East Coast Task Force Divisional Representative for the FEMA US&R System - Served as The Plans Chief for the Pentagon incident during the 9-11 terrorism attack, and deployed as the Task Force Leader for VATF-2 (Type I 80 persons) for Hurricane Katrina Earthquake in Port Au Prince, Haiti	Fire Service Subject Matter Expert
Data Assessment Team			
Dov Chelst, PhD	Subject Matter Expert in analyzing public safety department's workload and deployment	Managed over 140 data analysis projects for city and county agencies ranging in	Data Assessment Lead

Name/Title/ Location/Availability	Qualifications	Relevant Experience	Project Role
Director of Quantitative Analysis New Jersey 75% availability to project	- PhD Mathematics - BA Magna Cum Laude in Mathematics and Physics	population size from 8,000 to 800,000	
Xianfeng Li, PhD Senior Public Safety Data Analyst New Jersey 100% availability to project	- PhD and Master's degree in Polymer Science within the Institute of Chemistry from the Chinese Academy of Sciences in Beijing - Bachelor's degree in Chemistry, Jilin University in Changchun	- Professional computational scientist and certified SAS programmer with a wealth of knowledge and research experience in complex system modeling, data analysis, and statistical physics. - Previously worked as a Research Associate at Clemson University.	Data Analyst
Sarah Weadon, BA Senior Public Safety Data Analyst Virginia 100% availability to project	15+ years' experience consulting with local, state, and federal government agencies in data and geospatial analysis, database and application development, and project management - Bachelor's degree in Classical Languages	Worked with 40+ public safety agencies across the U.S. and Canada, providing data and geospatial analysis of response times, call trends, and station locations	Data Analyst

Director, Center for Public Safety Management, LLC —Thomas Wieczorek

Retired City Manager Ionia, MI; former Executive Director Center for Public Safety Excellence

Thomas Wieczorek is an expert in fire and emergency medical services operations. He has served as a police officer, fire chief, director of public safety and city manager and is former Executive Director of the Center for Public Safety Excellence (formerly the Commission on Fire Accreditation International, Inc.).

He has taught a number of programs at Grand Valley State University, the National Highway Traffic Safety Administration (NHTSA), and Grand Rapids Junior College. He has testified frequently for the Michigan Municipal League before the legislature and in several courts as an expert in the field of accident reconstruction and fire department management. He is the past president of the Michigan Local Government Manager's Association; served as the vice-chairperson of the Commission on Fire Officer Designation; and serves as a representative of ICMA on the NFPA 1710 career committee.

He most recently worked with the National League of Cities and the Department of Homeland Security to create and deliver a program on emergency management for local officials titled "Crisis Leadership for Local Government Officials." It has been presented in 43 states (including Hawaii) and has been assigned a course number by the DHS. He represents ICMA on the NFPA 1710 and 1730 Standards Committees and is a board member on the International Accreditation Service, a wholly-owned subsidiary of the International Code Council.

He received the Mark E. Keane "Award for Excellence" in 2000 from the ICMA, the Association's highest award, and was honored as City Manager of the Year (1999) and Person of the Year (2003) by the Rural Water Association of Michigan, and for distinguished service by the Michigan Municipal League in 2005.

Fire and EMS Operations Assessment Team

Chief Joseph Pozzo (Ret.), MPA, CFOD, SHRM-SCP — Project Manager

Former Director of Public Protection for Volusia County, Florida; Former Assistant Director of Human Resources, Volusia County, FL; Former Deputy Director, Volusia County Department of Public Protection; former Director and Fire Chief, Volusia County, Florida, former Fire Chief, Loudon County, Virginia, former Fire Chief Portsmouth, Virginia.

Chief Pozzo has a 40-year career in public service, and most recently served as the Director of Public Protection for Volusia County, Florida where he provided executive leadership to the Fire, EMS, Emergency Management, Corrections, Animal Control, and Beach Safety divisions. The Public Protection Department is the largest department in Volusia County and includes 945+ employees, an EMS Division that handles over 50,000 transports per year and utilizes Florida's first ever Nurse Triage system in the 911 Center, an all-hazards Emergency Management Division that specializes in coastal storm preparation and response, and a Fire Division that responds to 23,000 calls/year utilizing ALS staffed apparatus.

From March 2015 to September of 2018, Chief Pozzo served as the Assistant Director of Human Resources for Volusia County, Florida (3,200 employees), where he managed the employee relations, benefits administration, and occupational health services functions and teams, as well as assisted in the management and negotiation of six collective bargaining agreements/units. He was also involved in developing and implementing the County's Diversity and Inclusion initiative.

Chief Pozzo has also served as the Deputy Director of the Department of Public Protection Volusia County, Florida, where he was responsible for the day-to-day operations of Fire, EMS, Emergency Management, Medical Examiner, Beach Safety, Corrections, and Animal Services. He was formerly Fire Chief of Volusia County Fire Services, where he developed and implemented a service model designed to introduce EMS transport into the agency, incorporate fleet efficiencies, and enhance the wild land/urban interface efforts.

Prior to Chief Pozzo's appointment in Volusia County in 2010, he served as the Chief of the Loudoun County Department of Fire and Rescue. This agency is a combination fire and rescue system providing fire, rescue, and emergency management services in one of the fastest growing counties in the nation. The fire and rescue system during Chief Pozzo's tenure provided these services to over 275,000 permanent residents living in 520 square miles of diverse suburban and rural area located within the National Capital Region. Services were executed through 450+ career staff and 1,400+ volunteer members operating out of 19 stations.

Prior to his appointment with Loudoun County, Chief Pozzo served as Chief of the Portsmouth Fire, Rescue and Emergency Services Department. This agency is one of the oldest professional departments on the eastern seaboard and served over 100,000 residents during Chief Pozzo's tenure. Chief Pozzo also served in the City of Virginia Beach, Virginia Fire Department for 19 years, reaching the level of Deputy Fire Marshal and then Battalion Chief prior to embarking on his career as a Fire Chief/Director.

Chief Pozzo holds a Master of Public Administration degree from Troy University, a B.A. in Public Administration from Saint Leo University, and numerous public safety technical certifications. He holds the Chief Fire Officer Designation from the Center for Public Safety Excellence and is a Senior Certified Professional in Human Resources through the Society of Human Resource Management (SHRM).

Chief Rondall L. Early, MPA, EFO, NREMT-P — Associate

Fire Chief, Wake Forest, North Carolina

Chief Early has more than 30 years of fire and EMS experience as a practitioner, middle manager, and Chief officer in the planning, organizing, delivering, and administration of fire and EMS department operations. Since 2008, Chief Early has commanded the Wake Forest Fire Department. The Wake Forest fire department is a combination fire department that provides fire suppression, basic life support emergency medical services first response, hazardous material response, fire prevention, and fire and emergency medical services training programs.

Prior to his appointment in Wake Forest, Chief Early served the Portsmouth, VA Fire and EMS Department for 20 years. In Portsmouth, Chief Early rose through the ranks from firefighter to Battalion Chief, working in all areas of this department to include engine and ladder companies, EMS transport, and training. Chief Early's final assignment in Portsmouth prior to leaving for Wake Forest was as the Division Chief for Emergency Medical Services, where he oversaw the EMS transport operations, EMS billing, training, and administration of this departmental function.

Chief Early holds a Master in Public Administration degree from Troy University, is a 2011 graduate of the National Fire Academy's Executive Fire Officer Program, holds the certification of Nationally Registered Emergency Medical Technician-Paramedic, and holds the rank of 2nd Lieutenant with the North Carolina Civil Air Patrol in charge of Emergency Services.

Chief Mark I. Piland, MPH, EFO— Associate

Mark I. Piland is the Fire Chief and Emergency Management Coordinator for the City of Frisco, Texas, one of the fastest growing cities in the United States. Previously, Piland served as the Fire Chief for Volusia County Fire Services in Volusia County, Florida and as Shift Commander in Operations for the Virginia Beach Fire Department in Virginia Beach, Virginia.

Chief Piland has over 35 years in the Fire-Rescue service, beginning as a volunteer, amassing experience in the areas of Fire Administration, Fire Prevention, Fire Operations, Emergency Management and CERT, Training, Special Operations, Fire Accreditation, emergency response with local, state, and federal governments, and executive level management, and budget. Chief Piland has strong expertise in the areas of executive leadership and community disaster preparedness response and outreach programs.

Chief Piland has served with the Federal Emergency Management Agency (FEMA) as a Task Force Leader with Virginia Task Force 2 (VATF-2), a FEMA Urban Search and Rescue Team, as well as the East Coast Task Force Divisional Representative for the FEMA US&R System. He also served as a FEMA Working Group Member for Command and General Staff and Incident Support Team Leader. Chief Piland served as The Plans Chief for the Pentagon incident during the 9-11 terrorism attack and deployed as the Task Force Leader for VATF-2 (Type I 80 persons) for Hurricane Katrina in New Orleans (2005), and the Earthquake in Port Au Prince, Haiti (2010).

Chief Piland has served as a Principal Member on NFPA Technical Committee 1981 Standard on Open Circuit Self Contained Breathing Apparatus for seven years. He was recently selected to represent the International Association of Fire Chiefs (IAFC) at the NFPA Forum, a think tank of fire service leaders brought together to discuss and make recommendations for the protection of the fire service as well as the life and safety protection needs of society.

Chief Piland possesses a masters of public health degree from Eastern Virginia Medical School and a bachelor of psychology degree from Old Dominion University. He is a graduate of the National Fire Academy's Executive Fire Officer Program, The Executive Leaders Program at the Post Naval Graduate School, Center for Homeland Defense, and Senior Executives in State and Local Government from The Kennedy School at Harvard.

Data Assessment Team

Dov Chelst, PhD — Data Assessment Lead

Director of Quantitative Analysis

Dov Chelst is an expert in analyzing public safety department workload and deployment. He manages the analysis of all public safety data for CPSM. He is involved in all phases of CPSM's studies from initial data collection, onsite review, large-scale dataset processing, statistical analysis, and data report design. To date, he has managed over 140 data analysis projects for city and county agencies ranging in population size from 8,000 to 800,000.

Dr. Chelst has a PhD in Mathematics from Rutgers University and a BA *Magna Cum Laude* in Mathematics and Physics from Yeshiva University. He has taught mathematics, physics, and statistics at the university level for nine years. He has conducted research in complex analysis, mathematical physics, and wireless communication

networks, presented his academic research at local, national, and international conferences, and participated in workshops across the country.

Public Safety Data Analyst — Xianfeng Li, PhD

Dr. Xianfeng Li is a professional computational scientist and certified SAS programmer with a wealth of knowledge and research experience in complex system modeling, data analysis, and statistical physics. He performs CPSM's fire and EMS data analyses. He previously worked as a Research Associate at Clemson University.

Dr. Li earned his PhD and Master's degree in Polymer Science within the Institute of Chemistry from the Chinese Academy of Sciences in Beijing. He earned his Bachelor's degree in Chemistry at Jilin University in Changchun.

Sarah Weadon, BA — Senior Public Safety Data Analyst

Sarah Weadon has over 15 years' experience consulting with local, state, and federal government agencies in the areas of data and geospatial analysis, database and application development, and project management. She has worked with over 40 public safety agencies across the U.S. and Canada, providing data and geospatial analysis of response times, call trends, and station locations. Her skill in understanding the results of the analyses in the broader context of each client's budget, political, and overall reality, supports the development of practical, actionable recommendations. Ms. Weadon holds a bachelor's degree in Classical Languages.

2.D. References for Similar Projects with Cities of Similar or Greater Size Performed in Last Five Years

CPSM's references for similar projects with cities of similar or greater size performed within the last five years are provided in Table 3. These references are for projects with full-time career departments in similar settings and circumstances as well as similar size departments.

Electronic copies of the reports for CPSM's Exeter, New Hampshire; Danville, Kentucky; and Lufkin, Texas are provided with our proposal submittal.

Table 3. References for Similar Projects Within Past Five Years

Name and Address of Government Agency/ Services Provided/ Dates Service Provided	Client Contact and Title/ Telephone Number/ Email Address	Description of Services Performed
Town of Exeter, NH 10 Front Street Exeter, NH 03833 Fire Staffing and Deployment Analysis August 2019–December 2020	Russell Dean, Town Manager (603) 773-6101 rdean@exeternh.gov	CPSM analyzed the town's fire department, assessed the Emergency Communications Center (ECC), and reviewed the existing public safety facility and available sites to construct a new facility. A forensic data analysis, all-hazard risk assessment, and operational, staffing, administrative, and facility recommendations were prepared as part of this study.
City of Danville, KY 445 West Main Street Danville, KY 40422 Fire Operational & Administrative Analysis Report April 23, 2020–June 2021	Earl Coffey, City Manager (859) 238-1200 ecoffey@danvilleky.gov	CPSM conducted an analysis of the Danville Fire Department (DFD) that included an All-Hazard Risk Assessment of the community. The study was documented in a report that addressed response time and staffing components to examine the current level of service provided by the DFD compared to national best practices, as well as

Name and Address of Government Agency/ Services Provided/ Dates Service Provided	Client Contact and Title/ Telephone Number/ Email Address	Description of Services Performed
		incident data and relevant information to be utilized for future planning and self-review of service levels for continued improvement designed to meet community expectations and mitigate emergencies effectively and efficiently. Other significant components of this report included an analysis of the current deployment of resources and the performance of these resources in terms of response times and the two DFD fire management zones; current staffing levels and patterns; department resiliency (ability to handle more than one incident); critical tasking elements for specific incident responses; and assembling an effective response force. CPSM analyzed these items and provided recommendations where applicable to improve service delivery and for future planning purposes.
City of Lufkin, TX 300 E Shepherd Lufkin, TX 75901 Fire Operational and Administrative Analysis Report April 24, 2018–December 5, 2018	Gerald Williamson, Public Safety Director (936) 633-0203 gwilliamson@lufkinpolice.com	CPSM performed a comprehensive analysis of the city's fire and EMS department, which was designed to provide the city with a thorough and unbiased review of services provided by the Lufkin Fire Department (LFD). During the study, CPSM analyzed performance data provided by the LFD and examined firsthand the department's operations. To begin the review, CPSM project staff asked the city for certain documents, data, and information, which we used to familiarize ourselves with the department's structure, assets, operations, and risk. The provided information was also used in conjunction with the collected raw performance data to determine the existing performance of the department and to compare that performance to national benchmarks. Project staff conducted a site visit to observe fire department and agency-connected supportive operations, interview key department and city staff,

Name and Address of Government Agency/ Services Provided/ Dates Service Provided	Client Contact and Title/ Telephone Number/ Email Address	Description of Services Performed
		and review preliminary data, operations, and community risk. CPSM prepared a report that provided a benchmark of the LFD's existing service delivery performance and community risk as analyzed in the comprehensive data analysis and community risk assessment. This report contained observations and recommendations for more efficient, effective, and in some cases, in a safer manner operations.

3. Project Methodology

The City of Biddeford is seeking a consulting firm to provide organizational and performance management review services for the Biddeford Fire Department. The objective of the assessment is to prepare the department to meet modern and future trends and needs of the community in fire/emergency response preparedness. The assessment is to include, but is not limited to, analyzing the department's organization, management, and staffing; department functions, programs, and services; operating policies and procedures; training and certifications; equipment, and budget. A physical assessment of facilities is not included in the scope of services.

Based on the findings of the assessment, the consultant will provide recommendations to improve the effectiveness and efficiency of department operations. Recommendations may include but not be limited to, improvements, management actions, realigning staff responsibilities/job duties as needed, budget savings or initiatives requiring supplemental funding; as well as to comment on areas found to be well managed and/or appropriately funded.

3.A. Work Plan

CPSM's proposed approach to performing the required scope of services is described in the following subsections.

3.A.1. Gather Pertinent Data and Information in Collaboration with City and Fire Department

Immediately following project launch, CPSM's Project Manager will deliver an operational and administrative information request to the fire department or designated point of contact. This is an extensive request that provides us with a detailed understanding of the department's operations. We will provide instructions for uploading materials to our cloud files. When necessary, our Project Manager and/or Operations Team Members will lead telephone or virtual conferences with City of Biddeford team members to discuss items contained in the request.

Also immediately following the project launch, CPSM's Data Team Lead will submit a preliminary data request, which will evaluate the quality of the Computer-Aided Dispatch (CAD) system data. This will be followed by a comprehensive request for data from the CAD system and the department's National Incident Fire Reporting System (NFIRS) data to conduct the response and workload analysis. This request requires a concerted effort and focused response to ensure the timely production of required data for analysis. The data team will extract five years' worth of Calls for Service (CFS) from the CAD system. Once our Data Team Lead is confident the data are accurate (CAD and NFIRS), they will certify that they have all the data necessary to complete the data analysis.

Following project launch, our Project Manager will arrange an initial virtual meeting with key City and Department staff to discuss our approach to the scope of work for this project, as well as begin the stakeholder dialogue that will drive the project's success.

When CPSM is engaged in performing a public safety assessment for a jurisdiction, we make our project team accessible to our client and available to support the project as needed to ensure successful performance. We have found that by collaboratively partnering with our governmental clients, we are able to work more effectively and efficiently while ensuring a more comprehensive assessment and report. At the project kickoff meeting, we will introduce our project team to the City's project team and share our team's contact information as well as the draft project schedule. This step facilitates better project communication and performance.

CPSM has a firm understanding of this project and the importance of making fire department response decisions based on data and analytics rather than emotion. CPSM has always advocated this approach, which is why we are a leader in performing fire and EMS analyses using the Community Risk Assessment Standards of Cover (CRA-SOC) elements as foundational methods to our projects.

3.A.2. Staffing Analysis and Operational Assessment

We will interview key city and fire department staff regarding the current state of the fire department, analyze community hazards and risk, response and deployment of assets, mutual aid partners, staffing, ability to assemble

an effective response force, and perform a fire management zone analysis that includes response times and ISO coverage and operational performance expectations.

Our team will request data and information from the City that includes Computer-Aided Dispatch data, National Fire Incident Reporting System data, City Comprehensive Growth-Management Plan, City Transportation Plan, City and Fire Department Strategic Plans, staffing and deployment metrics, and a matrix of information, plans, and data germane to the fire department that will support the development of the operational and staffing analysis. A sample of this request is included in Figure 3.



Center for Public Safety Management
Fire Department Study - Document Request

Agency: Sample Fire Department

Municipality: Sample, USA

CPSM Contact

To make the analysis and information gathering process as efficient as possible for the Roswell, GA Strategic Plan Gap Analysis, CPSM is submitting this **Document Request** list. You will be provided a link to upload this information to the CPSM data site.

The information requested herein will familiarize our study team with your agency's structure, assets, operations, and processes. Any questions regarding the listed items can be directed to the CPSM Project Manager, Joe Pozzo at the above listed e-mail or phone number.

CPSM looks forward to working with your agency on this important project. CPSM realizes that you may not have all the documents requested below. ***If there is a document you do not have, please let CPSM know.***

The **Document Request** list is as follows:

1. Current Fire Dept. Organizational chart.
 - a. Number and type of positions assigned to fire administration.
 - b. Number and type of positions assigned to training function.
 - c. Number and type of positions assigned to Community Risk Reduction function (fire prevention, fire investigation, public education).
 - d. Number and type of positions assigned to Emergency Management.
 - e. Number and type of positions assigned to Fire Operations.
 - f. Number and type of positions assigned to ancillary functions such as logistics, fleet, facilities
2. Current City Organizational Chart showing where the FD fits.

1

Figure 3. Excerpt from Sample Document Request

stakeholder virtual meetings to clarify information, request new information, and establish a continuum of relevant dialogue to ensure a full understanding of the community risk and response and deployment of fire resources.

We will conduct a forensic data analysis that focuses on fire services first response types, response times; workload dedicated to fire and EMS first response; station response workload; apparatus/unit workload; peak workload hours; operational response resiliency, and operational response workload of the entire Fire and department.

CPSM will conduct an all-hazards analysis of community risks to include, but not be limited to:

- Demographic/population data analysis
- Target hazards analysis
- Growth and development projections
- Land use, zoning, and geospatial information
- Current Insurance Services Office (ISO) report analysis
- Building information, density, and occupancy type analysis (will use fire department Occupancy Vulnerability Assessment Profile (OVAP) scores if completed and available)
- Environmental factors analysis
- Transportation network analysis
- Fire Management Zone analysis—facility placement and response times
- Fire risk
- EMS risk
- 3-Axis Risk Calculation
- Current services/staffing model and resource deployment in relation to the defined risks
- Analysis of current department deployment of resources and performance
- Linking the Community Risk Assessment to response assets and evaluation of department capabilities to respond to these risks
- Analysis of the department's ability to assemble an Effective Response Force in accordance with national standards and benchmarking (NFPA and CPSE)
- Analysis of and recommendations on Critical Task Capabilities of the Fire and EMS department in accordance with national standards and benchmarking (NFPA and CPSE)
- Analysis of Fire Management Zones for station location, call density, response times, resiliency, community risk
- Analysis of current demographics and population, land use, and projected growth and associated impacts on the department
- Staffing evaluation to include:
 - Deployment methods and staffing performance for incidents
 - Cost analysis for each staffing model
- Facility analysis with regards to accommodation of existing and future staffing

3.A.3. City and Proposer Resources Required

CPSM expects the City to provide requested data and information in a timely manner. Delays in providing information and data will delay the delivery of the final document.

While performing onsite stakeholder meetings and onsite information gathering, CPSM expects adequate meeting rooms and when requested, City and/or fire department staff assistance and/or participation. This includes:

Meetings

- Preparatory meetings with city and fire department leadership (virtual).
- Internal stakeholder meetings with (virtual and in-person) to identify staffing and deployment issues and concerns.

- Formal presentation of findings and recommendations to the City Council at a regular or special public meeting specific to this report.

Evaluation and Analysis Activities

- Examination of the current and future environmental factors that affect the department's capability to meet staffing and deployment goals and objectives and as benchmarked against national standards.
- Evaluate the fire department's strengths, weaknesses, opportunities, and threats as they relate to staffing and deploying resources against current demand and population and future community growth.
- Comprehensive data analysis that includes fire and EMS call demand, response times, unit workload, and department resiliency.
 - Community Risk Assessment to include 3-Axis Risk Calculation and fire department Occupancy Vulnerability Assessment Profile (OVAP) scores if available.
- GIS mapping that assesses fire and EMS district/management zones.
- Analysis of the fire department's ability to assemble an effective response force.
- Demand analysis mapping.
- Critical task analysis for the fire department.
- Staffing analysis to include the need for potential future staffing based on community growth.

Report Preparation Activities

- Development of a work plan for gaining consensus of City Council, Fire Department administrative staff and stakeholders regarding service level benchmarks.
- Cost analysis of each staffing model identified and options for funding the cost of each model presented.
- Development of planning recommendations for the near term, mid-term, and long term.

3.A.4. Presentation of Data and GIS Mapping

CPSM will present the data analysis in a series of tables and charts depicting the outcomes of the analysis. Using GIS, we will conduct an analysis on call demand concentration of fire, EMS, and non-emergency calls. The results of the GIS analysis are presented in GIS mapping illustrations. Examples are identified in the following tables and figures.

Table 4. Call Types

Call Type	Number of Calls	Calls per Day	Call Percentage
Breathing difficulty	9,366	25.7	8.7
Cardiac and stroke	13,665	37.4	12.7
Fall and injury	14,747	40.4	13.7
Illness and other	29,426	80.6	27.3
MVA	7,280	19.9	6.7
Overdose and psychiatric	5,146	14.1	4.8
Seizure and unconsciousness	11,070	30.3	10.3
EMS Total	90,700	248.5	84.1
False alarm	1,646	4.5	1.5
Good intent	526	1.4	0.5
Hazard	893	2.4	0.8
Outside fire	2,101	5.8	1.9

Call Type	Number of Calls	Calls per Day	Call Percentage
Public service	1,815	5.0	1.7
Structure fire	993	2.7	0.9
Fire Total	7,974	21.8	7.4
Canceled	9,235	25.3	8.6
Total	107,909	295.6	100.0

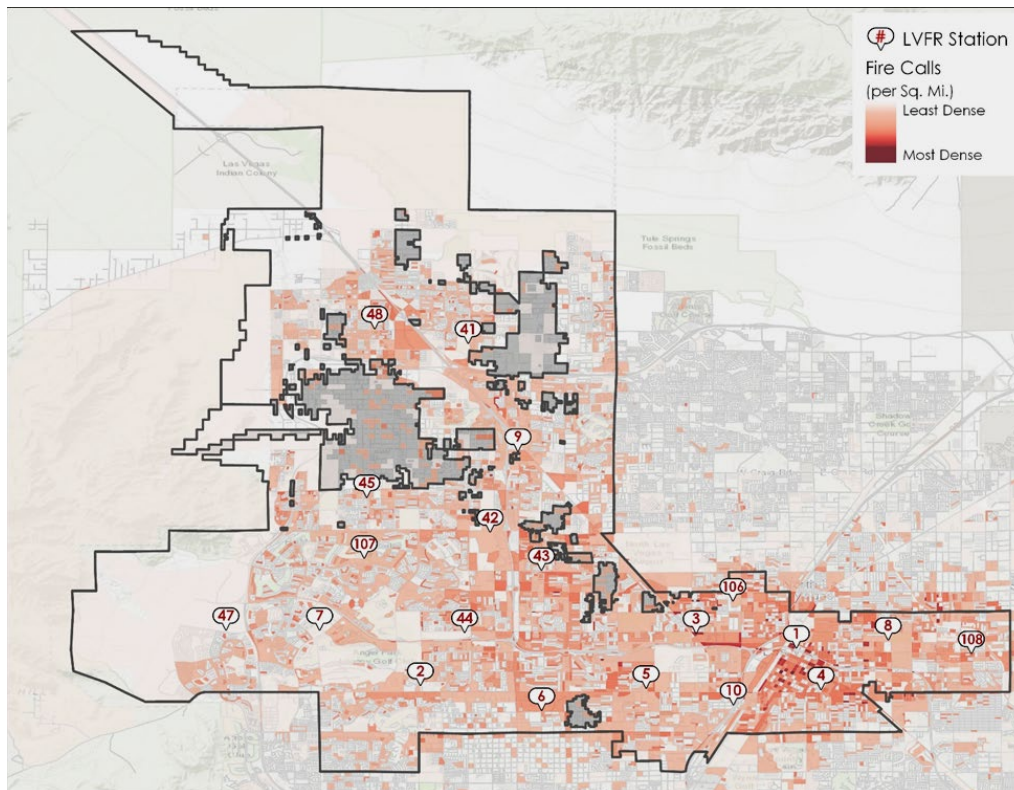


Figure 4. Density of Fire Calls

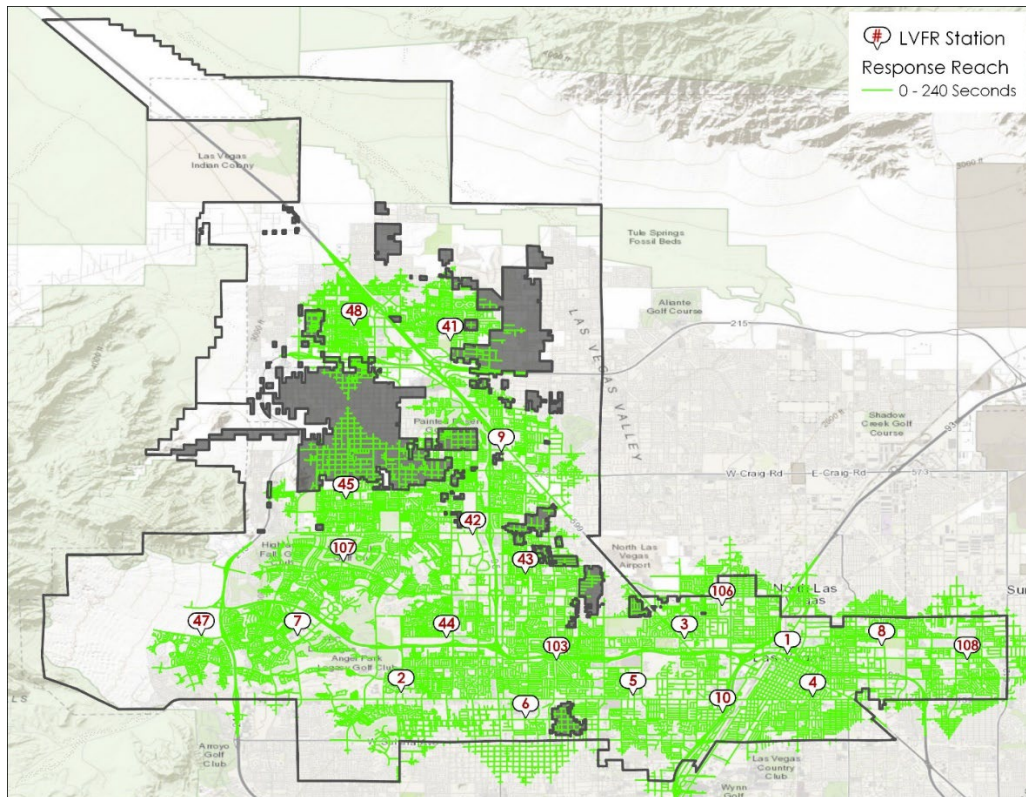


Figure 5. 240-Second Travel Time Bleed Map, City-wide Analysis

Table 5. 90th Percentile Response Time of First Arriving Unit, by Call Type (Minutes)

Call Type	Dispatch	Turnout	Travel	Total	Number of Calls
Breathing difficulty	2.4	2.0	7.3	10.6	8,053
Cardiac and stroke	2.8	1.9	7.3	10.9	11,685
Fall and injury	3.3	2.0	9.0	13.0	12,304
Illness and other	3.1	2.0	9.2	12.8	23,551
MVA	2.2	1.7	7.1	10.1	6,116
Overdose and psychiatric	10.2	2.0	8.5	18.2	3,701
Seizure and unconsciousness	3.0	1.9	7.9	11.6	9,840
EMS Total	3.1	1.9	8.4	12.2	75,250
False alarm	2.7	1.9	9.8	13.2	1,495
Good intent	3.0	1.8	9.8	12.7	410
Hazard	3.1	1.8	9.8	14.1	630
Outside fire	2.3	1.6	7.4	10.4	1,723
Public service	3.0	1.9	9.1	12.7	1,044
Structure fire	2.9	1.6	6.0	9.2	639
Fire Total	2.8	1.8	8.9	12.2	5,941
Total	3.0	1.9	8.4	12.2	81,191

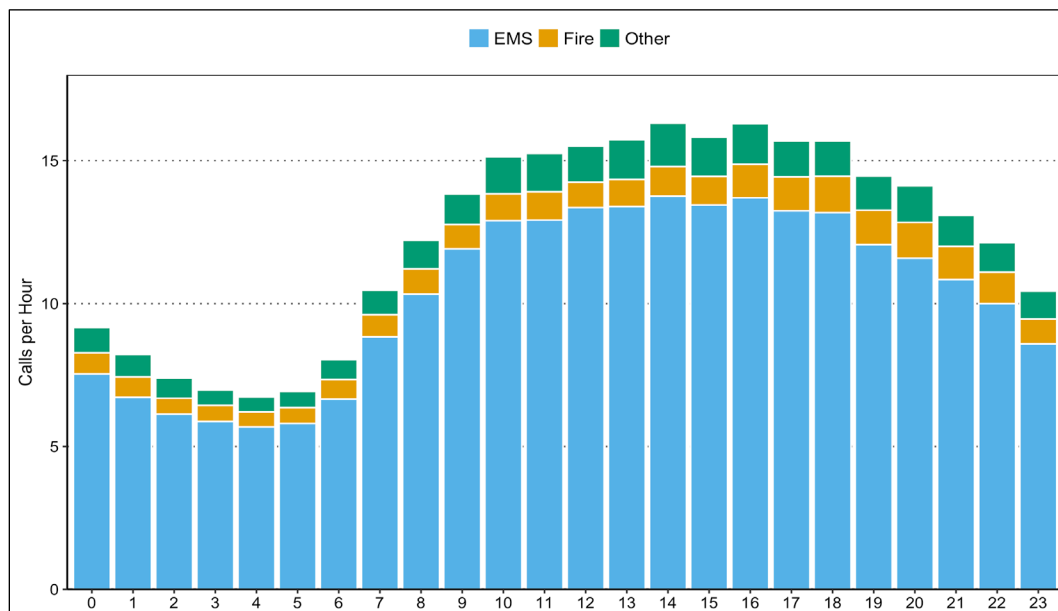


Figure 6. Call Demand by Hour of Day

3.B. Examples of Anticipated Survey Tools

CPSM uses a variety of survey tools to solicit stakeholder input for its assessments of fire departments. These may include one-on-one or group interviews, public meetings, and/or a questionnaire. For each project, we select the most appropriate survey tool(s) depending on factors such as availability of stakeholders and schedule.

3.C. Process for Identifying Key Stakeholders for Soliciting Input

Our project manager will collaborate with the City and Department to identify the specific key stakeholders for this project and to arrange for the interview schedule and location. Stakeholders may include City officials, Fire Department leadership and personnel, other City departments, community members, as identified by the City in conjunction with CPSM's assistance.

3.D. Description of Anticipated Interview Process

CPSM has conducted hundreds of stakeholder interviews. When our project manager and fire service subject matter experts conduct stakeholder interviews, we utilize an inclusionary interview process rather than force it through structured questions. Our experience guides us through a process where we gain the greatest amount of information through listening and discussion and encouraging open dialogue with the stakeholders.

3.E. Other Major Methodologies or Tools Used to Obtain Understanding of Current Operations

CPSM employs a systematic approach to evaluating a fire department's current operations. Our methodology is based on nationally recognized industry standards, guidelines, and criteria, including the Commission on Fire Accreditation's Standards of Response Coverage. We have refined our methodology based on the hundreds of public agency assessments CPSM has conducted as well as the expertise of our fire services subject matter experts. Following a systematic approach ensures that the assessments we conduct are comprehensive and that we collect, analyze, and present data in an organized format. Our subject matter experts have volumes of research data collected while conducting our studies and analyses that we have available to apply to specific projects. Our subject matter experts understand all the elements, practices, nuances, and structures in a fire department, as they themselves have years of experience as practitioners, first-line supervisors, middle managers, and senior leaders in municipal fire departments.

3.F. Proposed Benchmark for Measuring Results/Outcomes

CPSM utilizes National Fire Protection Association (NFPA) 1710 benchmark for career departments, the Center for Public Safety Excellence (CPSE) Standard of Cover elements, and Insurance Services Office-Fire Suppression Rating Schedule (ISO-FSRS) when benchmarking results/outcomes of our analysis regarding staffing, assembling an effective response force, critical tasking, and response times.

3.G. Project Deliverables

CPSM's project deliverables will include draft and final versions of the study report and presentation of the draft report to City staff and departmental personnel and to elected officials at a public workshop.

3.G.1. Draft and Final Reports

CPSM will deliver a draft copy of the report to the City and Department for review and comment.

The report will include at a minimum:

- Executive summary
- Study methodology
- Data gathered and evaluated
- Findings including a summary review of the strengths of the Department and opportunities for improvement and change
- Performance objectives including measures and compliance methodology
- Proposed changes and recommendations including best practices as well as rationale
- Supporting statistics and other visual data to fully illustrate the current situation and consultant recommendations

After presentations of the draft report (see below for more on presentations), CPSM will address comments received, finalize the report, and deliver the final report in both electronic (MS Word and PDF formats) and hard copies (five copies) as required.

3.G.2. Presentations

CPSM will prepare and conduct formal presentations of the draft study report findings and recommendations to 1) City staff and departmental personnel and 2) elected officials at a public workshop. We prepare in advance of our presentations to understand the intended audience and their specific needs and goals. This helps us present information in a manner that is sensitive to each presentation's audience composition, interests, and goals. Our presentation will incorporate use of multi-media tools to ensure that the presentation communicates pertinent information to the audience effectively both in terms of content and interest. CPSM's subject matter experts are accustomed to providing such presentations to similar audiences for our other municipal clients, and our presentations have been very well received both by our clients and stakeholder attendees. We will coordinate with the City on the schedule, attendees, location, etc. for each presentation.

4. Timeline

Table 6 provides a draft timeline for completion of the Biddeford Fire Department Assessment, submittal of the draft and final reports, and presentations on the draft report. After contract award, we will discuss the draft timeline with the City, and based on the discussion, we will submit a revised final schedule.

Table 6. Study Time Frame

Milestone Timeline	Milestone or Task	Description
1	Full execution of the agreement	Agreement completed between client and CPSM.
2 7–14 days	Project Kickoff Meeting	CPSM will conduct a virtual meeting with client’s project team. Our project manager will kick off the project by introducing our team, clarifying, and confirming expectations, detailing study parameters, discussing our proposed approach and schedule, and commencing information and data gathering.
3 7 days	Administrative, Operational, and Response Data Requests <i>We will provide instructions for uploading materials to our cloud file storage system.</i>	Immediately following the kickoff meeting, our Fire/EMS Project Manager will deliver an information request to the client. This request will provide us with a detailed understanding of the Department’s relevant policies, practices, organization, management, staffing, etc. Additionally, our Data Analysis Lead will submit a preliminary data request, which will evaluate the quality of the CAD system data. This will be followed by a comprehensive request for data from the CAD system and the department’s NFIRS report information to conduct a response and workload analysis from these records management systems.
4 <i>These two analyses overlap and are continuous until the Final Operational Report is delivered</i>	Response Data Analysis Commences Operational Analysis Commences	Once the Data Team is confident the CAD and NFIRS data are accurate, they will certify that they have all the data necessary to complete the analysis-Data Analysis commences. The Operations Team will review the data and information uploaded to our cloud file and begin the Operational Analysis. During this period, the Project Manager and operations team members will gather additional information as they build the background information of the Operational Report through virtual meetings, email request, and conference calls.
5 65 days	Deliver Draft Data Analysis Report	The Data Team will provide the client a Draft Data Analysis Report for review. The City will provide CPSM with a consolidated set of comments on the report that CPSM will address and incorporate.
6 90 days	Operations Team Onsite Visit	Once the Draft Data Analysis is in draft form, and the operations team has completed the background information sections of the Operational Analysis, the Project Manager will schedule an onsite visit. The purpose of this visit is to collect additional administrative and operational information as needed, conduct stakeholder

Milestone Timeline	Milestone or Task	Description
		interviews, and confirm information already recorded in the draft report.
7a 120–130 days	Deliver Draft Final Operational Analysis Report	CPSM will deliver a Draft Operational Report that includes the Data Analysis to the client. The client will provide CPSM with a consolidated set of comments on the report that CPSM will address and incorporate.
7b 140–150 days	Deliver Final Report	CPSM will deliver a Final Report to the client as specified in the proposal.
8a	Presentation of Initial Draft to City Staff and Department Personnel	CPSM will deliver a presentation of the initial report draft to the City staff and Department personnel.
8b	Presentation of Subsequent Draft to Elected Officials at a Public Workshop	CPSM will provide a formal presentation to elected officials at a public workshop to be coordinated with the City and Department.
Total Elapsed Time: 150–180 days		

5. Supporting Data

Not applicable.

Qualifications to Conduct a Fire Department Assessment

BIDDEFORD, MAINE

January 12, 2022



Table of Contents

	Letter of Transmittal	i
1	Qualifications	1
2	Project Methodology	10
3	Project Timeline	26



January 12, 2022

James Bennett, City Manager
City of Biddeford
205 Main Street, Suite 107
Biddeford, ME 04005

Dear Mr. Bennett:

The Matrix Consulting Group is pleased to provide you with our qualifications to conduct a Fire Department Assessment for the City of Biddeford. This proposal is based on our review of the request for qualifications, background review of the City and the Fire Department and our experience working with hundreds of fire departments in Maine, elsewhere in New England and across the United States.

A review of our services, experience, and qualifications will show that the Matrix Consulting Group is highly qualified because of its extensive experience evaluating fire operations, emergency medical services, management, and resource deployment throughout the United States. Our firm was founded in 2002 and members of the project team have over 30 years' experience in consulting and municipal management.

Our team's Fire and EMS analytical experience includes over 350 projects throughout the country, including these sample assignments (with New England projects in **bold**):

Amesbury, Massachusetts

Anchorage, Alaska

Auburn, Maine

Augusta, Maine

Bedford, New York

Berlin, Maryland

Berlin, New Hampshire

Billerica, Massachusetts

Canandaigua, New York

Chelsea, Massachusetts

Clinton, Massachusetts

Estacada, Oregon

Falmouth, Massachusetts

Greenwich, Connecticut

Highland, California

Hoboken, New Jersey

Indio, California

Keene, New Hampshire

Killington, Vermont

Mason, Ohio

Meriden, Connecticut

Milwaukee, Wisconsin

Monrovia, California

Montpelier, Vermont

New Rochelle, New York

North Kingstown, RI

Pacific Grove, California

Peoria, Illinois

Plano, Texas

Portland, Oregon

Pueblo, Colorado

Red Bluff, California

Reno, Nevada

Sacramento, California

San Antonio, Texas

Somerville, Massachusetts

Springdale, Arkansas

Westport, Connecticut

Yarmouth, Massachusetts

We are also conducting fire and EMS studies in **Sandwich (MA)** and Phoenix (AZ).

The following points characterize our approach to conducting fire studies:

- All of the staff for our proposed team are extremely experienced, having themselves conducted up to hundreds of EMS and fire service studies.
 - The President of the firm, with 40 years of fire service analytical experience would manage the project.
 - Our lead analyst, Robert Finn, has led the analysis of numerous fire studies, include examining the opportunities for contract services or regionalization of services.
- We are a 'fact based' firm providing detailed data collection and analysis.
- We obtain extensive input from 'stakeholders' in our studies, including municipal managers and elected officials, EMS and fire service managers and staff.
- We work closely with our clients through interim reports and review meetings.

As President, I am authorized to represent the firm in negotiations.

If you have any questions, please do not hesitate to contact me at 650-858-0507 or via email at rbrady@matrixcg.net. I can also be contacted at the letterhead address.

Richard P. Brady

President

Matrix Consulting Group

1 Qualifications

This section of our qualifications provides an overview of the firm, our experience, and qualifications as well as that of the proposed project team in providing fire and emergency medical analytical services to government agencies in general and to fire service agencies in particular.

1. Introduction to the Matrix Consulting Group

The Matrix Consulting Group, founded in 2002, is a management consulting firm dedicated to enhancing the efficiency and effectiveness of local governments, for their employees and the citizens they serve. Key elements of our approach to working with local governments in general and fire service agencies in particular include:

- We are specialists, not generalists. Each member of our proposed project team has experience conducting scores of fire department reviews. As described later in this proposal we have conducted over 350 fire studies, many in New England.
- We maximize field time with our clients, typically devoting over half of our project budgets to obtain client input through interviews and data collection.
- We take pride in exceeding expectations in every project.
- We have a strong commitment and record of providing assistance to our clients to implement appropriate solutions to organizational and management issues.
- Our corporate headquarters are in California. We also have offices in Massachusetts, North Carolina, Texas and Oregon. We are incorporated in both California and Massachusetts.
- Currently, we have 20 full time and 8 part time staff.

While we provide a wide variety of services to local government, the analysis of public safety (police and fire) services is our largest service area. This is described in the following section of this proposal.

2. Fire Service Analytical Experience

The Matrix Consulting Group has conducted over 350 fire and emergency medical

services studies. A summary of the Matrix Consulting Group's fire and emergency medical services analytical experience in recent years is provided in the table below (with New England projects in **bold**):

Amesbury, Massachusetts	Greenwich, Connecticut	Pacific Grove, California
Anchorage, Alaska	Highland, California	Peoria, Illinois
Auburn, Maine	Hoboken, New Jersey	Plano, Texas
Augusta, Maine	Indio, California	Portland, Oregon
Bedford, New York	Keene, New Hampshire	Pueblo, Colorado
Berlin, Maryland	Killington, Vermont	Red Bluff, California
Berlin, New Hampshire	Mason, Ohio	Reno, Nevada
Billerica, Massachusetts	Meriden, Connecticut	Sacramento, California
Canandaigua, New York	Milwaukee, Wisconsin	San Antonio, Texas
Chelsea, Massachusetts	Monrovia, California	Somerville, Massachusetts
Clinton, Massachusetts	Montpelier, Vermont	Springdale, Arkansas
Estacada, Oregon	New Rochelle, New York	Westport, Connecticut
Falmouth, Massachusetts	North Kingstown, RI	Yarmouth, Massachusetts

We are also currently completing fire studies in **Sandwich (MA)** and Phoenix (AZ).

3. Project Staff

The Matrix Consulting Group proposes to utilize a senior project team, including our President, who will serve as the Project Manager and be involved throughout the project. The project team includes former chief officers of career departments and a GIS Analyst.

This project team has worked with hundreds of fire departments across the country, including city, county and regional fire departments. The organization chart, which follows, depicts the project team and summary of their experience:

Summary of Project Team Qualifications

Richard Brady
President
Project Manager

Mr. Brady has been providing management consulting services to municipalities for 40 years across all governmental functions, including over 250 fire and EMS studies, department clients, conducting costs and financial analysis, organizational and operational assessments, organizational structure reviews, feasibility studies, technology and equipment reviews, and performance audits.

He has led all of our fire studies in New England. This includes recent fire department assessments for Auburn and Augusta (ME), Boston (MA), Chelsea, Somerville, Truro, Provincetown, Wilbraham, Yarmouth and Haverhill (MA), Meridian and Westport (CT), North Kingston (RI), and Dinuba (CA).

He has a Doctoral Degree from Oxford University and a BA from Cal State, Hayward.

Robert Finn
Senior Manager
Lead Analyst

Robert Finn is a Senior Manager with the firm. He has over 30 years' experience as a public safety manager and consultant. Mr. Finn is a former Fire Chief and has led our fire service consulting practice the past 6 years. He has conducted over 75 fire departments reviews in Massachusetts and across the country.

Mr. Finn has recently worked on fire and EMS department studies in Auburn (ME), Big Bear Lake (CA), Boston, Chelsea, Falmouth, Yarmouth and Billerica (MA), Lincoln (RI), Westport (CT), Butte County, Pacific Grove and Dinuba (CA), Davenport (IA), Perrysburg (OH), and Winter Garden (FL).

He holds an MBA and BA in Public Safety Administration from Grand Canyon University in Phoenix, AZ.

Terry Lewis
Senior Consultant
Project Analyst

Terry Lewis is a Senior Consultant with our firm and has over 30 years' experience as a consultant and fire service manager. He worked in all capacities of the fire service including financial management, fire prevention, public education, and operations, eventually becoming Fire Chief.

Mr. Lewis was a member of our department study teams for Yarmouth and Billerica (MA), Westport (CT), Butte County (CA), Davenport (IA), Matanuska-Susitna Borough (AK), King William County (VA), Mesa County (CO), Merced County, Santa Paula, and West Sacramento (CA).

Mr. Lewis has a Bachelor of Science in Fire and Safety Engineering Technology and an Associates in Accounting from the University of Cincinnati.

Ryan Peterson
Consultant
Project Analyst

Ryan Peterson is a Consultant with the Matrix Consulting Group, specializing in GIS and data analytics. He has over five years of experience in conducting geospatial analysis for local and regional governments, having previously worked for the City of Portland and City of Beaverton, as well as the Tri-County Metropolitan Transportation District of Oregon (TriMet). Mr. Peterson has recently worked on fire analytical projects for West Sacramento (CA), Mequon (WI), Atherton (CA) and New Rochelle (NY).

He holds a BS in Geography/GIS from University of Oregon, as well as a GIS Graduate Certificate from Portland State University, and a certificate in programming from the Epicodus School.

Detailed project team resumes are included in the following pages.

RICHARD P. BRADY, PHD

PRESIDENT, MATRIX CONSULTING GROUP

Richard is the Matrix Consulting Group's Founder and President. Richard has been a management consultant to local government for more than 40 years. Prior to joining the Matrix Consulting Group, he was the MAXIMUS national Vice President in charge of its local government consulting practice, and before that the managing partner of the California-based management consulting firm of Hughes, Heiss & Associates. The vast majority of his work is in the fire services, law enforcement, criminal justice, and public safety areas.

Richard has conducted master planning and management audits, each of which have included evaluation of all departmental programs; service level analysis for fire suppression and emergency medical services; financial analysis of all fees and revenues; and training program evaluation. Also included review of emergency management practices.

Experience Highlights

Berlin, NH: Richard served as the Project Manager for this engagement. He was responsible for oversight of all aspects of the project that examined the feasibility of consolidating EMS and Fire Services. Key findings/ achievements of the project:

- Development of facility plan for the consolidated operation.
- Financial analysis for transfer of capital assets.
- Financial analysis of the costs and savings of a consolidated operation.

Bellingham, WA: Richard served as the Project Manager for this project that developed a strategic plan for the Fire Department. Key findings/achievements include:

- Developed a 10-year strategic plan for the Department and contract Fire District.
- Recommended multiple improvements to the response system.
- Provided analysis and recommendations to enhancements to emergency management operations.

Role on This Engagement: Richard will serve as the project manager.

Relevant Clients:

AL	Birmingham
CA	Big Bear
CA	Butte County
CA	Monterey
CA	Merced County
CA	Placer County
CA	San Jose
CA	Sacramento
CA	Tuolumne County
CO	Mesa County
CO	Steamboat Springs
CT	Greenwich
CT	Westport
FL	Coconut Creek
GA	DeKalb County
GA	Peachtree City
IA	Davenport
MA	Billerica
MA	Boston
ME	Augusta
MI	Sterling Heights
MN	Hennepin County
MO	Columbia
NY	New Rochelle
OH	Cleveland
OH	Columbus
OR	Jefferson County
OR	Portland
WA	Bellingham
WI	Oshkosh

Years of Experience: 40+

Education:

BA, California State University, Hayward
Ph.D., Oxford University, United Kingdom

ROBERT FINN

SENIOR MANAGER, MATRIX CONSULTING GROUP

ROBERT is a Senior Manager with the Matrix Consulting Group and previously served as the Chief of the Southlake (TX) Department of Public Safety. Mr. Finn has a strong educational background coupled with a successful track record that includes strategic planning, budgeting, change management, community relations, and building collaborative partnerships. Robert has over 30 years of fire service and consulting experience covering all aspects of the fire service industry.

Robert's relevant experience includes serving the City of Southlake, Texas for 25 years in the following roles:

- Chief of Police (2008 to 2011)
- Chief of Fire Services (2004 to 2008)
- Lieutenant of Professional Standards (1999 to 2004)
- Lieutenant of Training (1995 to 1999)
- Coordinator of Emergency Medical Services (1993 to 1995)
- Firefighter / Driver / Paramedic (1987 to 1993)

Billerica, MA: Robert was the lead analyst on this project aimed at an assessment of the Fire Department. Key findings/ achievements of the project:

- Increasing minimum staffing on engine companies to 3 personnel.
- Relocation of a station to improve response times and reduce risk of flooding.
- Elimination of a redundant Captain position.

Westport, CT: Robert was the lead analyst on this study develop a strategic plan for the Fire Department. Key findings/achievements include:

- Changes to the deployment model to improve services.
- Improvements to the record keeping and data reporting systems
- Relocating Fire Prevention to centralize the service in the Town.
- Implementing electronic inspection and plan review processes.

Role on This Engagement: Robert will be the lead analyst on this project.

Relevant Clients:

AK	Anchorage
CA	Big Bear
CA	Huntington Beach
CA	Mercer County
CA	Monterey
CO	Mesa County
CO	Steamboat Springs
CT	Greenwich
CT	Westport
GA	DeKalb County
IA	Davenport
MA	Billerica
MA	Boston
MA	Yarmouth
ME	Auburn
MI	Sterling Heights
NC	Raleigh
NY	Bedford
NY	New Rochelle
OH	Cleveland
TX	Possum Kingdom
TX	San Antonio
WA	Bellingham
WI	Oshkosh

Years of Experience: 30

Education:

MBA, and BS, Public Safety Administration, Grand Canyon University

Professional Association:

National Fire Protection Association (NFPA)

International Association of Fire Chiefs (IAFC)

Center for Public Safety Excellence (CPSE)

TERRY LEWIS

SENIOR CONSULTANT, MATRIX CONSULTING GROUP

TERRY has over 30 years of fire service and consulting experience. He previously served as the Chief of the Henderson (KY) Fire Department. Terry has a strong educational background coupled with a successful track record of leading an agency of 60 personnel in a community with 30,000 residents. Terry brings a wealth of knowledge and experience evaluating the staffing and operational needs of fire and EMS operations.

Terry's relevant experience includes serving the City of Henderson, Kentucky as Fire Chief for 10 years. He began his career with the Loveland-Symmes (OH) Fire Department where he advanced through the ranks until being appointed as Chief of Henderson. He has experience in the following areas:

- Administration
- Fire Prevention
- Financial Management
- Operations
- Hazardous Materials

Experience Highlights

Yarmouth, MA: Terry was a technical analyst on this project aimed at an assessment of internal and shared service improvement opportunities. Key findings/ achievements of the project:

- Identification of consolidation opportunities in Emergency Communication Services.
- Staffing requirements for a peak hour EMS unit.
- Development of service requirements, staffing needs, and costs of operating a during winter and peak summer months.

Oshkosh, WI: Terry was a technical analyst on this study to look at the staffing, operations, and deployment of the fire department. Key findings/achievements include:

- Centralizing fleet and facility maintenance in the City.
- Discontinuing the interfacility EMS transfer program.
- Reorganization to improve reporting relationships in the Department.
- Deployment changes to improve gaps in coverage in the City.

Role on This Engagement:

Terry will be a technical expert for fire operations.

Relevant Clients:

CA Atherton
 CA Big Bear
 CA Butte County
 CA Dixon
 CA Huntington Beach
 CA Mercer County
 CA Monterey
 CA Placer County
 CO Steamboat Springs
 CT Greenwich
 CT Westport
 FL Coconut Creek
 GA DeKalb County
 IA Davenport
 MA Billerica
 MA Boston
 MA Chelsea
 MI Sterling Heights
 NC Raleigh
 NH Berlin
 NY New Rochelle
 OH Cleveland
 OR Estacada
 TX San Antonio
 WA Redmond
 WI Oshkosh

Years of Experience: 30+

Education:

BS Fire Technology, AS Accounting, University of Cincinnati

Professional Association:

National Fire Protection Association (NFPA)

International Association of Fire Chiefs (IAFC)

Center for Public Safety Excellence (CPSE)

RYAN PETERSON

CONSULTANT, MATRIX CONSULTING GROUP

Ryan is a data and GIS analyst with the firm and is involved in all emergency medical and fire projects. He performs data and GIS analysis for all public safety studies and is responsible for the creation of our response time analysis and graphics. Ryan has over eight years of geospatial and data analysis for public safety agencies. Prior to joining the Matrix Consulting Group in 2017 he was a GIS analyst for several local government agencies in the Pacific Northwest.

Experience Highlights

Berlin, NH: Fire and EMS Service Study

Ryan was a data and GIS analyst on this project that examined the feasibility of consolidate private EMS services with the Town Fire Department.

- Conducted the calls for service data analyst to determine the location for EMS and Fire calls for services.
- Geographic analysis to determine response time capabilities
- Developed three projection scenarios to determine future workload and staffing models.

Jefferson County, OR: Fire and EMS Feasibility Study

Ryan was a data and GIS analyst on this project that examined the feasibility of consolidating private EMS with the County Fire District.

- Conducted calls for service and unit utilization analysis.
- Conducted financial analysis related to costs of providing both services now and into the future.
- Developed mapping scenarios to illustrate travel time performance from various station locations.

Role on This Engagement:

Ryan will serve as the GIS and data analyst to help develop scenarios on current performance and future needs.

Relevant Experience:

AZ	Buckeye
AZ	Peoria
CA	Atherton
CA	Big Bear
CA	Monterey
FL	Coconut Creek
FL	Highland Beach
HI	Kauai County
IA	Davenport
IL	Rockford
MA	Billerica
MA	Yarmouth
MD	Berlin
NH	Berlin
OH	Columbus
TX	Fort Worth
TX	Lewisville
TX	Travis County
WA	Bellingham
WA	Mercer Island
WA	Tacoma
WI	Mequon
WI	Oshkosh

Years of Experience: 8

Education:

BS in Geography,
University of Oregon

4. Project References

This table below provides references for the quality and depth of our work.

Berlin, New Hampshire Fire Service EMS Study James Wheeler City Manager (603) 752-7532	The Matrix Consulting Group was retained by the Town of Berlin to determine if EMS transport services should be provided by the Fire Department as opposed to contracting with a 3rd party private provider. The study examined facility needs, training requirements, current costs and revenues and the process for acquiring capital equipment needed to assume transport services. The analysis showed that moving EMS transport services into the Fire Department would cost the City an additional \$8,673 the first year, but then generate savings of \$60,000 - \$100,000 in the subsequent five years.
Yarmouth, Massachusetts Fire and Police Department Operational Reviews Chris Dwelley Assistant Town Manager (508) 398-2231	In this study, the firm developed a comprehensive assessment of internal and shared service improvement opportunities for both Police and Fire. In the Fire Department study, the project team validated current staffing, deployment and management of all operational areas. Key recommendations included establishing performance targets, staffing a peak hour unit, reclassifying an inspector position, enhancing apparatus replacement plans and using call personnel to assist in fire prevention activities. The project team also examined short- and long-term opportunities for internal and external shared services. Most significant among these was a proposed consolidation of police and fire communications.
Jefferson County, Oregon Fire and EMS Feasibility Study Jeff Rasmussen County Administrator (541) 475-2449	The Matrix Consulting Group was retained by Jefferson County to determine the feasibility of the Jefferson County Fire District #1 and the Jefferson County Emergency Medical Services District to consolidate into a single district. The analysis indicated that the continued rising costs of providing emergency services in the County would result in both agencies reaching a point of deficit spending in the next several years. The analysis also showed there would be an improvement in operating costs as compared to revenue in a consolidated environment and recommended seeking voter approval to consolidate the districts with an effective tax rate of \$2.1847 per \$1,000 in assessed value.

We would be pleased to provide additional references for fire and EMS study projects completed.

5. Similar Projects

The following links are provided to allow review of two recent fire studies completed by our firm, and this proposed project team.

Oshkosh, Wisconsin

<https://drive.google.com/file/d/1lzda8DLvHSdeo7chWQS-9Gb8ccKR7yUS/view?usp=sharing>

Yarmouth, Massachusetts

https://drive.google.com/file/d/10GZoQ9UnpZaY8euaH_E9pusszypQcvhj/view?usp=sharing

Fremont, Nebraska

https://drive.google.com/file/d/1UdSEI2o07JH8Vxl_DcO6siNuE7XpVS02/view?usp=sharing

2 Project Methodology

This section illustrates our general approach to conducting fire staffing studies, as detailed project work plan and our recommendations for annual maintenance.

1. General Approach to Conducting the Study

Our place in the government consulting industry is based on our experience and our approach to project management and analysis. While more fully explained in later sections of the proposal, these strengths can be summarized as follows:

- As a team, we have collectively completed over 350 fire service staffing, operational assessments and master plans that include all facets of fire, rescue, and emergency medical operations.
- We are specialists, not generalists. Each staff member of our proposed team has experience conducting dozens of studies related specifically to fire operations, facility assessment, and master plans. Additionally, our team includes members who have served as former fire and public safety chiefs, facility planners, architects, engineers, and cost estimators which provides an in-depth understanding of local government operations, culture, and challenges.
- Our detailed approach to providing consulting services is client centered, recognizing that each client environment is unique. Our methodology includes:
 - Extensive interviews with staff and external stakeholders.
 - Detailed understanding of the fire, rescue, ems operations and needs.
 - Fact-based analysis of workloads, service levels, and costs.
 - Extensive evaluation of current facilities, locations, and determination of facility and space needs.
 - Collaboration with the client as the study proceeds, including obtaining buy-in from staff and stakeholders for our recommendations.
 - Detailed reports that provide a discussion of our analysis, the recommendations developed and an implementation plan to guide our client in making necessary changes over the planning horizon.

We are known for the depth and insight of our analysis and our client responsiveness. We believe very strongly in the science of our craft. As a result, we approach each project utilizing the following techniques as a baseline:

- **Project Management:** One critical success in conducting a project of this size and complexity in an efficient, timely, and effective approach to project management. The Matrix Consulting Group utilizes project management approaches that assures we have minimum impact on staff and their daily operations, while providing effective coordination of the project. Examples include the development of a project schedule in advance of formal project kickoff, distribution of a data collection after understanding what data is available and coordinating onsite efforts well in advance. All project work activities are defined in advance and tied to each project team member, deliverables, the schedule and the budget. Our approach to project management keeps all parties apprised of current project status (formally and informally) and when to expect deliverables.
- **Information Gathering:** Equally important to the success of the project are the methods that we will use to collect, analyze, and present information in order to formulate findings and develop and assure acceptance of recommendations. The Matrix Consulting Group has developed and fine-tuned over the years a number of information-gathering tools and techniques that enable us to gather information efficiently and quickly. They include the use of checklists that specify the types of data and other quantitative information we typically seek in order to evaluate workloads; development of interview guides to ensure that we capture the necessary objective and subjective information required to understand each position, process, and major operational areas; and observing current processes to identify strengths and improvement opportunities
- **Interaction:** Continual communication between the client and project team is a critical component of this study. We will conduct numerous interviews with management and supervisory staff and line staff from the Fire Rescue staff, City management, elected and appointed officials. Additionally, we will have on-going communication with the City's project manager and steering committee related to project status and review of project deliverables. Additionally, we dedicate significant time conducting interviews and meetings with a wide variety of stakeholders to gain an understanding of perspectives on current services and challenges.
- **Quality Control:** Our project manager designs and personally reviews all interim and final products before they are delivered to the client. This is done to ensure a quality document and that all services and analytical efforts outlined in our proposal have been fully completed.

- **Implementation:** Our projects result in implementable recommendations and solutions for our clients. We develop an implementation action plan that identifies the resources required for the implementation, degree of difficulty, and a time frame for successful implementation. The implementation action plan is critical, especially for recommendations that include significant capital and reoccurring cost. The action plan will provide strategy and management tools to successfully complete the implementation. Furthermore, our project team will remain available for consultation during the implementation phase.

Our approach to each project results in implementable recommendations, with approximately 85% of recommendations being implemented.

2. Project Work Plan

The task plan, which follows, provides an outline of the steps that the project team would take to conduct and complete this staffing study. Following the task plan is a suggested schedule for completion of the study.

Task 1 | Initiate the Project and Document Fire and Emergency Medical Service Trends and Issues That Led to this Study.

In order to conduct the study of the current and future facility, staffing and deployment needs of the Biddeford Fire Department, the project team will first develop an initial understanding of the Department and its service environment, as well as seek input on existing service levels and potential issues from Department staff and key stakeholders. This task, which involves on-site time by the project team, allows for an opportunity to learn about the unique characteristics, fire and EMS programs, and other services provided by the Department. This process includes the following elements:

- Interviews with the Mayor and other elected officials (if desired) to obtain views on fire and EMS service issues and improvement opportunities. Other external stakeholders identified by the City and Department would also be interviewed.
- Interviews with the City Manager, Fire Chief and command staff in order to obtain their views on service issues and improvement opportunities in the department.
- Interview City staff to gain an understanding of financial, human resources, community development and planning in the City.
- Interview leadership at regional and State service providers to obtain views on regional opportunities for service delivery and options for Biddeford to contract

out for services. We will work with the Department and City to identify these potential partners.

- Conduct a kick-off meeting with the project steering committee, including a review of project objectives, approach, interim deliverables, and schedule. It should be noted that we will meet with and brief the team at key steps in the study process.

These initial interviews will focus on determining individual attitudes toward current fire and EMS services in Biddeford and organizational considerations, including:

- Adequacy of existing service levels, including responsiveness to the community.
- Ability to effectively recruit and retain paid call members.
- Issues relating to deployment and service consistency in the City.
- Other issues with respect to emergency and/or special operations.

The project team will also collect various documents, including departmental goals and objectives statements, as well as other organizational materials and budget documents. During these initial meetings, the project team will identify key community members for input into the study and determining whether the current Fire and EMS system is meeting community needs.

TASK RESULT

Based on the results of these interviews and initial data collection, the project team will prepare a detailed project schedule and workplan to organize the project team responsibilities and timelines.

Task 2 | Document the Fire Department's Staffing, Organization and Deployment Plan in Biddeford.

To establish a basis for structuring and comprehensively evaluating the fire and EMS operational needs in Biddeford, we will develop a profile of the Fire Department. We will gather and analyze detailed information about the organizational structure, operations and service levels of the Fire Department to use as a basis for planning how services should be delivered in the City. In order to understand the system of fire and EMS service delivery and the basis for alternatives to the delivery of services, we will document:

- An overview of the service delivery systems in terms of service levels, deployments, scheduling and operational management of these systems.

- The organization of the Department and lines of authority that run through them.
- The staffing and deployment plan of the Fire Department.
- Workloads and service level performance indicators.
- Roles and responsibilities of career and paid call staff.
- Basic and in-service training provided to firefighters as well as any cross training.
- Inventory of current vehicles, equipment and facilities in use by the Department.
- All costs related to the operation and capital expenditures of the Fire Department over the past three (3) years.

TASK RESULT

The data will be profiled in a summary narrative and statistical portrait of fire and EMS services in Biddeford. This important first deliverable in the project will be reviewed with the City and Fire Department to ensure accuracy.

Task 3 | Evaluation of Community Risk

A key to this analysis is the development of a detailed understanding of workloads and service levels. To develop this level of understanding, we will document the current community characteristics and analyze workload and service levels as described in the following illustrative subsections.

(1) Review of Services Provided.

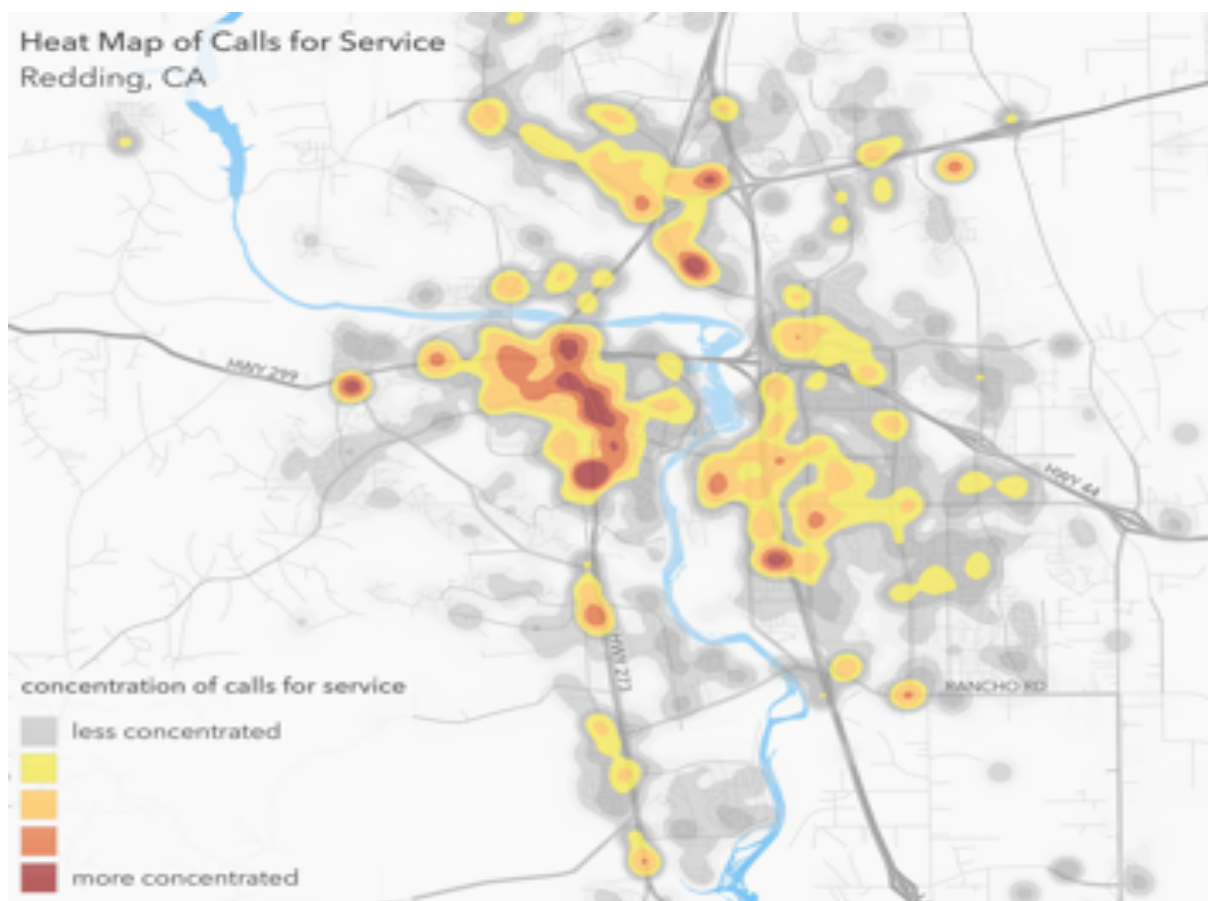
The project team will work to fully understand the services currently provided by the Department and conduct evaluation on these services. Areas to be considered include:

- Review of firefighter career and paid call staff distribution and assignment
- Review and evaluation of administration and support staffing levels
- Review and evaluation of operational staffing levels
- Review staff allocation to various functions in the Department
- Review the staff scheduling methodology in the Department
- Review of any current performance goals, objectives and measurements
- Review of the current staffing and service delivery compared to industry standards and benchmarks

(2) Conduct a Community Risk Assessment.

The project team will work to fully understand the range of hazards found within the Fire Department's area of responsibility and growth projections for the City and contract areas. Specific steps to understanding the fire and non-fire risks present in BFD's service area will include:

- Review of local planning/zoning data combined with Geographic Information System (GIS) data to evaluate the physical risks of the community, including:
 - Overall geospatial characteristics including political and growth boundaries, construction and infrastructure limitations
 - Topography including response barriers, elevation extremes and open space/Wildland interface
 - Transportation network including roads, rail lines and waterways
 - Evaluation of physical assets protected
- Review and interpretation of available census and community development data indicating
 - Population history
 - Census-based population and demographic information
 - Community planning-based population information
 - Transient population and demographic information
 - Population density
 - Community land use regulations
 - Locations of mid-rise and high-rise occupancies
 - Occupancy types by land use designation
 - Hazardous substances and processes
 - Non-structural risk in the service area
- Evaluation of the workloads of the BFD and how it relates to risks, including:
 - A **Demand Study** that will analyze and geographically display the current service demand by incident type and temporal variation

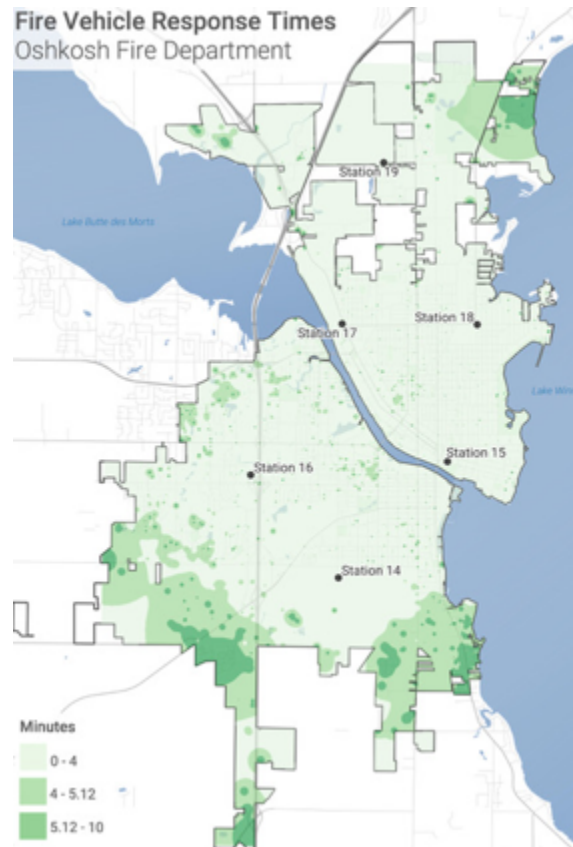


- Development of a matrix for the common and predictable risk types and corresponding staffing, resource needs and time standards to mitigate these types of emergencies. This will allow comparison of the current deployment capabilities against community risks, call demand and community expectations
- We will also separately evaluate the demand for services at other key target hazards.
- Summary of the current available resources and how they correspond to the community risk profile

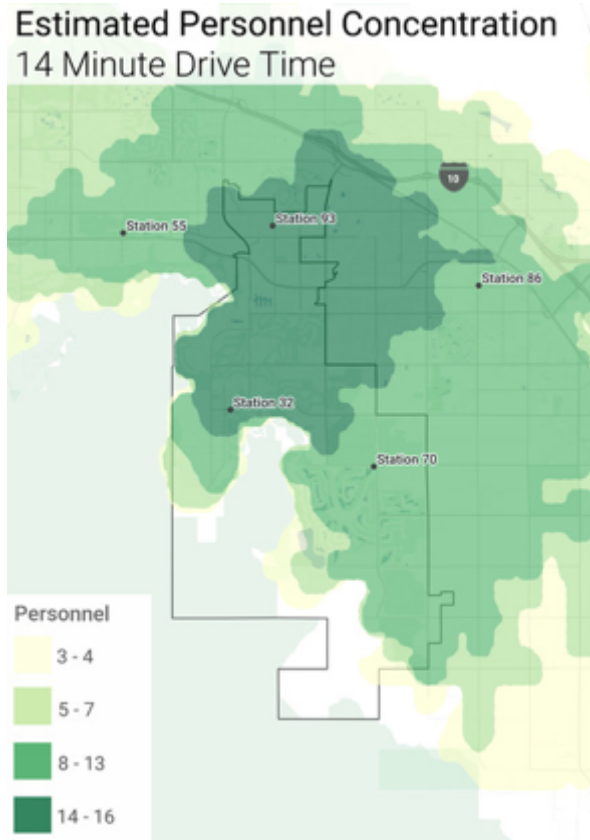
(4) Review of Historical System Performance

The project team will review and make observations in areas specifically involved in, or affecting, service levels and performance. This will include reviewing the impact of traffic calming strategies and other modifications that can impact response travel times. Key areas to be reviewed will include:

- **Distribution Study** – Overview of the current facility and apparatus deployment strategy, analyzed through GIS software, with identification of service gaps and redundancies in initial unit arrival.



- **Concentration Study**
 - Analysis of response time capability to achieve a full effective response force
 - Analysis of company and staff distribution as it relates to the assembly of an effective response force



- **Reliability Study**
 - Analysis of current workload, including unit hour utilization of individual companies
 - Review of actual or estimated failure rates of individual companies
 - Analysis of call concurrency and the impact on the ability to assemble an effective response force an impact on resource exhaustion
 - Analysis of actual system reflex time performance both system wide and by individual companies
- Review of current automatic and mutual aid documents to determine the ability of outside agencies to assist in the delivery of emergency services and development of an effective response force and development of maps illustrating the capability of these resources.

TASK RESULT

This task will conclude in an interim project report showing the current conditions and capabilities of the Biddeford Fire Department, including an apparatus assessment. This document will be delivered to the City, Department and Project Steering Committee for factual review to ensure that our understanding and analysis is factual.

Task 4 | Assess the Fire Department Staffing and Deployment Methods

By this point, the project team will have the data needed to evaluate the current staffing levels and deployments in each operational area of the Fire Department. This task will involve the following approaches:

- Evaluate existing fire call response and service levels.
- Determination of personnel net availability, which includes analysis of factors such as a leave, training, administrative tasks and turnover that impact actual on-duty staffing levels.
- Compare call and service demands and identify opportunities for changes in resource deployment.
 - Based on an understanding of demand and field unit deployment, evaluate existing staffing policies, scheduling, unit deployment and response approaches.
 - Evaluate the current and expected use of overtime and on call utilization to meet daily staffing needs.
- Analysis of time used by fire units to handle workloads and provide service effectively, including:
 - Call processing, turnout, and travel times by priority level and classification.
 - Total spent handling calls by units (unit hour utilization).
 - Consistent allocations workloads among field units.
- In other services, analysis of the ability for staffing levels to support effective operations management:
 - Are spans of control within targeted ranges for individual functions?
 - Are staffing levels sufficient to meet minimum staffing without the frequent use of overtime, and what standards are used to determine requirements?

- How are scheduling systems used for career and paid call personnel?
 - How are priorities and operational decisions supported by data-driven techniques?
- Analyze training programs and the implications for career development as well as meeting community needs.
- Analyze opportunities to adjust the mutual aid and automatic aid response system in the region or where regionalization of services is a possibility.
- Review and evaluate the personnel management practices in the Department for career and paid call personnel, including recruitment practices, selection practices, promotional practices, succession planning, health and wellness, retention programs and performance evaluations.
- Identify any issues that are impacting the effective use of personnel and the delivery of services in the Fire Department.

TASK RESULT

The result of this task would be the development of a staffing, scheduling and deployment model for sworn and non-sworn staff in the Fire Department to include recommended staffing levels for each organizational area and responding to calls with apparatus other than ladder and engine companies.

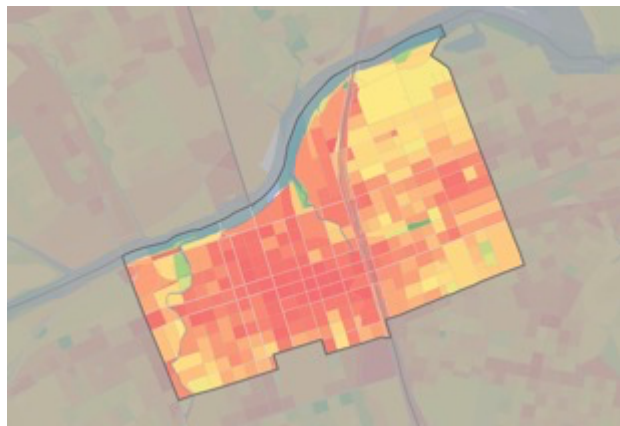
Task 5 | **Develop a Projection of Current and Future Station and Staffing Needs Based on Projected Growth in the City and Identified Potential Contract Communities.**

The unique factors of a community shape the service environment that public safety personnel operate in, and as a result, there is not a one-size-fits-all approach to identifying strategic planning.

The modeling system we have developed to determine the impacts of development and growth on fire service demands is the combined product of using advanced technical capabilities and our experience in working with local government clients.

Key aspects of the model employed to create an accurate and defensive model for planning service and personnel needs include the following:

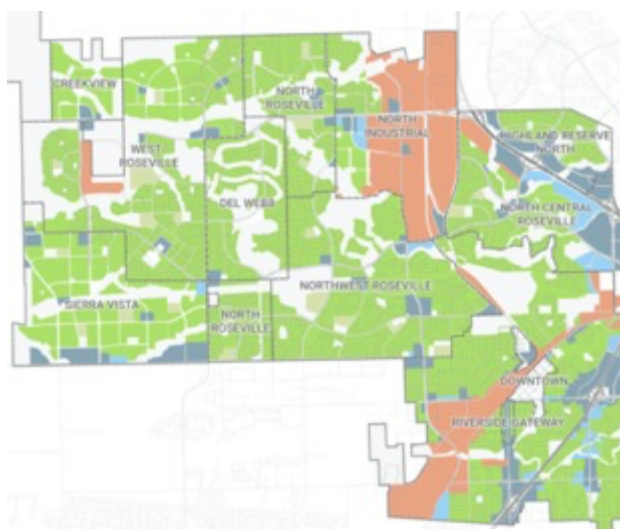
Illustrative Factors Considered to Project Future Staffing Needs



Geographic Analysis of Service Needs

In order to model the effects of the anticipated development projected in Biddeford, it is critical to understand the rates at which existing and similar developments generate workloads and other public safety service needs.

Our analysis will utilize a GIS-centered approach to examine geospatial trends in service demand.

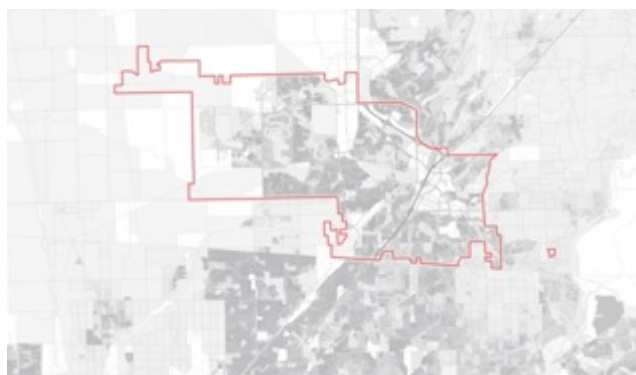


Land Use and Redevelopment

Different types of residential, commercial, and industrial zoning spaces have unique impacts on public safety service needs.

We will meet with Biddeford Planning officials to understand how land is used currently, as well as the configurations of the anticipated development project, in order to accurately model how these needs will evolve.

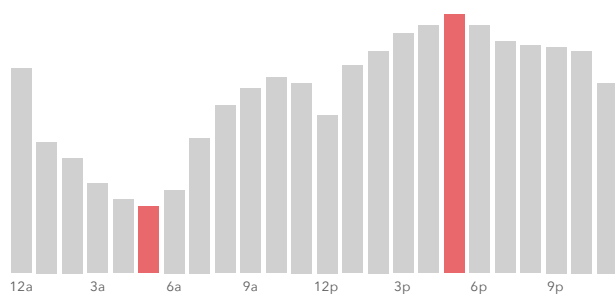
The data collected from Planning and other resources will form the basis of our GIS model of how fire service needs will evolve over the projection timeframe.



Regional Interactions

Understanding the context of the community within its surrounding region is essential to forecasting its planning needs.

This includes developing an understanding of factors such as the daytime working population and effects on field resource demands in the mixed-use environment of this proposed project.



Workload-Based Projections

Rather than base projections for future staffing or facility needs on a simple ratio such as firefighters per capita, our analysis builds staffing needs from how workload changes – whether driven by calls for service, inspection workload, or reports and administrative workloads for other staff.

Data collected for the analysis of projected service and personnel needs includes the following:

- CAD data (up to the past three years if current CAD system has been in place for that timeframe)
- Supporting information for CAD analysis (e.g., unit code and incident type lists, incident report totals).
- Planning and land use GIS shapefiles (preferably including information such as commercial space, housing unit counts, and other key target hazard data)
- Information on planned developments, including expected timeframes for completion when possible

The project team will collect other publicly available data used for the analysis, such as current and proposed road networks, census data, and geographical features.

Is the deployment of apparatus and personnel appropriate to best meet the current and future needs of the community? We will assess the current deployment and staffing of apparatus to determine if apparatus is over or underutilized and whether re-deployment, peak hour units, seasonal units or additional or fewer units are required to meet the needs of Biddeford. Each unit will be evaluated for use by time of day, day of week and seasonally to determine workload factors and whether call concurrence issues may impact the agency.

The results of the service need and staffing projections will be developed into an interim deliverable that provides comprehensive projections for facility and staffing needs to meet current service needs and provide services Biddeford over the next 10 years. The projections will be provided at multiple timeframes in order to provide for a more accurate

planning process and include options for new stations, relocation of stations or consolidation of stations. These options will include the analysis of the following:

- Continuing the combination career/paid call staffing model
- Opportunities to contract out services to enhance efficiencies
- Opportunities to regionalize staffing or deployment of resources

TASK RESULT

The analysis will result in an interim deliverable that comprehensively projects Fire Department facility and staffing needs based on planned development in Biddeford and surrounding areas. The project team will review the draft deliverable with the steering committee and make revisions as needed.

Task 6 | Develop the Final Report and Present the Results of the Study.

Once the work tasks noted above have been completed, our findings, conclusions, and recommendations will be documented in the form of a draft and final report to the City together with detailed plans for implementation, including financial impacts to both operational and capital budgetary needs.

- Executive summary describing the report, methods utilized for analysis, findings and key recommendations.
- Specific recommendations regarding:
 - Any recommended relocation of facilities
 - General location and timeline of any required future fire stations
 - Selection and deployment of each apparatus type
 - Deployment of operations personnel
 - Deployment of any special units or resources
 - Future growth projections and impact on services
- Evaluation and description of deployment options to include:
 - Benefits gained through implementation
 - Extent to which performance objectives will be achieved
 - Any potential negative consequences associated with the implementation
- Implementation plan

The report will include full detailed analysis of the items in the scope of work along with timelines and targets for implementing change and the costs or savings associated with making the change.

TASK RESULT

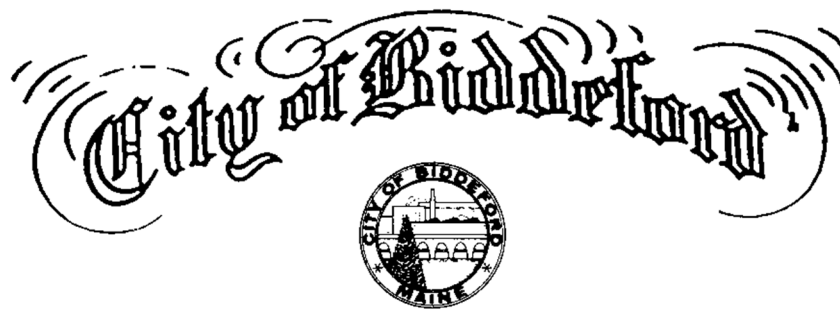
The results of this task would be draft and final reports, which would be reviewed internally prior to making them final. We would be prepared to make a public presentation of the results at a City Council meeting and deliver five (5) bound hard copies of the final report along with one (1) electronic version of the report.

3 Project Timeline

The Matrix Consulting Group proposes to conduct this assignment over a period of 16 weeks, but is committed to remain available to the City to assist with any issues related to the implementations of recommendations both short and long-term that are a result of this project. The following table illustrates the project timeline as proposed:

Proposed Project Schedule																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Initiation																
Stakeholder Input																
Profile																
Baseline Evaluation																
Current and Future Needs																
Draft / Final Report																

The Project Manager is responsible for ensuring each of the major tasks are completed according to the timeline established above. City staff will be needed during tasks to assist with gathering data and setting up interviews required for the project as well as reviewing interim deliverables at the end of each task.



2022.26

IN BOARD OF CITY COUNCIL.....APRIL 5, 2022

BE IT ORDERED, that the City Manager be authorized to extend the agreement with Weston & Sampson Engineers, Inc., for work related to the preparation and submittal of permitting for repair of the river wall at Mechanics Park.

BE IT FURTHER ORDERED, that funding for this activity shall be under the existing FY22 funding account for river wall repair assessment at 22004-92114.



City Council

Meeting Date: April 5, 2022

Meeting Time: 6:00 p.m.

Agenda Item No: 10.d.

Item Description: 2022.26) Discussion/Approval - Review River Wall Repair Alternatives Analysis/Recommended Extension of Contract with Weston & Sampson

Submitted by: James Bennett, City Manager
Brian S. Phinney, COO
Jeff Demers, Director of Public Works
Roby Fecteau, Code Enforce & EMA Director

Supporting Information/Documentation:

Alternatives Analysis Report by Weston & Sampson, dated March 25, 2022

Biddeford Riverwalk Retaining Wall Replacement – High Level Review, 3rd Party Review Letter dated April 4, 2022, James W. Sewall Co

Key Terms:

N/A

Executive Summary:

FEMA has approved the disaster declaration for the river wall collapse at the RiverWalk overlook. Staff is providing a project update to review the wall repair alternatives report, FEMA funding expectations, and next steps. Weston & Sampson recommends a soldier pile and lagging wall design. It happens that this design is also the lowest cost alternative. To ensure selection of the most appropriate alternative given the wall failure and other factors. A 3rd party review was requested as a “check”. James W. Sewall Co., confirmed Weston & Samson’s findings. Next steps include moving forward with permitting, final design once FEMA sign-off is received and construction bidding.

With funding available in the FY22 budget, staff also recommends adding a municipally funded task to Weston & Samson’s Agreement for permitting repair of the known failure and erosion damage at the Mechanics Park wall. The road constructed to access the RiverWalk collapse at Pepperell runs directly by the Mechanics Park section. Moving forward with permitting will allow repair and reduced overall cost. The City’s EMA director is also actively pursuing federal funding in support of the Mechanics Park section.

Detailed Review:

As a result of the storm in October of 2021, a section of the river wall supporting the RiverWalk at the location of the overlook collapsed. The City responded with mitigation activities to stabilize the failed wall section. The City’s EMA director began working with the Federal Emergency Management Agency (FEMA) and the Maine Emergency Management Agency (MEMA) for funding support shortly after the event. After a lengthy and detailed

review by MEMA a request for disaster assistance was filed by the Governor with FEMA and FEMA has accepted the declaration for funding.

The FEMA review and funding process requires several steps. Upon discovery of a disaster-type event identified as eligible for possible disaster assistance, a municipality is authorized, and obligated from as a practical matter, to assess the situation and implement mitigation measures to prevent further damage. As you are aware, the City engaged Weston & Sampson to assess the damage and evaluate alternatives and also engaged Shaw Bros., for the physical mitigation. In order to stabilize the area and provide direct access for the engineering evaluation Shaw Bros., constructed an access “road” from Mechanics Park under the bridge to the wall collapse area to facilitate installation of a cofferdam.

Weston & Sampson completed the engineering analysis and evaluated wall repair alternatives. The Alternatives Analysis Report (Report) is the product of that work. Generally, FEMA funds projects with an eye toward in-kind replacement. The Report identified three alternatives;

1. A mechanically stabilized earth (MSE) wall (existing wall design) with estimated total cost of \$3,500,000 to \$4,500,000.
2. A cast-in-place concrete wall with estimated total cost of \$4,300,000 to \$5,200,000.
3. A soldier pile and lagging wall with estimated total cost of \$2,200,000 to \$2,800,000.

Each design has advantages and disadvantages, see sections 4.2.1, 4.2.2, and 4.2.3 of the Report. Weston & Sampson recommends the soldier pile and lagging wall design. At the beginning of the process the Council expressed concern about the current design, conditions contributing to the wall failure, and assurances that wall repair consider these factors in order to reduce, to the extent possible, the chance of a future failure. The City engaged James W. Sewall, Co., to perform a high-level review of the Report for concurrence on the selected alternative. A copy of the review letter is provided. Sewall agrees with Weston & Sampson’s alternative selection.

The City’s EMA director has been in contact with FEMA to review the Report and confirm the preferred reconstruction approach. As noted above, FEMA typically looks to fund projects only to pre-disaster conditions. Given that the preferred alternative is the least expensive option we do not anticipate FEMA will object to Weston & Sampson’s recommendation.

The next steps in the process involves permitting, final design of the selected alternative, bidding for construction, and finally reconstruction. The current permits for in-river and near-river work are specific to mitigation and stabilization. Staff is requesting an extension of the agreement with Weston & Sampson to proceed with (1) permitting due to the expected agency review and processing period, and (2) final design of the FEMA approved alternative. In addition to the completed scope of work and alternatives analysis, the current agreement with Weston and Sampson states:

2.1 Additional Services: The ENGINEER will assist the OWNER with professional engineering services for additional project needs not otherwise articulated above. These services will be discussed and agreed upon by and between the ENGINEER and the OWNER prior to proceeding.

Based on this language, it is staff's belief that the active agreement with Weston & Sampson allows for extending the scope of work to include permitting, design, and project management; however, as a matter of transparency staff felt it was prudent to inform the Finance Committee and City Council as to the status of the project, remaining tasks, and intent to expand Weston & Sampson's scope of work as noted above.

As has been discussed previously, there is also a known limited failure of the wall at Mechanics Park near the CSO tank outfall. The soil behind the wall is eroding at a rapid pace and creating concern. Installation of the roadway in the river has allowed staff the opportunity to inspect the area confirming that action should be taken to stabilize this section as well. While not part of the collapse at the Pepperell property, the City's EMA director is actively pursuing separate federal funding to assist with repair of the wall at Mechanics Park while the roadway exists. Delaying repair until a later date would increase costs due to reinstallation of the roadway.

In anticipation of receipt of federal funding for the Mechanics Park repair, staff recommends utilizing Weston & Sampson for permitting of the Mechanics Park repair project considering Weston & Sampson will be preparing the permits for construction at the Pepperell section and there is a limited window for in-river work due to fish migration patterns. Absent the emergency that facilitated construction of the roadway and cofferdam, in-river access is limited to July 15th through November 30th each year.

Funding Source:

Now that FEMA has authorized funding the mitigation activity will be reimbursed at 100%. Design permitting and construction is expected to be reimbursed at between 90-96%. A range is specified because the Governor's office is expected to ask FEMA for an increase in the level of reimbursement. Maximum expected exposure is 10% of remaining project costs.

Expenses to date total \$566,311.85 with \$81,414.95 for engineering and \$484,896.90 for construction activities.

For Mechanics Park permitting, there is currently \$50,000 in the FY22 budget for Mechanics Park wall repair assessment (22004-92114) and \$200,000 in FY22 CIP for wall repair and engineering. We suggest using the \$50,000 for permitting. The anticipate cost is expected to be considerably less. For clarification, should federal funding be awarded, repair would be solicited through a sealed bid process with review and award in accordance with the City's purchasing policy.

Staff Recommendation:

Extend the scope of work for Weston & Sampson to include river wall repair permitting at Pepperell and add a separate municipal funded task for permitting for the river wall at Mechanics Park.



westonandsampson.com

WESTON & SAMPSON ENGINEERS, INC.
150 Dow Street, Tower 4, Suite 350
Manchester, NH 03101
tel: 603.263.9296

ALTERNATIVES ANALYSIS REPORT

March 25, 2022

CITY OF
BIDDEFORD
MAINE

Riverwalk Retaining Walls Replacement
Biddeford, Maine



March 25, 2022

Mr. Jeff Demers
City of Biddeford
Director of Public Works/Wastewater Department
371 Hill Street
Biddeford, Maine 04005
Jeff.Demers@biddefordmaine.org

**Re: Alternatives Analysis Report
Riverwalk Retaining Walls Replacement
Biddeford, Maine**

Dear Mr. Demers:

Weston & Sampson Engineers, Inc. (Weston & Sampson) is pleased to submit our Alternatives Analysis Report for the Riverwalk Retaining Walls Replacement project. This report presents our findings and documents our visual observations, topographic survey, subsurface explorations, laboratory testing, engineering assessments, and alternatives analysis. Retaining wall replacement concepts and estimated costs for feasible alternatives are provided along with our recommended replacement alternative to assist the City in deciding how to best proceed with addressing the failed wall portion of the Riverwalk wall and overlook structure.

We appreciate the opportunity to be of continued service to you. If you have questions concerning this report or require additional information, please contact me at 603-263-9499 (striket@wseinc.com).

Very truly yours,

WESTON & SAMPSON ENGINEERS, INC.



Thomas J. Strike, PE (NH)
Team Leader



Tulin Fuselier, PE
Geotechnical Practice Leader

P:\ME\Biddeford ME\ENG21-1343 Riverwalk Retaining Walls\Alternatives Analysis Report\Alternatives Study - Cover Letter.docx

TABLE OF CONTENTS

	Page
1.0 INTRODUCTION	1-1
1.1 Site History and Background	1-1
1.2 October 31, 2021 Failure and Existing Conditions	1-2
1.3 General Elevations (Feet).....	1-3
2.0 SUBSURFACE CONDITIONS	2-1
2.1 Subsurface Exploration Program by Summit (2008)	2-1
2.1.1 General	2-1
2.1.2 Encountered Subsurface Conditions	2-1
2.2 Subsurface Exploration Program by Weston & Sampson (2022)	2-1
2.2.1 General	2-1
2.2.2 Encountered Subsurface Conditions by Weston & Sampson	2-2
2.3 Past Environmental Studies and Weston & Sampson Environmental Testing Results ..	2-3
2.3.1 Past Environmental Studies	2-3
2.3.2 Weston & Sampson Environmental Testing Results	2-3
3.0 ENGINEERING ASSESSMENT AND EVALUATION	3-1
3.1 Existing Structure Conditions	3-1
3.1.1 Stacked, Non-Mortared Granite Block Wall.....	3-1
3.1.2 MSE Wall and Riverwalk Overhang Structure.....	3-1
3.1.3 2021 Failed Retaining Wall.....	3-2
3.1.4 Stacked, Non-Mortared Granite Rubble Wall	3-2
3.1.5 Smokestack and Boiler House Building.....	3-2
3.2 Environmental Considerations for Handling and Disposal of On-Site Soils	3-3
4.0 WALL REPLACEMENT ALTERNATIVES ANALYSES	4-1
4.1 Background	4-1
4.2 Conceptual Retaining Wall Replacement Alternatives.....	4-1
4.2.1 MSE Wall Replacement Alternative	4-2
4.2.2 Cast-in-Place Concrete Wall Replacement Alternative.....	4-2
4.2.3 Soldier Pile and Lagging Wall Replacement Alternative.....	4-3
4.3 Permitting	4-4
4.4 Estimated Wall Replacement Costs.....	4-4
4.5 Recommended Wall Replacement Alternative	4-5
4.6 Data Gaps	4-5
4.7 Additional Engineering Analyses.....	4-5
5.0 LIMITATIONS	5-1

FIGURES

Figure 1	Locus Map
Figure 2	Existing Conditions Plan
Figure 3	Existing Conditions Profile
Figure 4	Conceptual Site Conditions Plan

APPENDICES

Appendix A	Photographs
Appendix B	Summit and Wright Pierce Design Plans
Appendix C	Access Road/Cofferdam Plan
Appendix D	Summit Boring Logs
Appendix E	Weston & Sampson Boring Logs
Appendix F	Environmental Data

1.0 INTRODUCTION

Sections of retaining walls along the Saco River in Biddeford, Maine failed, or were significantly damaged following substantial rainfall on October 31, 2021. The failed and damaged sections are located along a stretch of the Biddeford-Saco Riverwalk that extends through the North Dam Mill Complex at 2 Main Street (project area), as shown in *Figure 1 – Locust Map* and *Figure 2 – Existing Conditions Plan*.

The City of Biddeford (the City) retained Weston & Sampson to provide consulting engineering services for repair of the failed walls. Our services to date have included historical document review, site observations by geotechnical and structural engineers, topographic survey, environmental permitting assistance, subsurface explorations, environmental laboratory testing and analysis, and preliminary engineering assessments and evaluations. This report summarizes our services and findings, and presents alternatives for wall replacement with advantages, disadvantages, and approximate cost ranges for each.

1.1 Site History and Background

The wall system in the project area is approximately 33 ft in height, and has historically consisted of stacked, non-mortared granite block wall (block wall) downstream, and stacked, non-mortared granite rubble walls (rubble walls) upstream of the project area. This report references downstream and upstream as areas left and right, respectively, as standing in Saco River and facing the walls. The Saco River at this location is tidal, therefore river flow direction varies. Our understanding of site history is based on information provided by the City and on our review of available electronic historical information.



View of site prior to wall failure (googlemaps.com)

Based on review of historical photos, construction of the granite rubble retaining wall began prior to 1894. Some time prior to 1920, the block wall was constructed, and portions of the rubble wall were vertically extended using reinforced concrete. The Boiler House building and the approximately 250 ft. tall smokestack located just downstream of the building were constructed behind the extended wall sections. We assume the retaining walls are supported on bedrock that forms the bottom of the Saco River. Historical site photographs as well as photos of the wall failure and existing conditions are provided in *Appendix A*.

The Boiler House building has two below grade levels. Based on site observations, the foundation wall of the building along the Saco River is not integrated with the adjacent retaining walls. We assume both the Boiler House building and the smokestack foundations are supported on the bedrock surface (see Data Gaps Section 4.6). The City was not able to locate plans for the smokestack and Boiler House building.

The retaining walls generally maintained their integrity and configuration until 2006. At this time, an approximately 40 ft. wide section of the granite rubble wall, approximately 80 ft. downstream of the smokestack, failed and collapsed into the Saco River. According to an April 2, 2008 Geotechnical Report prepared by Summit Geoenvironmental Services (Summit), the bottom of the wall after the failure appeared intact and stable. The cause

of the failure was not identified in the Summit Report. The Summit Report provided recommendations for replacement of the failed section of wall with a precast concrete block wall with geogrid tiebacks, also known as a Mechanically Stabilized Earth (MSE) type wall.

The failed section of wall was replaced in 2011 with an MSE wall having a maximum retained earth height of approximately 15 ft. According to review of 2011 Design Plans prepared by Summit and Wright-Pierce, Inc. and on review of construction photos, the new MSE wall base is supported on the top of the remnants of the failed granite rubble wall and the sides are/were structurally connected to adjacent walls with concrete infill and No. 5 steel rebar. Much of the 2006 failed section of wall was left in the Saco River and below the base of the MSE wall.

Wall replacement also included construction of an overhang deck structure, designed by Wright-Pierce, above the MSE wall. The overhang deck is supported by W12x22 steel beams that extend behind the wall. The beams are encased in a concrete slab behind the wall. The overhang deck also includes cast-in-place retaining walls along the sides of and behind the deck. Available Summit and Wright-Pierce Design Plans are provided in **Appendix B**. We understand that the overhang structure became a popular element of the Biddeford-Saco Riverwalk.

Site features along the Riverwalk and behind the retaining walls after the 2011 wall replacement included, the Riverwalk overhang structure, concrete sidewalks, a public garden, a generator in the area of the public garden, light poles, and other ancillary features. Subsurface utilities in this area include electric and stormwater drainage. A paved parking lot for the buildings at 2 Main Street are located south of the Riverwalk (further beyond the retaining walls). Additional subsurface utilities in the paved parking lot area include sewer and gas. The ground surface along the Riverwalk and in the paved parking area are relatively level and range from approximately El. 29 to El. 32 ft. The ground surface just south of the smokestack, in the area of an existing ramp, slope down from El. 30 to El. 27 ft.

1.2 October 31, 2021 Failure and Existing Conditions

An approximately 80 ft. wide section of the rubble wall between the smokestack and the MSE wall/overhang structure failed on October 31, 2021 during a period of significant rainfall in which the Biddeford area received approximately 6.5-inches of rain. The failed sections of wall and backfill material, along with features behind the wall including a concrete sidewalk adjacent to the overhang structure, metal railings, a flagpole, and landscaped features, collapsed into the Saco River. The failure left a steep, sloughed soil slope along the failed wall section. Based on existing site topographic information and site investigations estimating top of bedrock, the failed section of wall was up to approximately 33 ft. in height.

Failure of the retaining wall caused significant damage to the adjacent MSE wall and overhang structure. Damage included loss of backfill and geogrid support behind the MSE wall, displacement and reduced support of wall blocks that were structurally connected to the failed wall, and outward



View of wall failure on November 1, 2021

displacement of MSE wall support base (remnants of the 2006 wall failure). Additional discussions of the structural condition of the MSE wall, overhang structure, and adjacent retaining walls are provided in **Section 3.1**.

Since the time of the failure, stone riprap was placed over the exposed soil to stabilize the slope and a stone fill access road was installed in the Saco River to divert flow away from the failed wall and to provide access for site investigations and future wall replacement construction. The access road extends from downstream of the Main Street Bridge to just upstream of the smokestack. The access road along the failed section of wall and the MSE wall was intended to function as a cofferdam to maintain dry conditions along the project area. Due to the open-graded characteristics of the materials used to construct the access road and absence of an impermeable layer integrated into the road, the river flow easily passes through the access road and lowering water between the access road and the project area is not possible. Details of the access road are shown in a November 15, 2021 Access Road/Cofferdam Plan prepared by Gagnon Engineering, Inc. included in **Appendix C**. Photographs of the failure, damage, and site stabilization are included in **Figure 3 – Existing Conditions Profile** and **Appendix A**.

1.3 General Elevations (Feet)

Weston & Sampson retained Doucet Survey, LLC to complete a topographic survey of the project area and surrounding features. The survey was completed in December 2021 using a Leica Survey Grade Laser Scanner and conventional survey equipment. Survey data were obtained based on vertical and horizontal datums established on survey control provided by the City and do not reference known datums. An existing conditions plan is provided as **Figure 2**.

The following is a summary of elevations for specific features in the project area based on the survey.

A. Top of Granite Rubble/Concrete Wall	El. 27.0 to 29.4 +/-
B. Top of Concrete Slab at Overhang Deck	El. 29.5 +/-
C. Top of Granite Block Wall	El. 29.7 to 30.0 +/-
D. Top of Access Road	El. 7.0 +/-
E. Top of Bedrock in Explorations (see Section 2.0)	El. -3.0 to -2.5 +/-
F. Reported Saco River Mean High Water	El. 9.6 +/-

2.0 SUBSURFACE CONDITIONS

2.1 Subsurface Exploration Program by Summit (2008)

2.1.1 General

Summit completed a subsurface exploration program in March 2008 after the 2006 wall failure to support geotechnical evaluation and design for the wall replacement. The program included seven borings designated as B-1 through B-7 and six probes designated as P-1 through P-6, as included in *Appendix D*.

2.1.2 Encountered Subsurface Conditions

According to our review of the Summit Boring Logs, the explorations generally encountered fill material above refusal. Borings B-6 and B-7, however, encountered a native silty clay layer below the fill and above refusal. The fill generally contained a mixture of sand, gravel, silt, and clay and varying amounts of debris including brick, ash, wood, and cinder pieces. The Summit Report indicates that the explorations encountered “a significant number” of cobbles and boulders. Refusals were encountered in all explorations, except in P-1, at depths ranging from approximately 7.5 to 22.5 ft. Although the Summit Report indicates some explorations encountered refusals on boulders and others encountered refusal on bedrock, rock coring was not completed at refusal depths. Our opinion is, therefore, that the nature of refusals in the Summit explorations (boulders, bedrock, or other obstructions) cannot be confirmed. Groundwater was not observed in the Summit explorations. The Summit Boring Logs are provided in *Appendix D*.

2.2 Subsurface Exploration Program by Weston & Sampson (2022)

2.2.1 General

The Weston & Sampson exploration program was completed in the project area between January 18 and January 20, 2022. The purpose of this exploration program was to collect information on bedrock and soil conditions below and behind the wall failure area necessary to evaluate geotechnical and environmental considerations and appropriate wall replacement alternatives.

The program included five borings designated as B-101 through B-105, with borings B-104 and B-105 offset several times due to shallow refusal. Borings with “B” and “C” designations were offset from borings with “A” designations to attempt to advance the offset borings beyond shallow refusal depths. A groundwater monitoring well was installed in B-105C. Borings B-101 through B-103 were completed between the base of the wall failure and the stone fill access road. Up to approximately 11 ft. of sandy fill material was placed between the bottom of the wall failure area and the side of the stone fill access road to provide access to these borings. Borings B-104A through B-105C were completed behind the wall failure and at the top of the sloughed slope. Approximate boring locations are shown in *Figure 2*.

The borings were advanced to depths ranging from approximately 2 to 21 ft. by SW Cole Explorations, LLC of Hermon, ME with a track-mounted drill rig. Borings B-101 through B-103 were advanced using drive-and-wash drilling methods and borings B-104A through B-105C were advanced using hollow-stem auger drilling methods. Rock core sampling in B-101 through B-103 was completed using an NQ wire-line core barrel.

Standard penetration tests (SPTs) were conducted in B-104A through B-105B by driving a 24 in. long by 1-3/8 in. inside diameter (2 in. outside diameter) split spoon sampler with blows from a 140 lb. automatic safety hammer falling 30 in. per blow. Hammer blows per 6-inches of sampler penetration (for 24-inches) were recorded. The blow counts for the middle 12-inches are combined and designated as the SPT blow count, which is correlated to soil consistencies and engineering soil properties. Split-spoon refusal, where noted in the boring logs, is defined as 100 hammer blows for less than 6-inches of sampler penetration. Drilling refusal is defined as no discernable advancement of the auger under the full weight of the drill rig over a period of approximately 5 minutes. SPTs were not conducted through the sand fill above the bedrock in B-101 through B-103 or in B-105C, where a groundwater monitoring well was installed.

2.2.2 Encountered Subsurface Conditions by Weston & Sampson

Bedrock was encountered directly below the sand fill in B-101 through B-103. Subsurface conditions in B-104 through B-105C generally consisted of up to 14 ft. of undocumented fill over refusal. Boring B-105B, however, encountered a layer of weathered bedrock below the fill and above the boring termination depth of 16 ft.

Descriptions of the subsurface conditions encountered in the borings are included in the boring logs in **Appendix E**. The major strata encountered in the borings described below. Variations may occur and should be expected outside and between boring locations.

Fill – Approximately 8 to 15 ft. of undocumented fill was encountered in B-104A through B-105C. The fill generally consisted of a mixture of fine to coarse sand, gravel, non to medium plasticity fines, and debris materials. The debris materials included brick, slag, ash, concrete, and asphalt. Auger refusals were encountered in the fill at depths ranging from approximately 2 to 8 ft. Based on periodic auger grinding and inconsistent refusal depths, cobbles, boulders, and larger debris materials are likely present in the fill. Boring B-104C was terminated in the fill at 14 ft. due to damaged augers.

Bedrock/Refusal – An approximate 1 ft. thick layer of weathered bedrock was encountered below the fill, and at approximately 15 ft. in B-105B. The weathered bedrock possessed the consistency of well graded, fine to coarse gravel. Boring B-105B was terminated in the weathered bedrock at 16 ft.

Bedrock was encountered in B-101 through B-103 below the sand fill that was placed to access these boring locations. The top of the bedrock surface was encountered at elevations ranging from approximately El. -3 to El. -2.5 ft. Ten feet of rock core samples were collected from each of these borings. The bedrock generally consisted of very hard, slightly weathered, moderately fractured METAMORPHIC GNEISS. The Rock Quality Designation (RQD) of the bedrock samples ranged from 75 to 90 percent, indicating good quality bedrock.

Rock coring was not completed in borings B-104A through B-105C. Refusals at these locations, therefore, could have been on boulders, large debris, or bedrock.

Groundwater – Groundwater was encountered in B-104C, B-105B, and B-105C at depths ranging from approximately 8 to 12 ft. based on observation of saturated samples. We anticipate that groundwater levels will fluctuate with season, variations in precipitation, construction in the area, tides, and other factors. Perched groundwater conditions could exist close to the ground surface, especially during and after extended periods of wet weather.

A groundwater observation well was installed in B-105C at a depth of approximately 13 ft. Groundwater was measured at approximately 12 ft. on January 20, 2022. Weston & Sampson returned to the site on February 28, 2022 and groundwater was not observed in the well.

2.3 Past Environmental Studies and Weston & Sampson Environmental Testing Results

2.3.1 Past Environmental Studies

Based on our review of available information from the Maine Department of Environmental Protection (MEDEP), the project area coincides with two state-listed remediation sites (the North Dam Mill Site and Westpoint Stevens Boiler House Site). These sites are associated with the historic release of petroleum, metals, and polycyclic aromatic hydrocarbons (PAHs) to soil and groundwater from former bulk petroleum storage at the site, former industrial land use, and occurrence of historic urban fill. Response actions to address these impacts were historically completed by others and included the following:

- Removal of former underground storage tanks (UST) and associated petroleum-impacted soil.
- Construction of a soil cap over portions of properties at 2 Main Street. A plan of the cap areas is included in *Appendix F*.

2.3.2 Weston & Sampson Environmental Testing Results

Weston & Sampson completed a limited environmental site investigation concurrent with the geotechnical subsurface explorations described above to further characterize contaminated materials that may be encountered during project construction. Specifically, the investigation was completed in the anticipated excavation areas for wall replacement activities, which correspond with B-104A through B-105C. The investigation included:

- Evaluation of soil for visual and olfactory evidence of contamination, such as stains, odors, and free-phase oil.
- Field screening of soil samples for total volatile organic compounds (VOCs) using a photoionization detector (PID).
- Collection of shallow and deep soil samples from each location for disposal characterization laboratory analysis.

The shallow soil samples for laboratory analysis were collected at depths ranging from 0 to 8 ft., while deep samples were collected from greater than 8 ft. to the bottom of each boring. The samples were submitted to Pace Analytical for the following:

- Volatile Organic Compounds (VOCs),
- Semi-Volatile Organic Compounds (SVOCs),
- Total Petroleum Hydrocarbons (TPH),
- RCRA-8 Metals,
- Polychlorinated Biphenyls (PCBs),
- Hazardous characteristics (pH, reactivity, and ignitability), and
- Specific Conductance.

Additionally, the shallow and deep samples at the B-104 locations were analyzed for herbicide and pesticides, while select samples from both locations were also analyzed for toxicity characteristic leaching procedure (TCLP) lead analysis. Except for VOCs, the analysis was performed with composite samples. Samples for VOCs were collected as discrete 2-foot grab samples within each composite sampling interval based on soil evaluation/field screening results. The laboratory data reports are included in **Appendix F**.

As noted on the boring logs and in the sections above, fill materials containing debris materials such as ash and slag were identified at B-104A through B-105C; however, no other evidence of contamination or elevated PID screening results were encountered. As shown in Table 1 in **Appendix F**, laboratory analyses identified various metals, SVOC, and TPH concentrations at both locations along with a low-level VOC concentration (toluene) in shallow soil at the B-105 locations. Where detected, the concentrations were less than the most stringent MEDEP residential Remedial Action Guidelines (RAGs), except for arsenic at the B-104 and B-105 locations, lead at the B-105 locations, and a single SVOC, benzo(a)pyrene, at the B-104 locations.

3.0 ENGINEERING ASSESSMENT AND EVALUATION

3.1 Existing Structure Conditions

Our assessment and evaluation of the failed section of wall, the existing stacked, non-mortared granite block wall, the MSE wall/overhang structure, the stacked non-mortared granite rubble/concrete wall, the smokestack, and Boiler House building are described in the sections below. A profile section view of these structures is shown in *Figure 3*.

3.1.1 *Stacked, Non-Mortared Granite Block Wall*

The stacked, non-mortared granite block wall extends approximately 90 ft. from the existing Main Street Bridge to the existing MSE wall. The downstream side of the wall forms the wingwall for the Main Street Bridge. The battered wall retains the earth and park features from above. The support depth for most of the wall is not known, however, plans for the existing bridge indicate the wall closest to the bridge is supported on bedrock. We assume the remainder of the wall is similarly supported on bedrock.

The wall section from the bridge to approximately 15 ft. downstream of the MSE wall appears to be in a stable configuration. The batter of an approximately 15-foot-long section that abuts the MSE wall appears to be bulging with wider gaps between the blocks. Based on our field observations, there appears to be a distinct area where the wall transitions from a uniform construction with consistent shape granite blocks, having smaller joints and less voids (as may have been originally constructed) to a wall type showing signs of settlement, unevenness and more random nonrectangular placed stone, creating bulging in the wall at this location.

3.1.2 *MSE Wall and Riverwalk Overhang Structure*

The MSE wall extends approximately 55 ft. from the granite block wall to the failed wall. The MSE wall is recessed in from the face of the granite stone block wall and has less of a battered slope. As previously discussed, the MSE wall foundation was constructed on remnants of the 2006 failed section of the granite rubble wall.

MSE walls include wall blocks, backfill soils, and geogrids that are connected to the blocks and extend into the backfill soils (reinforced soil zone). Wall stability is derived from the weight of the wall blocks and interaction between the backfill soils and the layers of geogrid. For most MSE walls, the geogrids provide the greatest resistance to forces applied to the wall system.

The 2021 wall failure caused significant damage to the MSE wall, particularly along the upstream side of the wall where blocks were structurally connected to the failed wall and to the rubble wall below. As previously discussed, damage included loss of backfill and geogrid support behind the MSE Wall, displacement and reduced support of wall blocks, and outward displacement of the MSE wall foundation. It also appears that portions of the rubble block wall below the upstream side of the foundation have displacement downward.

The loss of backfill behind portions of the wall means that the geogrids in these areas are no longer contributing to wall stability. The volume of backfill loss behind the wall is not fully known but appears significant behind the upstream side of the wall. Loss of backfill was also observed near the bottom, east side of the wall. We anticipate that the loss of backfill will continue until repairs are completed, particularly during rainfall events.

The Riverwalk overhang structure is supported on the MSE wall backfill soils and on the wall blocks. The upstream retaining wall of the structure was undermined as a result of the adjacent wall failure. The loss of backfill behind the MSE wall, along with loss of foundation support of the upstream retaining wall significantly reduces the structural integrity of the Overhang structure. We have not monitored any movement of the structure.

The MSE wall is considered structurally deficient due to the sustained damage discussed above and does not provide sufficient stability/capacity to support the backfill soils and overlying features, such as the Riverwalk overhang structure. Movement of the base foundation of the MSE wall, which supports the wall blocks, and loss of geogrid support indicates the wall could be subject to further displacement and potential failure.

3.1.3 2021 Failed Retaining Wall

The 2021 failed section of retaining wall was mostly comprised of non-mortared, granite rubble blocks, with a section of reinforced concrete above the blocks near the existing smokestack. As discussed above, the failed section was approximately 80 ft. wide and extended from the existing MSE wall to the existing smokestack. Based on a test pit completed at the base of the riprap cover, portions of the wall below the Saco River remain intact. The base of the intact portion of wall appears to be supported on bedrock.

The cause of the failure is not evident and multiple factors over an extended time could have attributed to the failure. These factors could have included a combination of the age of the wall (up to 130 years), saturated backfill soil, damage/fatigue from the 2006 wall failure, and/or concentrated circular river currents (eddies) displacing backfill soils and wall stone.

3.1.4 Stacked, Non-Mortared Granite Rubble Wall

The stacked, non-mortared granite rubble wall extends from the wall failure area to the upstream end of the Boiler House building. This section of wall is of the same construction type as the 2021 failed section of wall. As previously discussed, the granite rubble section of the wall was constructed prior to 1892 and the wall was vertically extended sometime before 1920 using reinforced concrete. The heights of the two different wall types varies along its length, but the height of concrete generally increases upstream to downstream.

The stacked granite rubble and concrete extensions in front of most of the Boiler House building appear to be in a stable configuration. However, the wall extending from the smokestack to approximately 25 ft. upstream of the building corner, appears to have settled based on gaps observed in the top of the concrete section of the wall. In front of the smokestack, the end of concrete wall section has displaced due to loss of backfill and/or long-term movement of the rubble blocks below.

3.1.5 Smokestack and Boiler House Building

As previously discussed, plans for both the smokestack and Boiler House building were not located by the City, therefore, the foundations types and found support depths are not known. We assume, however, that the foundations for both structures are supported on bedrock and not on backfill soils above the bottom of the existing retaining walls.

Monitoring points (prisms) were installed on the smokestack by the City and the Contractor retained by the City to assist with this project (Shaw Brothers) to evaluate any horizontal displacement of the smokestack. We understand that no displacement has been recorded.

3.2 Environmental Considerations for Handling and Disposal of On-Site Soils

Our environmental testing program indicate that the in-situ soils behind the failed retaining wall are environmentally contaminated. Additionally, our research of MEDEP files indicate that the project area coincides with two state-listed remediation sites and that a cap system is in-place above environmentally contaminated soils.

Regardless of the wall replacement alternative selected by the City, the project will require handling and disposal of materials with contaminant concentrations exceeding MEDEP residential Remedial Action Guidelines (RAGs). The estimated volume of disposal required, however, will vary between the alternatives as discussed in **Section 4.0**.

Surplus excavated materials with contaminant concentrations exceeding residential RAGs will require appropriate off-site transportation and disposal. Based on concentrations detected, surplus excavated materials appear suitable for disposal at a non-hazardous Subtitle D landfill or appropriately licensed thermal treatment or asphalt batching facility.

According to MEDEP records, soil in the project area was previously capped during historic response actions at the North Mill site (adjacent to the project area). Based on the site's 2015 Soil Management Plan (SMP) requirements, off-site transportation and disposal of surplus excavated materials from capped areas will require MEDEP approval. We recommend contacting MEDEP to discuss the project, the proposed soil management strategy, and any additional data need required for their approval following wall replacement alternative selection.

The site's SMP indicates the previously installed soil caps shall be maintained by the site owner unless otherwise approved by MEDEP. According to the Soil Cover System Plan dated September 2015 included in the SMP, cap restoration needed for any disturbance should include either 6-inches of compacted subbase ad asphalt pavement or 12 to 18-inches of clean fill underlain by a geotextile demarcation layer.

4.0 WALL REPLACEMENT ALTERNATIVES ANALYSES

4.1 Background

In considering alternatives for restoring the failed retaining wall, we considered constructing a new wall in the failure area and repairing the adjacent damaged walls. However, given the level of repair necessary and unknowns of the full extent of damage sustained, it is our opinion that repair is not a practical or reliable approach, and is not recommended for the following reasons:

- The MSE wall foundation and bottom blocks have showed signs of displacement that affects the stability of the entire wall. Additionally, the overall wall stability is compromised due to the significant volume of backfill loss and geogrid support. The foundation cannot be repaired, backfill cannot be reliably replaced, and geogrid support cannot be regained without wall and Riverwalk overhang removal.
- The section of wall immediately upstream of the failed wall has displaced backwards and is at risk of failure due to loss of soil support behind the wall and due to the likelihood that granite rubble blocks shifted as a result to wall failure. Given the age and condition of this section of wall, repair of this section is not considered feasible.
- The bulging section of the block wall adjacent to the downstream side of the MSE wall does not appear at imminent risk of failure. The bulging, however, is an indication of block movement and displacement of soil. Continued bulging could cause damage to features behind the wall and contribute to future failure. Removal of the bulged wall section is recommended as it would serve as a reasonable and appropriate point to tie into with a new wall type system.

Based on the forgoing, we recommend that the failed and damaged sections be replaced with a new retaining wall that extends from the bulged area downstream to approximately 25 ft. beyond upstream end of the Boiler House building. The total length of replacement is estimated at 185 ft. and the total height of the wall is estimated at 33 ft. A conceptual plan of the replacement area is shown in *Figure 4 – Conceptual Proposed Site Conditions*.

Conceptual retaining wall replacement alternatives considered and evaluated are discussed below.

4.2 Conceptual Retaining Wall Replacement Alternatives

We considered three retaining wall replacement alternatives. These alternatives included an MSE wall, a cast-in-place concrete wall, and a soldier pile and lagging wall. Although each of these walls are technically feasible replacement alternatives (along most of the proposed replacement alignment), each have their own advantages and disadvantages that should be considered.

As discussed in **Section 3.2** above, the soils at the site are environmentally contaminated. Excavations will be required to construct the wall replacement; however the extent of these excavations will vary depending on the wall replacement alternative. Each wall replacement alternative would have similar batters as the existing walls. The wall replacement would be intended to perform independently of the existing walls and would not be structurally connected.

Although the retaining walls presented below are feasible replacement alternatives, they are conceptual in nature. Additional engineering analyses are required for final design.

4.2.1 *MSE Wall Replacement Alternative*

As previously discussed, MSE walls include the wall blocks, backfill soils, and geogrids that are connected to the blocks and extend into the backfill soils (reinforced soil zone). The bottom blocks are typically supported on a crushed stone or a concrete leveling pad and the geogrids typically extend up to about 70 percent of the wall height behind the blocks (up to 23 ft. for the wall replacement). The precast concrete wall blocks come in various patterns and facing options.

Replacement with an MSE wall is feasible along much of the proposed replacement alignment, however, construction of this type of wall is not possible in front of the smokestack or Boiler House building since excavation, and placement of the geogrids in these areas is not possible. Wall replacement would, therefore, need to terminate on the downstream side of the smokestack, leaving the structurally deficient section of stacked granite rubble/concrete wall in place. It may be possible, however, to complete some localized temporary repairs to this section of wall. Such repairs would not be considered a permanent solution and is not recommended if the City prefers a long-term repair approach.

Advantages and disadvantages of the MSE wall alternative are presented below:

Advantages

- Construction can be completed using conventional earthwork equipment.
- The blocks can be faced to aesthetically blend with existing historic features.
- The lowest cost wall system (**not including excavation, disposal, and replacement costs**).

Disadvantages

- Significant excavation volumes needed to install geogrids and construct safe excavation slopes, which will result in excessive contaminated soil disposal costs.
- The inability to extend a MSE wall beyond the smokestack, leaving structurally deficient wall sections in place.

4.2.2 *Cast-in-Place Concrete Wall Replacement Alternative*

Cast-in-place concrete walls are comprised of a stem wall and a foundation that includes a heel and a toe that extend to the back and front of the stem wall, respectively. Taller concrete walls, such as the proposed wall replacement, oftentimes include a concrete buttress/batter along the back of the stem wall to help resist forces imposed by backfill soils and overlying features. The foundation can be supported directly on the competent bedrock surface. The foundation width is generally 2/3rds the wall height behind the wall, or approximately 22 ft. for the proposed wall replacement. Less width can be accomplished if tiebacks are used. Facing can be applied to the front of the wall.

As with the MSE wall alternative, replacement with a cast-in-place concrete retaining wall is feasible along much of the proposed replacement alignment, however, construction of this type of wall is not possible in front of the smokestack or Boiler House building due to the excavation depth required. This will lead to the same concerns discussed above for the MSE wall.

Advantages and disadvantages of the cast-in-place alternative are presented below:

Advantages

- Construction can be completed using conventional earthwork equipment.
- No specialty contractor required.
- The front of the wall can be faced to aesthetically blend with existing historic features.

Disadvantages

- Significant excavation volumes needed to construct the wall and safe excavation slopes, which will result in excessive contaminated soil disposal costs.
- The inability to extend a cast-in-place concrete wall beyond the smokestack, leaving structurally deficient wall sections in-place.
- Longest construction duration due to concrete placement and curing times.
- The highest cost wall system (**excluding excavation, disposal, and replacement costs**).

4.2.3 *Soldier Pile and Lagging Wall Replacement Alternative*

Soldier pile and lagging walls are comprised of vertical steel piles (H-piles) with horizontal lagging between the piles. The H-piles are driven through overburden soil and/or drilled into bedrock at regular intervals along the wall alignment. The lagging would consist of precast concrete panels. The lagging resists loading imposed by the backfill soils and overlying features and transfers the loading to the H-piles. Depending on the wall height and loading needing resistance, additional lateral support can be attained by rows of tiebacks installed into the backfill soils and/or bedrock surface. Large excavations are not required for soldier pile and lagging walls.

We met on-site with a specialty installation contractor to discuss using a soldier pile and lagging wall as a wall replacement alternative. The contractor indicated that use of a soldier pile and lagging wall is feasible along the entire wall replacement alignment, including in front of the smokestack and Boiler House building. The piles would be installed in holes drilled into the bedrock surface (rock sockets) at approximate 8-foot spacing. All work would be completed from the access road installed in the Saco River.

Pre-cast concrete panels come in numerous patterns. It is possible for the pre-cast panels to be formed such that the ends of the panels extend over the H-piles to create the look of a uniform wall. Alternatively, shotcrete could be installed along the face of the H-piles.

Advantages and disadvantages of the cast-in-place alternative are presented below:

Advantages

- Can be installed over the full length of the recommended wall replacement area.
- Relatively small amount of excavation needed behind the wall that will result in significantly less volume of soil requiring disposal and less disturbance to features behind the replacement areas as compared with the MSE and cast-in-place concrete wall alternatives.
- Numerous pre-cast concrete panel options so that the wall can aesthetically blend with existing historic features.

Disadvantages

- Installed by specialty contractor.
- Cost of wall system (**excluding excavation and disposal costs**) higher than MSE wall alternative, but less expensive than cast-in-place concrete wall alternative.

4.3 Permitting

We understand that the City has secured an Army Corps of Engineers (ACOE) General Conditions permit for emergency repair and that the permit assumed that the failed wall would be replaced in-kind and within the same footprint as the failed wall. We also understand that the City has communicated with additional permitting agencies, including MEDEP and the Maine Historic Preservation Commission, regarding emergency repair efforts. Additional permits may be required for the proposed wall replacement including amendments to the ACOE and MEDEP permits. We estimate a permit review time of approximately one to three months.

4.4 Estimated Wall Replacement Costs

We estimated wall replacement cost ranges, including those for removal and disposal of existing structures and soils and engineering and permitting services, based on our experience with similar projects. Note that costs for removal and disposal of the contaminated backfill soil significantly impact the overall estimated costs of wall replacement. These costs ranges are presented in the following table:

Alternative	Estimated Cost Range for Design and Permitting	Estimated Cost Range for Construction	Estimated Total Cost Range
MSE Wall	\$125,000 to \$225,000	\$3,375,000 to \$4,275,000	\$3,500,000 to \$4,500,000
Cast-in-Place Concrete Wall	\$250,000 to \$350,000	\$4,050,000 to \$4,850,000	\$4,300,000 to \$5,200,000
Soldier Pile and Lagging Wall	\$250,000 to \$350,000	\$1,950,000 to \$2,450,000	\$2,200,000 to \$2,800,000

4.5 Recommended Wall Replacement Alternative

Based on the advantages and disadvantages and the estimated costs presented above, Weston & Sampson recommends selecting the soldier pile and lagging wall as the wall replacement alternative. This alternative will provide a consistent, aesthetically pleasing wall along the entire recommended wall replacement alignment at the lowest cost. The City, however, should review each alternative carefully and select the alternative that best fits the City's expectations.

4.6 Data Gaps

As indicated previously, we do not have information on the depths and configurations of the foundations for the smokestack and Boiler House building. This information will need to be obtained during final design. If plans with this information cannot be found, we should be provided access to the Boiler building lower level areas.

4.7 Additional Engineering Analyses

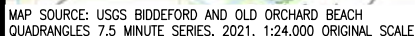
The wall alternatives included in this report are conceptual in nature and are intended to provide the City with a high level presentation of feasible wall replacement alternatives. Additional engineering analyses are required to progress the selected wall replacement alternative to final design.

5.0 LIMITATIONS

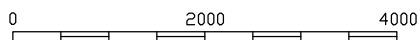
We have prepared this report for use by the City of Biddeford, Maine for the subject project and this site only. The data and report can be used for estimating purposes, but our report, conclusions, and interpretations should not be construed as a warranty of the actual conditions and are not applicable to other sites.

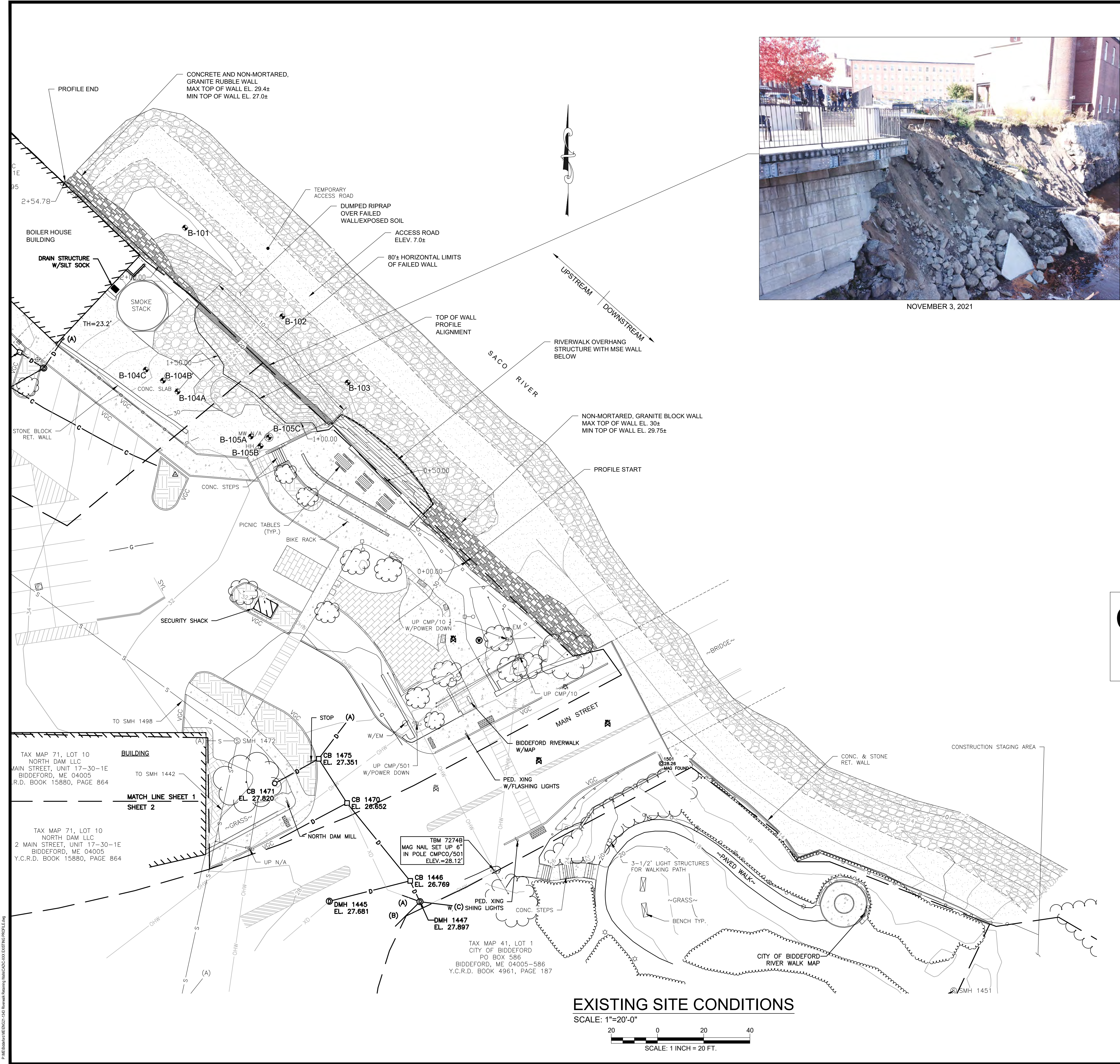
This report has been prepared solely for the purpose of preliminary evaluation and analyses of conceptual-level wall replacement alternatives. This is not a design-level report and should not be construed as such. Within the limitations of scope, schedule, and budget, our services have been executed in accordance with generally accepted practices in this area at the time this report was prepared. No warranty or other conditions, expressed or implied, is given.

FIGURES



SCALE: 1"=2000'





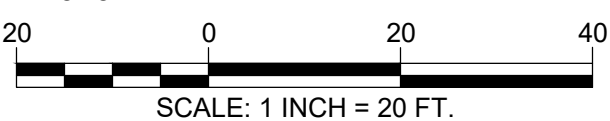
- LEGEND
- APPROX. LOT LINE PER CITY GIS
 - STOCKADE FENCE
 - CHAIN LINK FENCE
 - GUARDRAIL
 - OVERHEAD WIRE
 - SEWER LINE
 - DRAIN LINE
 - GAS LINE
 - MAJOR CONTOUR LINE
 - MINOR CONTOUR LINE
 - TREE LINE
 - SHRUB LINE
 - CONCRETE
 - RIP RAP
 - LANDSCAPED AREA
 - CRUSHED STONE
 - BRICK
 - UTILITY POLE
 - UTILITY POLE & GUY WIRE
 - LIGHT POLE (ONE ARM)
 - SIGN
 - SIGN (TWO POSTS)
 - BOLLARD
 - WATER GATE VALVE
 - WATER SHUTOFF VALVE
 - SPIGOT
 - SPRINKLER
 - GAS GATE VALVE
 - ELECTRIC BOX
 - CATCH BASIN
 - DRAIN MANHOLE
 - MANHOLE
 - ELECTRIC MANHOLE
 - WATER MANHOLE
 - WATER METER
 - SEWER MANHOLE
 - HAND HOLE
 - DECIDUOUS TREE
 - TRAFFIC SIGNAL
 - TYP.
 - CONC.
 - GRAN.
 - FF
 - TH
 - EP
 - VGC
 - AS
 - APPROX. BORING LOCATION

TOPOGRAPHIC INFORMATION
BASED ON SURVEY COMPLETED
BY DOUCET SURVEY, LLS IN
DECEMBER 2022. HORIZONTAL
AND VERTICAL DATUMS ARE
BASED ON SHAW BROTHERS
SURVEY CONTROL PROVIDED BY
THE CITY.

CONCEPTUAL PLANS

EXISTING SITE CONDITIONS

SCALE: 1"=20'-0"



Project:

CITY OF BIDDEFORD, MAINE

RIVERWALK RETAINING WALLS REPLACEMENT

Weston & Sampson

Weston & Sampson Engineers, Inc.
150 Dow Street, Tower 4, Suite 350
Manchester, NH 03103
978.532.1900 800.SAMPSON
www.westonandsampson.com

Consultants:

Revisions:		
No.	Date	Description

COA:

Seal:

Issued For:

**NOT RELEASED FOR
CONSTRUCTION**

Scale: AS NOTED

Date: 03/23/2022

Drawn By: YS

Reviewed By: TJS

Approved By: TF

W&S Project No.: ENG21-1343

W&S File No.:

Drawing Title:

**EXISTING SITE
CONDITIONS**

Sheet Number:

FIGURE 2

COPYRIGHT © 2021 WESTON & SAMPSON, INC 326

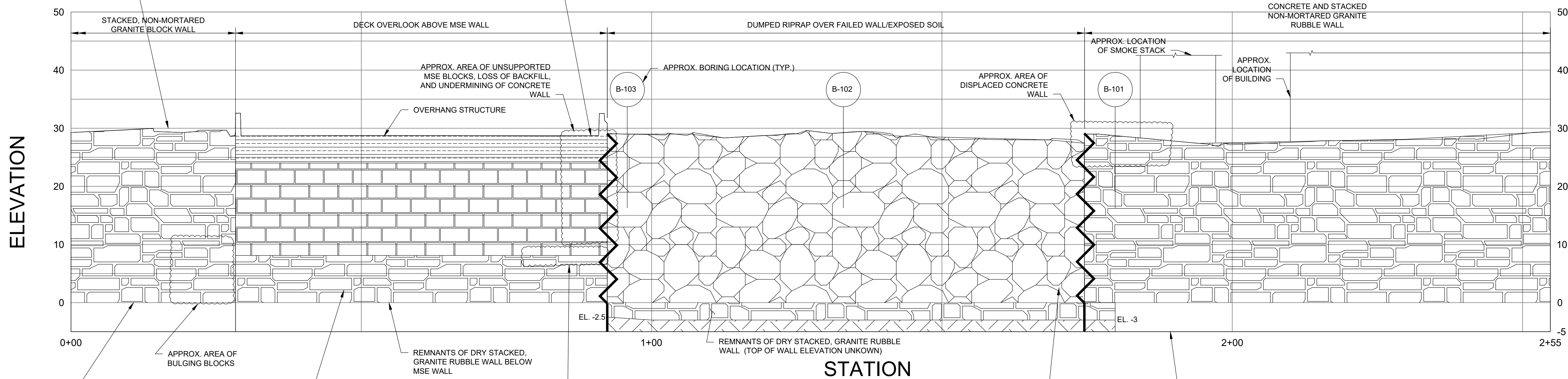


DECEMBER 9, 2021



DECEMBER 9, 2021

CONCEPTUAL PLANS



EXISTING CONDITIONS PROFILE

HORIZONTAL SCALE: 1"=10'-0"
VERTICAL SCALE 1"=10'-0"



DECEMBER 9, 2021



DECEMBER 9, 2021



DECEMBER 9, 2021

Revisions:		
No.	Date	Description

COA:

Seal:

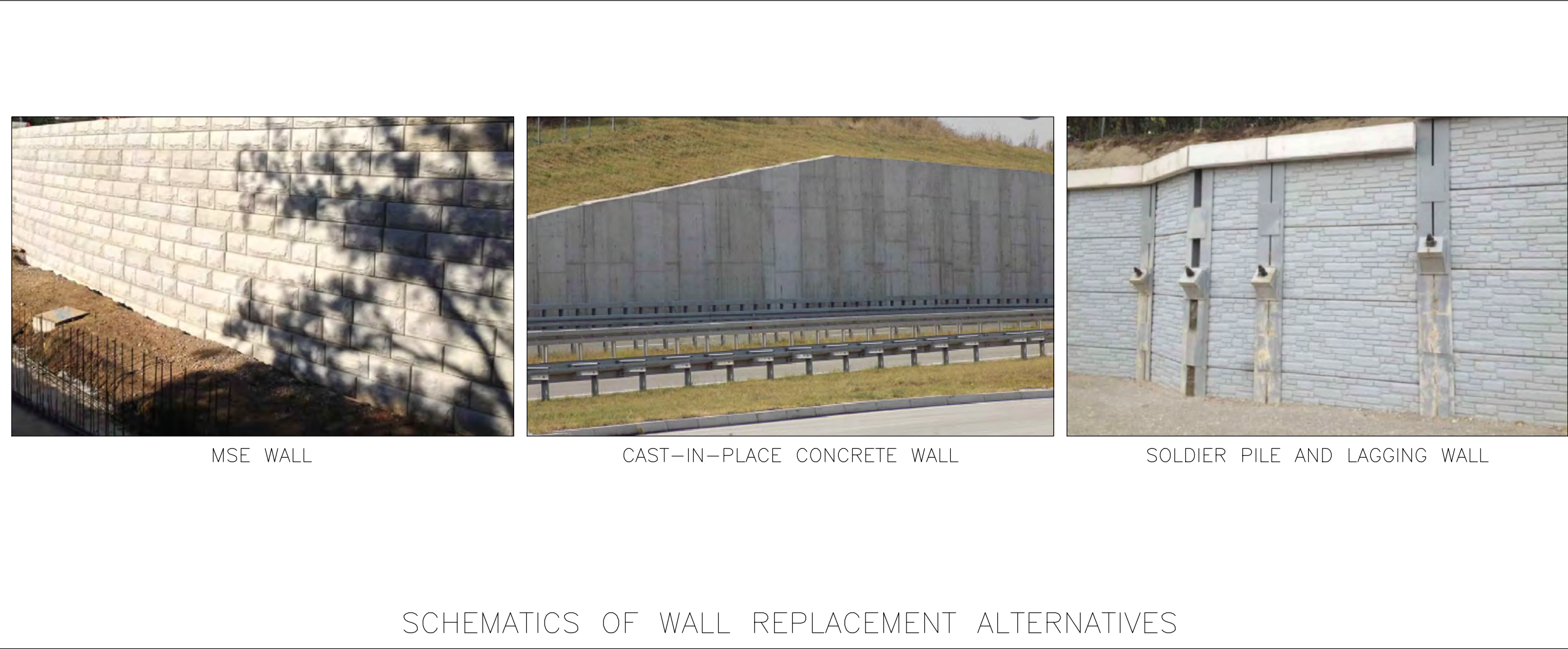
Issued For:
**NOT RELEASED FOR
CONSTRUCTION**

Scale: AS NOTED

Date: 03/23/2022
Drawn By: YS
Reviewed By: TJS
Approved By: TF
W&S Project No.: ENG21-1343
W&S File No.:

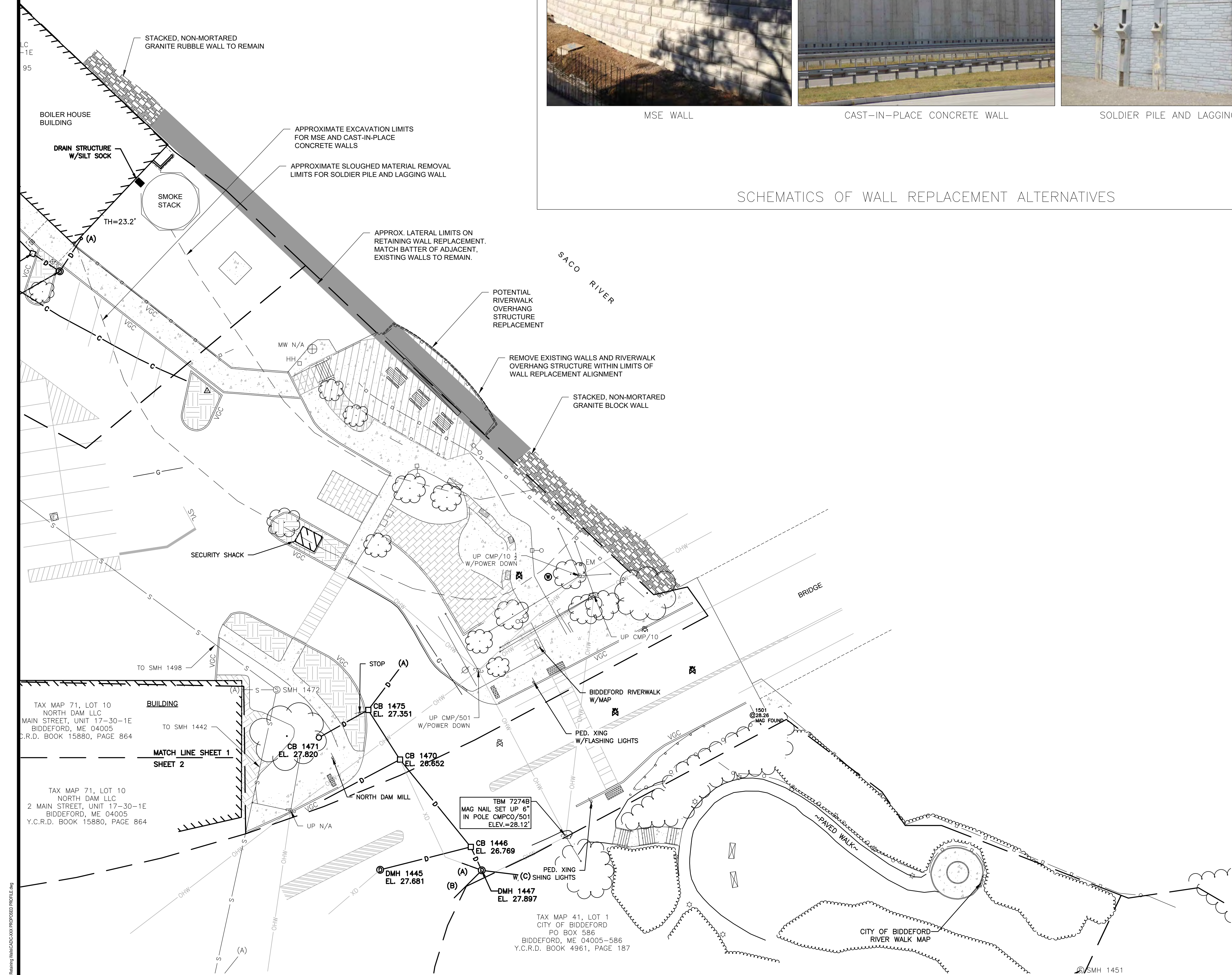
Drawing Title:
**EXISTING
CONDITIONS
PROFILE**

Sheet Number:
FIGURE 3



SCHEMATICS OF WALL REPLACEMENT ALTERNATIVES

- LEGEND
- APPROX. LOT LINE PER CITY GIS
 - STOCKADE FENCE
 - CHAIN LINK FENCE
 - GUARDRAIL
 - OVERHEAD WIRE
 - SEWER LINE
 - DRAIN LINE
 - GAS LINE
 - MAJOR CONTOUR LINE
 - MINOR CONTOUR LINE
 - TREE LINE
 - SHRUB LINE
 - CONCRETE
 - RIP RAP
 - LANDSCAPED AREA
 - CRUSHED STONE
 - BRICK
 - UTILITY POLE
 - UTILITY POLE & GUY WIRE
 - LIGHT POLE (ONE ARM)
 - SIGN
 - SIGN (TWO POSTS)
 - BOLLARD
 - WATER GATE VALVE
 - WATER SHUTOFF VALVE
 - SPIGOT
 - SPRINKLER
 - GAS GATE VALVE
 - ELECTRIC BOX
 - CATCH BASIN
 - DRAIN MANHOLE
 - MANHOLE
 - ELECTRIC MANHOLE
 - WATER MANHOLE
 - WATER METER
 - SEWER MANHOLE
 - HAND HOLE
 - DECIDUOUS TREE
 - TRAFFIC SIGNAL
 - TYPICAL
 - CONCRETE
 - FINISHED FLOOR
 - GRANITE
 - FF
 - TH
 - EP
 - VGC
 - AS
 - APPROX. BORING LOCATION



CONCEPTUAL SITE CONDITIONS

SCALE: 1"=20'-0"



CONCEPTUAL PLANS

Revisions:		
No.	Date	Description

COA:

Seal:

Issued For:
NOT RELEASED FOR CONSTRUCTION

Scale: AS NOTED

Date: 03/23/2022
Drawn By: YS
Reviewed By: TJS
Approved By: TF

W&S Project No.: ENG21-1343
W&S File No.:

Drawing Title:
CONCEPTUAL SITE CONDITIONS

Sheet Number:

FIGURE 4

APPENDIX A

Photographs



Photo 1- Wall Circa 1894 from mainmemory.net

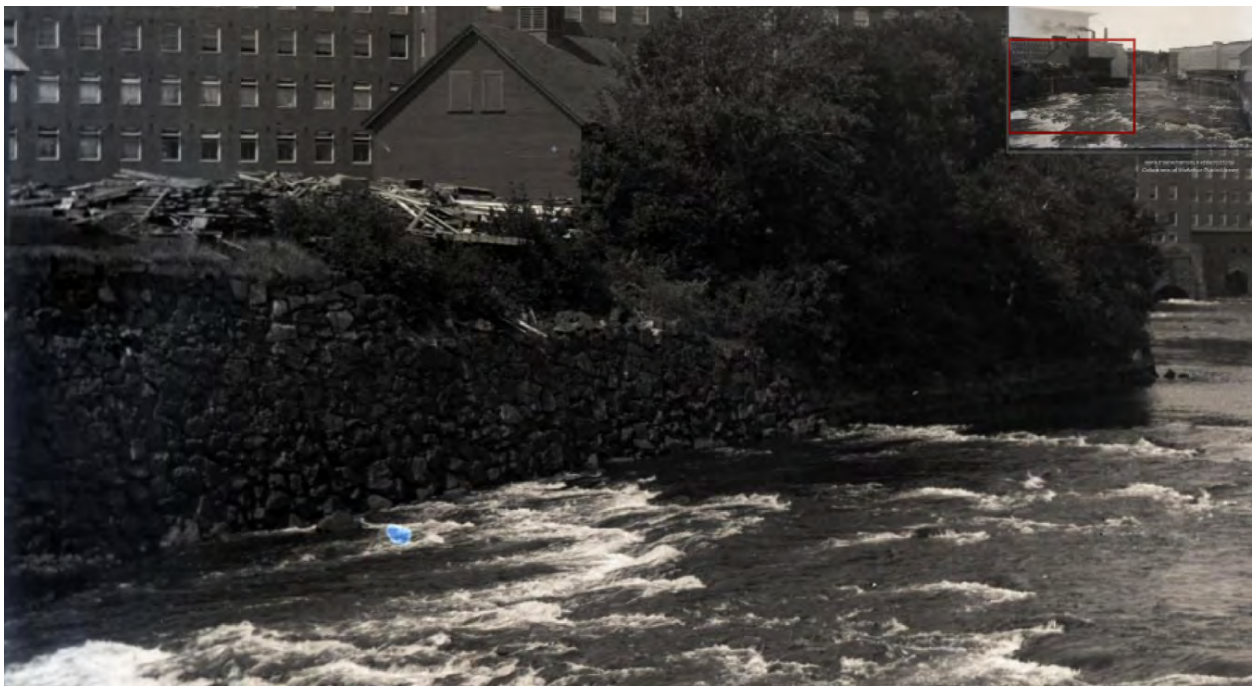


Photo 2 – Wall circa 1912 from mainmemory.net



Photo 3 – Wall, Smokestack, and Boiler House Building Circa 1920 from mainmemory.net



Photo 4 – Wall and Overhang Structure from Google Maps



Photo 5 – Wall Failure Before Stabilization on about November 1, 2021

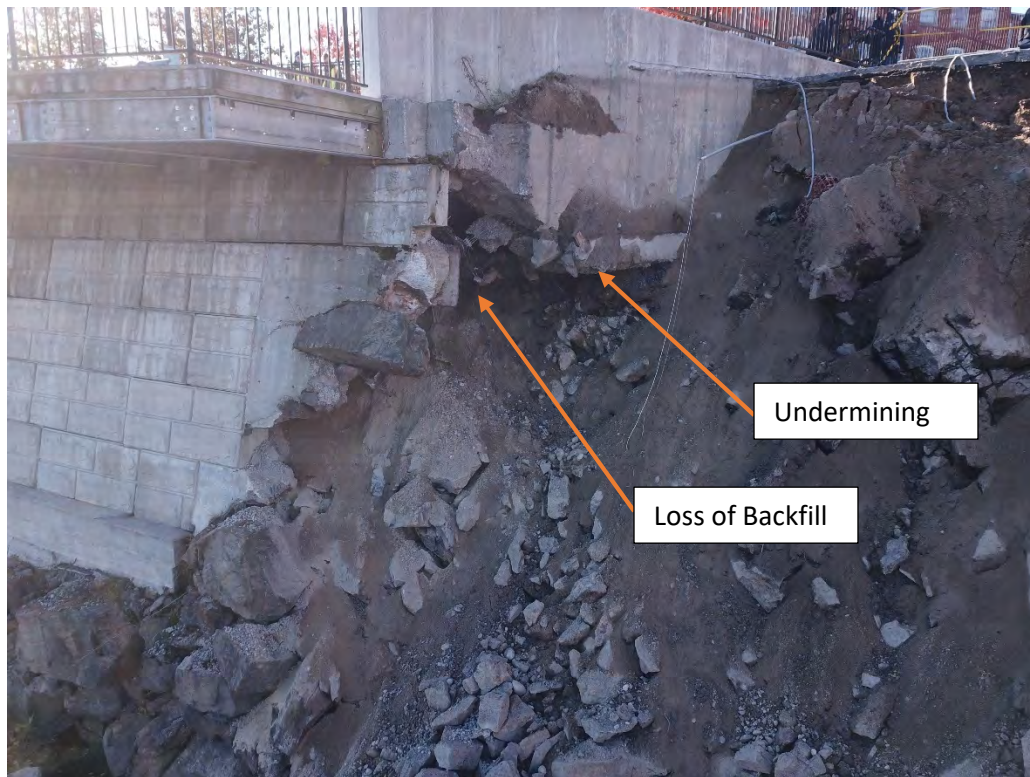


Photo 6 – Loss of Soil Behind MSE Wall and Undermining of Concrete Wall, November 3, 2021

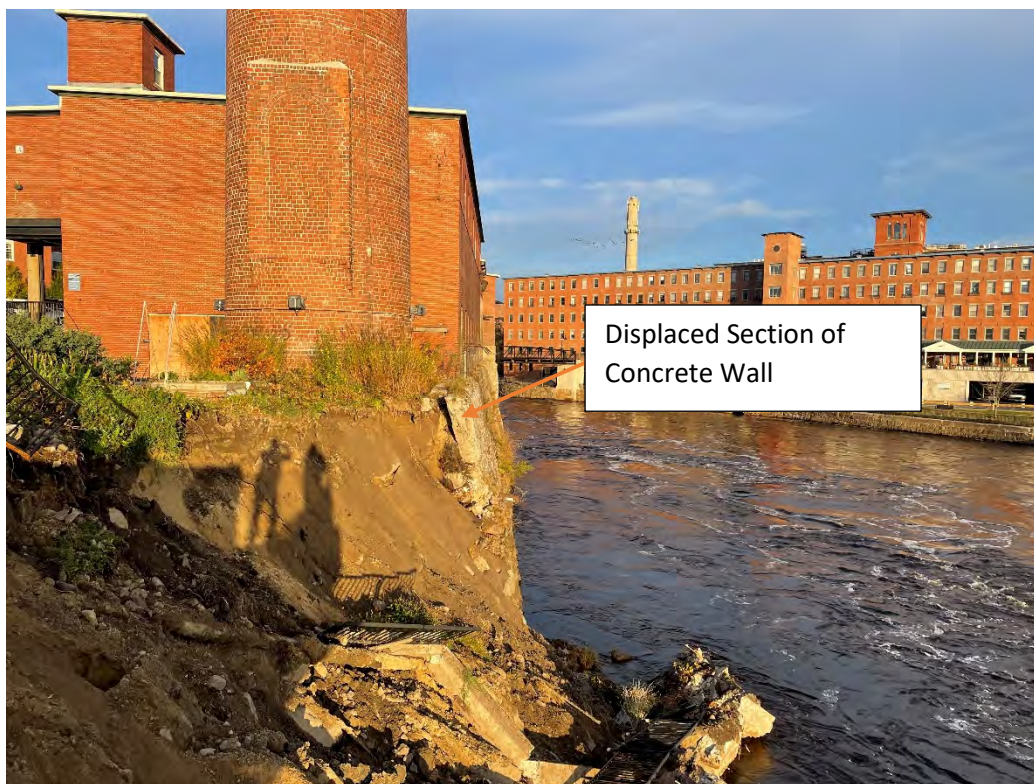


Photo 7 – Concrete Wall at Smokestack, November 2, 2021



Photo 8 – Riprap Stabilized Slope and Access Road, December 9, 2021

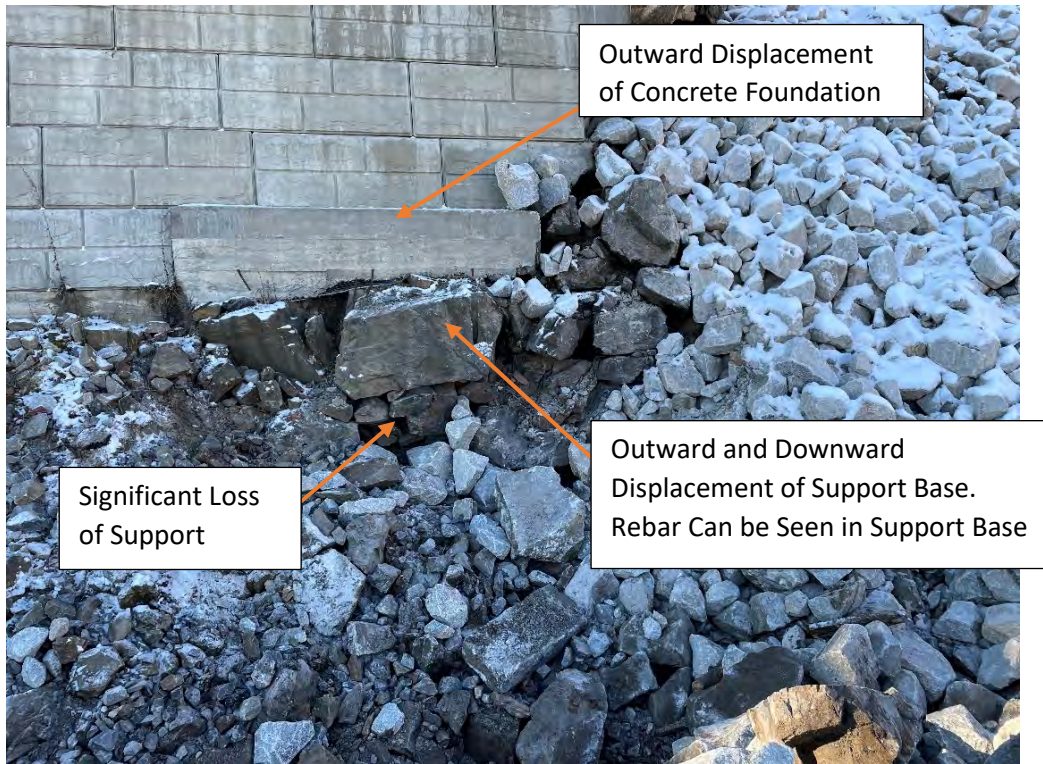


Photo 9 – Displacement of Concrete Foundation and Support Base, December 9, 2021



Photo 10 – Damage to West Side of MSE Wall, December 9, 2021



Photo 11 – Damage to East Side of MSE Wall, December 9, 2021

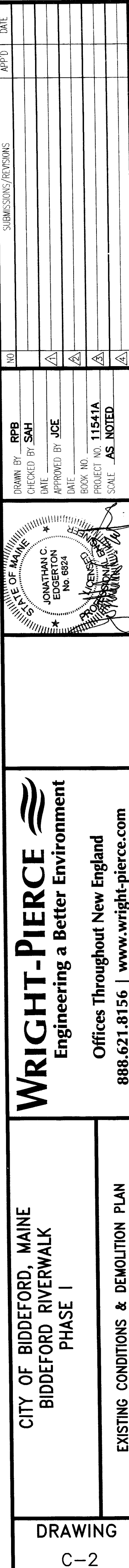


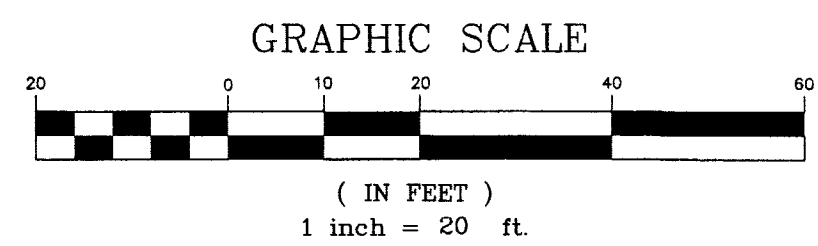
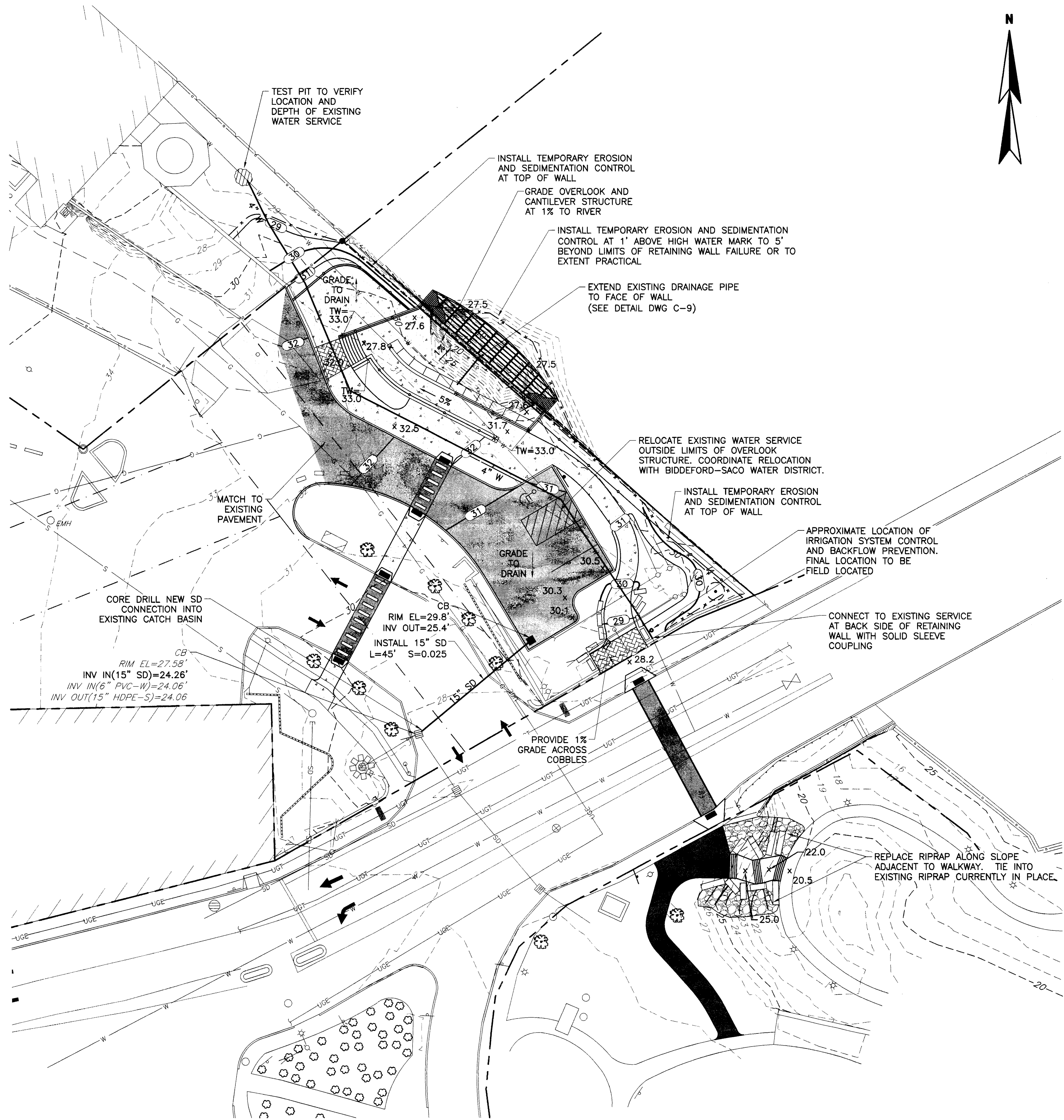
Photo 12 – Bulging of Stacked Block Wall, December 9, 2021

APPENDIX B

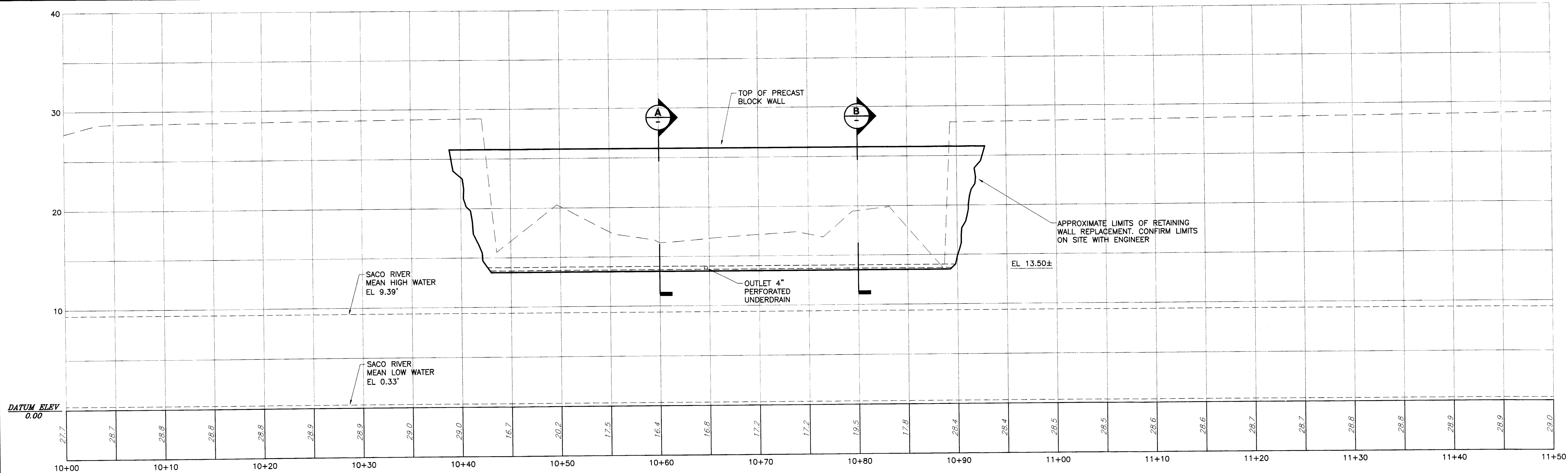
Summit and Wright Pierce Design Plans

-
- AREA AVAILABLE FOR SITE EQUIPMENT AND MATERIAL STORAGE DURING CONSTRUCTION. CONTRACTOR SHALL MAINTAIN ACCESS WITHIN STAGING AREA TO EXISTING BUILDINGS, FIRE HYDRANTS AND UTILITY LINES**
- PARTS OF EXISTING COBBLESTONE TO REMAIN**
- SMOKE STACK**
- FOUND LARGE SPIKE**
- EXISTING 4" WATER MAIN TO BE REMOVED AND SERVICE RELOCATED (SEE DWG C-4) SERVICE CURRENTLY OFFLINE. NO TEMPORARY SERVICE REQUIRED DURING CONSTRUCTION**
- EXISTING CHAINLINK FENCE ON TOP OF RETAINING WALL (TYP)**
- APPROXIMATE LOCATION EXISTING 4" WATER MAIN**
- TEMPORARY CHAINLINK FENCE**
- SACO RIVER**
- APPROXIMATE LOCATION OF DRAINAGE PIPE EXTENDING FROM FAILURE AREA**
- EXISTING SIGN TO BE REMOVED**
- EXISTING OVERHEAD ELECTRICAL TELECOMMUNICATION TO BE RELOCATED UNDERGROUND**
- EXISTING FLAG POLE TO BE REMOVED AND RELOCATED**
- EXISTING NORTH DAM SIGN TO BE RELOCATED. LOCATION OF RELOCATED SIGN TO BE COORDINATED WITH NORTH DAM, LLC**
- SE'LY CORNER OF MASONRY WALL AT BRIDGE ABUTMENT**
- BRIDGE**
- EXISTING BOLLARDS TO BE REMOVED**
- EXISTING BLACK ROD IRON FENCE TO BE REMOVED AND REUSED ALONG TOP OF RETAINING WALL ALONG MAIN STREET**
- REMOVE & RELOCATE EXISTING SIGN**
- TRANSFORMER PAD**
- WALKWAY PAVED**
- WALKWAY BRICK**
- EXISTING WHITE WHARF PARK**
- WAREHOUSE BUILDING**
- LOADING AREA**
- N/F IP PROPERTY HOLDINGS I, LLC TM 71-10 14603-592**
- MAIN STREET**
- ELEVATION DATA:**
 CB RIM EL=27.58'
 INV IN(6" PVC-W)=24.06'
 INV OUT(15" HDPE-S)=24.06'
 CB RIM EL=28.03'
 CB RIM EL=26.92'
 INV IN(15" HDPE-N)=22.72'
 INV IN(24" PVC-W)=18.92'
 INV OUT(24" PVC-S)=18.92'
 SMH RIM EL=29.23'
 DMH RIM EL=28.90'
 SMH RIM EL=30.03'
 DMH RIM EL=35.79'
 PROJECT IBM #1 TOP OF PK NAIL IN UTILITY POLE 1/3 ELEV.=33.24'
 CB RIM EL=26.98'
 SMH RIM EL=28.08'
 SMH RIM EL=28.65'
 SMH RIM EL=28.75'
- Other Labels:** GRAVEL, GATE, UP J-11 W/UG CONDUIT, PAVED, FLAG POLE, UP J-1, UP J-10, UP J-11, UP J-12, UP J-13, UP J-14, UP J-15, UP J-16, UP J-17, UP J-18, UP J-19, UP J-20, UP J-21, UP J-22, UP J-23, UP J-24, UP J-25, UP J-26, UP J-27, UP J-28, UP J-29, UP J-30, UP J-31, UP J-32, UP J-33, UP J-34, UP J-35, UP J-36, UP J-37, UP J-38, UP J-39, UP J-40, UP J-41, UP J-42, UP J-43, UP J-44, UP J-45, UP J-46, UP J-47, UP J-48, UP J-49, UP J-50, UP J-51, UP J-52, UP J-53, UP J-54, UP J-55, UP J-56, UP J-57, UP J-58, UP J-59, UP J-60, UP J-61, UP J-62, UP J-63, UP J-64, UP J-65, UP J-66, UP J-67, UP J-68, UP J-69, UP J-70, UP J-71, UP J-72, UP J-73, UP J-74, UP J-75, UP J-76, UP J-77, UP J-78, UP J-79, UP J-80, UP J-81, UP J-82, UP J-83, UP J-84, UP J-85, UP J-86, UP J-87, UP J-88, UP J-89, UP J-90, UP J-91, UP J-92, UP J-93, UP J-94, UP J-95, UP J-96, UP J-97, UP J-98, UP J-99, UP J-100.





CITY OF BIDDEFORD, MAINE BIDDEFORD RIVERWALK PHASE I	GRADING & UTILITIES PLAN	DRAWING C-4	WRIGHT-PIERCE Engineering a Better Environment Offices Throughout New England 888.621.8156 www.wright-pierce.com		APPROVED BY: JOE	DATE: _____
					CHECKED BY: SMH	DATE: _____
SUBMISSIONS/REVISIONS				NO.	DATE	
DRAWN BY: RPB				NO.	DATE	
PROJECT NO. 11541A				NO.	DATE	
SCALE AS NOTED				NO.	DATE	

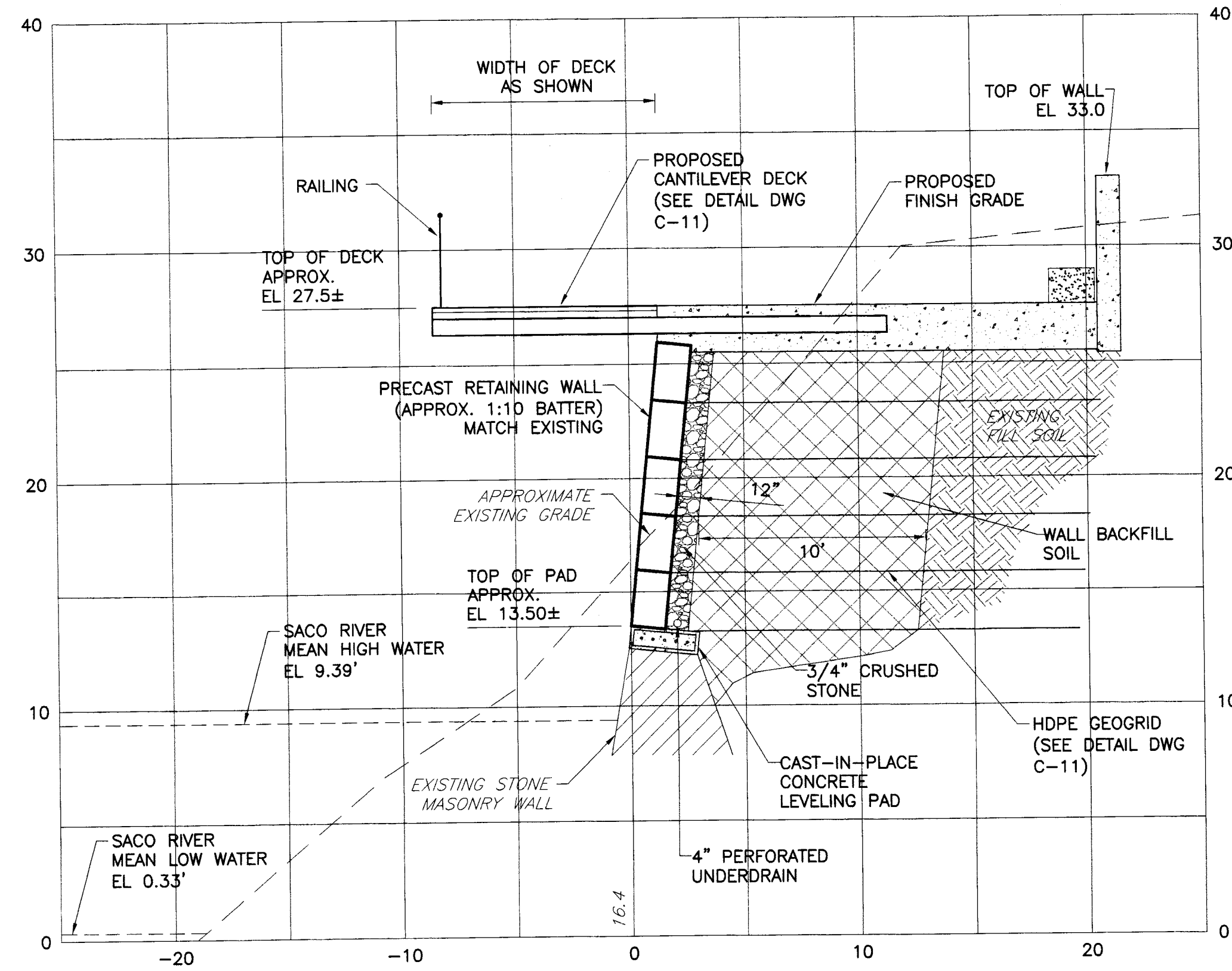


ELEVATION

SCALES:
VERT: 1"=5'
HORIZ: 1"=5'

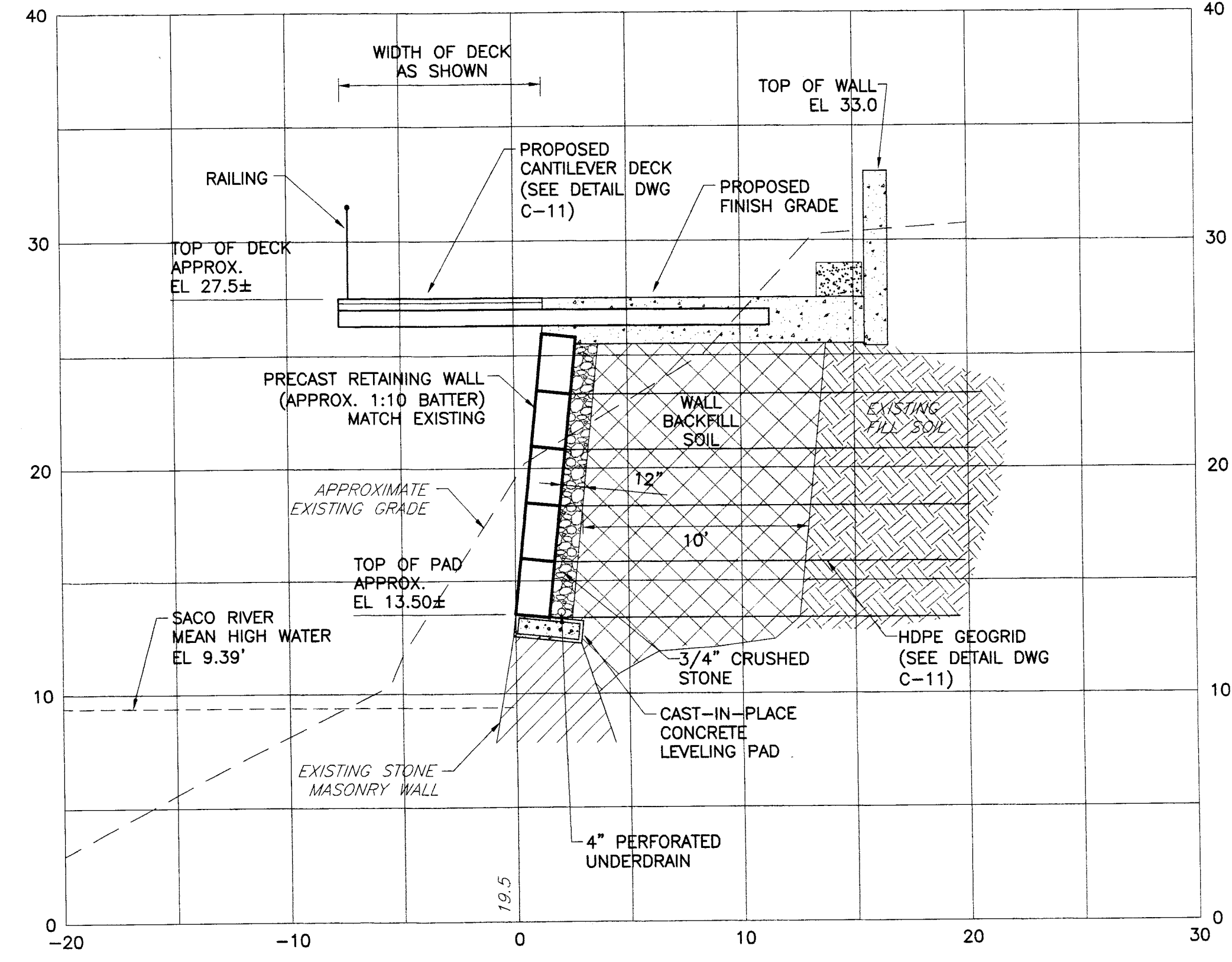
NOTES:

1. ELEVATIONS REFERENCE VERTICAL DATUM NGVD29.
2. MEAN HIGH WATER AND MEAN LOW WATER LEVELS WERE AS RECORDED BY N.O.A.A. ON AUGUST 12, 2009.



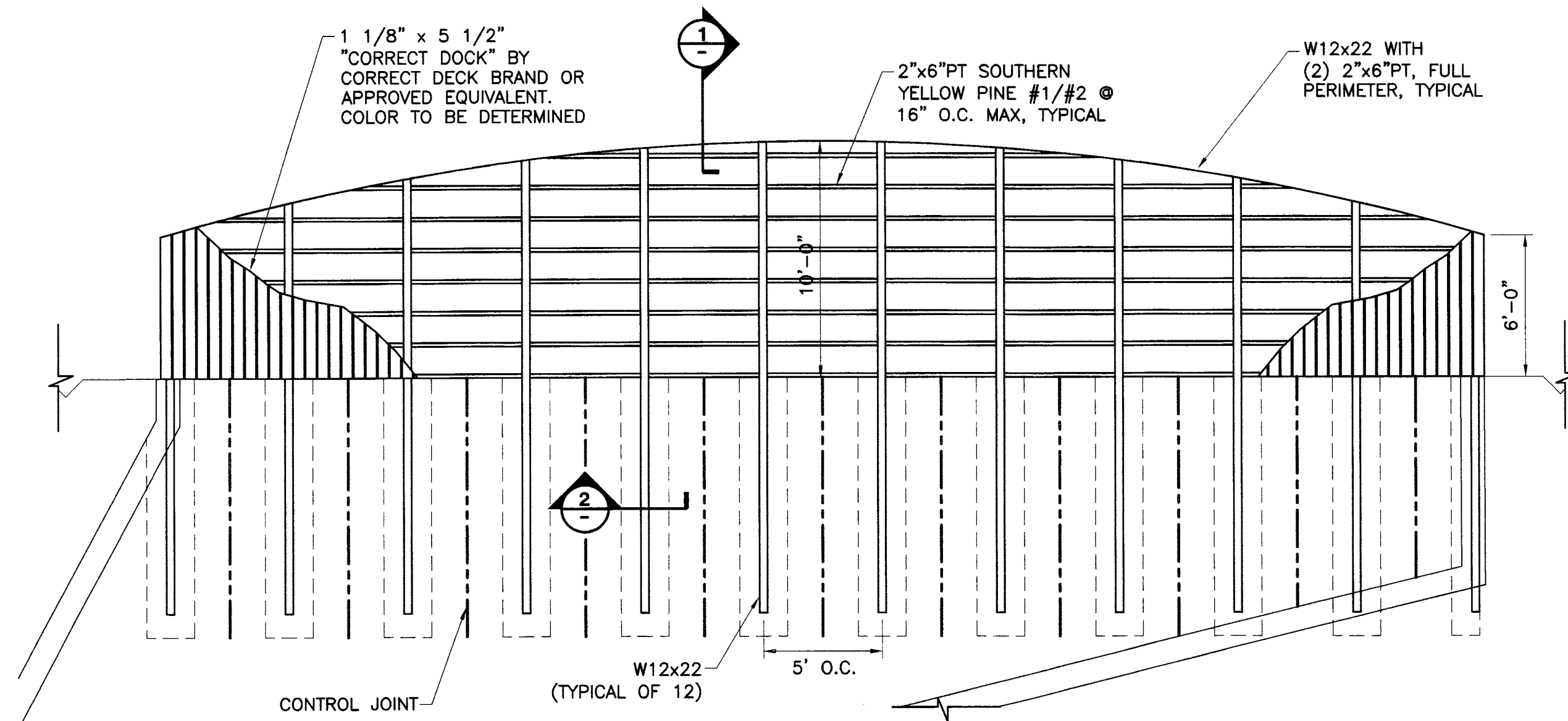
RETAINING WALL CROSS SECTION A

SCALES:
VERT: 1"=5'
HORIZ: 1"=5'



RETAINING WALL CROSS SECTION B

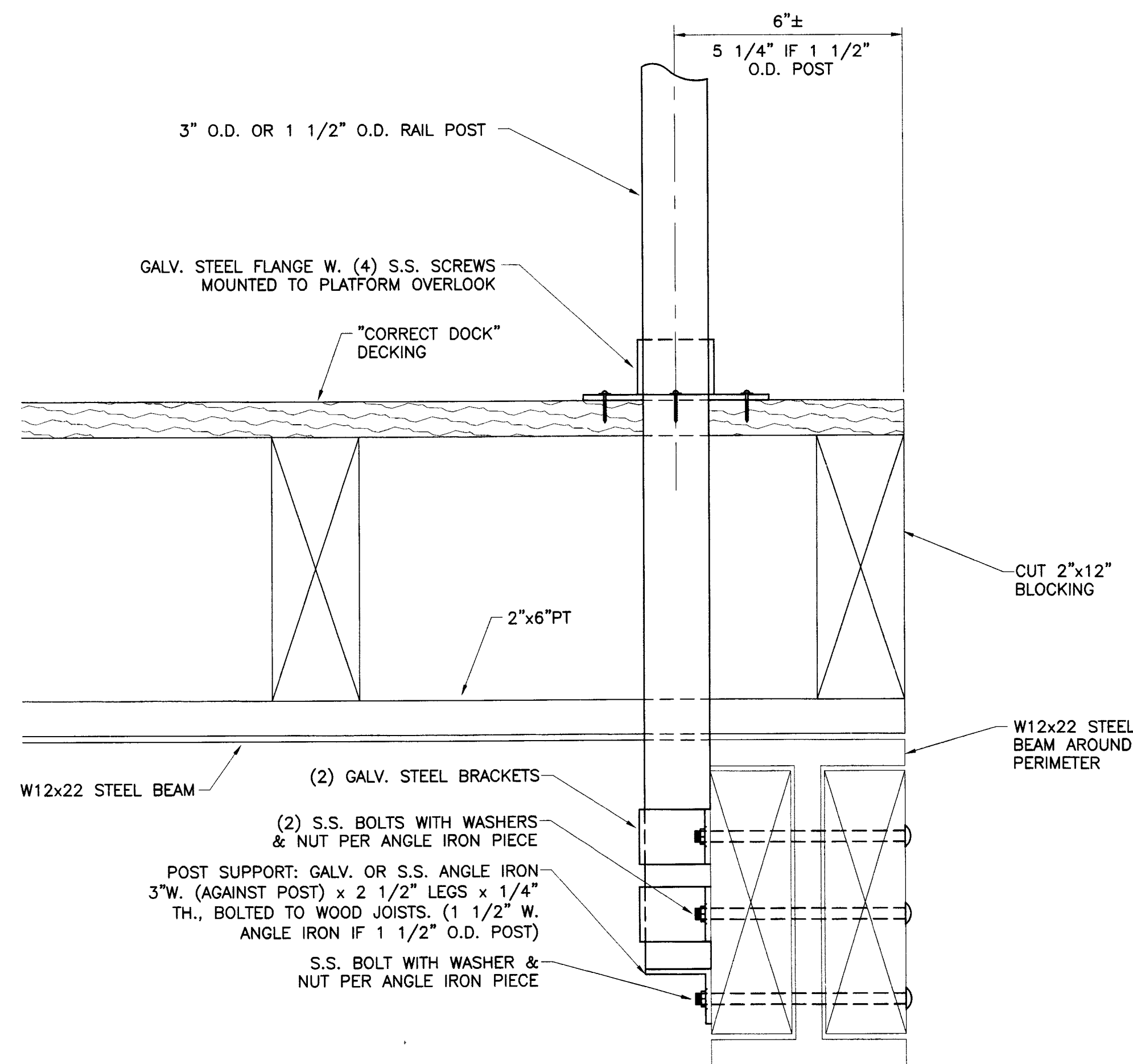
SCALES:
VERT: 1"=5'
HORIZ: 1"=5'



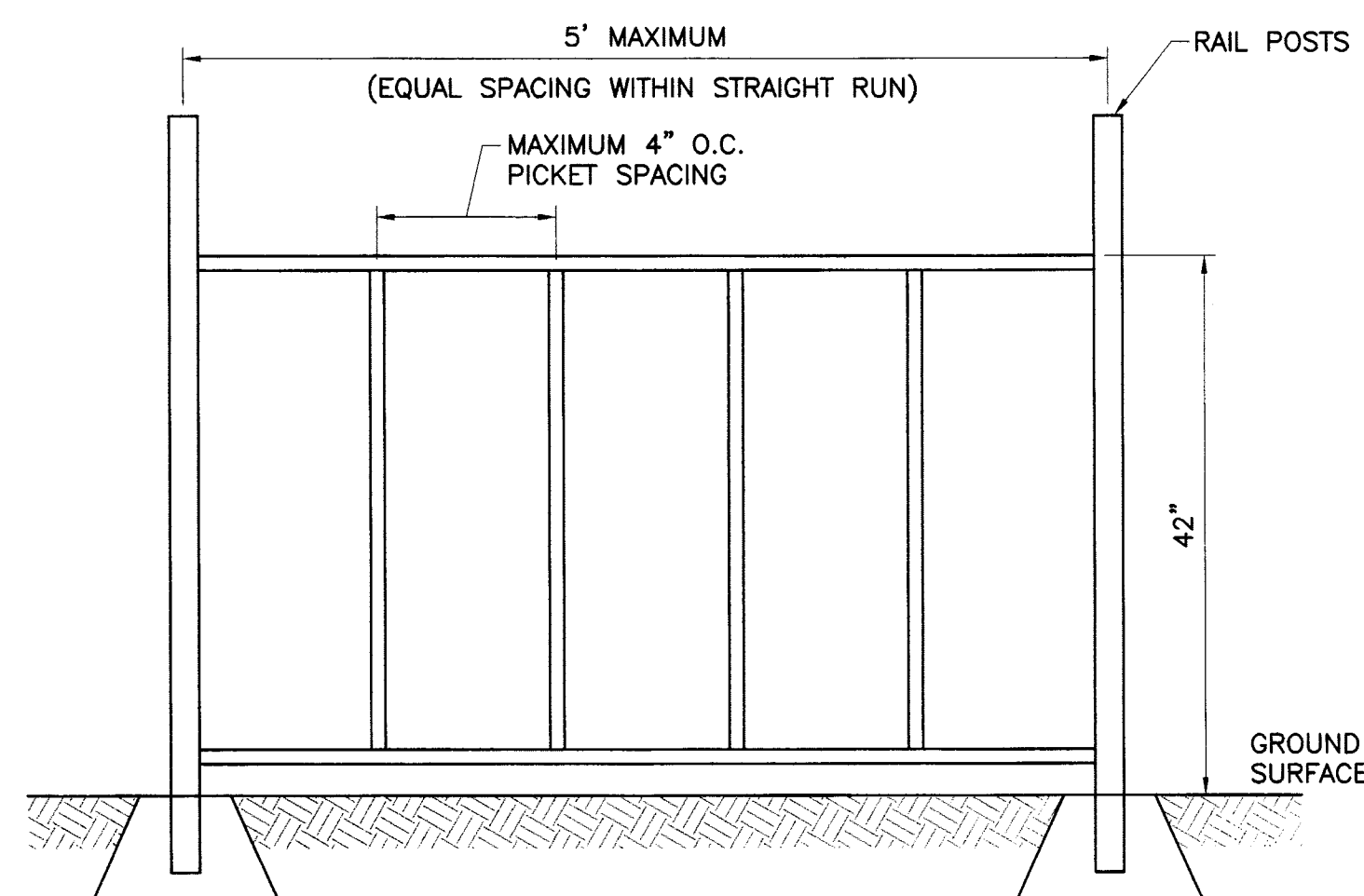
FRAMING PLAN
SCALE: 1"=5'

NOTES:

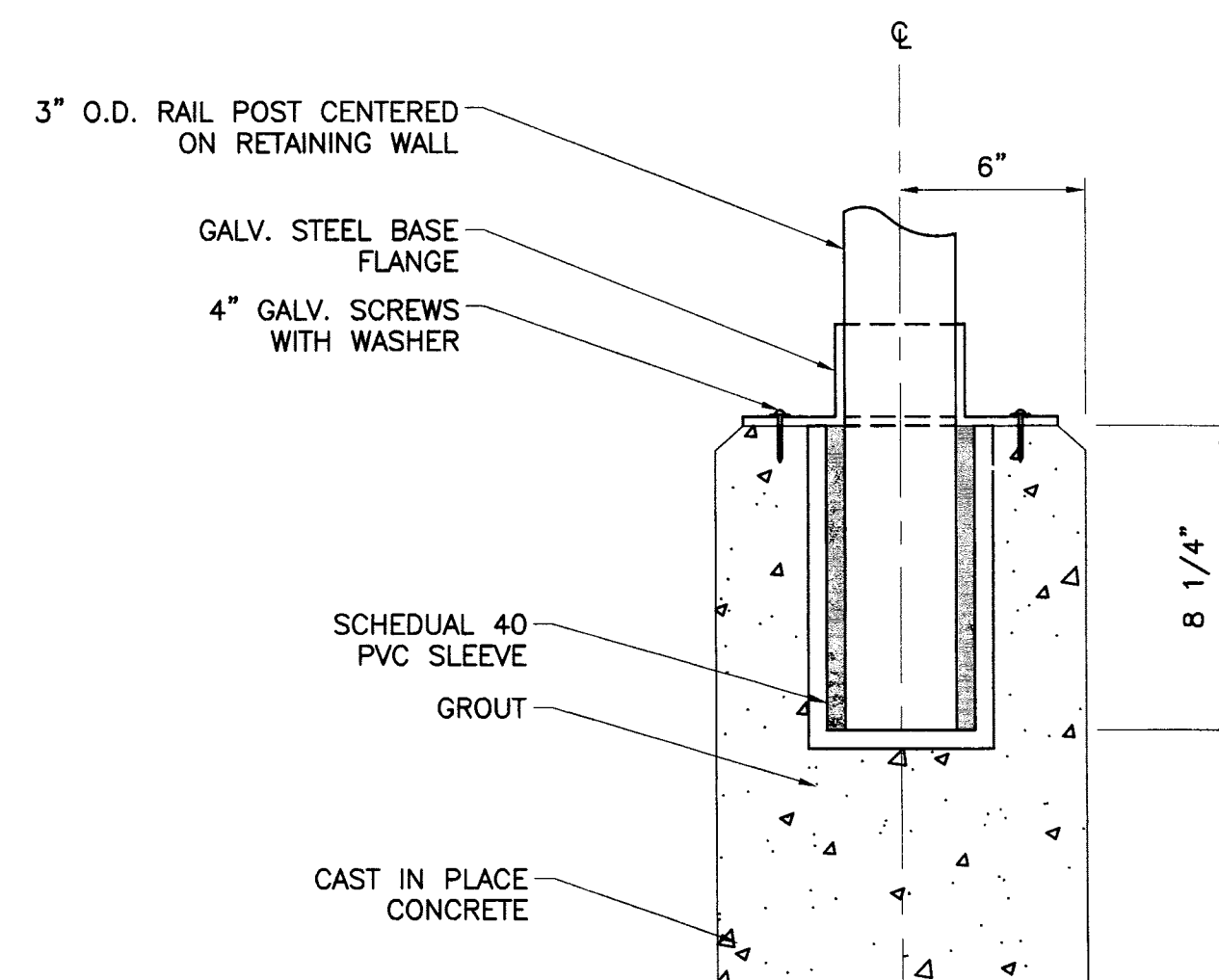
1. LIVE LOAD = 100 PSF
2. ALL BEAMS, CLIP ANGLES AND BOLTS SHALL BE HOT DIPPED GALVANIZED



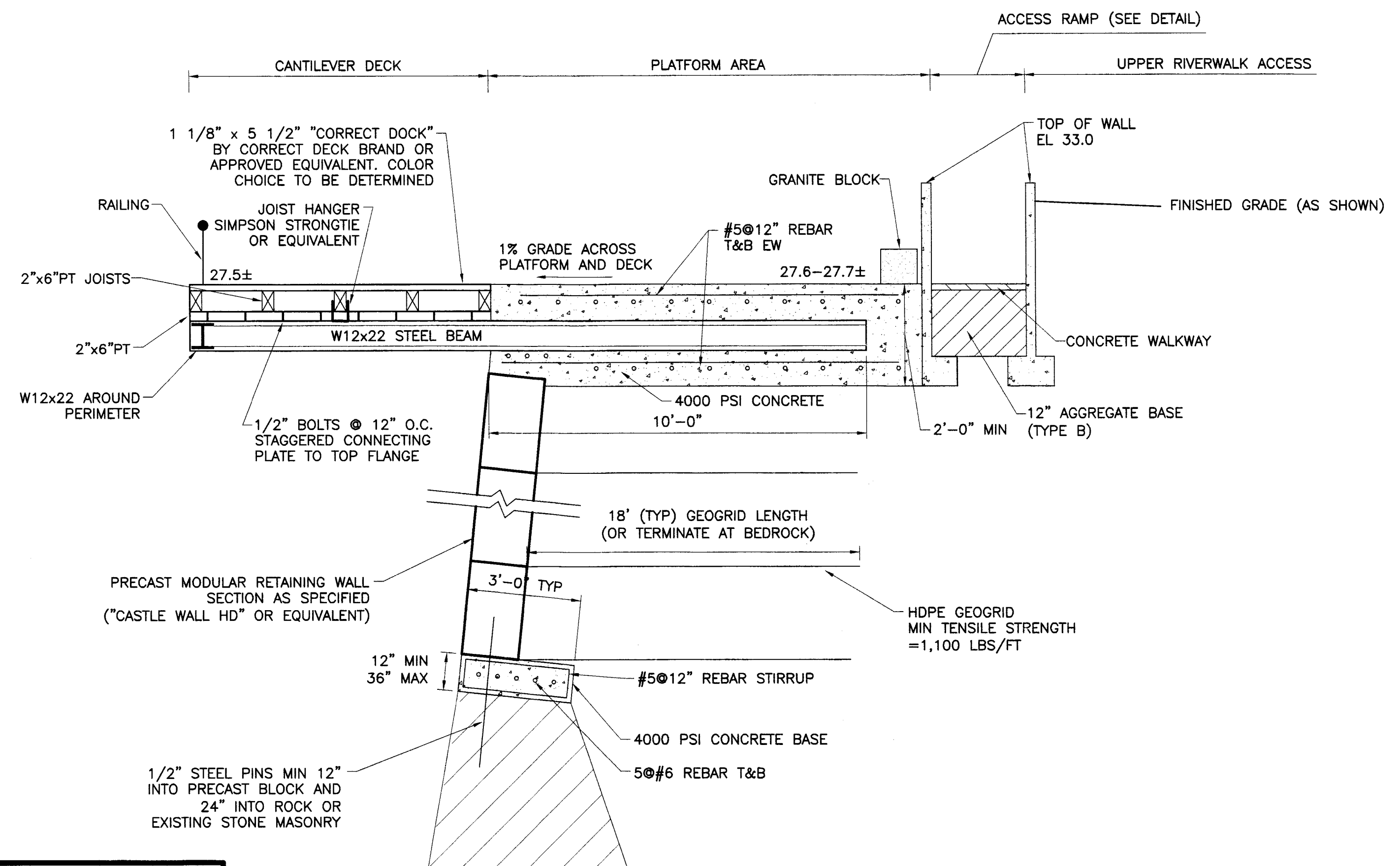
RAIL POST MOUNTING: TYPE A SECTION
NTS



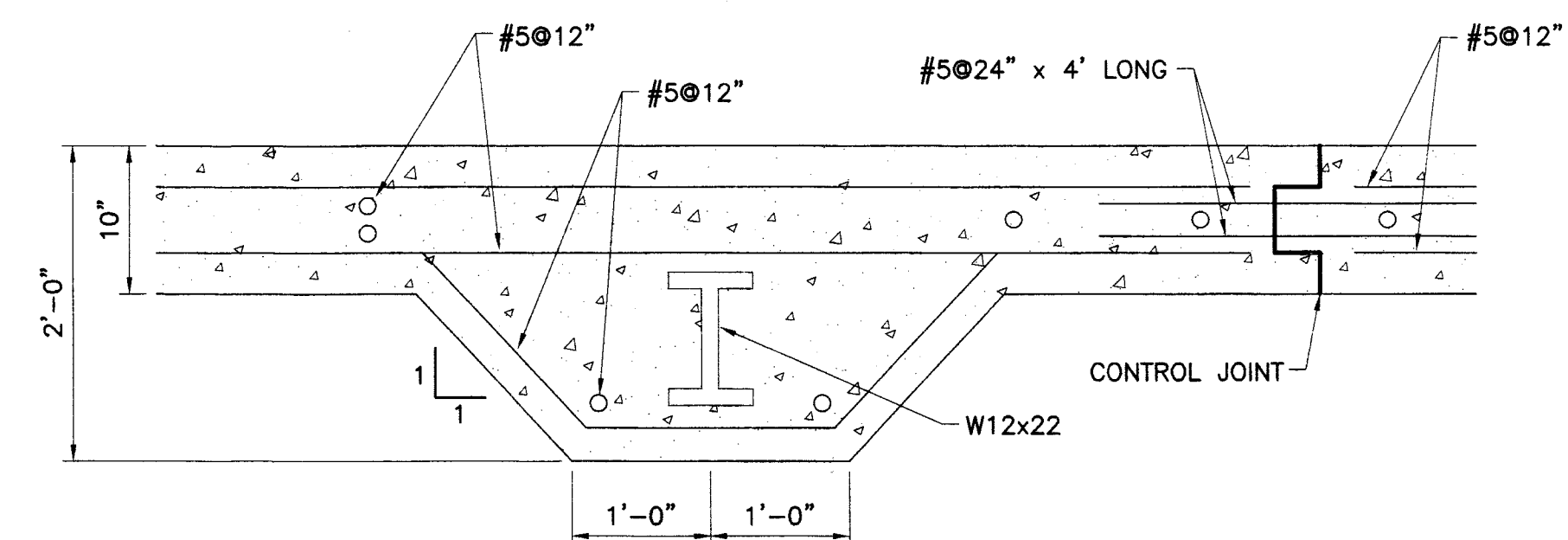
RAILING
NTS



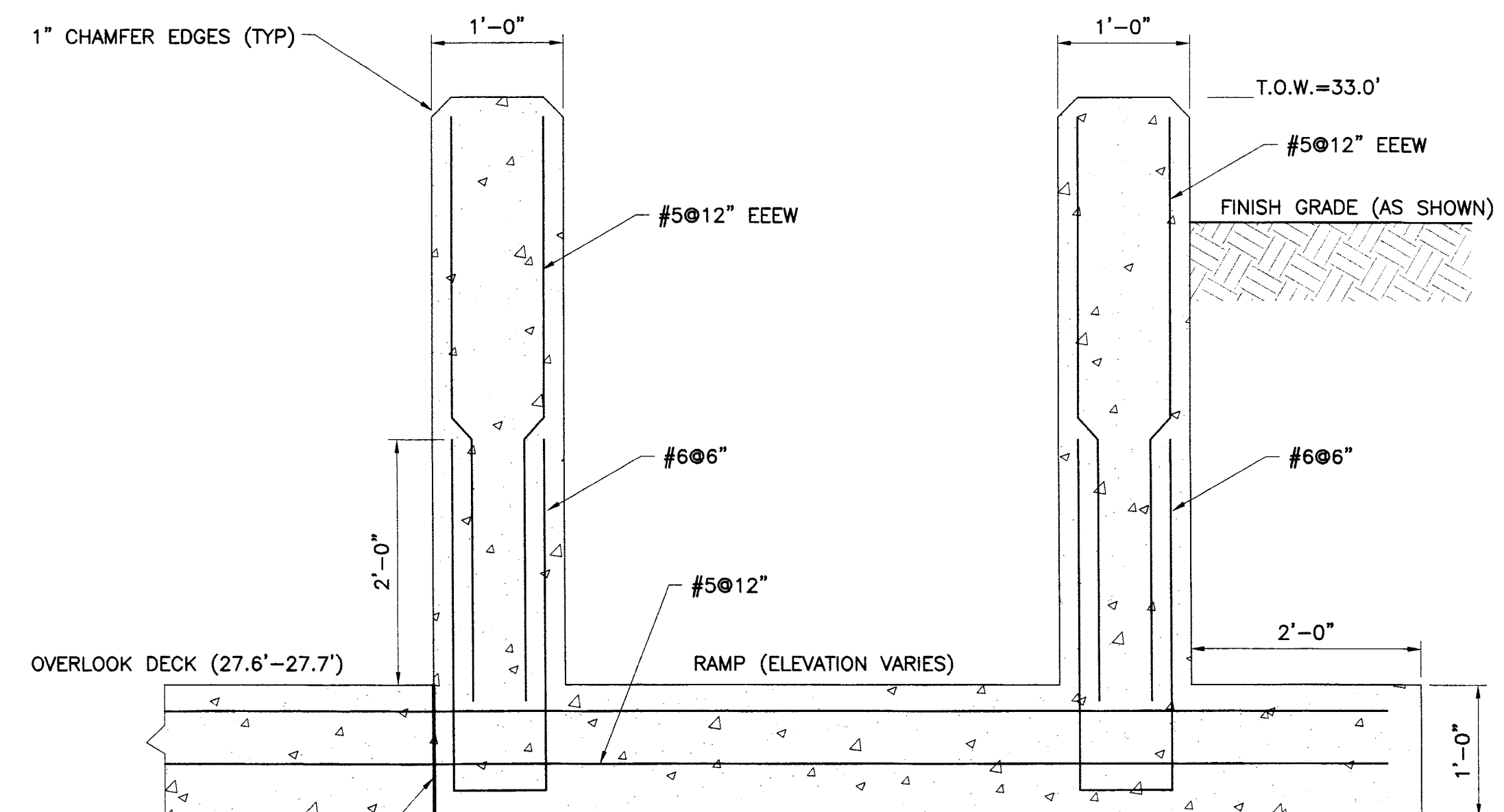
RAIL POST MOUNTING: TYPE B SECTION
NTS



RETAINING WALL DETAIL WITH CANTILEVERED DECK SECTION
NTS



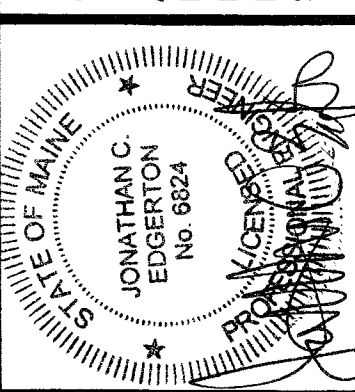
W BEAM CROSS SECTION
NTS



PRECAST CONCRETE RETAINING WALL
NTS

NO.	DATE	APPROVED	REVISIONS
1			

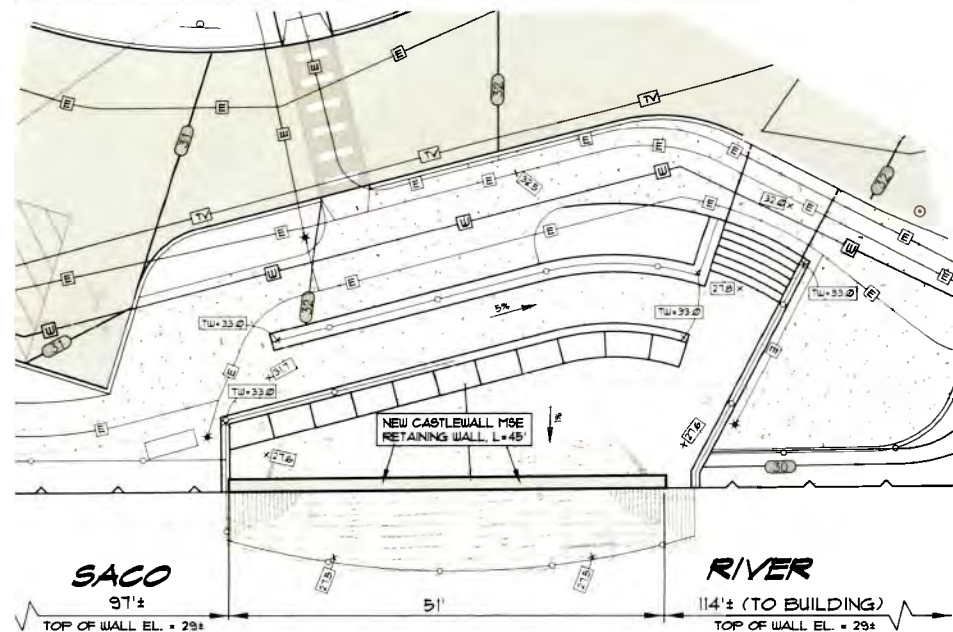
DRAWN BY	RPB
CHECKED BY	SAH
DATE	
APPROVED BY	JOE
DATE	
BOOK NO.	
PROJECT NO.	11541A
SCALE	AS NOTED



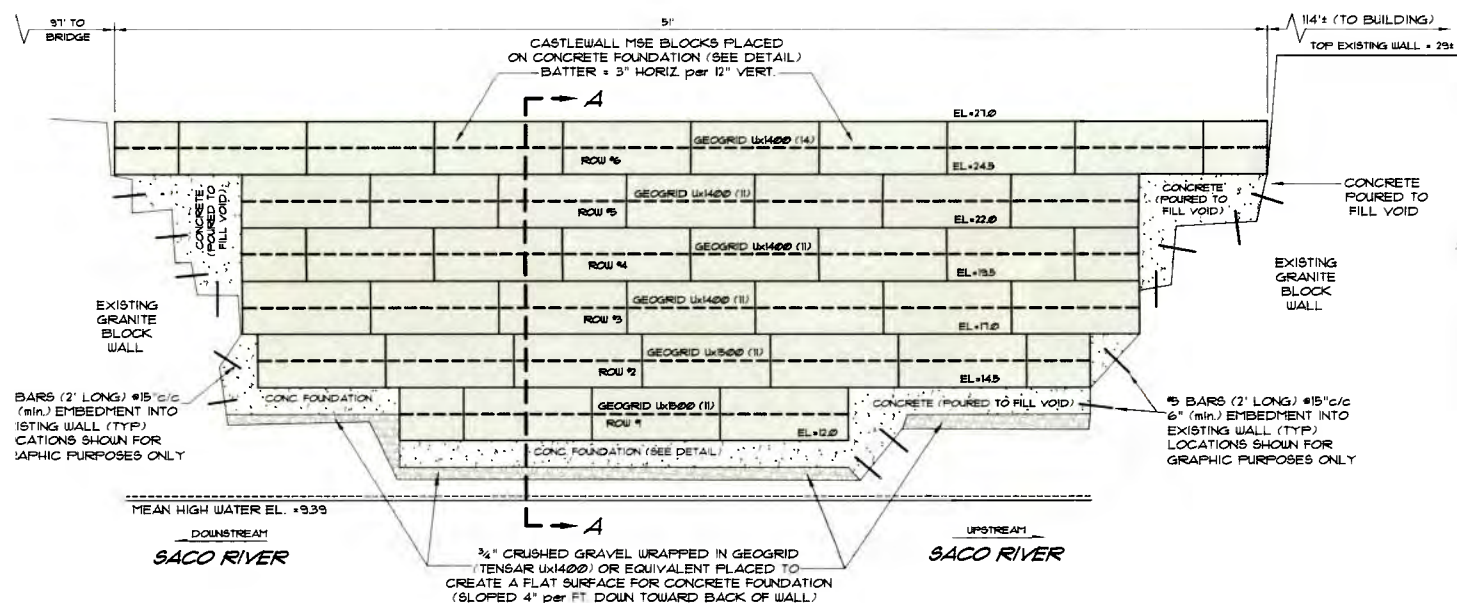
WRIGHT-PIERCE
Engineering a Better Environment
Offices Throughout New England
888.621.8156 | www.wright-pierce.com

CITY OF BIDDEFORD, MAINE
BIDDEFORD RIVERWALK
PHASE I
CANTILEVER STRUCTURE DETAILS

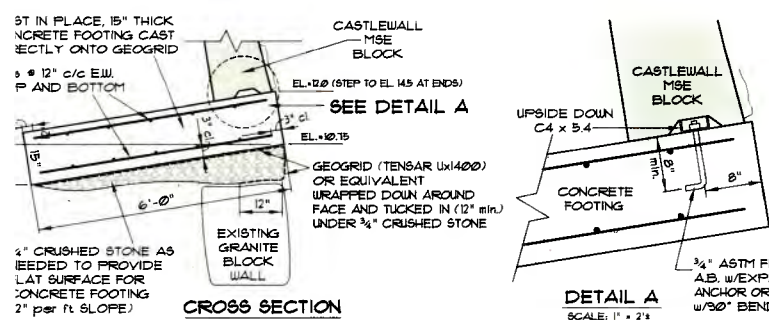
DRAWING
C-11



PLAN VIEW
SCALE: 1" = 10'

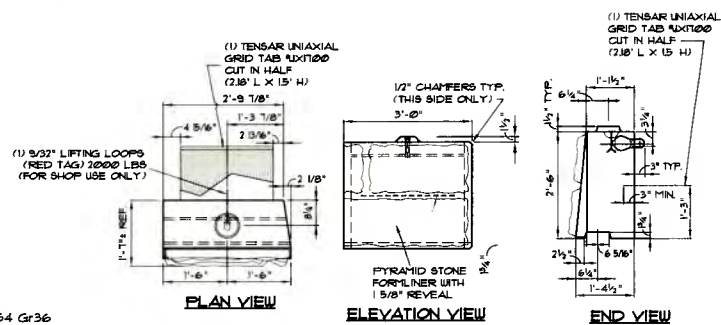


PROFILE
SCALE: 1" = 4'

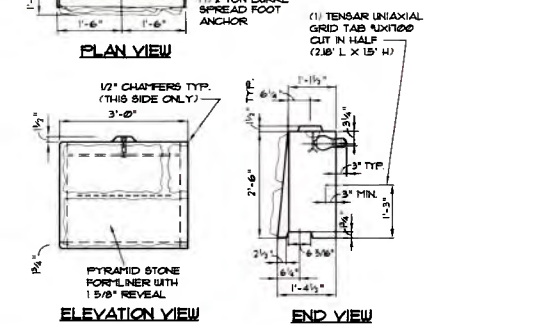


CROSS SECTION
SCALE: 1" = 4'

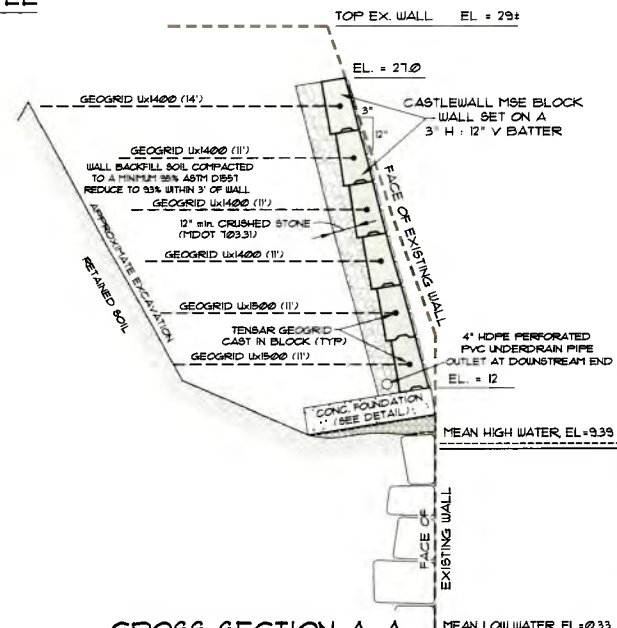
DETAIL A
SCALE: 1" = 2'



30" LEFT HALF MIDDLE
SCALE: 1" = 2'



30" RIGHT HALF MIDDLE
SCALE: 1" = 2'



CROSS SECTION A-A
SCALE: 1" = 4'

WALL INSTALLATION

- 1) INSTALL BASE COURSE OF BLOCKS ON PREPARED CONCRETE FOOTING SEE DETAIL.
- 2) INSTALL DRAINAGE AGGREGATE AND BACKFILL SOIL BEHIND THE WALL AND BACKFILL SOIL IN FRONT OF THE BASE COURSE TO THE ELEVATION INDICATED. INSTALL MATERIAL IN MAXIMUM 15" THICK LIFTS COMPACTED TO A MINIMUM OF 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D691, MODIFIED PROCTOR TEST. DO NOT USE HEAVY EQUIPMENT WITHIN 3 FEET OF THE BACK FACE OF THE WALL. COMPACT TO MINIMUM 93% WITHIN FIRST 3 FEET.
- 3) INSTALL GEOGRID USING BODKIN BAR CONNECTIONS IN FULL LENGTH PIECES WITH MINIMUM LENGTH INDICATED TO THE BACK FACE OF THE WALL. INSTALL GRID WITH ROLL DIMENSION I.E. STRONG DIRECTION PERPENDICULAR TO THE WALL FACE.
- 4) SWEET AND CLEAN OFF BLOCK WALL AND INSTALL NEXT COURSE OF BLOCKS. SHIMS MAY BE REQUIRED TO PLUMB BLOCK PROVIDE A SLIGHT BATTER BACK INTO THE RETAINED SOIL.
- 5) FULL GEOGRID TIGHT AND SECURE TO HOLD TENSION ON GEOGRID. INSTALL DRAINAGE MATERIAL AND BACKFILL MATERIAL ON GRID TAKING PRECAUTIONS TO KEEP GEOGRID TIGHT. COMPACT PARALLEL TO THE WALL FACE BEGINNING AT THE BACK FACE OF THE WALL AND CONTINUING TO THE LIMITS OF THE REINFORCED FILL ZONE.
- 6) DO NOT ALLOW ANY CONSTRUCTION EQUIPMENT TO TRAVEL DIRECTLY ON THE GEOGRID MATERIAL.
- 7) CONTRACTOR SHALL TAKE PRECAUTIONS DURING THE INSTALLATION AND COMPACTING OF THE DRAINAGE AND BACKFILL MATERIAL TO ENSURE THAT BACKFILL MATERIAL DOES NOT CONTAMINATE THE DRAINAGE LAYER DIRECTLY BEHIND THE WALL. REMOVE AND REPLACE ANY AREAS OF DRAINAGE MATERIAL THAT INADVERTENTLY BECOMES CONTAMINATED DURING THE BACKFILLING OPERATION.
- 8) CONTINUE PLACEMENT OF BLOCK WALL, GEOGRIDS, DRAINAGE AGGREGATE AND BACKFILL MATERIAL TO FULL HEIGHT OF WALL MAINTAINING HORIZONTAL AND VERTICAL ALIGNMENT DURING CONSTRUCTION.
- 9) FINISH GRADE FOR POSITIVE DRAINAGE AWAY FROM WALL FACE
- 10) DOUELS INTO ROCK SHALL CONSIST OF 5 DEFORMED REINFORCING STEEL BARS. BARS SHALL BE DRIVEN INTO THE DRILL HOLE SUFFICIENT TO PROVIDE ADEQUATE ANCHORAGE

DRAINAGE

- 1) DURING CONSTRUCTION BEFORE RAIN EVENTS, BACKFILL SURFACE SHALL BE GRADED AWAY FROM THE WALL FACE AND A TEMPORARY SOIL BERM CONSTRUCTED NEAR THE TOP CREST TO PREVENT SURFACE WATER RUNOFF FROM OVERTOPPING THE WALL. PROVIDE PRECAUTIONS AS NECESSARY TO ENSURE THAT SURFACE RUNOFF FROM ADJACENT AREAS DOES NOT ENTER THE WALL CONSTRUCTION SITE. DURING CONSTRUCTION BEFORE RAIN EVENTS, BACKFILL SURFACE SHALL BE SMOOTHED OUT TO PREVENT PONDING OF WATER AND SATURATION OF SOIL.

MATERIAL SPECIFICATION

- 1) DRAINAGE AGGREGATE SHALL BE CLEAN ANGULAR CRUSHED STONE MEETING THE FOLLOWING GRADATION AS DETERMINED IN ACCORDANCE WITH ASTM D422.

SIEVE SIZE	PERCENT PASSING
1 INCH	100
3/4 INCH	90 - 100
No. 4	20 - 55
No. 8	0 - 10
No. 16	0 - 5
- 2) WALL BACKFILL SHALL BE A FREE DRAINING, WELL GRADED GRANULAR MATERIAL MEETING THE FOLLOWING GRADATION AS DETERMINED IN ACCORDANCE WITH ASTM D422.

SIEVE SIZE	PERCENT PASSING
4 INCH	100
1/4 INCH	0 - 10
No. 20	0 - 10
- 3) SHIMS SHALL BE A HIGH COMPRESSIVE STRENGTH SLIP RESISTANT MATERIAL 1" MAXIMUM THICKNESS BY 4" DEEP BY 8" WIDE MINIMUM.
- 4) TENSAR GEOGRID REINFORCEMENT SHALL BE HIGH DENSITY POLYETHYLENE AS MANUFACTURED BY TENSAR EARTH TECHNOLOGIES INC. ATLANTA, GEORGIA. TYPE AND LENGTH SHALL BE AS INDICATED ON THESE PLANS.
- 5) CONCRETE FOR FOOTINGS AND FILLER SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI, A MAXIMUM AGGREGATE SIZE OF 3/4" AND AN ENTRAINED AIR OF 6% (±15%).
- 6) REINFORCING STEEL SHALL BE GRADE 60 HAVING A MINIMUM YIELD STRENGTH OF 60,000 PSI.

CONSTRUCTION CONTROL

- 1) IT IS THE RESPONSIBILITY OF THE OWNER, CONTRACTOR OR THEIR RESPECTIVE REPRESENTATIVES TO ENSURE THAT CONSTRUCTION OF THE WALL AND MATERIALS USED IN THE CONSTRUCTION OF THE WALL ARE IN ACCORDANCE WITH THESE SPECIFICATIONS AND/OR THE CONTRACT SPECIFICATIONS WHICH EVER ARE MORE STRINGENT.
- 2) OLDCASTLE PRECAST AND ITS ENGINEER ACCEPTS NO RESPONSIBILITY NOR LIABILITY IN THE DETERMINATION OF THE ADEQUACY OF SITE MATERIALS AND/OR PROCEDURES.
- 3) PRIOR TO THE START OF CONSTRUCTION THE CONTRACTOR SHALL VERIFY THAT ALL ELEVATIONS AND ASSUMED SITE CONDITIONS SHOWN ON THESE DRAWINGS ARE ACCURATE TO THE GIVEN SITE CONDITIONS. ANY DISCREPANCY SHALL BE BROUGHT TO THE ATTENTION OF OLDCASTLE PRECAST PRIOR TO START OF CONSTRUCTION.
- 4) THE FOLLOWING CONSTRUCTION TOLERANCES ARE RECOMMENDED:

VERTICAL CONTROL:	HORIZONTAL CONTROL:
± 1/2 INCHES OVER 10 FT ± 3 INCHES MAXIMUM	± 1/2 INCHES OVER 10 FT ± 3 INCHES MAXIMUM
ROTATION FROM PLAN BATTER: ± 2.0 DEGREES, ± 0.0 DEGREES	BULGING: 1 INCH OVER 10 FT DISTANCE

FOUNDATION NOTES

- 1) FOUNDATION EXCAVATION SHALL EXTEND TO THE SOLID BLOCKS OF THE EXISTING WALL. LOOSE MATERIAL OR UNSTABLE FOUNDATION SOILS SHALL BE REMOVED FROM THE AREA TO BE OCCUPIED BY THE WALL FOOTING.
- 2) UPON COMPLETION OF THE EXCAVATION THE NATURAL SUBGRADE SHALL BE COMPACTED BY A MINIMUM OF SIX PASSES WITH HAND OPERATED VIBRATORY COMPACTION EQUIPMENT (MIN. 500 LBS. STATIC WEIGHT).
- 3) CONSTRUCT THE WALL FOOTING AS SHOWN ON THIS DRAWING AND AS OTHERWISE DIRECTED BY THE WALL DESIGNER.

DESIGN ASSUMPTIONS

- 1) DESIGN OF CASTLEROCK MSE WALL IS IN GENERAL ACCORDANCE WITH "DESIGN MANUAL FOR SEGMENTAL RETAINING WALLS", SECOND EDITION, NCHA, "SEGMENTAL RETAINING WALLS - SEISMIC DESIGN MANUAL", FIRST EDITION, NCHA.
- 2) THE FOLLOWING ASSUMPTIONS WERE USED IN THE DESIGN:
 - A) SLOPE AT TOP + BACK OF WALL - LEVEL
 - B) SOIL PROPERTIES ASSUMED:

REINFORCED ZONE - WALL BACKFILL - PHI=34° - ULL 135 pcf	RETAINED ZONE - GRANULAR SOIL - PHI=30° - ULL 125 pcf
FOUNDATION SOILS - GRANULAR SOIL - PHI=30° - ULL 125 pcf	

 IF THE ACTUAL SOIL PROPERTIES DIFFER SIGNIFICANTLY, SUBMIT SHOULD BE NOTIFIED IMMEDIATELY.
 - C) LIVE LOAD SURCHARGE = 100 psf
 - D) MAXIMUM CONTACT PRESSURE IS LESS THAN 2,000 psf
 - E) GROUNDWATER AT OR BELOW THE BASE OF THE WALL.
 - F) SEISMIC DESIGN COEFFICIENT = 0.12

TITLE: **CASTLEROCK MSE RETAINING WALL PLAN / PROFILE**

PROJECT: **SACO RIVER WATERFRONT PARK**
ROUTE 9 - BIDDEFORD, MAINE

CLIENT: **STONEAGE STONEWORKS**

640 MAIN ST.
LEWISTON, MAINE 04240
Tel: (207) 516-3313
Fax: (207) 755-6128
www.summitgeoeng.com

SUMMIT
GEOENGINEERING SERVICES

JOB NO. - 11186
SHEET NUMBER - 1

DATE: AUGUST 2011

SCALE: AS NOTED

DATE: AUGUST 2011

SCALE: AS NOTED

DATE: AUGUST 2011

SCALE: AS NOTED

DATE: AUGUST 2011

SCALE: AS NOTED

DATE: AUGUST 2011

SCALE: AS NOTED

DATE: AUGUST 2011

SCALE: AS NOTED

DATE: AUGUST 2011

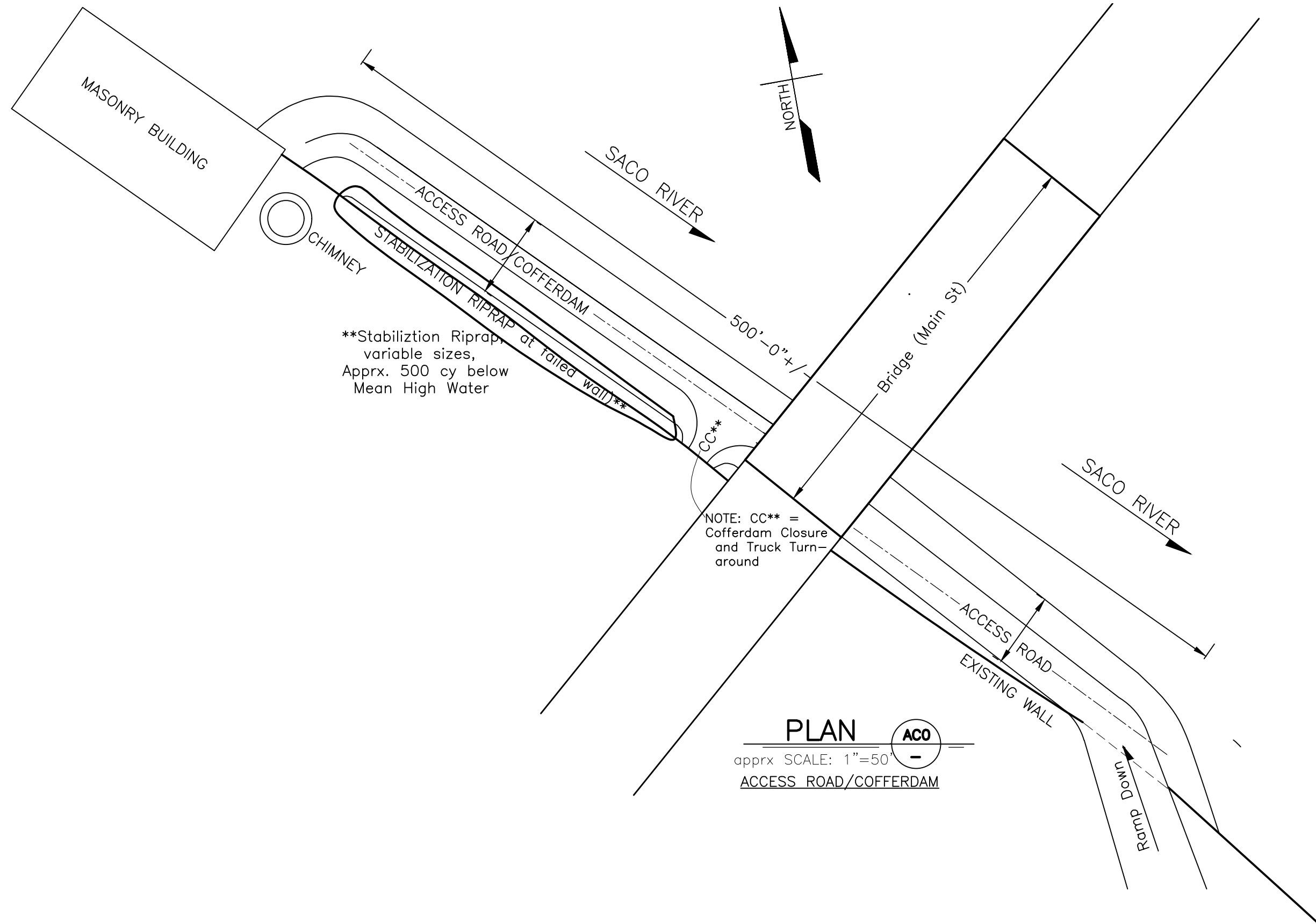
APPENDIX C

Access Road/Cofferdam Plan

PROJECT: SHAW BROS. BIDDEFORD
SUBJECT: ACCESS ROAD COFFERDAM
ITEM: PLAN VIEW

GAGNON ENGINEERING INC.
Structural Consultants
198 Main Street
GORHAM, MAINE 04038
(207 939-4689)

DATE: 11/15/21
BY: RG
SHEET: 1 OF 9999
PROJECT NO. 001SB



**Stabilization Riprap,
variable sizes,
Apprx. 500 cy below
Mean High Water

NOTE: CC** =
Cofferdam Closure
and Truck Turn-
around

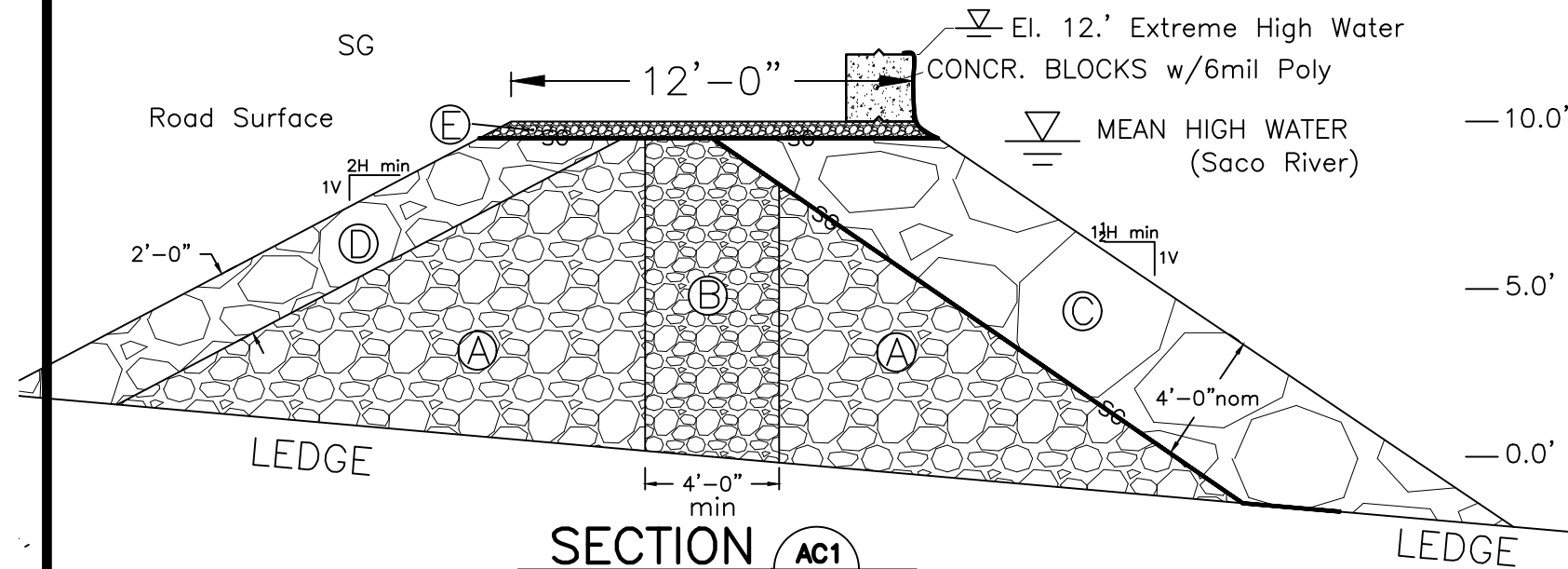
PLAN **ACO**
apprx SCALE: 1"=50'
ACCESS ROAD/COFFERDAM

PROJECT: SHAW BROS. — BIDDEFORD
SUBJECT: ACCESS ROAD/COFFERDAM
ITEM: SECTIONS

GAGNON ENGINEERING INC.
Structural Consultants
198 Main Street
GORHAM, MAINE 04038
(207 939-4689)

DATE: 11/15/21
BY: RG
SHEET: 2 OF 9999
PROJECT NO. SO

Separation
Geotextile

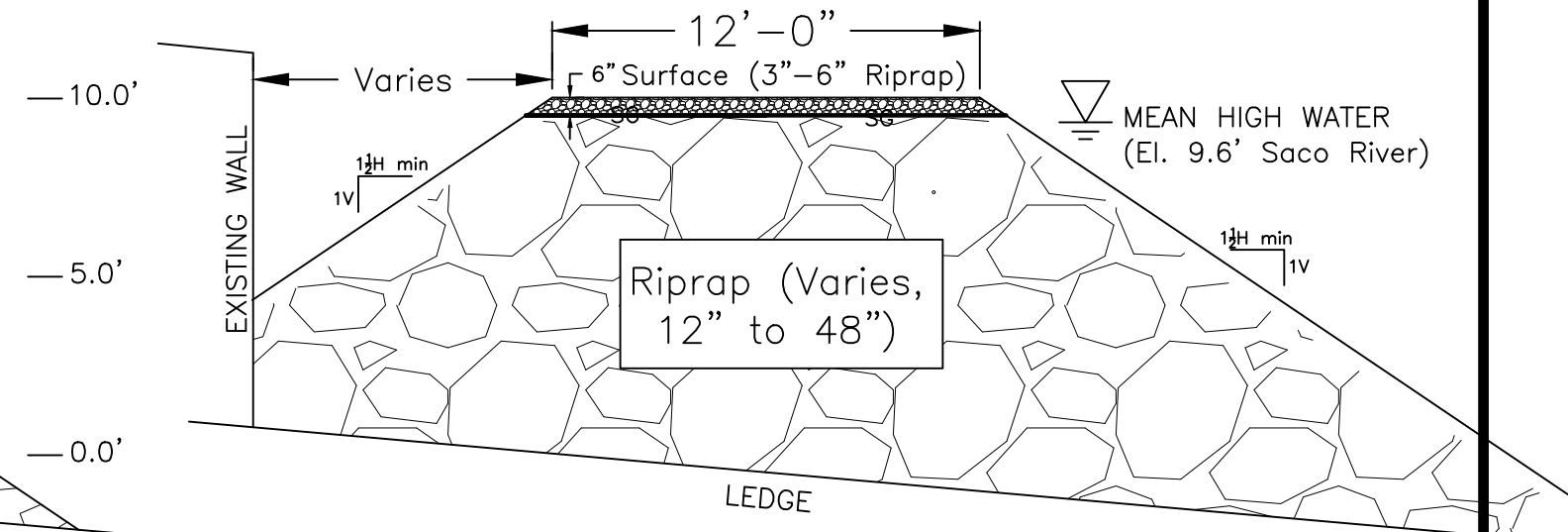


SECTION AC1
SCALE: 3/16"=1'-0"
TYP. SECTION (Work Area)
Access Road/Cofferdam
(& COFFERDAM CLOSURE)

NOTE: TOTAL RIPRAP PLACED BELOW
MEAN HIGH WATER APPRX. 3200.cy

LEGEND

- (A) 6"-12" RIPRAP
- (B) BLASTED ROCK (CORE)
- (C) 24"-48" RIPRAP (OUTBOARD SLOPE)
- (D) 12"-24" RIPRAP (INBOARD SLOPE)
- (E) 3"-6" RIPRAP (ROAD SURFACE)
- SG SEPARATION GEOTEXTILE



NOTE: TOTAL RIPRAP PLACED BELOW
MEAN HIGH WATER APPRX. 2800.cy

SECTION AR1
SCALE: 3/16"=1'-0"
TYP. SECTION
Access Road (Downstream)

SECTION GF1
SCALE: 1/2"=1'-0"
PERPENDIC. to JOISTS
(at Bearing Wall)

APPENDIX D

Summit Borings Logs

SUMMIT GEOENGINEERING SERVICES 640 Main Street Lewiston, Maine 04240					SOIL BORING LOG		Boring #: B-1	
Project: Wall Replacement North Mill Dam Saco, Maine					Project #: 17337 Sheet: 1 of 1 Prep by: WMP			
Drilling Co: Northern Test Borings					Ground Elevation: 31 ft +/-			
Foreman: M. Nadeau					Reference: Interpolated from C-1, Oak Point Associates			
Summit: B. Peterlein, P.E.					Date started: 3/19/2008 Date Comp: 3/19/2008			
DRILLING METHOD			SAMPLER		GROUND WATER DEPTH			
Vehicle: Tracked Model: Diedrich D50 Method: 2-1/2" H.S.A.			Type: 24" SS Hammer: 140 lb Fall: 30"		Date	Depth	Elevation	Comments
					3/19/2008			Caved at 5 ft
Depth (ft.) SAMPLE DATA					ENGINEERING DESCRIPTION		GEOLOGIC DESCRIPTION	
	No.	Pen/Rec (in.)	Depth (ft)	Blows				
1	S-1	24/8	0 to 2	4	Brown to black SAND, little Gravel and Silt, trace coal ash, loose, dry, SM		FILL	
				2				
				1				
2				3				
3								
4								
5								
	S-2	24/24	5 to 7	2	Olive brown Sandy SILT, little Clay, trace organics (appears to be a thin layer), wet, stiff, ML			
6				3				
				7				
7				14				
8					End of Boring on Auguer Refusal at 7.5 ft (No Bedrock)			
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								

SUMMIT GEOENGINEERING SERVICES 640 Main Street Lewiston, Maine 04240					SOIL BORING LOG		Boring #: B-2	
Project: Wall Replacement North Mill Dam Saco, Maine					Project #: 17337		Sheet: 1 of 1	
Drilling Co: Northern Test Borings					Ground Elevation: 31 ft +/-		Prep by: WMP	
Foreman: M. Nadeau					Reference: Interpolated from C-1, Oak Point Associates			
Summit: B. Peterlein, P.E.					Date started: 3/19/2008		Date Comp: 3/19/2008	
DRILLING METHOD			SAMPLER		GROUND WATER DEPTH			
Vehicle: Tracked			Type: 24" SS		Date	Depth	Elevation	Comments
Model: Diedrich D50			Hammer: 140 lb		3/19/2008			None observed, hole caved at 5 ft
Method: 2-1/2" H.S.A.			Fall: 30"					
Depth (ft.)	SAMPLE DATA				ENGINEERING DESCRIPTION		GEOLOGIC DESCRIPTION	
	No.	Pen/Rec (in.)	Depth (ft)	Blows				
1	S-1	24/12	0 to 2	19	Pavement		FILL	
				7	Black medium to fine SAND, little Gravel			
				5	and Silt, trace cinders and ashes, compact,			
2				3	dry, SM			
3								
4								
5								
	S-2	24/8	5 to 7	1	Black to brown SAND, little Gravel and			
6				2	Silt, trace bricks and cinder pieces, loose			
				3	dry, SM			
7				4				
8								
9								
10								
	S-3	1"/0	10 to 10.1	25-1"	Refusal at 10.1 feet, presumed to be a boulder			
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								

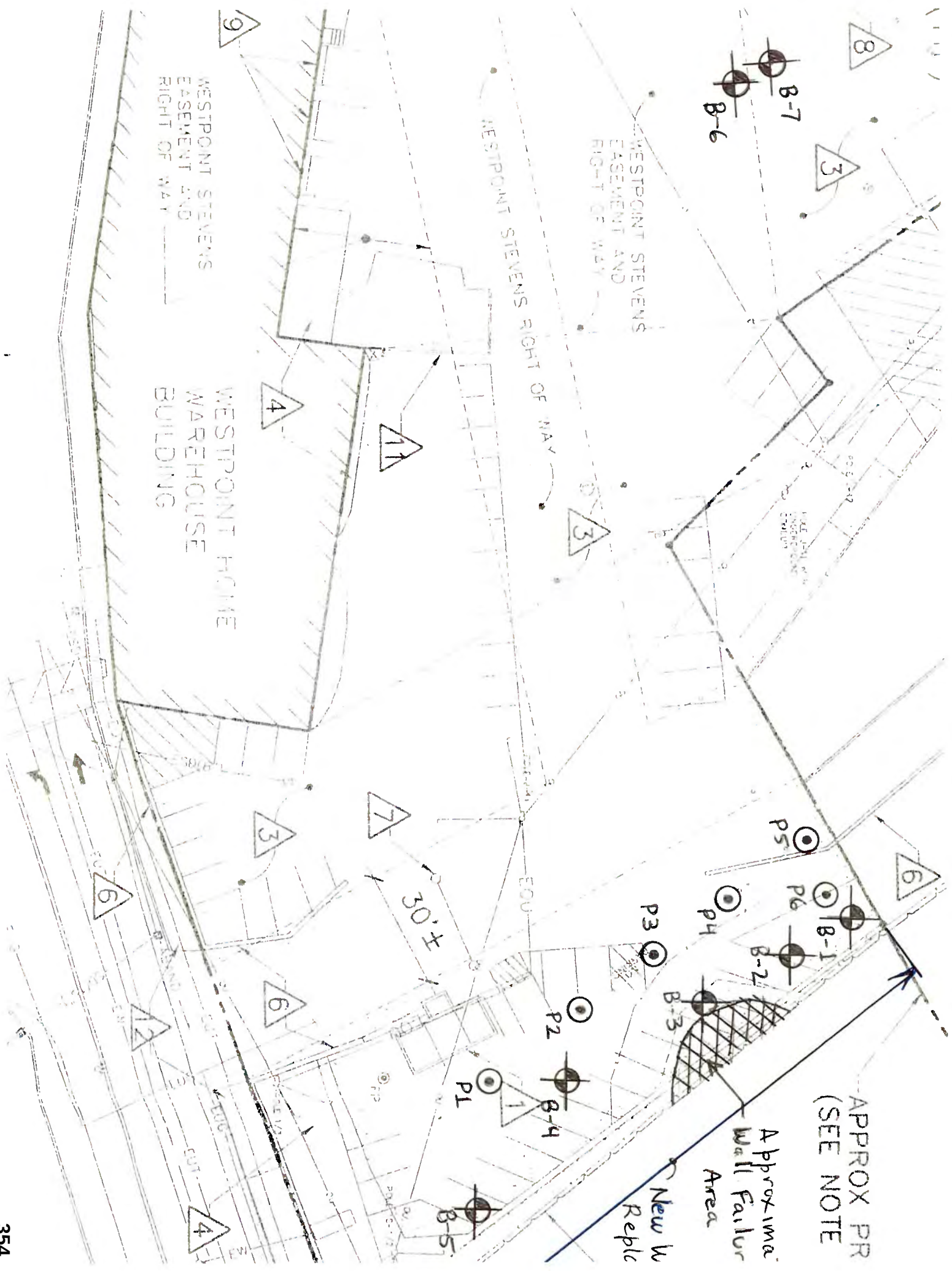
SUMMIT GEOENGINEERING SERVICES 640 Main Street Lewiston, Maine 04240					SOIL BORING LOG			Boring #: B-3	
Project: Wall Replacement North Mill Dam Saco, Maine					Project #: 17337		Sheet: 1 of 1		
Prep by: WMP					Ground Elevation: 30 ft +/-				
Drilling Co: Northern Test Borings					Reference: Interpolated from C-1, Oak Point Associates				
Foreman: M. Nadeau					Date started: 3/19/2008		Date Comp: 3/19/2008		
Summit: B. Peterlein, P.E.									
DRILLING METHOD		SAMPLER			GROUND WATER DEPTH				
Vehicle: Tracked		Type: 24" SS			Date	Depth	Elevation	Comments	
Model: Diedrich D50		Hammer: 140 lb			3/19/2008			None observed, hole caved at 5 ft	
Method: 2-1/2" H.S.A.		Fall: 30"							
Depth (ft.)	SAMPLE DATA				ENGINEERING DESCRIPTION			GEOLOGIC DESCRIPTION	
	No.	Pen/Rec (in.)	Depth (ft)	Blows					
1	S-1	24/12	0 to 2	3	Brown to black SAND, little Gravel and Silt, trace of black cinders and ashes, trace brick, loose, moist, SM			FILL	
				3					
				2					
2				2					
3									
4									
5									
6	S-2	24/2	5 to 7	3	Gray rock fragments mixed with brown Silty SAND, compact, wet, SM				
				5					
				6					
7				7					
8									
9									
10									
11	S-3	24/0	10 to 12	29	No recovery				
				12					
				6					
12				3					
13					Rocks/rubble				
14									
15									
16	S-4	18/0	15.5 to 17	29	No Recovery				
				12					
17				5					
18									
19									
20									
21	S-5	24/2	20 to 22	24	Brown SAND, little Gravel and Silt, trace bricks, compact, SM				
				10					
				10					
22				5					
					End of boring at 22.5 ft on Boulders				

SUMMIT GEOENGINEERING SERVICES 640 Main Street Lewiston, Maine 04240					SOIL BORING LOG		Boring #: B-4			
Drilling Co: Northern Test Borings					Ground Elevation: 31 ft +/-		Project #: 17337			
Foreman: M. Nadeau					Reference: Interpolated from C-1, Oak Point Associates		Sheet: 1 of 1			
Summit: B. Peterlein, P.E.					Date started: 3/19/2008		Date Comp: 3/19/2008			
Project: Wall Replacement North Mill Dam Saco, Maine					Prep by: WMP					
DRILLING METHOD		SAMPLER			GROUND WATER DEPTH					
Vehicle:	Tracked	Type:	24" SS		Date	Depth	Elevation	Comments		
Model:	Diedrich D50	Hammer:	140 lb		3/19/2008			None observed, hole caved		
Method:	2-1/2" H.S.A.	Fall:	30"							
Depth (ft.)	SAMPLE DATA				ENGINEERING DESCRIPTION		GEOLOGIC DESCRIPTION			
	No.	Pen/Rec (in.)	Depth (ft)	Blows						
1	S-1	24/8	0 to 2	3	Brown SAND, little Gravel and Silt, loose, moist, SM		FILL			
				2						
				3						
2				5						
3										
4										
5										
	S-2	24/12	5 to 7	4	Olive brown Silty CLAY, trace fine Sand, firm, damp, ML					
6				3						
				3						
7				3						
8										
9										
10										
	S-3	24/18	10 to 12	3	Olive brown Clayey SILT, trace fine Sand and Gravel, small brick pieces, firm, wet, ML					
11				3						
				23						
12				5						
13										
14										
15										
	S-4	24/8	15 to 17	8	Same as above weathered rock in bottom 6" of spoon					
16				10						
				9						
17				4						
18										
19										
20										
	S-5	23/12	20 to 22	20	Same as above Weathered rock in bottom of 4" spoon					
21				19						
				12						
22				50-5"						
					End of Boring at 22.5 ft on Auger Refusal					

SUMMIT GEOENGINEERING SERVICES 640 Main Street Lewiston, Maine 04240					SOIL BORING LOG		Boring #: B-5								
Project: Wall Replacement North Mill Dam Saco, Maine					Project #: 17337 Sheet: 1 of 1 Prep by: WMP										
Drilling Co: Northern Test Borings					Ground Elevation: 30 ft +/-										
Foreman: M. Nadeau					Reference: Interpolated from C-1, Oak Point Associates										
Summit: B. Peterlein, P.E.					Date started: 3/19/2008 Date Comp: 3/19/2008										
DRILLING METHOD		SAMPLER			GROUND WATER DEPTH										
Vehicle:	Tracked	Type:	24" SS		Date	Depth	Elevation								
Model:	Diedrich D50	Hammer:	140 lb		3/19/2008										
Method:	2-1/2" H.S.A.	Fall:	30"				Comments								
							None observed, hole caved								
Depth (ft.)	SAMPLE DATA				ENGINEERING DESCRIPTION	GEOLOGIC DESCRIPTION									
	No.	Pen/Rec (in.)	Depth (ft)	Blows											
1	S-1	24/12	0 to 2	9	Brown Gravelly SAND, trace Silt and brick pieces, loose, moist, SP or SM	FILL									
				5											
				3											
2				3	Brown to black SAND, trace Silt and Gravel, white ash, brick pieces, loose, SM or SP										
3							Rock fragments, brick, rubble, mixed with brown to black SAND, little Silt, loose, SM								
4								Hole caved							
5									Auger refusal at 21.5 ft						
6	S-2	24/12	5 to 7	2											
				3											
7				4											
				2											
8															
9															
10															
11	S-3	24/12	10 to 12	3											
				2											
12				8											
				10											
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															

SUMMIT GEOENGINEERING SERVICES 640 Main Street Lewiston, Maine 04240					SOIL BORING LOG		Boring #: B-6	
Project: Wall Replacement North Mill Dam Saco, Maine					Project #: 17337 Sheet: 1 of 1 Prep by: WMP			
Drilling Co: Northern Test Borings					Ground Elevation: 38 ft +/-			
Foreman: M. Nadeau					Reference: Interpolated from C-1, Oak Point Associates			
Summit: B. Peterlein, P.E.					Date started: 3/19/2008		Date Comp: 3/19/2008	
DRILLING METHOD		SAMPLER			GROUND WATER DEPTH			
Vehicle: Tracked Model: Diedrich D50 Method: 2-1/2" H.S.A.		Type: 24" SS Hammer: 140 lb Fall: 30"			Date	Depth	Elevation	Comments
					3/19/2008			None observed, hole caved
Depth (ft.)	SAMPLE DATA				ENGINEERING DESCRIPTION		GEOLOGIC DESCRIPTION	
No.	Pen/Rec (in.)	Depth (ft)	Blows					
1	S-1	24/12	0 to 2	20	Brown Gravelly SAND, trace Silt, trace rubble fragments, dense, SP		FILL	
				24				
				22				
2				24	Same as above with black ashes (coal), brick pieces, compact, dry, SP			
	S-2	24/12	2 to 4	14				
				9				
3				7	Wood fragments (stump or wood debris?)			
				7				
				3				
4	S-3	24/12	4 to 6	3				
				2				
				3				
5				3				
6					End of Boring at 6 ft			
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								

SUMMIT GEOENGINEERING SERVICES 640 Main Street Lewiston, Maine 04240					SOIL BORING LOG		Boring #: B-7	
Project: Wall Replacement North Mill Dam Saco, Maine					Project #: 17337		Sheet: 1 of 1	
Prep by: WMP					Date started: 3/19/2008		Date Comp: 3/19/2008	
Drilling Co: Northern Test Borings					Ground Elevation: 38 ft +/-			
Foreman: M. Nadeau					Reference: Interpolated from C-1, Oak Point Associates			
Summit: B. Peterlein, P.E.					Date started: 3/19/2008		Date Comp: 3/19/2008	
DRILLING METHOD			SAMPLER		GROUND WATER DEPTH			
Vehicle: Tracked			Type: 24" SS		Date	Depth	Elevation	Comments
Model: Diedrich D50			Hammer: 140 lb		3/19/2008			None observed, hole caved
Method: 2-1/2" H.S.A.			Fall: 30"					
Depth (ft.)	SAMPLE DATA				ENGINEERING DESCRIPTION		GEOLOGIC DESCRIPTION	
	No.	Pen/Rec (in.)	Depth (ft)	Blows				
1	S-1	24/18	0 to 2	21	Brown Gravelly SAND, trace to little Silt		FILL	
				12				
				6				
2				8				
	S-2	24/8	2 to 4	5	Olive-brown Silty CLAY, slightly mottled,		GLACIAL MARINE	
3				6	stiff, moist, ML			
				9				
4				15				
	S-3	24/8	4 to 6	15	Same as above			
5				8				
				7				
6				7				
7					End of Boring at 6 ft			
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								



APPENDIX E

Weston & Sampson Boring Logs

CONTRACTOR:	<u>S.W. Cole Explorations, LLC</u>	BORING LOCATION:	<u>See Attached Figure</u>	DATE START:	<u>January 18, 2022</u>
FOREMAN:	<u>Kevin</u>	ADVANCE METHOD:	<u>Rotary Wash Drilling</u>	DATE FINISH:	<u>January 18, 2022</u>
LOGGED BY:	<u>Aaron Chabot, E.I.T.</u>	AUGER DIAMETER:	<u>N/A</u>	GROUND EL:	<u>7.0 ± ()</u>
CHECKED BY:	<u>Thomas Strike, P.E.</u>	SUPPORT CASING:	<u>Driven Flush-Joint Casing (3" ID)</u>	FINAL DEPTH:	<u>20.5 ft.</u>
EQUIPMENT:	<u>Diedrich D-50 Hydraulic Drill</u>	CORING METHOD:	<u>NQ Wireline</u>	GRID COORDS:	<u>N/A</u>
SPT HAMMER:	<u>Automatic (140-lb.)</u>	BACKFILL MATERIAL:	<u>Drill Cuttings</u>	GRID SYSTEM:	<u>N/A</u>

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	GEOTECHNICAL TEST DATA				STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS
				● N-Value, Raw (bpf)							
				☒ Organic Content (%)							
				10	20	30	40				
				⊕ Moisture Content (%)							
				▶ Plastic Limit, PL (%)							
				▲ Liquid Limit, LL (%)							
				25	50	75	100				
		R-1 60/60	06:05						Surface: Sand.		Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.
			06:10						No sampling through fill.		[0.0 - 10.5] Contractor excavated riprap from inside of access road and replaced with imported sand to provide a flat and dry surface to operate drill rig at boring location.
5			06:55							-2	
			07:30								
			07:55								
10			03:45							-3	
			06:45						Metamorphic Gneiss, medium-grained, light blue, very hard, slightly weathered, moderately fractured [BERWICK FORMATION]		
			06:15								
15			05:00							-8	
		R-2 60/60	06:50								
20										-13	
											Exploration ended at 20.5 ft.

CONTRACTOR:	S.W. Cole Explorations, LLC	BORING LOCATION:	See Attached Figure	DATE START:	January 18, 2022
FOREMAN:	Kevin	ADVANCE METHOD:	Rotary Wash Drilling	DATE FINISH:	January 18, 2022
LOGGED BY:	Aaron Chabot, E.I.T.	AUGER DIAMETER:	N/A	GROUND EL:	7.5 ± ()
CHECKED BY:	Thomas Strike, P.E.	SUPPORT CASING:	Driven Flush-Joint Casing (3" ID)	FINAL DEPTH:	20.5 ft.
EQUIPMENT:	Diedrich D-50 Hydraulic Drill	CORING METHOD:	NQ Wireline	GRID COORDS:	N/A
SPT HAMMER:	Automatic (140-lb.)	BACKFILL MATERIAL:	Drill Cuttings	GRID SYSTEM:	N/A

[illegible]

CONTRACTOR:	S.W. Cole Explorations, LLC	BORING LOCATION:	See Attached Figure	DATE START:	January 19, 2022
FOREMAN:	Kevin	ADVANCE METHOD:	Rotary Wash Drilling	DATE FINISH:	January 19, 2022
LOGGED BY:	Aaron Chabot, E.I.T.	AUGER DIAMETER:	N/A	GROUND EL:	7.5 ± ()
CHECKED BY:	Thomas Strike, P.E.	SUPPORT CASING:	Driven Flush-Joint Casing (3" ID)	FINAL DEPTH:	21.0 ft.
EQUIPMENT:	Diedrich D-50 Hydraulic Drill	CORING METHOD:	NQ Wireline	GRID COORDS:	N/A
SPT HAMMER:	Automatic (140-lb.)	BACKFILL MATERIAL:	Drill Cuttings	GRID SYSTEM:	N/A

[illegible]

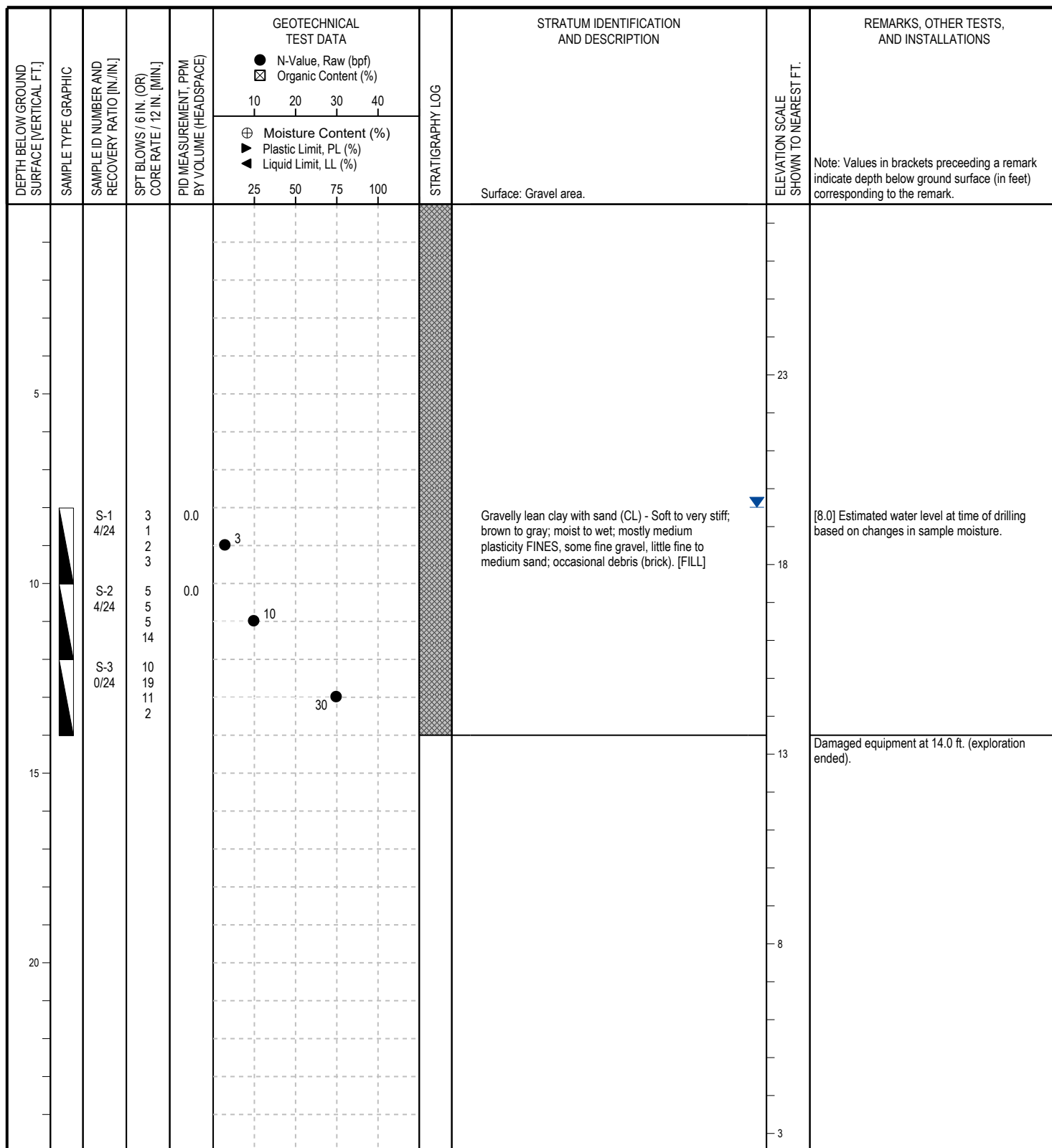
CONTRACTOR:	S.W. Cole Explorations, LLC	BORING LOCATION:	See Attached Figure	DATE START:	January 20, 2022
FOREMAN:	Kevin	ADVANCE METHOD:	Hollow-Stem Auger Drilling	DATE FINISH:	January 20, 2022
LOGGED BY:	Aaron Chabot, E.I.T.	AUGER DIAMETER:	2-1/4" ID (Stem), 5-5/8" OD (Flights)	GROUND EL:	29.0 ± ()
CHECKED BY:	Thomas Strike, P.E.	SUPPORT CASING:	N/A	FINAL DEPTH:	2.0 ft. (Refusal)
EQUIPMENT:	Diedrich D-50 Hydraulic Drill	CORING METHOD:	N/A	GRID COORDS:	N/A
SPT HAMMER:	Automatic (140-lb.)	BACKFILL MATERIAL:	Drill Cuttings	GRID SYSTEM:	N/A

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	PID MEASUREMENT, PPM BY VOLUME (HEADSPACE)	GEOTECHNICAL TEST DATA				STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS
		S-1 7/24	47 75 69 7	0.0								

CONTRACTOR:	<u>S.W. Cole Explorations, LLC</u>	BORING LOCATION:	<u>See Attached Figure</u>	DATE START:	<u>January 20, 2022</u>
FOREMAN:	<u>Kevin</u>	ADVANCE METHOD:	<u>Hollow-Stem Auger Drilling</u>	DATE FINISH:	<u>January 20, 2022</u>
LOGGED BY:	<u>Aaron Chabot, E.I.T.</u>	AUGER DIAMETER:	<u>2-1/4" ID (Stem), 5-5/8" OD (Flights)</u>	GROUND EL:	<u>28.0 ± ()</u>
CHECKED BY:	<u>Thomas Strike, P.E.</u>	SUPPORT CASING:	<u>N/A</u>	FINAL DEPTH:	<u>8.0 ft. (Refusal)</u>
EQUIPMENT:	<u>Diedrich D-50 Hydraulic Drill</u>	CORING METHOD:	<u>N/A</u>	GRID COORDS:	<u>N/A</u>
SPT HAMMER:	<u>Automatic (140-lb.)</u>	BACKFILL MATERIAL:	<u>Drill Cuttings</u>	GRID SYSTEM:	<u>N/A</u>

[illegible]

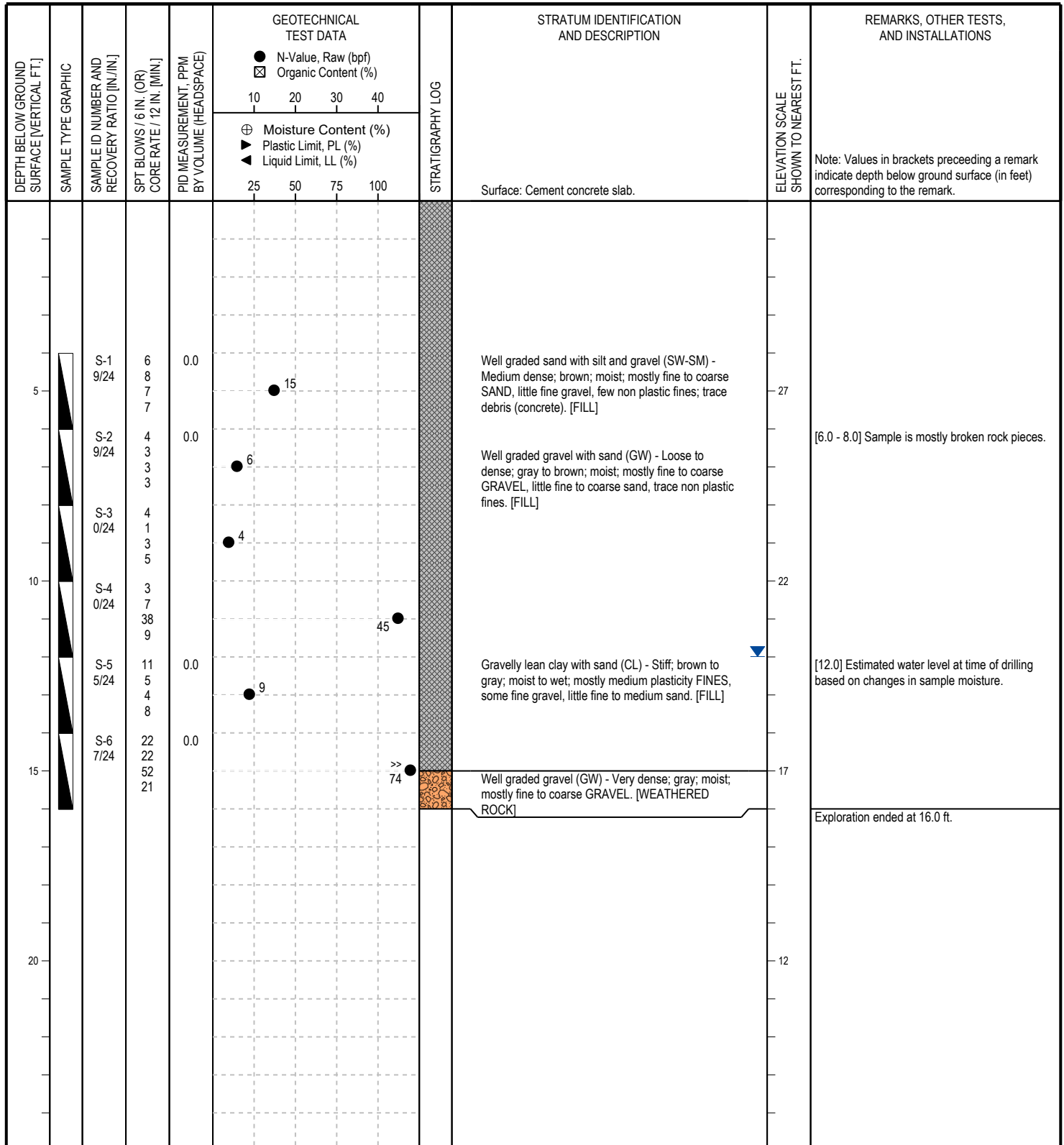
CONTRACTOR:	S.W. Cole Explorations, LLC	BORING LOCATION:	See Attached Figure	DATE START:	January 20, 2022
FOREMAN:	Kevin	ADVANCE METHOD:	Hollow-Stem Auger Drilling	DATE FINISH:	January 20, 2022
LOGGED BY:	Aaron Chabot, E.I.T.	AUGER DIAMETER:	2-1/4" ID (Stem), 5-5/8" OD (Flights)	GROUND EL:	27.5 ± ()
CHECKED BY:	Thomas Strike, P.E.	SUPPORT CASING:	N/A	FINAL DEPTH:	14.0 ft. (Refusal)
EQUIPMENT:	Diedrich D-50 Hydraulic Drill	CORING METHOD:	N/A	GRID COORDS:	N/A
SPT HAMMER:	Automatic (140-lb.)	BACKFILL MATERIAL:	Drill Cuttings	GRID SYSTEM:	N/A



CONTRACTOR:	S.W. Cole Explorations, LLC	BORING LOCATION:	See Attached Figure	DATE START:	January 20, 2022
FOREMAN:	Kevin	ADVANCE METHOD:	Hollow-Stem Auger Drilling	DATE FINISH:	January 20, 2022
LOGGED BY:	Aaron Chabot, E.I.T.	AUGER DIAMETER:	2-1/4" ID (Stem), 5-5/8" OD (Flights)	GROUND EL:	32.0 ± ()
CHECKED BY:	Thomas Strike, P.E.	SUPPORT CASING:	N/A	FINAL DEPTH:	4.0 ft. (Refusal)
EQUIPMENT:	Diedrich D-50 Hydraulic Drill	CORING METHOD:	N/A	GRID COORDS:	N/A
SPT HAMMER:	Automatic (140-lb.)	BACKFILL MATERIAL:	Drill Cuttings	GRID SYSTEM:	N/A

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	PID MEASUREMENT, PPM BY VOLUME (HEADSPACE)	GEOTECHNICAL TEST DATA				STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS		
					10	20	30	40						
					⊕ Moisture Content (%)									
					▶ Plastic Limit, PL (%)									
					▲ Liquid Limit, LL (%)									
					25	50	75	100						

CONTRACTOR:	S.W. Cole Explorations, LLC	BORING LOCATION:	See Attached Figure	DATE START:	January 20, 2022
FOREMAN:	Kevin	ADVANCE METHOD:	Hollow-Stem Auger Drilling	DATE FINISH:	January 20, 2022
LOGGED BY:	Aaron Chabot, E.I.T.	AUGER DIAMETER:	2-1/4" ID (Stem), 5-5/8" OD (Flights)	GROUND EL:	32.0 ± ()
CHECKED BY:	Thomas Strike, P.E.	SUPPORT CASING:	N/A	FINAL DEPTH:	16.0 ft.
EQUIPMENT:	Diedrich D-50 Hydraulic Drill	CORING METHOD:	N/A	GRID COORDS:	N/A
SPT HAMMER:	Automatic (140-lb.)	BACKFILL MATERIAL:	Drill Cuttings	GRID SYSTEM:	N/A



CONTRACTOR:	S.W. Cole Explorations, LLC	BORING LOCATION:	See Attached Figure	DATE START:	January 20, 2022
FOREMAN:	Kevin	ADVANCE METHOD:	Hollow-Stem Auger Drilling	DATE FINISH:	January 20, 2022
LOGGED BY:	Aaron Chabot, E.I.T.	AUGER DIAMETER:	4-1/4" ID (Stem), 7-5/8" OD (Flights)	GROUND EL:	32.0 ± ()
CHECKED BY:	Thomas Strike, P.E.	SUPPORT CASING:	N/A	FINAL DEPTH:	13.0 ft. (Refusal)
EQUIPMENT:	Diedrich D-50 Hydraulic Drill	CORING METHOD:	N/A	GRID COORDS:	N/A
SPT HAMMER:	N/A	BACKFILL MATERIAL:	Monitoring Well Installed	GRID SYSTEM:	N/A

DEPTH BELOW GROUND SURFACE [VERTICAL FT.]	SAMPLE TYPE GRAPHIC	SAMPLE ID NUMBER AND RECOVERY RATIO [IN./IN.]	SPT BLOWS / 6 IN. (OR) CORE RATE / 12 IN. [MIN.]	SPT RESISTANCE, RQD, AND LABORATORY DATA	STRATIGRAPHY LOG	STRATUM IDENTIFICATION AND DESCRIPTION	ELEVATION SCALE SHOWN TO NEAREST FT.	REMARKS, OTHER TESTS, AND INSTALLATIONS	
				● N-Value, Raw (bpf) ⊕ Moisture Content (%) ► Plastic Limit (%) ▲ Liquid Limit (%) ☒ Organic Content (%)					
				10 20 30 40		Surface: Cement concrete slab.		Note: Values in brackets preceeding a remark indicate depth below ground surface (in feet) corresponding to the remark.	
5							27		
10							22		
15							17	[12.0] Water level measured on 01/20/22 (during drilling).	
20							12	Auger refusal at 13.0 ft. (exploration ended).	

APPENDIX F

Environmental Data

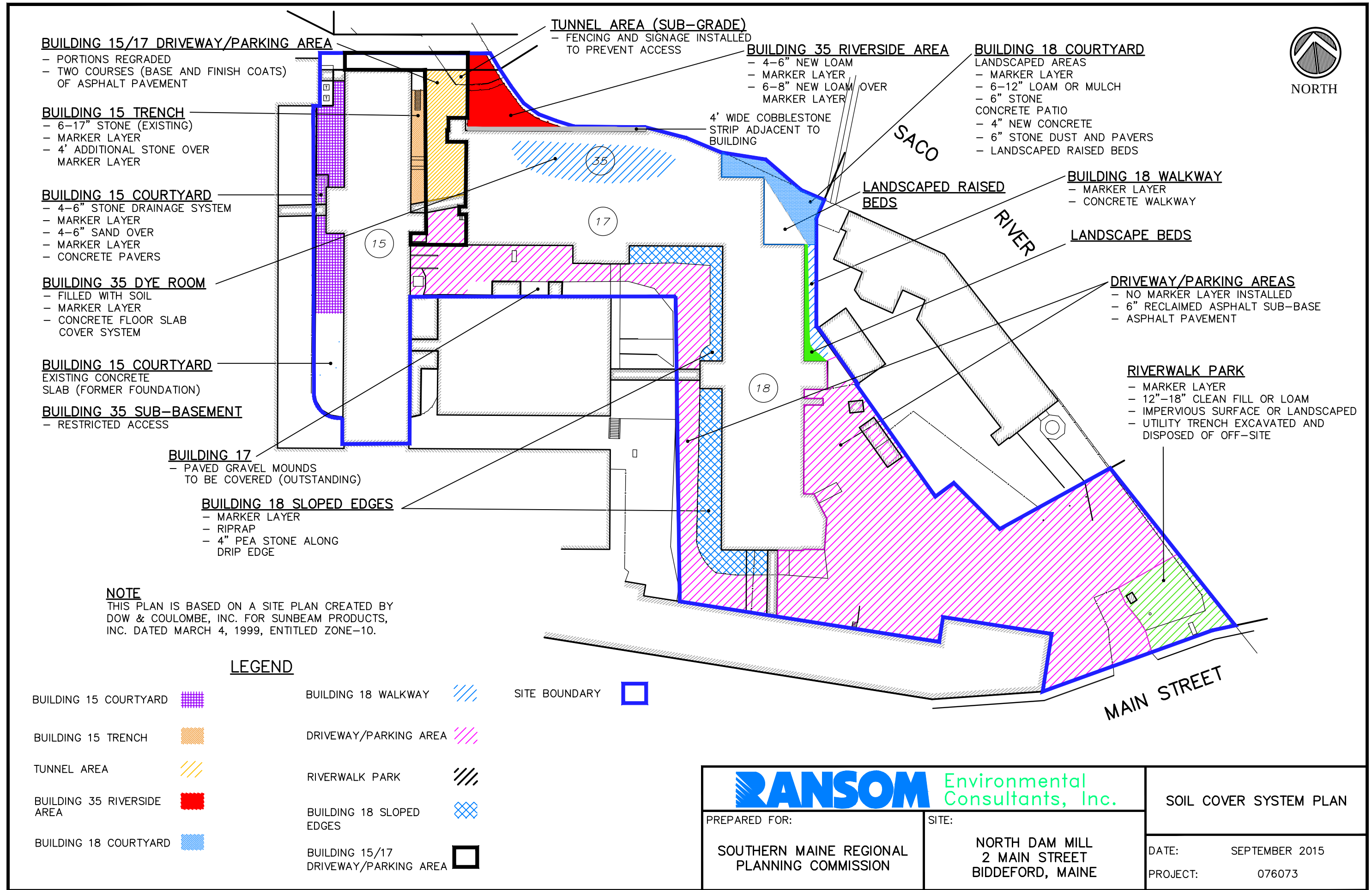


TABLE 1
SOIL RESULTS
RIVERWALK RETAINING WALL REPLACEMENT PROJECT
BIDDEFORD, MAINE

Parameter	Units	Soil RAG Resident (mg/kg)	B-104				B-105			
			0-8 ft	2-4 ft	8-12 ft	8-10 ft	0-8 ft	0.5-2 ft	8-16 ft	14-15 ft
			1/20/2022	1/20/2022	1/20/2022	1/20/2022	1/20/2022	1/20/2022	1/20/2022	1/20/2022
Volatile Organic Compounds (VOCs)										
Toluene	mg/Kg	750	NA	<0.0017	NA	<0.0016	NA	0.0017	NA	<0.0013
Total VOCs	mg/Kg	~	NA		NA	NA	NA	0.0017	NA	
Semivolatile Organic Compounds (SVOCs)										
Acenaphthene	mg/Kg	4,900	0.21	NA	<0.21	NA	<0.20	NA	<0.21	NA
Anthracene	mg/Kg	25,000	0.66	NA	<0.21	NA	<0.20	NA	0.35	NA
Benzo(a)anthracene	mg/Kg	16	1.9	NA	<0.21	NA	<0.20	NA	0.89	NA
Benzo(a)pyrene	mg/Kg	1.6	1.8	NA	0.25	NA	<0.20	NA	0.74	NA
Benzo(b)fluoranthene	mg/Kg	16	2.2	NA	0.25	NA	<0.20	NA	0.82	NA
Benzo(g,h,i)perylene	mg/Kg	2,500	1.0	NA	<0.21	NA	<0.20	NA	0.37	NA
Benzo(k)fluoranthene	mg/Kg	160	0.87	NA	<0.21	NA	<0.20	NA	0.34	NA
Carbazole	mg/Kg	270	0.31	NA	<0.21	NA	<0.20	NA	<0.21	NA
Chrysene	mg/Kg	1,600	1.9	NA	<0.21	NA	<0.20	NA	0.77	NA
Dibenz(a,h)anthracene	mg/Kg	1.6	0.31	NA	<0.21	NA	<0.20	NA	<0.21	NA
Fluoranthene	mg/Kg	3,300	3.8	NA	0.22	NA	<0.20	NA	1.5	NA
Fluorene	mg/Kg	3,300	0.24	NA	<0.21	NA	<0.20	NA	<0.21	NA
Indeno(1,2,3-cd)pyrene	mg/Kg	16	1.2	NA	<0.21	NA	<0.20	NA	0.39	NA
Phenanthrene	mg/Kg	2,500	3.1	NA	<0.21	NA	<0.20	NA	0.87	NA
Pyrene	mg/Kg	2,500	3.9	NA	0.27	NA	<0.20	NA	1.7	NA
Total SVOCs	mg/Kg	~	23.4	NA	0.99	NA	<0.20	NA	8.74	NA
Organochloride Pesticides										
Alachlor	mg/Kg	130	<1.2	NA	<0.24	NA	NA	NA	NA	NA
Aldrin	mg/Kg	~	<0.30	NA	<0.061	NA	NA	NA	NA	NA
alpha-BHC	mg/Kg	1.2	<0.30	NA	<0.061	NA	NA	NA	NA	NA
beta-BHC	mg/Kg	4.1	<0.30	NA	<0.061	NA	NA	NA	NA	NA
delta-BHC	mg/Kg	~	<0.30	NA	<0.061	NA	NA	NA	NA	NA
gamma-BHC (Lindane)	mg/Kg	7.8	<0.12	NA	<0.024	NA	NA	NA	NA	NA
Chlordane	mg/Kg	24	<1.2	NA	<0.24	NA	NA	NA	NA	NA
4,4'-DDD	mg/Kg	2.6	<0.24	NA	<0.049	NA	NA	NA	NA	NA
4,4'-DDE	mg/Kg	27	<0.24	NA	<0.049	NA	NA	NA	NA	NA
4,4'-DDT	mg/Kg	26	<0.24	NA	<0.049	NA	NA	NA	NA	NA
Dieldrin	mg/Kg	0.46	<0.24	NA	<0.049	NA	NA	NA	NA	NA
Endosulfan I	mg/Kg	640	<0.30	NA	<0.061	NA	NA	NA	NA	NA
Endosulfan II	mg/Kg	~	<0.47	NA	<0.098	NA	NA	NA	NA	NA
Endosulfan Sulfate	mg/Kg	~	<0.47	NA	<0.098	NA	NA	NA	NA	NA
Endrin	mg/Kg	26	<0.47	NA	<0.098	NA	NA	NA	NA	NA
Endrin Aldehyde	mg/Kg	~	<0.47	NA	<0.098	NA	NA	NA	NA	NA
Endrin Ketone	mg/Kg	~	<0.47	NA	<0.098	NA	NA	NA	NA	NA
Heptachlor	mg/Kg	1.9	<0.30	NA	<0.061	NA	NA	NA	NA	NA
Heptachlor Epoxide	mg/Kg	0.97	<0.30	NA	<0.061	NA	NA	NA	NA	NA
Hexachlorobenzene	mg/Kg	~	<0.35	NA	<0.073	NA	NA	NA	NA	NA
Methoxychlor	mg/Kg	430	<3.0	NA	<0.61	NA	NA	NA	NA	NA
Toxaphene	mg/Kg	~	<5.9	NA	<1.2	NA	NA	NA	NA	NA
Herbicides										
2,4-D	µg/kg	~	<120	NA	<120	NA	NA	NA	NA	NA
2,4-DB	µg/kg	~	<120	NA	<120	NA	NA	NA	NA	NA
2,4,5-TP (Silvex)	µg/kg	690	<12	NA	<12	NA	NA	NA	NA	NA
2,4,5-T	µg/kg	~	<12	NA	<12	NA	NA	NA	NA	NA
Dalapon	µg/kg	2600	<300	NA	<300	NA	NA	NA	NA	NA
Dicamba	µg/kg	~	<12	NA	<12	NA	NA	NA	NA	NA
Dichloroprop	µg/kg	~	<120	NA	<120	NA	NA	NA	NA	NA
Dinoseb	µg/kg	~	<59	NA	<61	NA	NA	NA	NA	NA
MCPA	µg/kg	43	<12000	NA	<12000	NA	NA	NA	NA	NA
MCPP	µg/kg	86	<12000	NA	<12000	NA	NA	NA	NA	NA
Polychlorinated Biphenyls (PCBs)										
Aroclor-1016	mg/Kg	5.6	<0.095	NA	<0.098	NA	<0.094	NA	<0.099	NA
Aroclor-1221	mg/Kg	~	<0.095	NA	<0.098	NA	<0.094	NA	<0.099	NA
Aroclor-1232	mg/Kg	~	<0.095	NA	<0.098	NA	<0.094	NA	<0.099	NA
Aroclor-1242	mg/Kg	~	<0.095	NA	<0.098	NA	<0.094	NA	<0.099	NA
Aroclor-1248	mg/Kg	~	<0.095	NA	<0.098	NA	<0.094	NA	<0.099	NA
Aroclor-1254	mg/Kg	~	<0.095	NA	<0.098	NA	<0.094	NA	<0.099	NA
Aroclor-1260	mg/Kg	~	<0.095	NA	<0.098	NA	<0.094	NA	<0.099	NA
Aroclor-1262	mg/Kg	~	<0.095	NA	<0.098	NA	<0.094	NA	<0.099	NA
Aroclor-1268	mg/Kg	~	<0.095	NA	<0.098	NA	<0.094	NA	<0.099	NA
Total PCBs	mg/Kg	3.1	<0.095	NA	<0.098	NA	<0.094	NA	<0.099	NA

TABLE 1
SOIL RESULTS
RIVERWALK RETAINING WALL REPLACEMENT PROJECT
BIDDEFORD, MAINE

Parameter	Units	Soil RAG Resident (mg/kg)	B-104				B-105			
			0-8 ft	2-4 ft	8-12 ft	8-10 ft	0-8 ft	0.5-2 ft	8-16 ft	14-15 ft
			1/20/2022	1/20/2022	1/20/2022	1/20/2022	1/20/2022	1/20/2022	1/20/2022	1/20/2022
Total Petroleum Hydrocarbons										
TPH (C9-C36)	mg/Kg	~	550	NA	45	NA	43	NA	63	NA
Metals (Total)										
Arsenic	mg/Kg	9.3	14	NA	18	NA	4.2	NA	14	NA
Barium	mg/Kg	21,000	60	NA	59	NA	16	NA	78	NA
Cadmium	mg/Kg	98	<0.37	NA	<0.38	NA	<0.37	NA	<0.39	NA
Chromium	mg/Kg	100,000	15	NA	23	NA	7.7	NA	46	NA
Lead	mg/Kg	140	120	NA	120	NA	9.5	NA	150	NA
TCLP Lead	mg/L	~	<0.10	NA	<0.10	NA	NA	NA	<0.10	NA
Mercury	mg/Kg	3.1	0.39	NA	0.15	NA	<0.028	NA	<0.028	NA
Selenium	mg/Kg	540	<3.7	NA	<3.8	NA	<3.7	NA	<3.9	NA
Silver	mg/Kg	540	<0.37	NA	<0.38	NA	<0.37	NA	<0.39	NA
Conventional Chemistry										
% Solids	% Wt	~	84.6	84.6	82	82	85.4	85.4	80.4	80.4
Specific conductance	µmhos/cm	~	21	NA	12	NA	14	NA	14	NA
Reactive Cyanide	mg/Kg	~	<4.0	NA	<3.9	NA	<4.0	NA	<4.0	NA
Reactive Sulfide	mg/Kg	~	<20	NA	<19	NA	<20	NA	<20	NA
pH	pH Units	~	9.3	NA	8.6	NA	9.9	NA	8.8	NA
Ignitability	present/absent	~	Absent	NA	Absent	NA	Absent	NA	Absent	NA

NOTES:

1. VOC and SVOC constituents detected in at least one sample are summarized. For the complete list of constituents refer to laboratory reports.
2. < # = Not detected above the lab reporting limits shown.
3. Bolded values detected above the lab reporting limits.
4. ~ = No Maine Department of Environmental Protection Remedial Action Guidelines for Contaminated Sites (RAGs) Effective Date: May 1, 2021 available.
5. Shaded values equal to or exceed the ME DEP RAGs concentrations.
6. Total Chromium concentrations are being compared to the ME DEP RAGs for Chromium(III), Insoluble Salts not Chromium(VI).
7. Sampling depths in feet below existing ground surface.

LABORATORY DATA REPORTS

February 4, 2022

Todd Bridgeo
Weston & Sampson Engineers MA
55 Walkers Brook Drive
Reading, MA 01867

Project Location: 2 Main St., Biddeford, ME
Client Job Number:
Project Number: ENG21-1343
Laboratory Work Order Number: 22A1249

Enclosed are results of analyses for samples as received by the laboratory on January 24, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kerry K. McGee
Project Manager

Table of Contents

Sample Summary	4
Case Narrative	6
Sample Results	10
22A1249-01	10
22A1249-02	18
22A1249-03	21
22A1249-04	29
22A1249-05	32
22A1249-06	38
22A1249-07	41
22A1249-08	47
Sample Preparation Information	50
QC Data	53
Volatile Organic Compounds by GC/MS	53
B299615	53
Semivolatile Organic Compounds by GC/MS	58
B299673	58
Organochloride Pesticides by GC/ECD	63
B299753	63
Herbicides by GC/ECD	66
B299771	66
Polychlorinated Biphenyls with 3540 Soxhlet Extraction	68
B300143	68
Petroleum Hydrocarbons Analyses	69
B299672	69

Table of Contents (continued)

Metals Analyses (Total)	70
B299663	70
B299725	70
B299756	71
B300060	71
Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)	72
B299601	72
B299813	72
B299818	72
B299827	72
Pesticides Degradation Report	73
Dual Column RPD Report	74
Flag/Qualifier Summary	82
Certifications	83
Chain of Custody/Sample Receipt	92

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Weston & Sampson Engineers MA
55 Walkers Brook Drive
Reading, MA 01867
ATTN: Todd Bridgeo

REPORT DATE: 2/4/2022

PURCHASE ORDER NUMBER:

PROJECT NUMBER: ENG21-1343

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22A1249

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 2 Main St., Biddeford, ME

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
B-104 (0-8)	22A1249-01	Soil		SM 2540G SM21-23 2510B Modified SW-846 1030 SW-846 6010D SW-846 7471B SW-846 8081B SW-846 8082A SW-846 8100 Modified SW-846 8151A SW-846 8270E SW-846 9014 SW-846 9030A SW-846 9045C	
B-104 (2-4)	22A1249-02	Soil		SM 2540G SW-846 8260D	
B-104 (8-12)	22A1249-03	Soil		SM 2540G SM21-23 2510B Modified SW-846 1030 SW-846 6010D SW-846 7471B SW-846 8081B SW-846 8082A SW-846 8100 Modified SW-846 8151A SW-846 8270E SW-846 9014 SW-846 9030A SW-846 9045C	
B-104 (8-10)	22A1249-04	Soil		SM 2540G SW-846 8260D	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

 Weston & Sampson Engineers MA
 55 Walkers Brook Drive
 Reading, MA 01867
 ATTN: Todd Bridgeo

REPORT DATE: 2/4/2022

PURCHASE ORDER NUMBER:

PROJECT NUMBER: ENG21-1343

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22A1249

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 2 Main St., Biddeford, ME

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
B-105 (0-8)	22A1249-05	Soil		SM 2540G SM21-23 2510B Modified SW-846 1030 SW-846 6010D SW-846 7471B SW-846 8082A SW-846 8100 Modified SW-846 8270E SW-846 9014 SW-846 9030A SW-846 9045C	
B-105 (0.5-2)	22A1249-06	Soil		SM 2540G SW-846 8260D	
B-105 (8-16)	22A1249-07	Soil		SM 2540G SM21-23 2510B Modified SW-846 1030 SW-846 6010D SW-846 7471B SW-846 8082A SW-846 8100 Modified SW-846 8270E SW-846 9014 SW-846 9030A SW-846 9045C	
B-105 (14-15)	22A1249-08	Soil		SM 2540G SW-846 8260D	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

For method 8151 samples were derivatized on 02/01/22

For method 8151 samples analysis bracketed by LCS to monitor esterification. All recoveries in the bracketing LCS met method criteria.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

SW-846 7471B

Qualifications:**R-05**

Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.

Analyte & Samples(s) Qualified:**Mercury**

B299756-BSD1

SW-846 8081B

Qualifications:**DL-03**

Elevated reporting limit due to matrix interference.

Analyte & Samples(s) Qualified:

22A1249-01[B-104 (0-8)], 22A1249-03[B-104 (8-12)]

S-01

The surrogate recovery for this sample is not available due to sample dilution below the surrogate reporting limit required from high analyte concentration and/or matrix interferences.

Analyte & Samples(s) Qualified:**Decachlorobiphenyl**

22A1249-01[B-104 (0-8)]

Decachlorobiphenyl [2C]

22A1249-01[B-104 (0-8)]

Tetrachloro-m-xylene

22A1249-01[B-104 (0-8)]

Tetrachloro-m-xylene [2C]

22A1249-01[B-104 (0-8)]

V-05

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:**Methoxychlor**

B299753-BS1, B299753-BSD1

SW-846 8260D

Qualifications:**V-20**

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:**Bromomethane**

B299615-BS1, B299615-BSD1, S067665-CCV1

V-34

Initial calibration verification (ICV) did not meet method specifications and was biased on the low side for this compound. Reported result is estimated.

Analyte & Samples(s) Qualified:**Bromomethane**

22A1249-02[B-104 (2-4)], 22A1249-04[B-104 (8-10)], 22A1249-06[B-105 (0.5-2)], 22A1249-08[B-105 (14-15)], B299615-BLK1, B299615-BS1, B299615-BSD1, S067665-CCV1

V-35

Initial calibration verification (ICV) did not meet method specifications and was biased on the high side for this compound. Reported result is estimated.

Analyte & Samples(s) Qualified:**Acetone**

B299615-BS1, B299615-BSD1, S067665-CCV1

SW-846 8270E

Qualifications:

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

L-07

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

Analyte & Samples(s) Qualified:
Hexachlorocyclopentadiene

B299673-BS1

R-05

Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.

Analyte & Samples(s) Qualified:
3/4-Methylphenol

22A1249-01[B-104 (0-8)], 22A1249-03[B-104 (8-12)], 22A1249-05[B-105 (0-8)], 22A1249-07[B-105 (8-16)], B299673-BLK1, B299673-BS1, B299673-BSD1

Acetophenone

22A1249-01[B-104 (0-8)], 22A1249-03[B-104 (8-12)], 22A1249-05[B-105 (0-8)], 22A1249-07[B-105 (8-16)], B299673-BLK1, B299673-BS1, B299673-BSD1

N-Nitrosodi-n-propylamine

22A1249-01[B-104 (0-8)], 22A1249-03[B-104 (8-12)], 22A1249-05[B-105 (0-8)], 22A1249-07[B-105 (8-16)], B299673-BLK1, B299673-BS1, B299673-BSD1

Phenol

22A1249-01[B-104 (0-8)], 22A1249-03[B-104 (8-12)], 22A1249-05[B-105 (0-8)], 22A1249-07[B-105 (8-16)], B299673-BLK1, B299673-BS1, B299673-BSD1

V-05

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:
Benzidine

22A1249-01[B-104 (0-8)], 22A1249-03[B-104 (8-12)], 22A1249-05[B-105 (0-8)], 22A1249-07[B-105 (8-16)], B299673-BLK1, B299673-BS1, B299673-BSD1, S067723-CCV1, S067777-CCV1

Hexachlorocyclopentadiene

22A1249-01[B-104 (0-8)], 22A1249-03[B-104 (8-12)], 22A1249-05[B-105 (0-8)], 22A1249-07[B-105 (8-16)], B299673-BLK1, B299673-BS1, B299673-BSD1, S067723-CCV1, S067777-CCV1

V-06

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.

Analyte & Samples(s) Qualified:
N-Nitrosodimethylamine

S067777-CCV1

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:
N-Nitrosodimethylamine

22A1249-01[B-104 (0-8)], 22A1249-03[B-104 (8-12)], 22A1249-05[B-105 (0-8)], 22A1249-07[B-105 (8-16)]

V-34

Initial calibration verification (ICV) did not meet method specifications and was biased on the low side for this compound. Reported result is estimated.

Analyte & Samples(s) Qualified:
4-Chloroaniline

22A1249-01[B-104 (0-8)], 22A1249-03[B-104 (8-12)], 22A1249-05[B-105 (0-8)], 22A1249-07[B-105 (8-16)], B299673-BLK1, B299673-BS1, B299673-BSD1, S067723-CCV1, S067777-CCV1

V-35

Initial calibration verification (ICV) did not meet method specifications and was biased on the high side for this compound. Reported result is estimated.

Analyte & Samples(s) Qualified:
Benzidine

22A1249-01[B-104 (0-8)], 22A1249-03[B-104 (8-12)], 22A1249-05[B-105 (0-8)], 22A1249-07[B-105 (8-16)], B299673-BLK1, B299673-BS1, B299673-BSD1, S067723-CCV1, S067777-CCV1

SW-846 9045C

Qualifications:
H-03

Sample received after recommended holding time was exceeded.

Analyte & Samples(s) Qualified:
pH

22A1249-01[B-104 (0-8)], 22A1249-03[B-104 (8-12)], 22A1249-05[B-105 (0-8)], 22A1249-07[B-105 (8-16)], B299601-DUP1

SW-846 8100 Modified

TPH (C9-C36) is quantitated against a calibration made with a diesel standard.

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Technical Representative

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (0-8)

Sampled: 1/20/2022 10:00

Sample ID: 22A1249-01

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene	0.21	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Acenaphthylene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Acetophenone	ND	0.40	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Aniline	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Anthracene	0.66	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Benzidine	ND	0.78	mg/Kg dry	1	V-05, V-35	SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Benzo(a)anthracene	1.9	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Benzo(a)pyrene	1.8	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Benzo(b)fluoranthene	2.2	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Benzo(g,h,i)perylene	1.0	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Benzo(k)fluoranthene	0.87	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Benzoic Acid	ND	1.2	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Bis(2-chloroethoxy)methane	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Bis(2-chloroethyl)ether	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Bis(2-chloroisopropyl)ether	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Bis(2-Ethylhexyl)phthalate	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
4-Bromophenylphenylether	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Butylbenzylphthalate	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Carbazole	0.31	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
4-Chloroaniline	ND	0.78	mg/Kg dry	1	V-34	SW-846 8270E	1/25/22	1/28/22 15:55	BGL
4-Chloro-3-methylphenol	ND	0.78	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
2-Chloronaphthalene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
2-Chlorophenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
4-Chlorophenylphenylether	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Chrysene	1.9	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Dibenz(a,h)anthracene	0.31	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Dibenzofuran	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Di-n-butylphthalate	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
1,2-Dichlorobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
1,3-Dichlorobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
1,4-Dichlorobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
3,3-Dichlorobenzidine	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
2,4-Dichlorophenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Diethylphthalate	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
2,4-Dimethylphenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Dimethylphthalate	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
4,6-Dinitro-2-methylphenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
2,4-Dinitrophenol	ND	0.78	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
2,4-Dinitrotoluene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
2,6-Dinitrotoluene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Di-n-octylphthalate	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
1,2-Diphenylhydrazine/Azobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Fluoranthene	3.8	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Fluorene	0.24	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (0-8)

Sampled: 1/20/2022 10:00

Sample ID: 22A1249-01

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Hexachlorobutadiene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Hexachlorocyclopentadiene	ND	0.40	mg/Kg dry	1	V-05	SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Hexachloroethane	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Indeno(1,2,3-cd)pyrene	1.2	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Isophorone	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
1-Methylnaphthalene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
2-Methylnaphthalene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
2-Methylphenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
3/4-Methylphenol	ND	0.40	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Naphthalene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
2-Nitroaniline	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
3-Nitroaniline	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
4-Nitroaniline	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Nitrobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
2-Nitrophenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
4-Nitrophenol	ND	0.78	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
N-Nitrosodimethylamine	ND	0.40	mg/Kg dry	1	V-20	SW-846 8270E	1/25/22	1/28/22 15:55	BGL
N-Nitrosodiphenylamine/Diphenylamine	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
N-Nitrosodi-n-propylamine	ND	0.40	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Pentachloronitrobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Pentachlorophenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Phenanthrene	3.1	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Phenol	ND	0.40	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Pyrene	3.9	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Pyridine	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
1,2,4,5-Tetrachlorobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
1,2,4-Trichlorobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
2,4,5-Trichlorophenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
2,4,6-Trichlorophenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 15:55	BGL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
2-Fluorophenol	61.1	30-130							
Phenol-d6	65.6	30-130							
Nitrobenzene-d5	61.0	30-130							
2-Fluorobiphenyl	68.7	30-130							
2,4,6-Tribromophenol	41.2	30-130							
p-Terphenyl-d14	80.6	30-130							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (0-8)

Sampled: 1/20/2022 10:00

Sample ID: 22A1249-01

Sample Matrix: Soil

Sample Flags: DL-03

Organochloride Pesticides by GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Alachlor [2]	ND	1.2	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Aldrin [2]	ND	0.30	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
alpha-BHC [2]	ND	0.30	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
beta-BHC [2]	ND	0.30	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
delta-BHC [2]	ND	0.30	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
gamma-BHC (Lindane) [2]	ND	0.12	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Chlordane [2]	ND	1.2	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
4,4'-DDD [2]	ND	0.24	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
4,4'-DDE [2]	ND	0.24	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
4,4'-DDT [2]	ND	0.24	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Dieldrin [2]	ND	0.24	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Endosulfan I [2]	ND	0.30	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Endosulfan II [2]	ND	0.47	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Endosulfan sulfate [2]	ND	0.47	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Endrin [2]	ND	0.47	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Endrin aldehyde [2]	ND	0.47	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Endrin ketone [2]	ND	0.47	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Heptachlor [2]	ND	0.30	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Heptachlor epoxide [2]	ND	0.30	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Hexachlorobenzene [2]	ND	0.35	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Methoxychlor [2]	ND	3.0	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Toxaphene [2]	ND	5.9	mg/Kg dry	50		SW-846 8081B	1/26/22	1/29/22 0:22	JMB
Surrogates	% Recovery	Recovery Limits			Flag/Qual				
Decachlorobiphenyl [1]	*	30-150			S-01			1/29/22 0:22	
Decachlorobiphenyl [2]	*	30-150			S-01			1/29/22 0:22	
Tetrachloro-m-xylene [1]	*	30-150			S-01			1/29/22 0:22	
Tetrachloro-m-xylene [2]	*	30-150			S-01			1/29/22 0:22	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (0-8)

Sampled: 1/20/2022 10:00

Sample ID: 22A1249-01

Sample Matrix: Soil

Herbicides by GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2,4-D [1]	ND	120	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:09	TG
2,4-DB [1]	ND	120	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:09	TG
2,4,5-TP (Silvex) [1]	ND	12	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:09	TG
2,4,5-T [1]	ND	12	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:09	TG
Dalapon [1]	ND	300	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:09	TG
Dicamba [1]	ND	12	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:09	TG
Dichloroprop [1]	ND	120	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:09	TG
Dinoseb [1]	ND	59	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:09	TG
MCPA [1]	ND	12000	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:09	TG
MCPP [1]	ND	12000	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:09	TG
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
2,4-Dichlorophenylacetic acid [1]	87.4	30-150							
2,4-Dichlorophenylacetic acid [2]	87.3	30-150							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (0-8)

Sampled: 1/20/2022 10:00

Sample ID: 22A1249-01

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:23	TG
Aroclor-1221 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:23	TG
Aroclor-1232 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:23	TG
Aroclor-1242 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:23	TG
Aroclor-1248 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:23	TG
Aroclor-1254 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:23	TG
Aroclor-1260 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:23	TG
Aroclor-1262 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:23	TG
Aroclor-1268 [1]	ND	0.095	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:23	TG
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	90.2	30-150							
Decachlorobiphenyl [2]	82.0	30-150							
Tetrachloro-m-xylene [1]	87.6	30-150							
Tetrachloro-m-xylene [2]	81.8	30-150							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (0-8)

Sampled: 1/20/2022 10:00

Sample ID: 22A1249-01

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	550	200	mg/Kg dry	20		SW-846 8100 Modified	1/25/22	1/28/22 14:12	SFM
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
2-Fluorobiphenyl	57.2	40-140						1/28/22 14:12	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (0-8)

Sampled: 1/20/2022 10:00

Sample ID: 22A1249-01

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	14	3.7	mg/Kg dry	1		SW-846 6010D	1/25/22	1/26/22 17:20	QNW
Barium	60	1.9	mg/Kg dry	1		SW-846 6010D	1/25/22	1/26/22 17:20	QNW
Cadmium	ND	0.37	mg/Kg dry	1		SW-846 6010D	1/25/22	1/26/22 17:20	QNW
Chromium	15	0.74	mg/Kg dry	1		SW-846 6010D	1/25/22	1/26/22 17:20	QNW
Lead	120	0.56	mg/Kg dry	1		SW-846 6010D	1/25/22	1/26/22 17:20	QNW
Mercury	0.39	0.030	mg/Kg dry	1		SW-846 7471B	1/31/22	2/1/22 14:28	GLH
Selenium	ND	3.7	mg/Kg dry	1		SW-846 6010D	1/25/22	1/26/22 17:20	QNW
Silver	ND	0.37	mg/Kg dry	1		SW-846 6010D	1/25/22	1/26/22 17:20	QNW

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (0-8)

Sampled: 1/20/2022 10:00

Sample ID: 22A1249-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	84.6		% Wt	1		SM 2540G	1/25/22	1/25/22 15:42	WAT
Ignitability	Absent		present/absent	1		SW-846 1030	1/25/22	1/25/22 14:45	CB2
pH @19.9°C	9.3		pH Units	1	H-03	SW-846 9045C	1/24/22	1/24/22 22:00	IS
Reactive Cyanide	ND	4.0	mg/Kg	1		SW-846 9014	1/27/22	1/28/22 12:35	EC
Reactive Sulfide	ND	20	mg/Kg	1		SW-846 9030A	1/27/22	1/28/22 11:50	EC
Specific conductance	21	2.0	µmhos/cm	1		SM21-23 2510B Modified	1/27/22	1/27/22 13:15	EC

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (2-4)

Sampled: 1/20/2022 10:00

Sample ID: 22A1249-02

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Acrylonitrile	ND	0.0052	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Benzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Bromobenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Bromochloromethane	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Bromodichloromethane	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Bromoform	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Bromomethane	ND	0.0086	mg/Kg dry	1	V-34	SW-846 8260D	1/25/22	1/25/22 9:00	MFF
2-Butanone (MEK)	ND	0.034	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
tert-Butyl Alcohol (TBA)	ND	0.086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
n-Butylbenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
sec-Butylbenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
tert-Butylbenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Carbon Disulfide	ND	0.0086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Carbon Tetrachloride	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Chlorobenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Chlorodibromomethane	ND	0.00086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Chloroethane	ND	0.017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Chloroform	ND	0.0034	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Chloromethane	ND	0.0086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
2-Chlorotoluene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
4-Chlorotoluene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,2-Dibromoethane (EDB)	ND	0.00086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Dibromomethane	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,2-Dichlorobenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,3-Dichlorobenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,4-Dichlorobenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
trans-1,4-Dichloro-2-butene	ND	0.0034	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,1-Dichloroethane	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,2-Dichloroethane	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,1-Dichloroethylene	ND	0.0034	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
cis-1,2-Dichloroethylene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
trans-1,2-Dichloroethylene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,2-Dichloropropane	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,3-Dichloropropane	ND	0.00086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
2,2-Dichloropropane	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,1-Dichloropropene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
cis-1,3-Dichloropropene	ND	0.00086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
trans-1,3-Dichloropropene	ND	0.00086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Diethyl Ether	ND	0.017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (2-4)

Sampled: 1/20/2022 10:00

Sample ID: 22A1249-02

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.00086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,4-Dioxane	ND	0.086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Ethylbenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Hexachlorobutadiene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
2-Hexanone (MBK)	ND	0.017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Isopropylbenzene (Cumene)	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Methyl Acetate	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0034	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Methyl Cyclohexane	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Methylene Chloride	ND	0.017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Naphthalene	ND	0.0034	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
n-Propylbenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Styrene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,1,1,2-Tetrachloroethane	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,1,2,2-Tetrachloroethane	ND	0.00086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Tetrachloroethylene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Tetrahydrofuran	ND	0.0086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Toluene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,2,3-Trichlorobenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,2,4-Trichlorobenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,3,5-Trichlorobenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,1,1-Trichloroethane	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,1,2-Trichloroethane	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Trichloroethylene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,2,3-Trichloropropane	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.0086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,2,4-Trimethylbenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
1,3,5-Trimethylbenzene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Vinyl Chloride	ND	0.0086	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
m+p Xylene	ND	0.0034	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
o-Xylene	ND	0.0017	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:00	MFF
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
1,2-Dichloroethane-d4	99.0	70-130							
Toluene-d8	95.6	70-130							
4-Bromofluorobenzene	90.0	70-130							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (2-4)

Sampled: 1/20/2022 10:00

Sample ID: 22A1249-02

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	84.6		% Wt	1		SM 2540G	1/25/22	1/25/22 15:47	MJH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (8-12)

Sampled: 1/20/2022 10:15

Sample ID: 22A1249-03

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Acenaphthylene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Acetophenone	ND	0.41	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Aniline	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Anthracene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Benzidine	ND	0.80	mg/Kg dry	1	V-05, V-35	SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Benzo(a)anthracene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Benzo(a)pyrene	0.25	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Benzo(b)fluoranthene	0.25	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Benzo(g,h,i)perylene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Benzo(k)fluoranthene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Benzoic Acid	ND	1.2	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Bis(2-chloroethoxy)methane	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Bis(2-chloroethyl)ether	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Bis(2-chloroisopropyl)ether	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Bis(2-Ethylhexyl)phthalate	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
4-Bromophenylphenylether	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Butylbenzylphthalate	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Carbazole	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
4-Chloroaniline	ND	0.80	mg/Kg dry	1	V-34	SW-846 8270E	1/25/22	1/28/22 16:19	BGL
4-Chloro-3-methylphenol	ND	0.80	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
2-Chloronaphthalene	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
2-Chlorophenol	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
4-Chlorophenylphenylether	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Chrysene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Dibenz(a,h)anthracene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Dibenzofuran	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Di-n-butylphthalate	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
1,2-Dichlorobenzene	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
1,3-Dichlorobenzene	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
1,4-Dichlorobenzene	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
3,3-Dichlorobenzidine	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
2,4-Dichlorophenol	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Diethylphthalate	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
2,4-Dimethylphenol	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Dimethylphthalate	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
4,6-Dinitro-2-methylphenol	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
2,4-Dinitrophenol	ND	0.80	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
2,4-Dinitrotoluene	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
2,6-Dinitrotoluene	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Di-n-octylphthalate	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
1,2-Diphenylhydrazine/Azobenzene	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Fluoranthene	0.22	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Fluorene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (8-12)

Sampled: 1/20/2022 10:15

Sample ID: 22A1249-03

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobenzene	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Hexachlorobutadiene	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Hexachlorocyclopentadiene	ND	0.41	mg/Kg dry	1	V-05	SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Hexachloroethane	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Indeno(1,2,3-cd)pyrene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Isophorone	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
1-Methylnaphthalene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
2-Methylnaphthalene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
2-Methylphenol	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
3/4-Methylphenol	ND	0.41	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Naphthalene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
2-Nitroaniline	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
3-Nitroaniline	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
4-Nitroaniline	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Nitrobenzene	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
2-Nitrophenol	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
4-Nitrophenol	ND	0.80	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
N-Nitrosodimethylamine	ND	0.41	mg/Kg dry	1	V-20	SW-846 8270E	1/25/22	1/28/22 16:19	BGL
N-Nitrosodiphenylamine/Diphenylamine	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
N-Nitrosodi-n-propylamine	ND	0.41	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Pentachloronitrobenzene	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Pentachlorophenol	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Phenanthrene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Phenol	ND	0.41	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Pyrene	0.27	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Pyridine	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
1,2,4,5-Tetrachlorobenzene	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
1,2,4-Trichlorobenzene	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
2,4,5-Trichlorophenol	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
2,4,6-Trichlorophenol	ND	0.41	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:19	BGL
Surrogates	% Recovery		Recovery Limits		Flag/Qual				
2-Fluorophenol	38.3		30-130				1/28/22 16:19		
Phenol-d6	40.8		30-130				1/28/22 16:19		
Nitrobenzene-d5	38.0		30-130				1/28/22 16:19		
2-Fluorobiphenyl	44.4		30-130				1/28/22 16:19		
2,4,6-Tribromophenol	35.0		30-130				1/28/22 16:19		
p-Terphenyl-d14	53.9		30-130				1/28/22 16:19		

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (8-12)

Sampled: 1/20/2022 10:15

Sample ID: 22A1249-03

Sample Matrix: Soil

Sample Flags: DL-03

Organochloride Pesticides by GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Alachlor [2]	ND	0.24	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Aldrin [2]	ND	0.061	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
alpha-BHC [2]	ND	0.061	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
beta-BHC [2]	ND	0.061	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
delta-BHC [2]	ND	0.061	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
gamma-BHC (Lindane) [2]	ND	0.024	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Chlordane [2]	ND	0.24	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
4,4'-DDD [2]	ND	0.049	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
4,4'-DDE [2]	ND	0.049	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
4,4'-DDT [2]	ND	0.049	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Dieldrin [2]	ND	0.049	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Endosulfan I [2]	ND	0.061	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Endosulfan II [2]	ND	0.098	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Endosulfan sulfate [2]	ND	0.098	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Endrin [2]	ND	0.098	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Endrin aldehyde [2]	ND	0.098	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Endrin ketone [2]	ND	0.098	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Heptachlor [2]	ND	0.061	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Heptachlor epoxide [2]	ND	0.061	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Hexachlorobenzene [2]	ND	0.073	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Methoxychlor [2]	ND	0.61	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Toxaphene [2]	ND	1.2	mg/Kg dry	10		SW-846 8081B	1/26/22	1/29/22 0:49	JMB
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	66.4	30-150							
Decachlorobiphenyl [2]	76.5	30-150							
Tetrachloro-m-xylene [1]	64.7	30-150							
Tetrachloro-m-xylene [2]	75.8	30-150							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (8-12)

Sampled: 1/20/2022 10:15

Sample ID: 22A1249-03

Sample Matrix: Soil

Herbicides by GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2,4-D [1]	ND	120	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:49	TG
2,4-DB [1]	ND	120	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:49	TG
2,4,5-TP (Silvex) [1]	ND	12	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:49	TG
2,4,5-T [1]	ND	12	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:49	TG
Dalapon [1]	ND	300	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:49	TG
Dicamba [1]	ND	12	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:49	TG
Dichloroprop [1]	ND	120	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:49	TG
Dinoseb [1]	ND	61	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:49	TG
MCPA [1]	ND	12000	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:49	TG
MCPP [1]	ND	12000	µg/kg dry	4		SW-846 8151A	1/27/22	2/2/22 20:49	TG
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
2,4-Dichlorophenylacetic acid [1]	100	30-150						2/2/22 20:49	
2,4-Dichlorophenylacetic acid [2]	86.2	30-150						2/2/22 20:49	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (8-12)

Sampled: 1/20/2022 10:15

Sample ID: 22A1249-03

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:41	TG
Aroclor-1221 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:41	TG
Aroclor-1232 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:41	TG
Aroclor-1242 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:41	TG
Aroclor-1248 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:41	TG
Aroclor-1254 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:41	TG
Aroclor-1260 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:41	TG
Aroclor-1262 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:41	TG
Aroclor-1268 [1]	ND	0.098	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:41	TG
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	94.3	30-150							
Decachlorobiphenyl [2]	84.6	30-150							
Tetrachloro-m-xylene [1]	81.6	30-150							
Tetrachloro-m-xylene [2]	79.0	30-150							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (8-12)

Sampled: 1/20/2022 10:15

Sample ID: 22A1249-03

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	45	10	mg/Kg dry	1		SW-846 8100 Modified	1/25/22	1/28/22 0:00	SFM
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
2-Fluorobiphenyl	44.8	40-140						1/28/22 0:00	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (8-12)

Sampled: 1/20/2022 10:15

Sample ID: 22A1249-03

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	18	3.8	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:41	QNW
Barium	59	1.9	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:41	QNW
Cadmium	ND	0.38	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:41	QNW
Chromium	23	0.77	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:41	QNW
Lead	120	0.57	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:41	QNW
Mercury	0.15	0.030	mg/Kg dry	1		SW-846 7471B	1/31/22	2/1/22 14:29	GLH
Selenium	ND	3.8	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:41	QNW
Silver	ND	0.38	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:41	QNW

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (8-12)

Sampled: 1/20/2022 10:15

Sample ID: 22A1249-03

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	82.0		% Wt	1		SM 2540G	1/25/22	1/25/22 15:42	WAT
Ignitability	Absent		present/absent	1		SW-846 1030	1/25/22	1/25/22 14:45	CB2
pH @19.1°C	8.6		pH Units	1	H-03	SW-846 9045C	1/24/22	1/24/22 22:00	IS
Reactive Cyanide	ND	3.9	mg/Kg	1		SW-846 9014	1/27/22	1/28/22 12:35	EC
Reactive Sulfide	ND	19	mg/Kg	1		SW-846 9030A	1/27/22	1/28/22 11:50	EC
Specific conductance	12	2.0	µmhos/cm	1		SM21-23 2510B Modified	1/27/22	1/27/22 13:15	EC

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (8-10)

Sampled: 1/20/2022 10:15

Sample ID: 22A1249-04

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Acrylonitrile	ND	0.0047	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Benzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Bromobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Bromochloromethane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Bromodichloromethane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Bromoform	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Bromomethane	ND	0.0078	mg/Kg dry	1	V-34	SW-846 8260D	1/25/22	1/25/22 9:25	MFF
2-Butanone (MEK)	ND	0.031	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
tert-Butyl Alcohol (TBA)	ND	0.078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
n-Butylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
sec-Butylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
tert-Butylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Carbon Disulfide	ND	0.0078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Carbon Tetrachloride	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Chlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Chlorodibromomethane	ND	0.00078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Chloroethane	ND	0.016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Chloroform	ND	0.0031	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Chloromethane	ND	0.0078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
2-Chlorotoluene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
4-Chlorotoluene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,2-Dibromoethane (EDB)	ND	0.00078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Dibromomethane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,2-Dichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,3-Dichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,4-Dichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
trans-1,4-Dichloro-2-butene	ND	0.0031	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,1-Dichloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,2-Dichloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,1-Dichloroethylene	ND	0.0031	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
cis-1,2-Dichloroethylene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
trans-1,2-Dichloroethylene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,2-Dichloropropane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,3-Dichloropropane	ND	0.00078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
2,2-Dichloropropane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,1-Dichloropropene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
cis-1,3-Dichloropropene	ND	0.00078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
trans-1,3-Dichloropropene	ND	0.00078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Diethyl Ether	ND	0.016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (8-10)

Sampled: 1/20/2022 10:15

Sample ID: 22A1249-04

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.00078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,4-Dioxane	ND	0.078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Ethylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Hexachlorobutadiene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
2-Hexanone (MBK)	ND	0.016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Isopropylbenzene (Cumene)	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Methyl Acetate	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0031	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Methyl Cyclohexane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Methylene Chloride	ND	0.016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Naphthalene	ND	0.0031	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
n-Propylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Styrene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,1,1,2-Tetrachloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,1,2,2-Tetrachloroethane	ND	0.00078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Tetrachloroethylene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Tetrahydrofuran	ND	0.0078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Toluene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,2,3-Trichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,2,4-Trichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,3,5-Trichlorobenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,1,1-Trichloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,1,2-Trichloroethane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Trichloroethylene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,2,3-Trichloropropane	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.0078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,2,4-Trimethylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
1,3,5-Trimethylbenzene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Vinyl Chloride	ND	0.0078	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
m+p Xylene	ND	0.0031	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
o-Xylene	ND	0.0016	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:25	MFF
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
1,2-Dichloroethane-d4	92.7	70-130							
Toluene-d8	96.4	70-130							
4-Bromofluorobenzene	98.1	70-130							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-104 (8-10)

Sampled: 1/20/2022 10:15

Sample ID: 22A1249-04

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	82.0		% Wt	1		SM 2540G	1/25/22	1/25/22 15:47	MJH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (0-8)

Sampled: 1/20/2022 08:15

Sample ID: 22A1249-05

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Acenaphthylene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Acetophenone	ND	0.40	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Aniline	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Anthracene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Benzidine	ND	0.77	mg/Kg dry	1	V-05, V-35	SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Benzo(a)anthracene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Benzo(a)pyrene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Benzo(b)fluoranthene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Benzo(g,h,i)perylene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Benzo(k)fluoranthene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Benzoic Acid	ND	1.2	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Bis(2-chloroethoxy)methane	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Bis(2-chloroethyl)ether	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Bis(2-chloroisopropyl)ether	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Bis(2-Ethylhexyl)phthalate	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
4-Bromophenylphenylether	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Butylbenzylphthalate	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Carbazole	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
4-Chloroaniline	ND	0.77	mg/Kg dry	1	V-34	SW-846 8270E	1/25/22	1/28/22 16:43	BGL
4-Chloro-3-methylphenol	ND	0.77	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
2-Chloronaphthalene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
2-Chlorophenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
4-Chlorophenylphenylether	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Chrysene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Dibenz(a,h)anthracene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Dibenzofuran	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Di-n-butylphthalate	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
1,2-Dichlorobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
1,3-Dichlorobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
1,4-Dichlorobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
3,3-Dichlorobenzidine	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
2,4-Dichlorophenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Diethylphthalate	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
2,4-Dimethylphenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Dimethylphthalate	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
4,6-Dinitro-2-methylphenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
2,4-Dinitrophenol	ND	0.77	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
2,4-Dinitrotoluene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
2,6-Dinitrotoluene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Di-n-octylphthalate	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
1,2-Diphenylhydrazine/Azobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Fluoranthene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Fluorene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (0-8)

Sampled: 1/20/2022 08:15

Sample ID: 22A1249-05

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Hexachlorobutadiene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Hexachlorocyclopentadiene	ND	0.40	mg/Kg dry	1	V-05	SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Hexachloroethane	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Indeno(1,2,3-cd)pyrene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Isophorone	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
1-Methylnaphthalene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
2-Methylnaphthalene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
2-Methylphenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
3/4-Methylphenol	ND	0.40	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Naphthalene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
2-Nitroaniline	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
3-Nitroaniline	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
4-Nitroaniline	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Nitrobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
2-Nitrophenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
4-Nitrophenol	ND	0.77	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
N-Nitrosodimethylamine	ND	0.40	mg/Kg dry	1	V-20	SW-846 8270E	1/25/22	1/28/22 16:43	BGL
N-Nitrosodiphenylamine/Diphenylamine	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
N-Nitrosodi-n-propylamine	ND	0.40	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Pentachloronitrobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Pentachlorophenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Phenanthrene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Phenol	ND	0.40	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Pyrene	ND	0.20	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Pyridine	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
1,2,4,5-Tetrachlorobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
1,2,4-Trichlorobenzene	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
2,4,5-Trichlorophenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
2,4,6-Trichlorophenol	ND	0.40	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 16:43	BGL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
2-Fluorophenol	68.2	30-130							
Phenol-d6	73.7	30-130							
Nitrobenzene-d5	69.6	30-130							
2-Fluorobiphenyl	79.1	30-130							
2,4,6-Tribromophenol	66.8	30-130							
p-Terphenyl-d14	95.3	30-130							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (0-8)

Sampled: 1/20/2022 08:15

Sample ID: 22A1249-05

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.094	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:59	TG
Aroclor-1221 [1]	ND	0.094	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:59	TG
Aroclor-1232 [1]	ND	0.094	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:59	TG
Aroclor-1242 [1]	ND	0.094	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:59	TG
Aroclor-1248 [1]	ND	0.094	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:59	TG
Aroclor-1254 [1]	ND	0.094	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:59	TG
Aroclor-1260 [1]	ND	0.094	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:59	TG
Aroclor-1262 [1]	ND	0.094	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:59	TG
Aroclor-1268 [1]	ND	0.094	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 18:59	TG
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	110	30-150							
Decachlorobiphenyl [2]	100	30-150							
Tetrachloro-m-xylene [1]	90.4	30-150							
Tetrachloro-m-xylene [2]	88.5	30-150							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (0-8)

Sampled: 1/20/2022 08:15

Sample ID: 22A1249-05

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	43	9.8	mg/Kg dry	1		SW-846 8100 Modified	1/25/22	1/28/22 0:31	SFM
Surrogates	% Recovery	Recovery Limits			Flag/Qual				
2-Fluorobiphenyl	70.8	40-140						1/28/22 0:31	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (0-8)

Sampled: 1/20/2022 08:15

Sample ID: 22A1249-05

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	4.2	3.7	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:46	QNW
Barium	16	1.8	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:46	QNW
Cadmium	ND	0.37	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:46	QNW
Chromium	7.7	0.74	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:46	QNW
Lead	9.5	0.55	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:46	QNW
Mercury	ND	0.028	mg/Kg dry	1		SW-846 7471B	1/28/22	1/31/22 15:19	ICP
Selenium	ND	3.7	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:46	QNW
Silver	ND	0.37	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:46	QNW

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (0-8)

Sampled: 1/20/2022 08:15

Sample ID: 22A1249-05

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	85.4		% Wt	1		SM 2540G	1/26/22	1/26/22 13:53	WAT
Ignitability	Absent		present/absent	1		SW-846 1030	1/25/22	1/25/22 14:45	CB2
pH @19.1°C	9.9		pH Units	1	H-03	SW-846 9045C	1/24/22	1/24/22 22:00	IS
Reactive Cyanide	ND	4.0	mg/Kg	1		SW-846 9014	1/27/22	1/28/22 12:35	EC
Reactive Sulfide	ND	20	mg/Kg	1		SW-846 9030A	1/27/22	1/28/22 11:50	EC
Specific conductance	14	2.0	µmhos/cm	1		SM21-23 2510B Modified	1/27/22	1/27/22 13:15	EC

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (0.5-2)

Sampled: 1/20/2022 08:00

Sample ID: 22A1249-06

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Acrylonitrile	ND	0.0033	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Benzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Bromobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Bromochloromethane	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Bromodichloromethane	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Bromoform	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Bromomethane	ND	0.0055	mg/Kg dry	1	V-34	SW-846 8260D	1/25/22	1/25/22 9:50	MFF
2-Butanone (MEK)	ND	0.022	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
tert-Butyl Alcohol (TBA)	ND	0.055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
n-Butylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
sec-Butylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
tert-Butylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Carbon Disulfide	ND	0.0055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Carbon Tetrachloride	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Chlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Chlorodibromomethane	ND	0.00055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Chloroethane	ND	0.011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Chloroform	ND	0.0022	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Chloromethane	ND	0.0055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
2-Chlorotoluene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
4-Chlorotoluene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,2-Dibromoethane (EDB)	ND	0.00055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Dibromomethane	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,2-Dichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,3-Dichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,4-Dichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
trans-1,4-Dichloro-2-butene	ND	0.0022	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,1-Dichloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,2-Dichloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,1-Dichloroethylene	ND	0.0022	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
cis-1,2-Dichloroethylene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
trans-1,2-Dichloroethylene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,2-Dichloropropane	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,3-Dichloropropane	ND	0.00055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
2,2-Dichloropropane	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,1-Dichloropropene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
cis-1,3-Dichloropropene	ND	0.00055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
trans-1,3-Dichloropropene	ND	0.00055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Diethyl Ether	ND	0.011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (0.5-2)

Sampled: 1/20/2022 08:00

Sample ID: 22A1249-06

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.00055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,4-Dioxane	ND	0.055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Ethylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Hexachlorobutadiene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
2-Hexanone (MBK)	ND	0.011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Isopropylbenzene (Cumene)	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Methyl Acetate	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0022	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Methyl Cyclohexane	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Methylene Chloride	ND	0.011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Naphthalene	ND	0.0022	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
n-Propylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Styrene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,1,1,2-Tetrachloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,1,2,2-Tetrachloroethane	ND	0.00055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Tetrachloroethylene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Tetrahydrofuran	ND	0.0055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Toluene	0.0017	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,2,3-Trichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,2,4-Trichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,3,5-Trichlorobenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,1,1-Trichloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,1,2-Trichloroethane	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Trichloroethylene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,2,3-Trichloropropane	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.0055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,2,4-Trimethylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
1,3,5-Trimethylbenzene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Vinyl Chloride	ND	0.0055	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
m+p Xylene	ND	0.0022	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
o-Xylene	ND	0.0011	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 9:50	MFF
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
1,2-Dichloroethane-d4	97.0	70-130							
Toluene-d8	96.7	70-130							
4-Bromofluorobenzene	101	70-130							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (0.5-2)

Sampled: 1/20/2022 08:00

Sample ID: 22A1249-06

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	85.4		% Wt	1		SM 2540G	1/26/22	1/31/22 12:11	MJH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (8-16)

Sampled: 1/20/2022 08:45

Sample ID: 22A1249-07

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acenaphthene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Acenaphthylene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Acetophenone	ND	0.42	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Aniline	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Anthracene	0.35	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Benzidine	ND	0.82	mg/Kg dry	1	V-05, V-35	SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Benzo(a)anthracene	0.89	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Benzo(a)pyrene	0.74	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Benzo(b)fluoranthene	0.82	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Benzo(g,h,i)perylene	0.37	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Benzo(k)fluoranthene	0.34	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Benzoic Acid	ND	1.2	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Bis(2-chloroethoxy)methane	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Bis(2-chloroethyl)ether	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Bis(2-chloroisopropyl)ether	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Bis(2-Ethylhexyl)phthalate	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
4-Bromophenylphenylether	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Butylbenzylphthalate	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Carbazole	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
4-Chloroaniline	ND	0.82	mg/Kg dry	1	V-34	SW-846 8270E	1/25/22	1/28/22 17:07	BGL
4-Chloro-3-methylphenol	ND	0.82	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
2-Chloronaphthalene	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
2-Chlorophenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
4-Chlorophenylphenylether	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Chrysene	0.77	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Dibenz(a,h)anthracene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Dibenzofuran	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Di-n-butylphthalate	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
1,2-Dichlorobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
1,3-Dichlorobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
1,4-Dichlorobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
3,3-Dichlorobenzidine	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
2,4-Dichlorophenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Diethylphthalate	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
2,4-Dimethylphenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Dimethylphthalate	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
4,6-Dinitro-2-methylphenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
2,4-Dinitrophenol	ND	0.82	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
2,4-Dinitrotoluene	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
2,6-Dinitrotoluene	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Di-n-octylphthalate	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
1,2-Diphenylhydrazine/Azobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Fluoranthene	1.5	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Fluorene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (8-16)

Sampled: 1/20/2022 08:45

Sample ID: 22A1249-07

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Hexachlorobutadiene	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Hexachlorocyclopentadiene	ND	0.42	mg/Kg dry	1	V-05	SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Hexachloroethane	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Indeno(1,2,3-cd)pyrene	0.39	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Isophorone	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
1-Methylnaphthalene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
2-Methylnaphthalene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
2-Methylphenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
3/4-Methylphenol	ND	0.42	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Naphthalene	ND	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
2-Nitroaniline	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
3-Nitroaniline	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
4-Nitroaniline	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Nitrobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
2-Nitrophenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
4-Nitrophenol	ND	0.82	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
N-Nitrosodimethylamine	ND	0.42	mg/Kg dry	1	V-20	SW-846 8270E	1/25/22	1/28/22 17:07	BGL
N-Nitrosodiphenylamine/Diphenylamine	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
N-Nitrosodi-n-propylamine	ND	0.42	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Pentachloronitrobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Pentachlorophenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Phenanthrene	0.87	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Phenol	ND	0.42	mg/Kg dry	1	R-05	SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Pyrene	1.7	0.21	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Pyridine	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
1,2,4,5-Tetrachlorobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
1,2,4-Trichlorobenzene	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
2,4,5-Trichlorophenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
2,4,6-Trichlorophenol	ND	0.42	mg/Kg dry	1		SW-846 8270E	1/25/22	1/28/22 17:07	BGL
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
2-Fluorophenol	51.7	30-130							
Phenol-d6	54.9	30-130							
Nitrobenzene-d5	49.7	30-130							
2-Fluorobiphenyl	57.6	30-130							
2,4,6-Tribromophenol	37.3	30-130							
p-Terphenyl-d14	69.8	30-130							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (8-16)

Sampled: 1/20/2022 08:45

Sample ID: 22A1249-07

Sample Matrix: Soil

Polychlorinated Biphenyls with 3540 Soxhlet Extraction

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.099	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 19:17	TG
Aroclor-1221 [1]	ND	0.099	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 19:17	TG
Aroclor-1232 [1]	ND	0.099	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 19:17	TG
Aroclor-1242 [1]	ND	0.099	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 19:17	TG
Aroclor-1248 [1]	ND	0.099	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 19:17	TG
Aroclor-1254 [1]	ND	0.099	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 19:17	TG
Aroclor-1260 [1]	ND	0.099	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 19:17	TG
Aroclor-1262 [1]	ND	0.099	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 19:17	TG
Aroclor-1268 [1]	ND	0.099	mg/Kg dry	4		SW-846 8082A	2/1/22	2/2/22 19:17	TG
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
Decachlorobiphenyl [1]	111	30-150						2/2/22 19:17	
Decachlorobiphenyl [2]	96.6	30-150						2/2/22 19:17	
Tetrachloro-m-xylene [1]	90.3	30-150						2/2/22 19:17	
Tetrachloro-m-xylene [2]	87.1	30-150						2/2/22 19:17	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (8-16)

Sampled: 1/20/2022 08:45

Sample ID: 22A1249-07

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	63	10	mg/Kg dry	1		SW-846 8100 Modified	1/25/22	1/28/22 2:04	SFM
Surrogates	% Recovery	Recovery Limits			Flag/Qual				
2-Fluorobiphenyl	46.6	40-140						1/28/22 2:04	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (8-16)

Sampled: 1/20/2022 08:45

Sample ID: 22A1249-07

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	14	3.9	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:53	QNW
Barium	78	2.0	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:53	QNW
Cadmium	ND	0.39	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:53	QNW
Chromium	46	0.79	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:53	QNW
Lead	150	0.59	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:53	QNW
Mercury	ND	0.028	mg/Kg dry	1		SW-846 7471B	1/28/22	1/31/22 15:21	ICP
Selenium	ND	3.9	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:53	QNW
Silver	ND	0.39	mg/Kg dry	1		SW-846 6010D	1/26/22	1/27/22 15:53	QNW

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (8-16)

Sampled: 1/20/2022 08:45

Sample ID: 22A1249-07

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	80.4		% Wt	1		SM 2540G	1/25/22	1/25/22 15:42	WAT
Ignitability	Absent		present/absent	1		SW-846 1030	1/25/22	1/25/22 14:45	CB2
pH @18.9°C	8.8		pH Units	1	H-03	SW-846 9045C	1/24/22	1/24/22 22:00	IS
Reactive Cyanide	ND	4.0	mg/Kg	1		SW-846 9014	1/27/22	1/28/22 12:35	EC
Reactive Sulfide	ND	20	mg/Kg	1		SW-846 9030A	1/27/22	1/28/22 11:50	EC
Specific conductance	14	2.0	µmhos/cm	1		SM21-23 2510B Modified	1/27/22	1/27/22 13:15	EC

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (14-15)

Sampled: 1/20/2022 08:45

Sample ID: 22A1249-08

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Acrylonitrile	ND	0.0040	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Benzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Bromobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Bromochloromethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Bromodichloromethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Bromoform	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Bromomethane	ND	0.0067	mg/Kg dry	1	V-34	SW-846 8260D	1/25/22	1/25/22 10:15	MFF
2-Butanone (MEK)	ND	0.027	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
tert-Butyl Alcohol (TBA)	ND	0.067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
n-Butylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
sec-Butylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
tert-Butylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Carbon Disulfide	ND	0.0067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Carbon Tetrachloride	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Chlorobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Chlorodibromomethane	ND	0.00067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Chloroethane	ND	0.013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Chloroform	ND	0.0027	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Chloromethane	ND	0.0067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
2-Chlorotoluene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
4-Chlorotoluene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,2-Dibromoethane (EDB)	ND	0.00067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Dibromomethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,2-Dichlorobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,3-Dichlorobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,4-Dichlorobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
trans-1,4-Dichloro-2-butene	ND	0.0027	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,1-Dichloroethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,2-Dichloroethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,1-Dichloroethylene	ND	0.0027	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
cis-1,2-Dichloroethylene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
trans-1,2-Dichloroethylene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,2-Dichloropropane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,3-Dichloropropane	ND	0.00067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
2,2-Dichloropropane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,1-Dichloropropene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
cis-1,3-Dichloropropene	ND	0.00067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
trans-1,3-Dichloropropene	ND	0.00067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Diethyl Ether	ND	0.013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (14-15)

Sampled: 1/20/2022 08:45

Sample ID: 22A1249-08

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Diisopropyl Ether (DIPE)	ND	0.00067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,4-Dioxane	ND	0.067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Ethylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Hexachlorobutadiene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
2-Hexanone (MBK)	ND	0.013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Isopropylbenzene (Cumene)	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Methyl Acetate	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0027	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Methyl Cyclohexane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Methylene Chloride	ND	0.013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Naphthalene	ND	0.0027	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
n-Propylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Styrene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,1,1,2-Tetrachloroethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,1,2,2-Tetrachloroethane	ND	0.00067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Tetrachloroethylene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Tetrahydrofuran	ND	0.0067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Toluene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,2,3-Trichlorobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,2,4-Trichlorobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,3,5-Trichlorobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,1,1-Trichloroethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,1,2-Trichloroethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Trichloroethylene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,2,3-Trichloropropane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.0067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,2,4-Trimethylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
1,3,5-Trimethylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Vinyl Chloride	ND	0.0067	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
m+p Xylene	ND	0.0027	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
o-Xylene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	1/25/22	1/25/22 10:15	MFF
Surrogates	% Recovery	Recovery Limits	Flag/Qual						
1,2-Dichloroethane-d4	96.8	70-130							
Toluene-d8	99.4	70-130							
4-Bromofluorobenzene	103	70-130							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22A1249

Date Received: 1/24/2022

Field Sample #: B-105 (14-15)

Sampled: 1/20/2022 08:45

Sample ID: 22A1249-08

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	80.4		% Wt	1		SM 2540G	1/25/22	1/25/22 15:47	MJH

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: % Solids Analytical Method: SM 2540G

Lab Number [Field ID]	Batch	Date
22A1249-01 [B-104 (0-8)]	B299617	01/25/22
22A1249-02 [B-104 (2-4)]	B299617	01/25/22
22A1249-03 [B-104 (8-12)]	B299617	01/25/22
22A1249-04 [B-104 (8-10)]	B299617	01/25/22
22A1249-07 [B-105 (8-16)]	B299617	01/25/22
22A1249-08 [B-105 (14-15)]	B299617	01/25/22

Prep Method: % Solids Analytical Method: SM 2540G

Lab Number [Field ID]	Batch	Date
22A1249-05 [B-105 (0-8)]	B299706	01/26/22
22A1249-06 [B-105 (0.5-2)]	B299706	01/26/22

SM21-23 2510B Modified

Lab Number [Field ID]	Batch	Initial [g]	Date
22A1249-01 [B-104 (0-8)]	B299827	1.00	01/27/22
22A1249-03 [B-104 (8-12)]	B299827	1.00	01/27/22
22A1249-05 [B-105 (0-8)]	B299827	1.00	01/27/22
22A1249-07 [B-105 (8-16)]	B299827	1.00	01/27/22

SW-846 1030

Lab Number [Field ID]	Batch	Initial [g]	Date
22A1249-01 [B-104 (0-8)]	B299676	50.0	01/25/22
22A1249-03 [B-104 (8-12)]	B299676	50.0	01/25/22
22A1249-05 [B-105 (0-8)]	B299676	50.0	01/25/22
22A1249-07 [B-105 (8-16)]	B299676	50.0	01/25/22

Prep Method: SW-846 3050B Analytical Method: SW-846 6010D

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22A1249-01 [B-104 (0-8)]	B299663	1.60	50.0	01/25/22

Prep Method: SW-846 3050B Analytical Method: SW-846 6010D

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22A1249-03 [B-104 (8-12)]	B299725	1.59	50.0	01/26/22
22A1249-05 [B-105 (0-8)]	B299725	1.59	50.0	01/26/22
22A1249-07 [B-105 (8-16)]	B299725	1.58	50.0	01/26/22

Prep Method: SW-846 7471 Analytical Method: SW-846 7471B

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22A1249-05 [B-105 (0-8)]	B299756	0.634	50.0	01/28/22
22A1249-07 [B-105 (8-16)]	B299756	0.676	50.0	01/28/22

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: SW-846 7471 Analytical Method: SW-846 7471B

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22A1249-01 [B-104 (0-8)]	B300060	0.599	50.0	01/31/22
22A1249-03 [B-104 (8-12)]	B300060	0.610	50.0	01/31/22

Prep Method: SW-846 3546 Analytical Method: SW-846 8081B

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22A1249-01 [B-104 (0-8)]	B299753	10.0	10.0	01/26/22
22A1249-03 [B-104 (8-12)]	B299753	10.0	10.0	01/26/22

Prep Method: SW-846 3540C Analytical Method: SW-846 8082A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22A1249-01RE1 [B-104 (0-8)]	B300143	10.0	10.0	02/01/22
22A1249-03RE1 [B-104 (8-12)]	B300143	10.0	10.0	02/01/22
22A1249-05RE1 [B-105 (0-8)]	B300143	10.0	10.0	02/01/22
22A1249-07RE1 [B-105 (8-16)]	B300143	10.0	10.0	02/01/22

Prep Method: SW-846 3546 Analytical Method: SW-846 8100 Modified

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22A1249-01 [B-104 (0-8)]	B299672	30.0	1.00	01/25/22
22A1249-03 [B-104 (8-12)]	B299672	30.0	1.00	01/25/22
22A1249-05 [B-105 (0-8)]	B299672	30.0	1.00	01/25/22
22A1249-07 [B-105 (8-16)]	B299672	30.0	1.00	01/25/22

Prep Method: SW-846 8151 Analytical Method: SW-846 8151A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22A1249-01 [B-104 (0-8)]	B299771	20.0	5.00	01/27/22
22A1249-03 [B-104 (8-12)]	B299771	20.0	5.00	01/27/22

Prep Method: SW-846 5035 Analytical Method: SW-846 8260D

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22A1249-02 [B-104 (2-4)]	B299615	6.87	10.0	01/25/22
22A1249-04 [B-104 (8-10)]	B299615	7.83	10.0	01/25/22
22A1249-06 [B-105 (0.5-2)]	B299615	10.6	10.0	01/25/22
22A1249-08 [B-105 (14-15)]	B299615	9.33	10.0	01/25/22

Prep Method: SW-846 3546 Analytical Method: SW-846 8270E

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22A1249-01 [B-104 (0-8)]	B299673	30.0	1.00	01/25/22
22A1249-03 [B-104 (8-12)]	B299673	30.0	1.00	01/25/22
22A1249-05 [B-105 (0-8)]	B299673	30.0	1.00	01/25/22
22A1249-07 [B-105 (8-16)]	B299673	30.0	1.00	01/25/22

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

SW-846 9014

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22A1249-01 [B-104 (0-8)]	B299813	25.2	250	01/27/22
22A1249-03 [B-104 (8-12)]	B299813	25.7	250	01/27/22
22A1249-05 [B-105 (0-8)]	B299813	25.2	250	01/27/22
22A1249-07 [B-105 (8-16)]	B299813	25.3	250	01/27/22

SW-846 9030A

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22A1249-01 [B-104 (0-8)]	B299818	25.2	250	01/27/22
22A1249-03 [B-104 (8-12)]	B299818	25.7	250	01/27/22
22A1249-05 [B-105 (0-8)]	B299818	25.2	250	01/27/22
22A1249-07 [B-105 (8-16)]	B299818	25.3	250	01/27/22

SW-846 9045C

Lab Number [Field ID]	Batch	Initial [g]	Date
22A1249-01 [B-104 (0-8)]	B299601	20.0	01/24/22
22A1249-03 [B-104 (8-12)]	B299601	20.0	01/24/22
22A1249-05 [B-105 (0-8)]	B299601	20.0	01/24/22
22A1249-07 [B-105 (8-16)]	B299601	20.0	01/24/22

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

Batch B299615 - SW-846 5035
Blank (B299615-BLK1)

Prepared & Analyzed: 01/25/22

Acetone	ND	0.10	mg/Kg wet							
Acrylonitrile	ND	0.0060	mg/Kg wet							
tert-Amyl Methyl Ether (TAME)	ND	0.0010	mg/Kg wet							
Benzene	ND	0.0020	mg/Kg wet							
Bromobenzene	ND	0.0020	mg/Kg wet							
Bromochloromethane	ND	0.0020	mg/Kg wet							
Bromodichloromethane	ND	0.0020	mg/Kg wet							
Bromoform	ND	0.0020	mg/Kg wet							
Bromomethane	ND	0.010	mg/Kg wet							V-34
2-Butanone (MEK)	ND	0.040	mg/Kg wet							
tert-Butyl Alcohol (TBA)	ND	0.10	mg/Kg wet							
n-Butylbenzene	ND	0.0020	mg/Kg wet							
sec-Butylbenzene	ND	0.0020	mg/Kg wet							
tert-Butylbenzene	ND	0.0020	mg/Kg wet							
tert-Butyl Ethyl Ether (TBEE)	ND	0.0010	mg/Kg wet							
Carbon Disulfide	ND	0.010	mg/Kg wet							
Carbon Tetrachloride	ND	0.0020	mg/Kg wet							
Chlorobenzene	ND	0.0020	mg/Kg wet							
Chlorodibromomethane	ND	0.0010	mg/Kg wet							
Chloroethane	ND	0.020	mg/Kg wet							
Chloroform	ND	0.0040	mg/Kg wet							
Chloromethane	ND	0.010	mg/Kg wet							
2-Chlorotoluene	ND	0.0020	mg/Kg wet							
4-Chlorotoluene	ND	0.0020	mg/Kg wet							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0020	mg/Kg wet							
1,2-Dibromoethane (EDB)	ND	0.0010	mg/Kg wet							
Dibromomethane	ND	0.0020	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.0020	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.0020	mg/Kg wet							
1,4-Dichlorobenzene	ND	0.0020	mg/Kg wet							
trans-1,4-Dichloro-2-butene	ND	0.0040	mg/Kg wet							
Dichlorodifluoromethane (Freon 12)	ND	0.020	mg/Kg wet							
1,1-Dichloroethane	ND	0.0020	mg/Kg wet							
1,2-Dichloroethane	ND	0.0020	mg/Kg wet							
1,1-Dichloroethylene	ND	0.0040	mg/Kg wet							
cis-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet							
trans-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet							
1,2-Dichloropropane	ND	0.0020	mg/Kg wet							
1,3-Dichloropropane	ND	0.0010	mg/Kg wet							
2,2-Dichloropropane	ND	0.0020	mg/Kg wet							
1,1-Dichloropropene	ND	0.0020	mg/Kg wet							
cis-1,3-Dichloropropene	ND	0.0010	mg/Kg wet							
trans-1,3-Dichloropropene	ND	0.0010	mg/Kg wet							
Diethyl Ether	ND	0.020	mg/Kg wet							
Diisopropyl Ether (DIPE)	ND	0.0010	mg/Kg wet							
1,4-Dioxane	ND	0.10	mg/Kg wet							
Ethylbenzene	ND	0.0020	mg/Kg wet							
Hexachlorobutadiene	ND	0.0020	mg/Kg wet							
2-Hexanone (MBK)	ND	0.020	mg/Kg wet							
Isopropylbenzene (Cumene)	ND	0.0020	mg/Kg wet							
p-Isopropyltoluene (p-Cymene)	ND	0.0020	mg/Kg wet							
Methyl Acetate	ND	0.0020	mg/Kg wet							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B299615 - SW-846 5035
Blank (B299615-BLK1)

Prepared & Analyzed: 01/25/22

Methyl tert-Butyl Ether (MTBE)	ND	0.0040	mg/Kg wet							
Methyl Cyclohexane	ND	0.0020	mg/Kg wet							
Methylene Chloride	ND	0.020	mg/Kg wet							
4-Methyl-2-pentanone (MIBK)	ND	0.020	mg/Kg wet							
Naphthalene	ND	0.0040	mg/Kg wet							
n-Propylbenzene	ND	0.0020	mg/Kg wet							
Styrene	ND	0.0020	mg/Kg wet							
1,1,1,2-Tetrachloroethane	ND	0.0020	mg/Kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0010	mg/Kg wet							
Tetrachloroethylene	ND	0.0020	mg/Kg wet							
Tetrahydrofuran	ND	0.010	mg/Kg wet							
Toluene	ND	0.0020	mg/Kg wet							
1,2,3-Trichlorobenzene	ND	0.0020	mg/Kg wet							
1,2,4-Trichlorobenzene	ND	0.0020	mg/Kg wet							
1,3,5-Trichlorobenzene	ND	0.0020	mg/Kg wet							
1,1,1-Trichloroethane	ND	0.0020	mg/Kg wet							
1,1,2-Trichloroethane	ND	0.0020	mg/Kg wet							
Trichloroethylene	ND	0.0020	mg/Kg wet							
Trichlorofluoromethane (Freon 11)	ND	0.010	mg/Kg wet							
1,2,3-Trichloropropane	ND	0.0020	mg/Kg wet							
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	ND	0.010	mg/Kg wet							
1,2,4-Trimethylbenzene	ND	0.0020	mg/Kg wet							
1,3,5-Trimethylbenzene	ND	0.0020	mg/Kg wet							
Vinyl Chloride	ND	0.010	mg/Kg wet							
m+p Xylene	ND	0.0040	mg/Kg wet							
o-Xylene	ND	0.0020	mg/Kg wet							
Surrogate: 1,2-Dichloroethane-d4	0.0488		mg/Kg wet	0.0500		97.6	70-130			
Surrogate: Toluene-d8	0.0494		mg/Kg wet	0.0500		98.8	70-130			
Surrogate: 4-Bromofluorobenzene	0.0508		mg/Kg wet	0.0500		102	70-130			

LCS (B299615-BS1)

Prepared & Analyzed: 01/25/22

Acetone	0.188	0.10	mg/Kg wet	0.200		94.0	70-160		V-35	†
Acrylonitrile	0.0185	0.0060	mg/Kg wet	0.0200		92.5	70-130			
tert-Amyl Methyl Ether (TAME)	0.0185	0.0010	mg/Kg wet	0.0200		92.4	70-130			
Benzene	0.0182	0.0020	mg/Kg wet	0.0200		91.2	70-130			
Bromobenzene	0.0187	0.0020	mg/Kg wet	0.0200		93.3	70-130			
Bromochloromethane	0.0192	0.0020	mg/Kg wet	0.0200		96.1	70-130			
Bromodichloromethane	0.0195	0.0020	mg/Kg wet	0.0200		97.5	70-130			
Bromoform	0.0212	0.0020	mg/Kg wet	0.0200		106	70-130			
Bromomethane	0.0237	0.010	mg/Kg wet	0.0200		119	40-130		V-20, V-34	†
2-Butanone (MEK)	0.187	0.040	mg/Kg wet	0.200		93.3	70-160			†
tert-Butyl Alcohol (TBA)	0.171	0.10	mg/Kg wet	0.200		85.4	40-130			†
n-Butylbenzene	0.0190	0.0020	mg/Kg wet	0.0200		95.0	70-130			
sec-Butylbenzene	0.0192	0.0020	mg/Kg wet	0.0200		95.8	70-130			
tert-Butylbenzene	0.0192	0.0020	mg/Kg wet	0.0200		96.1	70-160			†
tert-Butyl Ethyl Ether (TBEE)	0.0179	0.0010	mg/Kg wet	0.0200		89.5	70-130			
Carbon Disulfide	0.198	0.010	mg/Kg wet	0.200		99.2	70-130			
Carbon Tetrachloride	0.0196	0.0020	mg/Kg wet	0.0200		97.9	70-130			
Chlorobenzene	0.0199	0.0020	mg/Kg wet	0.0200		99.4	70-130			
Chlorodibromomethane	0.0200	0.0010	mg/Kg wet	0.0200		100	70-130			
Chloroethane	0.0191	0.020	mg/Kg wet	0.0200		95.6	70-130			
Chloroform	0.0188	0.0040	mg/Kg wet	0.0200		94.0	70-130			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B299615 - SW-846 5035										
LCS (B299615-BS1)				Prepared & Analyzed: 01/25/22						
Chloromethane	0.0195	0.010	mg/Kg wet	0.0200		97.4	70-130			
2-Chlorotoluene	0.0198	0.0020	mg/Kg wet	0.0200		99.0	70-130			
4-Chlorotoluene	0.0199	0.0020	mg/Kg wet	0.0200		99.6	70-130			
1,2-Dibromo-3-chloropropane (DBCP)	0.0185	0.0020	mg/Kg wet	0.0200		92.6	70-130			
1,2-Dibromoethane (EDB)	0.0199	0.0010	mg/Kg wet	0.0200		99.5	70-130			
Dibromomethane	0.0195	0.0020	mg/Kg wet	0.0200		97.6	70-130			
1,2-Dichlorobenzene	0.0192	0.0020	mg/Kg wet	0.0200		95.9	70-130			
1,3-Dichlorobenzene	0.0188	0.0020	mg/Kg wet	0.0200		94.1	70-130			
1,4-Dichlorobenzene	0.0189	0.0020	mg/Kg wet	0.0200		94.7	70-130			
trans-1,4-Dichloro-2-butene	0.0196	0.0040	mg/Kg wet	0.0200		98.1	70-130			
Dichlorodifluoromethane (Freon 12)	0.0173	0.020	mg/Kg wet	0.0200		86.6	40-160			†
1,1-Dichloroethane	0.0184	0.0020	mg/Kg wet	0.0200		91.8	70-130			
1,2-Dichloroethane	0.0189	0.0020	mg/Kg wet	0.0200		94.4	70-130			
1,1-Dichloroethylene	0.0194	0.0040	mg/Kg wet	0.0200		96.8	70-130			
cis-1,2-Dichloroethylene	0.0182	0.0020	mg/Kg wet	0.0200		91.0	70-130			
trans-1,2-Dichloroethylene	0.0187	0.0020	mg/Kg wet	0.0200		93.4	70-130			
1,2-Dichloropropane	0.0192	0.0020	mg/Kg wet	0.0200		96.0	70-130			
1,3-Dichloropropane	0.0196	0.0010	mg/Kg wet	0.0200		98.2	70-130			
2,2-Dichloropropane	0.0180	0.0020	mg/Kg wet	0.0200		90.2	70-130			
1,1-Dichloropropene	0.0192	0.0020	mg/Kg wet	0.0200		95.9	70-130			
cis-1,3-Dichloropropene	0.0201	0.0010	mg/Kg wet	0.0200		100	70-130			
trans-1,3-Dichloropropene	0.0199	0.0010	mg/Kg wet	0.0200		99.3	70-130			
Diethyl Ether	0.0184	0.020	mg/Kg wet	0.0200		92.0	70-130			
Diisopropyl Ether (DIPE)	0.0185	0.0010	mg/Kg wet	0.0200		92.7	70-130			
1,4-Dioxane	0.188	0.10	mg/Kg wet	0.200		93.9	40-160			†
Ethylbenzene	0.0203	0.0020	mg/Kg wet	0.0200		102	70-130			
Hexachlorobutadiene	0.0195	0.0020	mg/Kg wet	0.0200		97.5	70-160			
2-Hexanone (MBK)	0.198	0.020	mg/Kg wet	0.200		99.2	70-160			†
Isopropylbenzene (Cumene)	0.0204	0.0020	mg/Kg wet	0.0200		102	70-130			
p-Isopropyltoluene (p-Cymene)	0.0190	0.0020	mg/Kg wet	0.0200		95.0	70-130			
Methyl Acetate	0.0175	0.0020	mg/Kg wet	0.0200		87.4	70-130			
Methyl tert-Butyl Ether (MTBE)	0.0187	0.0040	mg/Kg wet	0.0200		93.4	70-130			
Methyl Cyclohexane	0.0199	0.0020	mg/Kg wet	0.0200		99.6	70-130			
Methylene Chloride	0.0168	0.020	mg/Kg wet	0.0200		84.2	40-160			†
4-Methyl-2-pentanone (MIBK)	0.190	0.020	mg/Kg wet	0.200		95.2	70-160			†
Naphthalene	0.0189	0.0040	mg/Kg wet	0.0200		94.5	40-130			†
n-Propylbenzene	0.0210	0.0020	mg/Kg wet	0.0200		105	70-130			
Styrene	0.0203	0.0020	mg/Kg wet	0.0200		102	70-130			
1,1,1,2-Tetrachloroethane	0.0207	0.0020	mg/Kg wet	0.0200		104	70-130			
1,1,2,2-Tetrachloroethane	0.0202	0.0010	mg/Kg wet	0.0200		101	70-130			
Tetrachloroethylene	0.0210	0.0020	mg/Kg wet	0.0200		105	70-130			
Tetrahydrofuran	0.0177	0.010	mg/Kg wet	0.0200		88.6	70-130			
Toluene	0.0179	0.0020	mg/Kg wet	0.0200		89.5	70-130			
1,2,3-Trichlorobenzene	0.0187	0.0020	mg/Kg wet	0.0200		93.7	70-130			
1,2,4-Trichlorobenzene	0.0186	0.0020	mg/Kg wet	0.0200		92.8	70-130			
1,3,5-Trichlorobenzene	0.0186	0.0020	mg/Kg wet	0.0200		93.2	70-130			
1,1,1-Trichloroethane	0.0197	0.0020	mg/Kg wet	0.0200		98.3	70-130			
1,1,2-Trichloroethane	0.0196	0.0020	mg/Kg wet	0.0200		98.1	70-130			
Trichloroethylene	0.0199	0.0020	mg/Kg wet	0.0200		99.3	70-130			
Trichlorofluoromethane (Freon 11)	0.0192	0.010	mg/Kg wet	0.0200		95.9	70-130			
1,2,3-Trichloropropane	0.0199	0.0020	mg/Kg wet	0.0200		99.7	70-130			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B299615 - SW-846 5035
LCS (B299615-BS1)

Prepared & Analyzed: 01/25/22

1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.0204	0.010	mg/Kg wet	0.0200		102	70-130			
1,2,4-Trimethylbenzene	0.0188	0.0020	mg/Kg wet	0.0200		94.2	70-130			
1,3,5-Trimethylbenzene	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130			
Vinyl Chloride	0.0180	0.010	mg/Kg wet	0.0200		90.0	40-130			†
m+p Xylene	0.0404	0.0040	mg/Kg wet	0.0400		101	70-130			
o-Xylene	0.0198	0.0020	mg/Kg wet	0.0200		99.2	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0473		mg/Kg wet	0.0500		94.6	70-130			
Surrogate: Toluene-d8	0.0499		mg/Kg wet	0.0500		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	0.0511		mg/Kg wet	0.0500		102	70-130			

LCS Dup (B299615-BSD1)

Prepared & Analyzed: 01/25/22

Acetone	0.179	0.10	mg/Kg wet	0.200		89.3	70-160	5.20	25	V-35	†
Acrylonitrile	0.0183	0.0060	mg/Kg wet	0.0200		91.3	70-130	1.31	25		
tert-Amyl Methyl Ether (TAME)	0.0180	0.0010	mg/Kg wet	0.0200		90.0	70-130	2.63	25		
Benzene	0.0178	0.0020	mg/Kg wet	0.0200		88.8	70-130	2.67	25		
Bromobenzene	0.0211	0.0020	mg/Kg wet	0.0200		105	70-130	12.2	25		
Bromochloromethane	0.0187	0.0020	mg/Kg wet	0.0200		93.4	70-130	2.85	25		
Bromodichloromethane	0.0194	0.0020	mg/Kg wet	0.0200		96.9	70-130	0.617	25		
Bromoform	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130	4.54	25		
Bromomethane	0.0221	0.010	mg/Kg wet	0.0200		111	40-130	6.97	25	V-20, V-34	†
2-Butanone (MEK)	0.178	0.040	mg/Kg wet	0.200		89.2	70-160	4.47	25		†
tert-Butyl Alcohol (TBA)	0.165	0.10	mg/Kg wet	0.200		82.3	40-130	3.67	25		†
n-Butylbenzene	0.0185	0.0020	mg/Kg wet	0.0200		92.7	70-130	2.45	25		
sec-Butylbenzene	0.0189	0.0020	mg/Kg wet	0.0200		94.6	70-130	1.26	25		
tert-Butylbenzene	0.0188	0.0020	mg/Kg wet	0.0200		93.9	70-160	2.32	25		†
tert-Butyl Ethyl Ether (TBEE)	0.0175	0.0010	mg/Kg wet	0.0200		87.5	70-130	2.26	25		
Carbon Disulfide	0.189	0.010	mg/Kg wet	0.200		94.5	70-130	4.82	25		
Carbon Tetrachloride	0.0184	0.0020	mg/Kg wet	0.0200		92.2	70-130	6.00	25		
Chlorobenzene	0.0197	0.0020	mg/Kg wet	0.0200		98.6	70-130	0.808	25		
Chlorodibromomethane	0.0203	0.0010	mg/Kg wet	0.0200		101	70-130	1.09	25		
Chloroethane	0.0178	0.020	mg/Kg wet	0.0200		88.8	70-130	7.38	25		
Chloroform	0.0180	0.0040	mg/Kg wet	0.0200		90.1	70-130	4.24	25		
Chloromethane	0.0185	0.010	mg/Kg wet	0.0200		92.4	70-130	5.27	25		
2-Chlorotoluene	0.0193	0.0020	mg/Kg wet	0.0200		96.5	70-130	2.56	25		
4-Chlorotoluene	0.0193	0.0020	mg/Kg wet	0.0200		96.3	70-130	3.37	25		
1,2-Dibromo-3-chloropropane (DBCP)	0.0176	0.0020	mg/Kg wet	0.0200		87.9	70-130	5.21	25		
1,2-Dibromoethane (EDB)	0.0199	0.0010	mg/Kg wet	0.0200		99.4	70-130	0.101	25		
Dibromomethane	0.0198	0.0020	mg/Kg wet	0.0200		98.8	70-130	1.22	25		
1,2-Dichlorobenzene	0.0187	0.0020	mg/Kg wet	0.0200		93.5	70-130	2.53	25		
1,3-Dichlorobenzene	0.0186	0.0020	mg/Kg wet	0.0200		93.2	70-130	0.961	25		
1,4-Dichlorobenzene	0.0185	0.0020	mg/Kg wet	0.0200		92.5	70-130	2.35	25		
trans-1,4-Dichloro-2-butene	0.0190	0.0040	mg/Kg wet	0.0200		95.2	70-130	3.00	25		
Dichlorodifluoromethane (Freon 12)	0.0166	0.020	mg/Kg wet	0.0200		83.1	40-160	4.12	25		†
1,1-Dichloroethane	0.0179	0.0020	mg/Kg wet	0.0200		89.4	70-130	2.65	25		
1,2-Dichloroethane	0.0187	0.0020	mg/Kg wet	0.0200		93.5	70-130	0.958	25		
1,1-Dichloroethylene	0.0184	0.0040	mg/Kg wet	0.0200		92.0	70-130	5.08	25		
cis-1,2-Dichloroethylene	0.0179	0.0020	mg/Kg wet	0.0200		89.7	70-130	1.44	25		
trans-1,2-Dichloroethylene	0.0181	0.0020	mg/Kg wet	0.0200		90.5	70-130	3.15	25		
1,2-Dichloropropane	0.0190	0.0020	mg/Kg wet	0.0200		94.9	70-130	1.15	25		
1,3-Dichloropropane	0.0195	0.0010	mg/Kg wet	0.0200		97.4	70-130	0.818	25		
2,2-Dichloropropane	0.0175	0.0020	mg/Kg wet	0.0200		87.4	70-130	3.15	25		
1,1-Dichloropropene	0.0182	0.0020	mg/Kg wet	0.0200		91.0	70-130	5.24	25		

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B299615 - SW-846 5035										
LCS Dup (B299615-BSD1)				Prepared & Analyzed: 01/25/22						
cis-1,3-Dichloropropene	0.0199	0.0010	mg/Kg wet	0.0200		99.4	70-130	0.901	25	
trans-1,3-Dichloropropene	0.0199	0.0010	mg/Kg wet	0.0200		99.5	70-130	0.201	25	
Diethyl Ether	0.0180	0.020	mg/Kg wet	0.0200		89.9	70-130	2.31	25	
Diisopropyl Ether (DIPE)	0.0174	0.0010	mg/Kg wet	0.0200		87.1	70-130	6.23	25	
1,4-Dioxane	0.195	0.10	mg/Kg wet	0.200		97.3	40-160	3.51	50	† ‡
Ethylbenzene	0.0196	0.0020	mg/Kg wet	0.0200		97.9	70-130	3.81	25	
Hexachlorobutadiene	0.0193	0.0020	mg/Kg wet	0.0200		96.3	70-160	1.24	25	
2-Hexanone (MBK)	0.197	0.020	mg/Kg wet	0.200		98.6	70-160	0.688	25	†
Isopropylbenzene (Cumene)	0.0196	0.0020	mg/Kg wet	0.0200		97.9	70-130	4.00	25	
p-Isopropyltoluene (p-Cymene)	0.0184	0.0020	mg/Kg wet	0.0200		92.1	70-130	3.10	25	
Methyl Acetate	0.0182	0.0020	mg/Kg wet	0.0200		90.8	70-130	3.82	25	
Methyl tert-Butyl Ether (MTBE)	0.0181	0.0040	mg/Kg wet	0.0200		90.3	70-130	3.38	25	
Methyl Cyclohexane	0.0193	0.0020	mg/Kg wet	0.0200		96.4	70-130	3.27	25	
Methylene Chloride	0.0166	0.020	mg/Kg wet	0.0200		83.0	40-160	1.44	25	†
4-Methyl-2-pentanone (MIBK)	0.189	0.020	mg/Kg wet	0.200		94.6	70-160	0.611	25	†
Naphthalene	0.0184	0.0040	mg/Kg wet	0.0200		91.8	40-130	2.90	25	†
n-Propylbenzene	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130	3.89	25	
Styrene	0.0197	0.0020	mg/Kg wet	0.0200		98.5	70-130	3.10	25	
1,1,1,2-Tetrachloroethane	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130	2.25	25	
1,1,2,2-Tetrachloroethane	0.0197	0.0010	mg/Kg wet	0.0200		98.3	70-130	2.51	25	
Tetrachloroethylene	0.0204	0.0020	mg/Kg wet	0.0200		102	70-130	2.90	25	
Tetrahydrofuran	0.0169	0.010	mg/Kg wet	0.0200		84.5	70-130	4.74	25	
Toluene	0.0183	0.0020	mg/Kg wet	0.0200		91.4	70-130	2.10	25	
1,2,3-Trichlorobenzene	0.0182	0.0020	mg/Kg wet	0.0200		91.0	70-130	2.92	25	
1,2,4-Trichlorobenzene	0.0178	0.0020	mg/Kg wet	0.0200		89.1	70-130	4.07	25	
1,3,5-Trichlorobenzene	0.0179	0.0020	mg/Kg wet	0.0200		89.7	70-130	3.83	25	
1,1,1-Trichloroethane	0.0190	0.0020	mg/Kg wet	0.0200		95.2	70-130	3.20	25	
1,1,2-Trichloroethane	0.0194	0.0020	mg/Kg wet	0.0200		97.1	70-130	1.02	25	
Trichloroethylene	0.0197	0.0020	mg/Kg wet	0.0200		98.6	70-130	0.707	25	
Trichlorofluoromethane (Freon 11)	0.0184	0.010	mg/Kg wet	0.0200		92.1	70-130	4.04	25	
1,2,3-Trichloropropane	0.0195	0.0020	mg/Kg wet	0.0200		97.7	70-130	2.03	25	
1,1,2-Trichloro-1,2,2-trifluoroethane (Freon 113)	0.0198	0.010	mg/Kg wet	0.0200		98.8	70-130	3.19	25	
1,2,4-Trimethylbenzene	0.0182	0.0020	mg/Kg wet	0.0200		91.2	70-130	3.24	25	
1,3,5-Trimethylbenzene	0.0197	0.0020	mg/Kg wet	0.0200		98.7	70-130	2.40	25	
Vinyl Chloride	0.0168	0.010	mg/Kg wet	0.0200		84.1	40-130	6.78	25	†
m+p Xylene	0.0391	0.0040	mg/Kg wet	0.0400		97.8	70-130	3.32	25	
o-Xylene	0.0195	0.0020	mg/Kg wet	0.0200		97.6	70-130	1.63	25	
Surrogate: 1,2-Dichloroethane-d4	0.0467		mg/Kg wet	0.0500		93.4	70-130			
Surrogate: Toluene-d8	0.0495		mg/Kg wet	0.0500		99.0	70-130			
Surrogate: 4-Bromofluorobenzene	0.0504		mg/Kg wet	0.0500		101	70-130			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	--------------	----------------	------------	--------------	-------

Batch B299673 - SW-846 3546
Blank (B299673-BLK1)

Prepared: 01/25/22 Analyzed: 01/27/22

Acenaphthene	ND	0.17	mg/Kg wet							
Acenaphthylene	ND	0.17	mg/Kg wet							
Acetophenone	ND	0.34	mg/Kg wet							R-05
Aniline	ND	0.34	mg/Kg wet							
Anthracene	ND	0.17	mg/Kg wet							
Benztidine	ND	0.66	mg/Kg wet							V-05, V-35
Benzo(a)anthracene	ND	0.17	mg/Kg wet							
Benzo(a)pyrene	ND	0.17	mg/Kg wet							
Benzo(b)fluoranthene	ND	0.17	mg/Kg wet							
Benzo(g,h,i)perylene	ND	0.17	mg/Kg wet							
Benzo(k)fluoranthene	ND	0.17	mg/Kg wet							
Benzoic Acid	ND	1.0	mg/Kg wet							
Bis(2-chloroethoxy)methane	ND	0.34	mg/Kg wet							
Bis(2-chloroethyl)ether	ND	0.34	mg/Kg wet							
Bis(2-chloroisopropyl)ether	ND	0.34	mg/Kg wet							
Bis(2-Ethylhexyl)phthalate	ND	0.34	mg/Kg wet							
4-Bromophenylphenylether	ND	0.34	mg/Kg wet							
Butylbenzylphthalate	ND	0.34	mg/Kg wet							
Carbazole	ND	0.17	mg/Kg wet							
4-Chloroaniline	ND	0.66	mg/Kg wet							V-34
4-Chloro-3-methylphenol	ND	0.66	mg/Kg wet							
2-Chloronaphthalene	ND	0.34	mg/Kg wet							
2-Chlorophenol	ND	0.34	mg/Kg wet							
4-Chlorophenylphenylether	ND	0.34	mg/Kg wet							
Chrysene	ND	0.17	mg/Kg wet							
Dibenz(a,h)anthracene	ND	0.17	mg/Kg wet							
Dibenzofuran	ND	0.34	mg/Kg wet							
Di-n-butylphthalate	ND	0.34	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.34	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.34	mg/Kg wet							
1,4-Dichlorobenzene	ND	0.34	mg/Kg wet							
3,3-Dichlorobenzidine	ND	0.17	mg/Kg wet							
2,4-Dichlorophenol	ND	0.34	mg/Kg wet							
Diethylphthalate	ND	0.34	mg/Kg wet							
2,4-Dimethylphenol	ND	0.34	mg/Kg wet							
Dimethylphthalate	ND	0.34	mg/Kg wet							
4,6-Dinitro-2-methylphenol	ND	0.34	mg/Kg wet							
2,4-Dinitrophenol	ND	0.66	mg/Kg wet							
2,4-Dinitrotoluene	ND	0.34	mg/Kg wet							
2,6-Dinitrotoluene	ND	0.34	mg/Kg wet							
Di-n-octylphthalate	ND	0.34	mg/Kg wet							
1,2-Diphenylhydrazine/Azobenzene	ND	0.34	mg/Kg wet							
Fluoranthene	ND	0.17	mg/Kg wet							
Fluorene	ND	0.17	mg/Kg wet							
Hexachlorobenzene	ND	0.34	mg/Kg wet							
Hexachlorobutadiene	ND	0.34	mg/Kg wet							
Hexachlorocyclopentadiene	ND	0.34	mg/Kg wet							V-05
Hexachloroethane	ND	0.34	mg/Kg wet							
Indeno(1,2,3-cd)pyrene	ND	0.17	mg/Kg wet							
Isophorone	ND	0.34	mg/Kg wet							
1-Methylnaphthalene	ND	0.17	mg/Kg wet							
2-Methylnaphthalene	ND	0.17	mg/Kg wet							

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

Batch B299673 - SW-846 3546
Blank (B299673-BLK1)

Prepared: 01/25/22 Analyzed: 01/27/22

2-Methylphenol	ND	0.34	mg/Kg wet							
3/4-Methylphenol	ND	0.34	mg/Kg wet							R-05
Naphthalene	ND	0.17	mg/Kg wet							
2-Nitroaniline	ND	0.34	mg/Kg wet							
3-Nitroaniline	ND	0.34	mg/Kg wet							
4-Nitroaniline	ND	0.34	mg/Kg wet							
Nitrobenzene	ND	0.34	mg/Kg wet							
2-Nitrophenol	ND	0.34	mg/Kg wet							
4-Nitrophenol	ND	0.66	mg/Kg wet							
N-Nitrosodimethylamine	ND	0.34	mg/Kg wet							
N-Nitrosodiphenylamine/Diphenylamine	ND	0.34	mg/Kg wet							
N-Nitrosodi-n-propylamine	ND	0.34	mg/Kg wet							R-05
Pentachloronitrobenzene	ND	0.34	mg/Kg wet							
Pentachlorophenol	ND	0.34	mg/Kg wet							
Phenanthrene	ND	0.17	mg/Kg wet							
Phenol	ND	0.34	mg/Kg wet							R-05
Pyrene	ND	0.17	mg/Kg wet							
Pyridine	ND	0.34	mg/Kg wet							
1,2,4,5-Tetrachlorobenzene	ND	0.34	mg/Kg wet							
1,2,4-Trichlorobenzene	ND	0.34	mg/Kg wet							
2,4,5-Trichlorophenol	ND	0.34	mg/Kg wet							
2,4,6-Trichlorophenol	ND	0.34	mg/Kg wet							
Surrogate: 2-Fluorophenol	4.39		mg/Kg wet	6.67		65.9	30-130			
Surrogate: Phenol-d6	4.58		mg/Kg wet	6.67		68.7	30-130			
Surrogate: Nitrobenzene-d5	2.03		mg/Kg wet	3.33		61.0	30-130			
Surrogate: 2-Fluorobiphenyl	2.34		mg/Kg wet	3.33		70.3	30-130			
Surrogate: 2,4,6-Tribromophenol	5.38		mg/Kg wet	6.67		80.7	30-130			
Surrogate: p-Terphenyl-d14	2.91		mg/Kg wet	3.33		87.4	30-130			

LCS (B299673-BS1)

Prepared: 01/25/22 Analyzed: 01/27/22

Acenaphthene	1.02	0.17	mg/Kg wet	1.67		60.9	40-140			
Acenaphthylene	1.11	0.17	mg/Kg wet	1.67		66.6	40-140			
Acetophenone	0.895	0.34	mg/Kg wet	1.67		53.7	40-140			R-05
Aniline	0.705	0.34	mg/Kg wet	1.67		42.3	10-140			†
Anthracene	1.17	0.17	mg/Kg wet	1.67		70.1	40-140			
Benzdine	1.61	0.66	mg/Kg wet	1.67		96.6	40-140			V-05, V-35
Benzo(a)anthracene	1.19	0.17	mg/Kg wet	1.67		71.2	40-140			
Benzo(a)pyrene	1.29	0.17	mg/Kg wet	1.67		77.1	40-140			
Benzo(b)fluoranthene	1.27	0.17	mg/Kg wet	1.67		76.1	40-140			
Benzo(g,h,i)perylene	1.23	0.17	mg/Kg wet	1.67		73.6	40-140			
Benzo(k)fluoranthene	1.34	0.17	mg/Kg wet	1.67		80.5	40-140			
Benzoic Acid	0.975	1.0	mg/Kg wet	1.67		58.5	30-130			
Bis(2-chloroethoxy)methane	0.950	0.34	mg/Kg wet	1.67		57.0	40-140			
Bis(2-chloroethyl)ether	0.975	0.34	mg/Kg wet	1.67		58.5	40-140			
Bis(2-chloroisopropyl)ether	1.15	0.34	mg/Kg wet	1.67		69.2	40-140			
Bis(2-Ethylhexyl)phthalate	1.12	0.34	mg/Kg wet	1.67		67.5	40-140			
4-Bromophenylphenylether	1.08	0.34	mg/Kg wet	1.67		64.6	40-140			
Butylbenzylphthalate	1.10	0.34	mg/Kg wet	1.67		66.2	40-140			
Carbazole	1.18	0.17	mg/Kg wet	1.67		70.8	40-140			
4-Chloroaniline	0.866	0.66	mg/Kg wet	1.67		52.0	10-140			V-34 †
4-Chloro-3-methylphenol	1.05	0.66	mg/Kg wet	1.67		62.9	30-130			
2-Chloronaphthalene	0.974	0.34	mg/Kg wet	1.67		58.4	40-140			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B299673 - SW-846 3546										
LCS (B299673-BS1)										
Prepared: 01/25/22 Analyzed: 01/27/22										
2-Chlorophenol	0.955	0.34	mg/Kg wet	1.67		57.3	30-130			
4-Chlorophenylphenylether	1.14	0.34	mg/Kg wet	1.67		68.2	40-140			
Chrysene	1.16	0.17	mg/Kg wet	1.67		69.4	40-140			
Dibenz(a,h)anthracene	1.28	0.17	mg/Kg wet	1.67		76.9	40-140			
Dibenzofuran	1.22	0.34	mg/Kg wet	1.67		73.4	40-140			
Di-n-butylphthalate	1.13	0.34	mg/Kg wet	1.67		67.9	40-140			
1,2-Dichlorobenzene	1.01	0.34	mg/Kg wet	1.67		60.8	40-140			
1,3-Dichlorobenzene	0.964	0.34	mg/Kg wet	1.67		57.8	40-140			
1,4-Dichlorobenzene	0.968	0.34	mg/Kg wet	1.67		58.1	40-140			
3,3-Dichlorobenzidine	0.818	0.17	mg/Kg wet	1.67		49.1	20-140			†
2,4-Dichlorophenol	1.00	0.34	mg/Kg wet	1.67		60.1	30-130			
Diethylphthalate	1.12	0.34	mg/Kg wet	1.67		67.1	40-140			
2,4-Dimethylphenol	0.976	0.34	mg/Kg wet	1.67		58.6	30-130			
Dimethylphthalate	1.11	0.34	mg/Kg wet	1.67		66.9	40-140			
4,6-Dinitro-2-methylphenol	0.957	0.34	mg/Kg wet	1.67		57.4	30-130			
2,4-Dinitrophenol	0.603	0.66	mg/Kg wet	1.67		36.2	30-130			
2,4-Dinitrotoluene	1.22	0.34	mg/Kg wet	1.67		73.3	40-140			
2,6-Dinitrotoluene	1.23	0.34	mg/Kg wet	1.67		73.9	40-140			
Di-n-octylphthalate	1.23	0.34	mg/Kg wet	1.67		73.9	40-140			
1,2-Diphenylhydrazine/Azobenzene	1.06	0.34	mg/Kg wet	1.67		63.7	40-140			
Fluoranthene	1.25	0.17	mg/Kg wet	1.67		75.0	40-140			
Fluorene	1.17	0.17	mg/Kg wet	1.67		70.0	40-140			
Hexachlorobenzene	1.23	0.34	mg/Kg wet	1.67		73.9	40-140			
Hexachlorobutadiene	0.983	0.34	mg/Kg wet	1.67		59.0	40-140			
Hexachlorocyclopentadiene	0.654	0.34	mg/Kg wet	1.67		39.2	* 40-140			L-07, V-05
Hexachloroethane	0.818	0.34	mg/Kg wet	1.67		49.1	40-140			
Indeno(1,2,3-cd)pyrene	1.19	0.17	mg/Kg wet	1.67		71.5	40-140			
Isophorone	1.04	0.34	mg/Kg wet	1.67		62.7	40-140			
1-Methylnaphthalene	0.987	0.17	mg/Kg wet	1.67		59.2	40-140			
2-Methylnaphthalene	1.13	0.17	mg/Kg wet	1.67		67.9	40-140			
2-Methylphenol	1.06	0.34	mg/Kg wet	1.67		63.4	30-130			
3/4-Methylphenol	0.949	0.34	mg/Kg wet	1.67		56.9	30-130			R-05
Naphthalene	1.00	0.17	mg/Kg wet	1.67		60.0	40-140			
2-Nitroaniline	1.17	0.34	mg/Kg wet	1.67		70.1	40-140			
3-Nitroaniline	1.22	0.34	mg/Kg wet	1.67		73.1	30-140			†
4-Nitroaniline	1.32	0.34	mg/Kg wet	1.67		79.0	40-140			
Nitrobenzene	0.940	0.34	mg/Kg wet	1.67		56.4	40-140			
2-Nitrophenol	0.979	0.34	mg/Kg wet	1.67		58.7	30-130			
4-Nitrophenol	1.14	0.66	mg/Kg wet	1.67		68.1	30-130			
N-Nitrosodimethylamine	1.06	0.34	mg/Kg wet	1.67		63.5	40-140			
N-Nitrosodiphenylamine/Diphenylamine	1.16	0.34	mg/Kg wet	1.67		69.4	40-140			
N-Nitrosodi-n-propylamine	0.860	0.34	mg/Kg wet	1.67		51.6	40-140			R-05
Pentachloronitrobenzene	1.24	0.34	mg/Kg wet	1.67		74.2	40-140			
Pentachlorophenol	0.828	0.34	mg/Kg wet	1.67		49.7	30-130			
Phenanthrene	1.17	0.17	mg/Kg wet	1.67		70.1	40-140			
Phenol	0.930	0.34	mg/Kg wet	1.67		55.8	30-130			R-05
Pyrene	1.18	0.17	mg/Kg wet	1.67		70.7	40-140			
Pyridine	0.657	0.34	mg/Kg wet	1.67		39.4	30-140			†
1,2,4,5-Tetrachlorobenzene	0.983	0.34	mg/Kg wet	1.67		59.0	40-140			
1,2,4-Trichlorobenzene	0.983	0.34	mg/Kg wet	1.67		59.0	40-140			
2,4,5-Trichlorophenol	1.17	0.34	mg/Kg wet	1.67		70.3	30-130			
2,4,6-Trichlorophenol	1.06	0.34	mg/Kg wet	1.67		63.5	30-130			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B299673 - SW-846 3546

LCS (B299673-BS1)

Prepared: 01/25/22 Analyzed: 01/27/22

Surrogate: 2-Fluorophenol	4.07		mg/Kg wet	6.67		61.0	30-130			
Surrogate: Phenol-d6	4.29		mg/Kg wet	6.67		64.4	30-130			
Surrogate: Nitrobenzene-d5	1.92		mg/Kg wet	3.33		57.6	30-130			
Surrogate: 2-Fluorobiphenyl	2.27		mg/Kg wet	3.33		68.2	30-130			
Surrogate: 2,4,6-Tribromophenol	5.66		mg/Kg wet	6.67		84.8	30-130			
Surrogate: p-Terphenyl-d14	2.72		mg/Kg wet	3.33		81.6	30-130			

LCS Dup (B299673-BSD1)

Prepared: 01/25/22 Analyzed: 01/27/22

Acenaphthene	1.15	0.17	mg/Kg wet	1.67		68.7	40-140	12.1	30	
Acenaphthylene	1.26	0.17	mg/Kg wet	1.67		75.5	40-140	12.6	30	
Acetophenone	1.23	0.34	mg/Kg wet	1.67		73.7	40-140	31.4	*	30 R-05
Aniline	1.07	0.34	mg/Kg wet	1.67		64.3	10-140	41.3	50	† ‡
Anthracene	1.32	0.17	mg/Kg wet	1.67		79.3	40-140	12.3	30	
Benzdine	2.04	0.66	mg/Kg wet	1.67		123	40-140	23.6	30	V-05, V-35
Benzo(a)anthracene	1.32	0.17	mg/Kg wet	1.67		79.0	40-140	10.5	30	
Benzo(a)pyrene	1.43	0.17	mg/Kg wet	1.67		85.8	40-140	10.7	30	
Benzo(b)fluoranthene	1.41	0.17	mg/Kg wet	1.67		84.3	40-140	10.2	30	
Benzo(g,h,i)perylene	1.36	0.17	mg/Kg wet	1.67		81.7	40-140	10.5	30	
Benzo(k)fluoranthene	1.48	0.17	mg/Kg wet	1.67		88.9	40-140	9.99	30	
Benzoic Acid	1.16	1.0	mg/Kg wet	1.67		69.8	30-130	17.6	50	‡
Bis(2-chloroethoxy)methane	1.12	0.34	mg/Kg wet	1.67		67.0	40-140	16.1	30	
Bis(2-chloroethyl)ether	1.28	0.34	mg/Kg wet	1.67		76.7	40-140	26.8	30	
Bis(2-chloroisopropyl)ether	1.27	0.34	mg/Kg wet	1.67		76.5	40-140	9.97	30	
Bis(2-Ethylhexyl)phthalate	1.27	0.34	mg/Kg wet	1.67		76.2	40-140	12.1	30	
4-Bromophenylphenylether	1.20	0.34	mg/Kg wet	1.67		71.8	40-140	10.5	30	
Butylbenzylphthalate	1.26	0.34	mg/Kg wet	1.67		75.6	40-140	13.3	30	
Carbazole	1.31	0.17	mg/Kg wet	1.67		78.5	40-140	10.3	30	
4-Chloroaniline	1.01	0.66	mg/Kg wet	1.67		60.4	10-140	15.0	30	V-34 †
4-Chloro-3-methylphenol	1.20	0.66	mg/Kg wet	1.67		71.8	30-130	13.2	30	
2-Chloronaphthalene	1.09	0.34	mg/Kg wet	1.67		65.2	40-140	10.9	30	
2-Chlorophenol	1.29	0.34	mg/Kg wet	1.67		77.5	30-130	30.0	30	
4-Chlorophenylphenylether	1.25	0.34	mg/Kg wet	1.67		75.1	40-140	9.60	30	
Chrysene	1.27	0.17	mg/Kg wet	1.67		76.3	40-140	9.42	30	
Dibenz(a,h)anthracene	1.36	0.17	mg/Kg wet	1.67		81.4	40-140	5.71	30	
Dibenzofuran	1.36	0.34	mg/Kg wet	1.67		81.8	40-140	10.9	30	
Di-n-butylphthalate	1.28	0.34	mg/Kg wet	1.67		76.8	40-140	12.3	30	
1,2-Dichlorobenzene	1.17	0.34	mg/Kg wet	1.67		70.0	40-140	14.1	30	
1,3-Dichlorobenzene	1.12	0.34	mg/Kg wet	1.67		67.1	40-140	14.8	30	
1,4-Dichlorobenzene	1.12	0.34	mg/Kg wet	1.67		67.5	40-140	15.0	30	
3,3-Dichlorobenzenidine	0.889	0.17	mg/Kg wet	1.67		53.4	20-140	8.40	50	† ‡
2,4-Dichlorophenol	1.19	0.34	mg/Kg wet	1.67		71.3	30-130	17.0	30	
Diethylphthalate	1.23	0.34	mg/Kg wet	1.67		73.9	40-140	9.68	30	
2,4-Dimethylphenol	1.14	0.34	mg/Kg wet	1.67		68.7	30-130	15.9	30	
Dimethylphthalate	1.22	0.34	mg/Kg wet	1.67		73.3	40-140	9.24	30	
4,6-Dinitro-2-methylphenol	1.06	0.34	mg/Kg wet	1.67		63.5	30-130	10.2	30	
2,4-Dinitrophenol	0.681	0.66	mg/Kg wet	1.67		40.9	30-130	12.1	30	
2,4-Dinitrotoluene	1.35	0.34	mg/Kg wet	1.67		80.7	40-140	9.61	30	
2,6-Dinitrotoluene	1.38	0.34	mg/Kg wet	1.67		82.8	40-140	11.3	30	
Di-n-octylphthalate	1.39	0.34	mg/Kg wet	1.67		83.2	40-140	11.8	30	
1,2-Diphenylhydrazine/Azobenzene	1.19	0.34	mg/Kg wet	1.67		71.1	40-140	11.0	30	
Fluoranthene	1.37	0.17	mg/Kg wet	1.67		82.5	40-140	9.45	30	
Fluorene	1.30	0.17	mg/Kg wet	1.67		77.8	40-140	10.5	30	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B299673 - SW-846 3546										
LCS Dup (B299673-BSD1)										
Prepared: 01/25/22 Analyzed: 01/27/22										
Hexachlorobenzene	1.38	0.34	mg/Kg wet	1.67		83.1	40-140	11.8	30	
Hexachlorobutadiene	1.16	0.34	mg/Kg wet	1.67		69.6	40-140	16.5	30	
Hexachlorocyclopentadiene	0.785	0.34	mg/Kg wet	1.67		47.1	40-140	18.2	30	V-05
Hexachloroethane	1.10	0.34	mg/Kg wet	1.67		66.3	40-140	29.8	30	
Indeno(1,2,3-cd)pyrene	1.37	0.17	mg/Kg wet	1.67		82.1	40-140	13.9	30	
Isophorone	1.25	0.34	mg/Kg wet	1.67		74.8	40-140	17.6	30	
1-Methylnaphthalene	1.17	0.17	mg/Kg wet	1.67		70.3	40-140	17.2	30	
2-Methylnaphthalene	1.36	0.17	mg/Kg wet	1.67		81.3	40-140	18.0	30	
2-Methylphenol	1.27	0.34	mg/Kg wet	1.67		76.4	30-130	18.5	30	
3/4-Methylphenol	1.30	0.34	mg/Kg wet	1.67		78.2	30-130	31.4 *	30	R-05
Naphthalene	1.19	0.17	mg/Kg wet	1.67		71.5	40-140	17.6	30	
2-Nitroaniline	1.26	0.34	mg/Kg wet	1.67		75.9	40-140	7.89	30	
3-Nitroaniline	1.35	0.34	mg/Kg wet	1.67		80.9	30-140	10.2	30	†
4-Nitroaniline	1.44	0.34	mg/Kg wet	1.67		86.3	40-140	8.81	30	
Nitrobenzene	1.12	0.34	mg/Kg wet	1.67		67.3	40-140	17.6	30	
2-Nitrophenol	1.16	0.34	mg/Kg wet	1.67		69.9	30-130	17.3	30	
4-Nitrophenol	1.24	0.66	mg/Kg wet	1.67		74.6	30-130	9.10	50	‡
N-Nitrosodimethylamine	1.37	0.34	mg/Kg wet	1.67		82.0	40-140	25.5	30	
N-Nitrosodiphenylamine/Diphenylamine	1.29	0.34	mg/Kg wet	1.67		77.5	40-140	11.1	30	
N-Nitrosodi-n-propylamine	1.17	0.34	mg/Kg wet	1.67		70.1	40-140	30.4 *	30	R-05
Pentachloronitrobenzene	1.41	0.34	mg/Kg wet	1.67		84.6	40-140	13.2	30	
Pentachlorophenol	0.934	0.34	mg/Kg wet	1.67		56.1	30-130	12.1	30	
Phenanthrene	1.31	0.17	mg/Kg wet	1.67		78.5	40-140	11.3	30	
Phenol	1.26	0.34	mg/Kg wet	1.67		75.5	30-130	30.1 *	30	R-05
Pyrene	1.35	0.17	mg/Kg wet	1.67		80.9	40-140	13.4	30	
Pyridine	0.850	0.34	mg/Kg wet	1.67		51.0	30-140	25.7	30	†
1,2,4,5-Tetrachlorobenzene	1.16	0.34	mg/Kg wet	1.67		69.5	40-140	16.4	30	
1,2,4-Trichlorobenzene	1.18	0.34	mg/Kg wet	1.67		70.8	40-140	18.2	30	
2,4,5-Trichlorophenol	1.29	0.34	mg/Kg wet	1.67		77.3	30-130	9.43	30	
2,4,6-Trichlorophenol	1.18	0.34	mg/Kg wet	1.67		70.7	30-130	10.7	30	
Surrogate: 2-Fluorophenol	5.55		mg/Kg wet	6.67		83.2	30-130			
Surrogate: Phenol-d6	5.70		mg/Kg wet	6.67		85.5	30-130			
Surrogate: Nitrobenzene-d5	2.28		mg/Kg wet	3.33		68.3	30-130			
Surrogate: 2-Fluorobiphenyl	2.57		mg/Kg wet	3.33		77.0	30-130			
Surrogate: 2,4,6-Tribromophenol	6.12		mg/Kg wet	6.67		91.8	30-130			
Surrogate: p-Terphenyl-d14	3.03		mg/Kg wet	3.33		91.0	30-130			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Organochloride Pesticides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

Batch B299753 - SW-846 3546
Blank (B299753-BLK1)

Prepared: 01/26/22 Analyzed: 01/28/22

alpha-Chlordane	ND	0.0050	mg/Kg wet							
alpha-Chlordane [2C]	ND	0.0050	mg/Kg wet							
gamma-Chlordane	ND	0.0050	mg/Kg wet							
gamma-Chlordane [2C]	ND	0.0050	mg/Kg wet							
Alachlor	ND	0.020	mg/Kg wet							
Alachlor [2C]	ND	0.020	mg/Kg wet							
Aldrin	ND	0.0050	mg/Kg wet							
Aldrin [2C]	ND	0.0050	mg/Kg wet							
alpha-BHC	ND	0.0050	mg/Kg wet							
alpha-BHC [2C]	ND	0.0050	mg/Kg wet							
beta-BHC	ND	0.0050	mg/Kg wet							
beta-BHC [2C]	ND	0.0050	mg/Kg wet							
delta-BHC	ND	0.0050	mg/Kg wet							
delta-BHC [2C]	ND	0.0050	mg/Kg wet							
gamma-BHC (Lindane)	ND	0.0020	mg/Kg wet							
gamma-BHC (Lindane) [2C]	ND	0.0020	mg/Kg wet							
Chlordane	ND	0.020	mg/Kg wet							
Chlordane [2C]	ND	0.020	mg/Kg wet							
4,4'-DDD	ND	0.0040	mg/Kg wet							
4,4'-DDD [2C]	ND	0.0040	mg/Kg wet							
4,4'-DDE	ND	0.0040	mg/Kg wet							
4,4'-DDE [2C]	ND	0.0040	mg/Kg wet							
4,4'-DDT	ND	0.0040	mg/Kg wet							
4,4'-DDT [2C]	ND	0.0040	mg/Kg wet							
Dieldrin	ND	0.0040	mg/Kg wet							
Dieldrin [2C]	ND	0.0040	mg/Kg wet							
Endosulfan I	ND	0.0050	mg/Kg wet							
Endosulfan I [2C]	ND	0.0050	mg/Kg wet							
Endosulfan II	ND	0.0080	mg/Kg wet							
Endosulfan II [2C]	ND	0.0080	mg/Kg wet							
Endosulfan Sulfate	ND	0.0080	mg/Kg wet							
Endosulfan Sulfate [2C]	ND	0.0080	mg/Kg wet							
Endrin	ND	0.0080	mg/Kg wet							
Endrin [2C]	ND	0.0080	mg/Kg wet							
Endrin Aldehyde	ND	0.0080	mg/Kg wet							
Endrin Aldehyde [2C]	ND	0.0080	mg/Kg wet							
Endrin Ketone	ND	0.0080	mg/Kg wet							
Endrin Ketone [2C]	ND	0.0080	mg/Kg wet							
Heptachlor	ND	0.0050	mg/Kg wet							
Heptachlor [2C]	ND	0.0050	mg/Kg wet							
Heptachlor Epoxide	ND	0.0050	mg/Kg wet							
Heptachlor Epoxide [2C]	ND	0.0050	mg/Kg wet							
Hexachlorobenzene	ND	0.0060	mg/Kg wet							
Hexachlorobenzene [2C]	ND	0.0060	mg/Kg wet							
Methoxychlor	ND	0.050	mg/Kg wet							
Methoxychlor [2C]	ND	0.050	mg/Kg wet							
Toxaphene	ND	0.10	mg/Kg wet							
Toxaphene [2C]	ND	0.10	mg/Kg wet							
Surrogate: Decachlorobiphenyl	0.123		mg/Kg wet	0.200		61.4	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.181		mg/Kg wet	0.200		90.4	30-150			
Surrogate: Tetrachloro-m-xylene	0.136		mg/Kg wet	0.200		68.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.181		mg/Kg wet	0.200		90.5	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL

Organochloride Pesticides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B299753 - SW-846 3546										
LCS (B299753-BS1)										
Prepared: 01/26/22 Analyzed: 01/28/22										
alpha-Chlordane	0.076	0.0050	mg/Kg wet	0.100		76.3	40-140			
alpha-Chlordane [2C]	0.095	0.0050	mg/Kg wet	0.100		95.1	40-140			
gamma-Chlordane	0.072	0.0050	mg/Kg wet	0.100		71.8	40-140			
gamma-Chlordane [2C]	0.097	0.0050	mg/Kg wet	0.100		96.7	40-140			
Alachlor	0.098	0.020	mg/Kg wet	0.100		97.7	40-140			
Alachlor [2C]	0.099	0.020	mg/Kg wet	0.100		98.8	40-140			
Aldrin	0.076	0.0050	mg/Kg wet	0.100		76.2	40-140			
Aldrin [2C]	0.10	0.0050	mg/Kg wet	0.100		99.6	40-140			
alpha-BHC	0.074	0.0050	mg/Kg wet	0.100		73.9	40-140			
alpha-BHC [2C]	0.10	0.0050	mg/Kg wet	0.100		103	40-140			
beta-BHC	0.074	0.0050	mg/Kg wet	0.100		74.2	40-140			
beta-BHC [2C]	0.092	0.0050	mg/Kg wet	0.100		92.4	40-140			
delta-BHC	0.076	0.0050	mg/Kg wet	0.100		76.2	40-140			
delta-BHC [2C]	0.095	0.0050	mg/Kg wet	0.100		94.6	40-140			
gamma-BHC (Lindane)	0.070	0.0020	mg/Kg wet	0.100		69.9	40-140			
gamma-BHC (Lindane) [2C]	0.099	0.0020	mg/Kg wet	0.100		99.3	40-140			
Chlordane	ND	0.020	mg/Kg wet				40-140			
Chlordane [2C]	ND	0.020	mg/Kg wet				40-140			
4,4'-DDD	0.086	0.0040	mg/Kg wet	0.100		85.6	40-140			
4,4'-DDD [2C]	0.11	0.0040	mg/Kg wet	0.100		114	40-140			
4,4'-DDE	0.082	0.0040	mg/Kg wet	0.100		81.7	40-140			
4,4'-DDE [2C]	0.11	0.0040	mg/Kg wet	0.100		107	40-140			
4,4'-DDT	0.087	0.0040	mg/Kg wet	0.100		86.9	40-140			
4,4'-DDT [2C]	0.11	0.0040	mg/Kg wet	0.100		108	40-140			
Dieldrin	0.083	0.0040	mg/Kg wet	0.100		83.4	40-140			
Dieldrin [2C]	0.10	0.0040	mg/Kg wet	0.100		104	40-140			
Endosulfan I	0.080	0.0050	mg/Kg wet	0.100		80.1	40-140			
Endosulfan I [2C]	0.096	0.0050	mg/Kg wet	0.100		96.3	40-140			
Endosulfan II	0.084	0.0080	mg/Kg wet	0.100		83.8	40-140			
Endosulfan II [2C]	0.10	0.0080	mg/Kg wet	0.100		101	40-140			
Endosulfan Sulfate	0.092	0.0080	mg/Kg wet	0.100		92.3	40-140			
Endosulfan Sulfate [2C]	0.11	0.0080	mg/Kg wet	0.100		108	40-140			
Endrin	0.084	0.0080	mg/Kg wet	0.100		84.3	40-140			
Endrin [2C]	0.10	0.0080	mg/Kg wet	0.100		101	40-140			
Endrin Aldehyde	0.082	0.0080	mg/Kg wet	0.100		81.9	40-140			
Endrin Aldehyde [2C]	0.093	0.0080	mg/Kg wet	0.100		93.5	40-140			
Endrin Ketone	0.092	0.0080	mg/Kg wet	0.100		92.3	40-140			
Endrin Ketone [2C]	0.11	0.0080	mg/Kg wet	0.100		108	40-140			
Heptachlor	0.073	0.0050	mg/Kg wet	0.100		72.5	40-140			
Heptachlor [2C]	0.097	0.0050	mg/Kg wet	0.100		96.8	40-140			
Heptachlor Epoxide	0.076	0.0050	mg/Kg wet	0.100		75.8	40-140			
Heptachlor Epoxide [2C]	0.092	0.0050	mg/Kg wet	0.100		92.0	40-140			
Hexachlorobenzene	0.076	0.0060	mg/Kg wet	0.100		75.7	40-140			
Hexachlorobenzene [2C]	0.10	0.0060	mg/Kg wet	0.100		102	40-140			
Methoxychlor	0.092	0.050	mg/Kg wet	0.100		92.3	40-140			V-05
Methoxychlor [2C]	0.11	0.050	mg/Kg wet	0.100		107	40-140			
Toxaphene	ND	0.10	mg/Kg wet				40-140			
Toxaphene [2C]	ND	0.10	mg/Kg wet				40-140			
Surrogate: Decachlorobiphenyl	0.124		mg/Kg wet	0.200		61.8	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.182		mg/Kg wet	0.200		91.2	30-150			
Surrogate: Tetrachloro-m-xylene	0.137		mg/Kg wet	0.200		68.5	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.177		mg/Kg wet	0.200		88.4	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Organochloride Pesticides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B299753 - SW-846 3546										
LCS Dup (B299753-BSD1)					Prepared: 01/26/22 Analyzed: 01/28/22					
alpha-Chlordane	0.072	0.0050	mg/Kg wet	0.100		71.9	40-140	5.94	30	
alpha-Chlordane [2C]	0.091	0.0050	mg/Kg wet	0.100		90.8	40-140	4.58	30	
gamma-Chlordane	0.064	0.0050	mg/Kg wet	0.100		64.1	40-140	11.3	30	
gamma-Chlordane [2C]	0.092	0.0050	mg/Kg wet	0.100		91.8	40-140	5.20	30	
Alachlor	0.092	0.020	mg/Kg wet	0.100		92.2	40-140	5.74	30	
Alachlor [2C]	0.091	0.020	mg/Kg wet	0.100		90.8	40-140	8.39	30	
Aldrin	0.074	0.0050	mg/Kg wet	0.100		74.2	40-140	2.78	30	
Aldrin [2C]	0.094	0.0050	mg/Kg wet	0.100		93.7	40-140	6.12	30	
alpha-BHC	0.075	0.0050	mg/Kg wet	0.100		74.5	40-140	0.911	30	
alpha-BHC [2C]	0.092	0.0050	mg/Kg wet	0.100		92.3	40-140	11.1	30	
beta-BHC	0.071	0.0050	mg/Kg wet	0.100		71.5	40-140	3.68	30	
beta-BHC [2C]	0.087	0.0050	mg/Kg wet	0.100		86.6	40-140	6.44	30	
delta-BHC	0.074	0.0050	mg/Kg wet	0.100		73.8	40-140	3.24	30	
delta-BHC [2C]	0.086	0.0050	mg/Kg wet	0.100		86.3	40-140	9.17	30	
gamma-BHC (Lindane)	0.069	0.0020	mg/Kg wet	0.100		69.0	40-140	1.24	30	
gamma-BHC (Lindane) [2C]	0.091	0.0020	mg/Kg wet	0.100		90.7	40-140	9.00	30	
Chlordane	ND	0.020	mg/Kg wet				40-140	NC	30	
Chlordane [2C]	ND	0.020	mg/Kg wet				40-140	NC	30	
4,4'-DDD	0.082	0.0040	mg/Kg wet	0.100		81.5	40-140	4.83	30	
4,4'-DDD [2C]	0.11	0.0040	mg/Kg wet	0.100		112	40-140	1.76	30	
4,4'-DDE	0.077	0.0040	mg/Kg wet	0.100		76.8	40-140	6.24	30	
4,4'-DDE [2C]	0.10	0.0040	mg/Kg wet	0.100		104	40-140	2.62	30	
4,4'-DDT	0.083	0.0040	mg/Kg wet	0.100		83.3	40-140	4.25	30	
4,4'-DDT [2C]	0.10	0.0040	mg/Kg wet	0.100		105	40-140	3.49	30	
Dieldrin	0.077	0.0040	mg/Kg wet	0.100		77.3	40-140	7.54	30	
Dieldrin [2C]	0.10	0.0040	mg/Kg wet	0.100		99.6	40-140	4.45	30	
Endosulfan I	0.075	0.0050	mg/Kg wet	0.100		74.9	40-140	6.69	30	
Endosulfan I [2C]	0.091	0.0050	mg/Kg wet	0.100		90.9	40-140	5.84	30	
Endosulfan II	0.078	0.0080	mg/Kg wet	0.100		77.9	40-140	7.32	30	
Endosulfan II [2C]	0.098	0.0080	mg/Kg wet	0.100		97.6	40-140	3.63	30	
Endosulfan Sulfate	0.085	0.0080	mg/Kg wet	0.100		84.7	40-140	8.59	30	
Endosulfan Sulfate [2C]	0.10	0.0080	mg/Kg wet	0.100		103	40-140	3.94	30	
Endrin	0.080	0.0080	mg/Kg wet	0.100		79.6	40-140	5.73	30	
Endrin [2C]	0.096	0.0080	mg/Kg wet	0.100		96.0	40-140	5.42	30	
Endrin Aldehyde	0.075	0.0080	mg/Kg wet	0.100		75.2	40-140	8.47	30	
Endrin Aldehyde [2C]	0.090	0.0080	mg/Kg wet	0.100		89.7	40-140	4.17	30	
Endrin Ketone	0.087	0.0080	mg/Kg wet	0.100		86.8	40-140	6.14	30	
Endrin Ketone [2C]	0.10	0.0080	mg/Kg wet	0.100		105	40-140	2.80	30	
Heptachlor	0.072	0.0050	mg/Kg wet	0.100		72.2	40-140	0.493	30	
Heptachlor [2C]	0.089	0.0050	mg/Kg wet	0.100		88.5	40-140	8.98	30	
Heptachlor Epoxide	0.072	0.0050	mg/Kg wet	0.100		72.1	40-140	5.06	30	
Heptachlor Epoxide [2C]	0.086	0.0050	mg/Kg wet	0.100		85.6	40-140	7.17	30	
Hexachlorobenzene	0.078	0.0060	mg/Kg wet	0.100		78.2	40-140	3.29	30	
Hexachlorobenzene [2C]	0.095	0.0060	mg/Kg wet	0.100		94.9	40-140	7.40	30	
Methoxychlor	0.090	0.050	mg/Kg wet	0.100		90.1	40-140	2.44	30	V-05
Methoxychlor [2C]	0.11	0.050	mg/Kg wet	0.100		105	40-140	1.51	30	
Toxaphene	ND	0.10	mg/Kg wet				40-140	NC	30	
Toxaphene [2C]	ND	0.10	mg/Kg wet				40-140	NC	30	
Surrogate: Decachlorobiphenyl	0.124		mg/Kg wet	0.200		61.8	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.185		mg/Kg wet	0.200		92.5	30-150			
Surrogate: Tetrachloro-m-xylene	0.146		mg/Kg wet	0.200		72.8	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.169		mg/Kg wet	0.200		84.5	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Herbicides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B299771 - SW-846 8151										
Blank (B299771-BLK1)										
Prepared: 01/27/22 Analyzed: 02/02/22										
2,4-D	ND	24	µg/kg wet							
2,4-D [2C]	ND	24	µg/kg wet							
2,4-DB	ND	24	µg/kg wet							
2,4-DB [2C]	ND	24	µg/kg wet							
2,4,5-TP (Silvex)	ND	2.4	µg/kg wet							
2,4,5-TP (Silvex) [2C]	ND	2.4	µg/kg wet							
2,4,5-T	ND	2.4	µg/kg wet							
2,4,5-T [2C]	ND	2.4	µg/kg wet							
Dalapon	ND	60	µg/kg wet							
Dalapon [2C]	ND	60	µg/kg wet							
Dicamba	ND	2.4	µg/kg wet							
Dicamba [2C]	ND	2.4	µg/kg wet							
Dichloroprop	ND	24	µg/kg wet							
Dichloroprop [2C]	ND	24	µg/kg wet							
Dinoseb	ND	12	µg/kg wet							
Dinoseb [2C]	ND	12	µg/kg wet							
MCPA	ND	2400	µg/kg wet							
MCPA [2C]	ND	2400	µg/kg wet							
MCPP	ND	2400	µg/kg wet							
MCPP [2C]	ND	2400	µg/kg wet							
Surrogate: 2,4-Dichlorophenylacetic acid	48.9		µg/kg wet	95.2		51.4	30-150			
Surrogate: 2,4-Dichlorophenylacetic acid [2C]	59.1		µg/kg wet	95.2		62.1	30-150			
LCS (B299771-BS1)										
Prepared: 01/27/22 Analyzed: 02/02/22										
2,4-D	82.1	25	µg/kg wet	125		65.7	40-140			
2,4-D [2C]	91.5	25	µg/kg wet	125		73.2	40-140			
2,4-DB	79.3	25	µg/kg wet	125		63.4	40-140			
2,4-DB [2C]	76.0	25	µg/kg wet	125		60.8	40-140			
2,4,5-TP (Silvex)	9.00	2.5	µg/kg wet	12.5		72.0	40-140			
2,4,5-TP (Silvex) [2C]	9.17	2.5	µg/kg wet	12.5		73.3	40-140			
2,4,5-T	8.59	2.5	µg/kg wet	12.5		68.7	40-140			
2,4,5-T [2C]	8.75	2.5	µg/kg wet	12.5		70.0	40-140			
Dalapon	144	62	µg/kg wet	312		46.1	40-140			
Dalapon [2C]	153	62	µg/kg wet	312		48.8	40-140			
Dicamba	8.51	2.5	µg/kg wet	12.5		68.1	40-140			
Dicamba [2C]	8.55	2.5	µg/kg wet	12.5		68.4	40-140			
Dichloroprop	92.6	25	µg/kg wet	125		74.1	40-140			
Dichloroprop [2C]	91.8	25	µg/kg wet	125		73.4	40-140			
Dinoseb	10.4	12	µg/kg wet	62.5		16.7	2.28-30.2			
Dinoseb [2C]	10.5	12	µg/kg wet	62.5		16.8	2.56-33.2			
MCPA	8130	2500	µg/kg wet	12500		65.1	40-140			
MCPA [2C]	8360	2500	µg/kg wet	12500		66.9	40-140			
MCPP	8840	2500	µg/kg wet	12500		70.8	40-140			
MCPP [2C]	8620	2500	µg/kg wet	12500		69.0	40-140			
Surrogate: 2,4-Dichlorophenylacetic acid	71.7		µg/kg wet	100		71.7	30-150			
Surrogate: 2,4-Dichlorophenylacetic acid [2C]	77.3		µg/kg wet	100		77.3	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Herbicides by GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B299771 - SW-846 8151										
LCS Dup (B299771-BSD1)										
Prepared: 01/27/22 Analyzed: 02/02/22										
2,4-D	82.9	25	µg/kg wet	125		66.4	40-140	0.971	30	
2,4-D [2C]	92.4	25	µg/kg wet	125		73.9	40-140	0.972	30	
2,4-DB	81.1	25	µg/kg wet	125		64.9	40-140	2.29	30	
2,4-DB [2C]	76.4	25	µg/kg wet	125		61.1	40-140	0.533	30	
2,4,5-TP (Silvex)	8.86	2.5	µg/kg wet	12.5		70.9	40-140	1.47	30	
2,4,5-TP (Silvex) [2C]	8.99	2.5	µg/kg wet	12.5		71.9	40-140	1.93	30	
2,4,5-T	8.58	2.5	µg/kg wet	12.5		68.6	40-140	0.183	30	
2,4,5-T [2C]	8.69	2.5	µg/kg wet	12.5		69.5	40-140	0.671	30	
Dalapon	153	62	µg/kg wet	312		49.1	40-140	6.16	30	
Dalapon [2C]	166	62	µg/kg wet	312		53.0	40-140	8.11	30	
Dicamba	8.33	2.5	µg/kg wet	12.5		66.6	40-140	2.24	30	
Dicamba [2C]	8.48	2.5	µg/kg wet	12.5		67.8	40-140	0.866	30	
Dichloroprop	92.4	25	µg/kg wet	125		73.9	40-140	0.212	30	
Dichloroprop [2C]	91.3	25	µg/kg wet	125		73.0	40-140	0.556	30	
Dinoseb	9.61	12	µg/kg wet	62.5		15.4	2.28-30.2	8.02	30	
Dinoseb [2C]	9.68	12	µg/kg wet	62.5		15.5	2.56-33.2	8.39	30	
MCPA	8210	2500	µg/kg wet	12500		65.7	40-140	0.980	30	
MCPA [2C]	8330	2500	µg/kg wet	12500		66.6	40-140	0.403	30	
MCPP	8780	2500	µg/kg wet	12500		70.3	40-140	0.682	30	
MCPP [2C]	8500	2500	µg/kg wet	12500		68.0	40-140	1.41	30	
Surrogate: 2,4-Dichlorophenylacetic acid	67.7		µg/kg wet	100		67.7	30-150			
Surrogate: 2,4-Dichlorophenylacetic acid [2C]	76.5		µg/kg wet	100		76.5	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Polychlorinated Biphenyls with 3540 Soxhlet Extraction - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	-----------------	-------	-------------	---------------	------	-------------	-----	-----------	-------

Batch B300143 - SW-846 3540C
Blank (B300143-BLK1)

Prepared: 02/01/22 Analyzed: 02/02/22

Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	0.221		mg/Kg wet	0.200		111	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.174		mg/Kg wet	0.200		87.0	30-150			
Surrogate: Tetrachloro-m-xylene	0.163		mg/Kg wet	0.200		81.4	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.113		mg/Kg wet	0.200		56.7	30-150			

LCS (B300143-BS1)

Prepared: 02/01/22 Analyzed: 02/02/22

Aroclor-1016	0.16	0.020	mg/Kg wet	0.200		79.1	40-140			
Aroclor-1016 [2C]	0.14	0.020	mg/Kg wet	0.200		72.2	40-140			
Aroclor-1260	0.17	0.020	mg/Kg wet	0.200		87.1	40-140			
Aroclor-1260 [2C]	0.17	0.020	mg/Kg wet	0.200		85.8	40-140			
Surrogate: Decachlorobiphenyl	0.239		mg/Kg wet	0.200		119	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.182		mg/Kg wet	0.200		90.9	30-150			
Surrogate: Tetrachloro-m-xylene	0.179		mg/Kg wet	0.200		89.4	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.115		mg/Kg wet	0.200		57.7	30-150			

LCS Dup (B300143-BSD1)

Prepared: 02/01/22 Analyzed: 02/02/22

Aroclor-1016	0.16	0.020	mg/Kg wet	0.200		78.8	40-140	0.494	30	
Aroclor-1016 [2C]	0.14	0.020	mg/Kg wet	0.200		71.7	40-140	0.651	30	
Aroclor-1260	0.17	0.020	mg/Kg wet	0.200		86.2	40-140	1.05	30	
Aroclor-1260 [2C]	0.17	0.020	mg/Kg wet	0.200		83.9	40-140	2.18	30	
Surrogate: Decachlorobiphenyl	0.230		mg/Kg wet	0.200		115	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.177		mg/Kg wet	0.200		88.4	30-150			
Surrogate: Tetrachloro-m-xylene	0.171		mg/Kg wet	0.200		85.4	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.114		mg/Kg wet	0.200		57.1	30-150			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Petroleum Hydrocarbons Analyses - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B299672 - SW-846 3546										
Blank (B299672-BLK1)										
					Prepared: 01/25/22 Analyzed: 01/27/22					
TPH (C9-C36)	ND	8.3	mg/Kg wet							
Surrogate: 2-Fluorobiphenyl	3.32		mg/Kg wet	3.33		99.7	40-140			
LCS (B299672-BS1)										
					Prepared: 01/25/22 Analyzed: 01/27/22					
TPH (C9-C36)	18.7	8.3	mg/Kg wet	33.3		56.2	40-140			
Surrogate: 2-Fluorobiphenyl	1.77		mg/Kg wet	3.33		53.2	40-140			
LCS Dup (B299672-BSD1)										
					Prepared: 01/25/22 Analyzed: 01/27/22					
TPH (C9-C36)	25.3	8.3	mg/Kg wet	33.3		75.9	40-140	29.8	30	
Surrogate: 2-Fluorobiphenyl	2.49		mg/Kg wet	3.33		74.6	40-140			

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
---------	--------	--------------------	-------	----------------	------------------	------	----------------	-----	--------------	-------

Batch B299663 - SW-846 3050B
Blank (B299663-BLK1)

Prepared: 01/25/22 Analyzed: 01/26/22

Arsenic	ND	3.3	mg/Kg wet						
Barium	ND	1.6	mg/Kg wet						
Cadmium	ND	0.33	mg/Kg wet						
Chromium	ND	0.66	mg/Kg wet						
Lead	ND	0.49	mg/Kg wet						
Selenium	ND	3.3	mg/Kg wet						
Silver	ND	0.33	mg/Kg wet						

LCS (B299663-BS1)

Prepared: 01/25/22 Analyzed: 01/26/22

Arsenic	146	9.8	mg/Kg wet	170		86.1	82.9-117.6		
Barium	166	4.9	mg/Kg wet	183		90.8	82.5-117.5		
Cadmium	78.7	0.98	mg/Kg wet	89.5		87.9	82.8-117.3		
Chromium	90.5	2.0	mg/Kg wet	101		89.6	82.1-117.8		
Lead	124	1.5	mg/Kg wet	140		88.5	82.9-117.1		
Selenium	165	9.8	mg/Kg wet	182		90.4	79.7-120.3		
Silver	45.5	0.98	mg/Kg wet	50.1		90.9	80.2-120		

LCS Dup (B299663-BSD1)

Prepared: 01/25/22 Analyzed: 01/26/22

Arsenic	154	9.6	mg/Kg wet	170		90.6	82.9-117.6	5.10	30
Barium	175	4.8	mg/Kg wet	183		95.4	82.5-117.5	4.96	20
Cadmium	83.1	0.96	mg/Kg wet	89.5		92.9	82.8-117.3	5.45	20
Chromium	95.1	1.9	mg/Kg wet	101		94.2	82.1-117.8	4.95	30
Lead	130	1.4	mg/Kg wet	140		92.8	82.9-117.1	4.78	30
Selenium	170	9.6	mg/Kg wet	182		93.5	79.7-120.3	3.34	30
Silver	47.8	0.96	mg/Kg wet	50.1		95.4	80.2-120	4.82	30

Reference (B299663-SRM1) MRL CHECK

Prepared: 01/25/22 Analyzed: 01/26/22

Lead	0.477	0.50	mg/Kg wet	0.497		96.1	80-120		
------	-------	------	-----------	-------	--	------	--------	--	--

Batch B299725 - SW-846 3050B
Blank (B299725-BLK1)

Prepared: 01/26/22 Analyzed: 01/27/22

Arsenic	ND	3.3	mg/Kg wet						
Barium	ND	1.7	mg/Kg wet						
Cadmium	ND	0.33	mg/Kg wet						
Chromium	ND	0.67	mg/Kg wet						
Lead	ND	0.50	mg/Kg wet						
Selenium	ND	3.3	mg/Kg wet						
Silver	ND	0.33	mg/Kg wet						

LCS (B299725-BS1)

Prepared: 01/26/22 Analyzed: 01/27/22

Arsenic	162	9.9	mg/Kg wet	170		95.3	82.9-117.6		
Barium	183	5.0	mg/Kg wet	183		100	82.5-117.5		
Cadmium	85.8	0.99	mg/Kg wet	89.5		95.9	82.8-117.3		
Chromium	99.2	2.0	mg/Kg wet	101		98.3	82.1-117.8		
Lead	140	1.5	mg/Kg wet	140		99.7	82.9-117.1		
Selenium	179	9.9	mg/Kg wet	182		98.5	79.7-120.3		
Silver	50.1	0.99	mg/Kg wet	50.1		100	80.2-120		

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B299725 - SW-846 3050B										
LCS Dup (B299725-BSD1)					Prepared: 01/26/22 Analyzed: 01/27/22					
Arsenic	162	9.7	mg/Kg wet	170		95.5	82.9-117.6	0.203	30	
Barium	187	4.8	mg/Kg wet	183		102	82.5-117.5	1.97	20	
Cadmium	90.6	0.97	mg/Kg wet	89.5		101	82.8-117.3	5.45	20	
Chromium	101	1.9	mg/Kg wet	101		100	82.1-117.8	1.74	30	
Lead	138	1.5	mg/Kg wet	140		98.5	82.9-117.1	1.17	30	
Selenium	182	9.7	mg/Kg wet	182		100	79.7-120.3	1.75	30	
Silver	49.1	0.97	mg/Kg wet	50.1		98.1	80.2-120	1.99	30	
Reference (B299725-SRM1) MRL CHECK					Prepared: 01/26/22 Analyzed: 01/27/22					
Lead	0.518	0.50	mg/Kg wet	0.500		104	80-120			
Batch B299756 - SW-846 7471										
Blank (B299756-BLK1)					Prepared: 01/28/22 Analyzed: 01/31/22					
Mercury	ND	0.025	mg/Kg wet							
LCS (B299756-BS1)					Prepared: 01/28/22 Analyzed: 01/31/22					
Mercury	1.49	0.075	mg/Kg wet	1.56		95.5	59.3-140.4			
LCS Dup (B299756-BSD1)					Prepared: 01/28/22 Analyzed: 01/31/22					
Mercury	20.6	0.74	mg/Kg wet	15.6		132	59.3-140.4	173 *	20	R-05
Batch B300060 - SW-846 7471										
Blank (B300060-BLK1)					Prepared: 01/31/22 Analyzed: 02/01/22					
Mercury	ND	0.025	mg/Kg wet							
LCS (B300060-BS1)					Prepared: 01/31/22 Analyzed: 02/01/22					
Mercury	16.7	0.76	mg/Kg wet	15.6		107	59.3-140.4			
LCS Dup (B300060-BSD1)					Prepared: 01/31/22 Analyzed: 02/01/22					
Mercury	17.2	0.76	mg/Kg wet	15.6		110	59.3-140.4	3.37	20	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B299601 - SW-846 9045C										
LCS (B299601-BS1)				Prepared & Analyzed: 01/24/22						
pH	5.99		pH Units	6.00		99.8	90-110			
Duplicate (B299601-DUP1)				Source: 22A1249-01		Prepared & Analyzed: 01/24/22				
pH	9.2		pH Units		9.3			0.616	10	H-03
Batch B299813 - SW-846 9014										
Blank (B299813-BLK1)				Prepared: 01/27/22 Analyzed: 01/28/22						
Reactive Cyanide	ND	0.40	mg/Kg							
LCS (B299813-BS1)				Prepared: 01/27/22 Analyzed: 01/28/22						
Reactive Cyanide	9.3	0.40	mg/Kg	10.0		93.0	81.3-111			
Batch B299818 - SW-846 9030A										
Blank (B299818-BLK1)				Prepared: 01/27/22 Analyzed: 01/28/22						
Reactive Sulfide	ND	2.0	mg/Kg							
LCS (B299818-BS1)				Prepared: 01/27/22 Analyzed: 01/28/22						
Reactive Sulfide	4.4	2.0	mg/Kg	4.00		110	71.8-120			
Batch B299827 - SM21-23 2510B Modified										
Blank (B299827-BLK1)				Prepared & Analyzed: 01/27/22						
Specific conductance	ND	2.0	µmhos/cm							
LCS (B299827-BS1)				Prepared & Analyzed: 01/27/22						
Specific conductance	150		µmhos/cm	137		110	90-114			
Duplicate (B299827-DUP1)				Source: 22A1249-01		Prepared & Analyzed: 01/27/22				
Specific conductance	20	2.0	µmhos/cm		21			4.16	44.6	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

BREAKDOWN REPORT

Lab Sample ID: S067797-PEM1 **Analyzed:** 01/28/2022

Column Number: 1

Analyte	% Breakdown
4,4'-DDT [1]	1.81
Endrin [1]	3.25

Column Number: 2

Analyte	% Breakdown
4,4'-DDT [2]	1.10
Endrin [2]	1.89

BREAKDOWN REPORT

Lab Sample ID: S067797-PEM2 **Analyzed:** 01/28/2022

Column Number: 1

Analyte	% Breakdown
4,4'-DDT [1]	2.73
Endrin [1]	5.50

Column Number: 2

Analyte	% Breakdown
4,4'-DDT [2]	1.90
Endrin [2]	5.67

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8081B

LCS

Lab Sample ID: B299753-BS1 Date(s) Analyzed: 01/28/2022 01/28/2022
 Instrument ID (1): ECD6 Instrument ID (2): ECD6
 GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
4,4'-DDD	1	6.945	6.914	6.974	0.086	
	2	6.958	6.926	6.986	0.11	24.5
4,4'-DDE	1	6.518	6.487	6.547	0.082	
	2	6.541	6.509	6.569	0.11	29.2
4,4'-DDT	1	7.152	7.120	7.180	0.087	
	2	7.189	7.158	7.218	0.11	23.4
Alachlor	1	5.981	5.951	6.011	0.098	
	2	5.765	5.734	5.794	0.099	1.0
Aldrin	1	5.881	5.850	5.910	0.076	
	2	5.811	5.780	5.840	0.10	27.3
alpha-BHC	1	5.222	5.192	5.252	0.074	
	2	5.164	5.134	5.194	0.10	29.9
alpha-Chlordane	1	6.457	6.425	6.485	0.076	
	2	6.410	6.378	6.438	0.095	22.2
beta-BHC	1	5.460	5.428	5.488	0.074	
	2	5.415	5.383	5.443	0.092	21.7
delta-BHC	1	5.565	5.534	5.594	0.076	
	2	5.585	5.555	5.615	0.095	22.2
Dieldrin	1	6.718	6.686	6.746	0.083	
	2	6.635	6.603	6.663	0.10	18.6
Endosulfan I	1	6.549	6.517	6.577	0.080	
	2	6.444	6.412	6.472	0.096	18.2
Endosulfan II	1	7.046	7.014	7.074	0.084	
	2	7.008	6.976	7.036	0.10	17.4
Endosulfan Sulfate	1	7.692	7.660	7.720	0.092	
	2	7.474	7.443	7.503	0.11	17.8
Endrin	1	6.882	6.851	6.911	0.084	
	2	6.849	6.817	6.877	0.10	17.4
Endrin Aldehyde	1	7.360	7.328	7.388	0.082	
	2	7.262	7.232	7.292	0.093	12.6
Endrin Ketone	1	7.903	7.871	7.931	0.092	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8081B

LCS

Lab Sample ID: B299753-BS1 Date(s) Analyzed: 01/28/2022 01/28/2022
 Instrument ID (1): ECD6 Instrument ID (2): ECD6
 GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
	2	7.876	7.845	7.905	0.11	17.8
gamma-BHC (Lindane)	1	5.406	5.375	5.435	0.070	
	2	5.362	5.332	5.392	0.099	34.3
gamma-Chlordane	1	6.365	6.334	6.394	0.072	
	2	6.309	6.278	6.338	0.097	29.6
Heptachlor	1	5.693	5.662	5.722	0.073	
	2	5.616	5.585	5.645	0.097	28.2
Heptachlor Epoxide	1	6.281	6.249	6.309	0.076	
	2	6.182	6.151	6.211	0.092	19.0
Hexachlorobenzene	1	5.124	5.093	5.153	0.076	
	2	5.084	5.053	5.113	0.10	27.3
Methoxychlor	1	7.533	7.502	7.562	0.092	
	2	7.737	7.706	7.766	0.11	17.8

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8081B

LCS Dup

Lab Sample ID: B299753-BSD1 Date(s) Analyzed: 01/28/2022 01/28/2022
 Instrument ID (1): ECD6 Instrument ID (2): ECD6
 GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
4,4'-DDD	1	6.944	6.914	6.974	0.082	
	2	6.957	6.926	6.986	0.11	29.2
4,4'-DDE	1	6.518	6.487	6.547	0.077	
	2	6.540	6.509	6.569	0.10	26.0
4,4'-DDT	1	7.150	7.120	7.180	0.083	
	2	7.188	7.158	7.218	0.10	18.6
Alachlor	1	5.981	5.951	6.011	0.092	
	2	5.764	5.734	5.794	0.091	1.1
Aldrin	1	5.880	5.850	5.910	0.074	
	2	5.811	5.780	5.840	0.094	23.8
alpha-BHC	1	5.222	5.192	5.252	0.075	
	2	5.164	5.134	5.194	0.092	20.4
alpha-Chlordane	1	6.456	6.425	6.485	0.072	
	2	6.409	6.378	6.438	0.091	23.3
beta-BHC	1	5.459	5.428	5.488	0.071	
	2	5.415	5.383	5.443	0.087	18.9
delta-BHC	1	5.565	5.534	5.594	0.074	
	2	5.585	5.555	5.615	0.086	15.0
Dieldrin	1	6.717	6.686	6.746	0.077	
	2	6.634	6.603	6.663	0.10	26.0
Endosulfan I	1	6.548	6.517	6.577	0.075	
	2	6.443	6.412	6.472	0.091	19.3
Endosulfan II	1	7.045	7.014	7.074	0.078	
	2	7.006	6.976	7.036	0.098	22.7
Endosulfan Sulfate	1	7.691	7.660	7.720	0.085	
	2	7.472	7.443	7.503	0.10	16.2
Endrin	1	6.881	6.851	6.911	0.080	
	2	6.848	6.817	6.877	0.096	18.2
Endrin Aldehyde	1	7.358	7.328	7.388	0.075	
	2	7.261	7.232	7.292	0.090	18.2
Endrin Ketone	1	7.901	7.871	7.931	0.087	

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8081B

LCS Dup

Lab Sample ID: B299753-BSD1 Date(s) Analyzed: 01/28/2022 01/28/2022
 Instrument ID (1): ECD6 Instrument ID (2): ECD6
 GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
	2	7.876	7.845	7.905	0.10	13.9
gamma-BHC (Lindane)	1	5.406	5.375	5.435	0.069	
	2	5.362	5.332	5.392	0.091	27.5
gamma-Chlordane	1	6.364	6.334	6.394	0.064	
	2	6.309	6.278	6.338	0.092	35.9
Heptachlor	1	5.692	5.662	5.722	0.072	
	2	5.615	5.585	5.645	0.089	21.1
Heptachlor Epoxide	1	6.280	6.249	6.309	0.072	
	2	6.181	6.151	6.211	0.086	17.7
Hexachlorobenzene	1	5.124	5.093	5.153	0.078	
	2	5.084	5.053	5.113	0.095	19.7
Methoxychlor	1	7.532	7.502	7.562	0.090	
	2	7.736	7.706	7.766	0.11	20.0

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8151A

LCS

Lab Sample ID: B299771-BS1 Date(s) Analyzed: 02/02/2022 02/02/2022
 Instrument ID (1): ECD 8 Instrument ID (2): ECD 8
 GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
2,4,5-T	1	17.473	0.000	0.000	8.59	
	2	17.273	0.000	0.000	8.75	1.7
2,4,5-TP (Silvex)	1	17.265	0.000	0.000	9.00	
	2	16.948	0.000	0.000	9.17	1.9
2,4-D	1	16.102	0.000	0.000	82.1	
	2	15.403	0.000	0.000	91.5	11.0
2,4-DB	1	17.806	0.000	0.000	79.3	
	2	17.600	0.000	0.000	76.0	3.9
Dalapon	1	5.630	0.000	0.000	144	
	2	5.053	0.000	0.000	153	8.9
Dicamba	1	13.806	0.000	0.000	8.51	
	2	13.043	0.000	0.000	8.55	0.6
Dichloroprop	1	15.554	0.000	0.000	92.6	
	2	14.682	0.000	0.000	91.8	1.3
Dinoseb	1	18.325	0.000	0.000	10.4	
	2	17.765	0.000	0.000	10.5	4.9
MCPA	1	14.683	0.000	0.000	8130	
	2	13.929	0.000	0.000	8360	3.2
MCPP	1	14.320	0.000	0.000	8840	
	2	13.389	0.000	0.000	8620	2.1

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8151A

LCS Dup

Lab Sample ID: B299771-BSD1 Date(s) Analyzed: 02/02/2022 02/02/2022
 Instrument ID (1): ECD 8 Instrument ID (2): ECD 8
 GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
2,4,5-T	1	17.474	0.000	0.000	8.58	
	2	17.273	0.000	0.000	8.69	1.0
2,4,5-TP (Silvex)	1	17.266	0.000	0.000	8.86	
	2	16.949	0.000	0.000	8.99	1.0
2,4-D	1	16.102	0.000	0.000	82.9	
	2	15.403	0.000	0.000	92.4	10.7
2,4-DB	1	17.807	0.000	0.000	81.1	
	2	17.601	0.000	0.000	76.4	5.8
Dalapon	1	5.628	0.000	0.000	153	
	2	5.051	0.000	0.000	166	10.1
Dicamba	1	13.805	0.000	0.000	8.33	
	2	13.043	0.000	0.000	8.48	2.2
Dichloroprop	1	15.554	0.000	0.000	92.4	
	2	14.682	0.000	0.000	91.3	0.8
Dinoseb	1	18.326	0.000	0.000	9.61	
	2	17.767	0.000	0.000	9.68	0.8
MCPA	1	14.684	0.000	0.000	8210	
	2	13.929	0.000	0.000	8330	1.6
MCPP	1	14.319	0.000	0.000	8780	
	2	13.389	0.000	0.000	8500	3.5

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS

Lab Sample ID: B300143-BS1 Date(s) Analyzed: 02/02/2022 02/02/2022
 Instrument ID (1): ECD1 Instrument ID (2): ECD1
 GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	-0.030	0.030	0.16	
	2	0.000	-0.030	0.030	0.14	13.3
Aroclor-1260	1	0.000	-0.030	0.030	0.17	
	2	0.000	-0.030	0.030	0.17	0.0

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS Dup

Lab Sample ID: B300143-BSD1 Date(s) Analyzed: 02/02/2022 02/02/2022
 Instrument ID (1): ECD1 Instrument ID (2): ECD1
 GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	-0.030	0.030	0.16	
	2	0.000	-0.030	0.030	0.14	13.3
Aroclor-1260	1	0.000	-0.030	0.030	0.17	
	2	0.000	-0.030	0.030	0.17	0.0

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
DL-03	Elevated reporting limit due to matrix interference.
H-03	Sample received after recommended holding time was exceeded.
L-07	Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.
R-05	Laboratory fortified blank duplicate RPD is outside of control limits. Reduced precision is anticipated for any reported value for this compound.
S-01	The surrogate recovery for this sample is not available due to sample dilution below the surrogate reporting limit required from high analyte concentration and/or matrix interferences.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-06	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.
V-34	Initial calibration verification (ICV) did not meet method specifications and was biased on the low side for this compound. Reported result is estimated.
V-35	Initial calibration verification (ICV) did not meet method specifications and was biased on the high side for this compound. Reported result is estimated.

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 1030 in Soil</i>	
Ignitability	NY,NH,CT,NC,ME,VA
<i>SW-846 6010D in Soil</i>	
Arsenic	CT,NH,NY,ME,VA,NC
Barium	CT,NH,NY,ME,VA,NC
Cadmium	CT,NH,NY,ME,VA,NC
Chromium	CT,NH,NY,ME,VA,NC
Lead	CT,NH,NY,AIHA,ME,VA,NC
Selenium	CT,NH,NY,ME,VA,NC
Silver	CT,NH,NY,ME,VA,NC
<i>SW-846 7471B in Soil</i>	
Mercury	CT,NH,NY,NC,ME,VA
<i>SW-846 8081B in Soil</i>	
Alachlor	NC
Alachlor [2C]	NC
Aldrin	CT,NH,NY,ME,NC,VA
Aldrin [2C]	CT,NH,NY,ME,NC,VA
alpha-BHC	CT,NH,NY,ME,NC,VA
alpha-BHC [2C]	CT,NH,NY,ME,NC,VA
beta-BHC	CT,NH,NY,ME,NC,VA
beta-BHC [2C]	CT,NH,NY,ME,NC,VA
delta-BHC	CT,NH,NY,ME,NC,VA
delta-BHC [2C]	CT,NH,NY,ME,NC,VA
gamma-BHC (Lindane)	CT,NH,NY,ME,NC,VA
gamma-BHC (Lindane) [2C]	CT,NH,NY,ME,NC,VA
Chlordane	CT,NH,NY,ME,NC,VA
Chlordane [2C]	CT,NH,NY,ME,NC,VA
4,4'-DDD	CT,NH,NY,ME,NC,VA
4,4'-DDD [2C]	CT,NH,NY,ME,NC,VA
4,4'-DDE	CT,NH,NY,ME,NC,VA
4,4'-DDE [2C]	CT,NH,NY,ME,NC,VA
4,4'-DDT	CT,NH,NY,ME,NC,VA
4,4'-DDT [2C]	CT,NH,NY,ME,NC,VA
Dieldrin	CT,NH,NY,ME,NC,VA
Dieldrin [2C]	CT,NH,NY,ME,NC,VA
Endosulfan I	CT,NH,NY,ME,NC,VA
Endosulfan I [2C]	CT,NH,NY,ME,NC,VA
Endosulfan II	CT,NH,NY,ME,NC,VA
Endosulfan II [2C]	CT,NH,NY,ME,NC,VA
Endosulfan Sulfate	CT,NH,NY,ME,NC,VA
Endosulfan Sulfate [2C]	CT,NH,NY,ME,NC,VA
Endrin	CT,NH,NY,ME,NC,VA
Endrin [2C]	CT,NH,NY,ME,NC,VA
Endrin Aldehyde	CT,NH,NY,ME,NC,VA
Endrin Aldehyde [2C]	CT,NH,NY,ME,NC,VA
Endrin Ketone	NC
Endrin Ketone [2C]	NC

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8081B in Soil</i>	
Heptachlor	CT,NH,NY,ME,NC,VA
Heptachlor [2C]	CT,NH,NY,ME,NC,VA
Heptachlor Epoxide	CT,NH,NY,ME,NC,VA
Heptachlor Epoxide [2C]	CT,NH,NY,ME,NC,VA
Hexachlorobenzene	NC
Hexachlorobenzene [2C]	NC
Methoxychlor	CT,NH,NY,ME,NC,VA
Methoxychlor [2C]	CT,NH,NY,ME,NC,VA
Toxaphene	CT,NH,NY,ME,NC,VA
Toxaphene [2C]	CT,NH,NY,ME,NC,VA
<i>SW-846 8082A in Product/Solid</i>	
Aroclor-1016	CT,NH,NY,ME,NC,VA,PA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1221	CT,NH,NY,ME,NC,VA,PA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1232	CT,NH,NY,ME,NC,VA,PA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1242	CT,NH,NY,ME,NC,VA,PA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1248	CT,NH,NY,ME,NC,VA,PA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1254	CT,NH,NY,ME,NC,VA,PA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1260	CT,NH,NY,ME,NC,VA,PA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1262	NY,NC,VA,PA
Aroclor-1262 [2C]	NY,NC,VA,PA
Aroclor-1268	NY,NC,VA,PA
Aroclor-1268 [2C]	NY,NC,VA,PA
<i>SW-846 8082A in Soil</i>	
Aroclor-1016	CT,NH,NY,ME,NC,VA,PA
Aroclor-1016 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1221	CT,NH,NY,ME,NC,VA,PA
Aroclor-1221 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1232	CT,NH,NY,ME,NC,VA,PA
Aroclor-1232 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1242	CT,NH,NY,ME,NC,VA,PA
Aroclor-1242 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1248	CT,NH,NY,ME,NC,VA,PA
Aroclor-1248 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1254	CT,NH,NY,ME,NC,VA,PA
Aroclor-1254 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1260	CT,NH,NY,ME,NC,VA,PA
Aroclor-1260 [2C]	CT,NH,NY,ME,NC,VA,PA
Aroclor-1262	NY,NC,VA,PA
Aroclor-1262 [2C]	NY,NC,VA,PA

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8082A in Soil</i>	
Aroclor-1268	NY,NC,VA,PA
Aroclor-1268 [2C]	NY,NC,VA,PA
<i>SW-846 8151A in Soil</i>	
2,4-D	NY,ME,NC,NH,VA,CT
2,4-D [2C]	NY,ME,NC,NH,VA,CT
2,4-DB	NY,ME,NC,NH,VA,CT
2,4-DB [2C]	NY,ME,NC,NH,VA,CT
2,4,5-TP (Silvex)	NY,ME,NC,NH,VA,CT
2,4,5-TP (Silvex) [2C]	NY,ME,NC,NH,VA,CT
2,4,5-T	NY,ME,NC,NH,VA,CT
2,4,5-T [2C]	NY,ME,NC,NH,VA,CT
Dalapon	NY,ME,NC,NH,VA,CT
Dalapon [2C]	NY,ME,NC,NH,VA,CT
Dicamba	NY,ME,NC,NH,VA,CT
Dicamba [2C]	NY,ME,NC,NH,VA,CT
Dichloroprop	NY,ME,NC,NH,VA,CT
Dichloroprop [2C]	NY,ME,NC,NH,VA,CT
Dinoseb	NY,ME,NC,NH,VA,CT
Dinoseb [2C]	NY,ME,NC,NH,VA,CT
MCPA	NY,ME,NC,NH,VA,CT
MCPA [2C]	NY,ME,NC,NH,VA,CT
MCPP	NY,ME,NC,NH,VA,CT
MCPP [2C]	NY,ME,NC,NH,VA,CT
<i>SW-846 8151A in Water</i>	
2,4-D	ME,NC,NH,CT,NY,VA
2,4-D [2C]	ME,NC,NH,CT,NY,VA
2,4-DB	ME,NC,NH,CT,NY,VA
2,4-DB [2C]	ME,NC,NH,CT,NY,VA
2,4,5-TP (Silvex)	ME,NC,NH,CT,NY,VA
2,4,5-TP (Silvex) [2C]	ME,NC,NH,CT,NY,VA
2,4,5-T	ME,NC,NH,CT,NY,VA
2,4,5-T [2C]	ME,NC,NH,CT,NY,VA
Dalapon	ME,NC,NH,CT,NY,VA
Dalapon [2C]	ME,NC,NH,CT,NY,VA
Dicamba	ME,NC,NH,CT,NY,VA
Dicamba [2C]	ME,NC,NH,CT,NY,VA
Dichloroprop	ME,NC,NH,CT,NY,VA
Dichloroprop [2C]	ME,NC,NH,CT,NY,VA
Dinoseb	ME,NC,NH,CT,NY,VA
Dinoseb [2C]	ME,NC,NH,CT,NY,VA
MCPA	NC,CT
MCPA [2C]	NC,CT
MCPP	NC,CT
MCPP [2C]	NC,CT
<i>SW-846 8260D in Soil</i>	
Acetone	CT,NH,NY,ME,VA

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8260D in Soil</i>	
Acrylonitrile	CT,NH,NY,ME,VA
Benzene	CT,NH,NY,ME,VA
Bromobenzene	NH,NY,ME,VA
Bromochloromethane	NH,NY,ME,VA
Bromodichloromethane	CT,NH,NY,ME,VA
Bromoform	CT,NH,NY,ME,VA
Bromomethane	CT,NH,NY,ME,VA
2-Butanone (MEK)	CT,NH,NY,ME,VA
tert-Butyl Alcohol (TBA)	NY,ME
n-Butylbenzene	CT,NH,NY,ME,VA
sec-Butylbenzene	CT,NH,NY,ME,VA
tert-Butylbenzene	CT,NH,NY,ME,VA
Carbon Disulfide	CT,NH,NY,ME,VA
Carbon Tetrachloride	CT,NH,NY,ME,VA
Chlorobenzene	CT,NH,NY,ME,VA
Chlorodibromomethane	CT,NH,NY,ME,VA
Chloroethane	CT,NH,NY,ME,VA
Chloroform	CT,NH,NY,ME,VA
Chloromethane	CT,NH,NY,ME,VA
2-Chlorotoluene	CT,NH,NY,ME,VA
4-Chlorotoluene	CT,NH,NY,ME,VA
1,2-Dibromo-3-chloropropane (DBCP)	NY,ME
1,2-Dibromoethane (EDB)	NH,NY
Dibromomethane	NH,NY,ME,VA
1,2-Dichlorobenzene	CT,NH,NY,ME,VA
1,3-Dichlorobenzene	CT,NH,NY,ME,VA
1,4-Dichlorobenzene	CT,NH,NY,ME,VA
trans-1,4-Dichloro-2-butene	NY,ME
Dichlorodifluoromethane (Freon 12)	NH,NY,ME,VA
1,1-Dichloroethane	CT,NH,NY,ME,VA
1,2-Dichloroethane	CT,NH,NY,ME,VA
1,1-Dichloroethylene	CT,NH,NY,ME,VA
cis-1,2-Dichloroethylene	CT,NH,NY,ME,VA
trans-1,2-Dichloroethylene	CT,NH,NY,ME,VA
1,2-Dichloropropane	CT,NH,NY,ME,VA
1,3-Dichloropropane	NH,NY,ME,VA
2,2-Dichloropropane	NH,NY,ME,VA
1,1-Dichloropropene	NH,NY,ME,VA
cis-1,3-Dichloropropene	CT,NH,NY,ME,VA
trans-1,3-Dichloropropene	CT,NH,NY,ME,VA
Diethyl Ether	ME
1,4-Dioxane	NY,ME
Ethylbenzene	CT,NH,NY,ME,VA
Hexachlorobutadiene	NH,NY,ME,VA
2-Hexanone (MBK)	CT,NH,NY,ME,VA
Isopropylbenzene (Cumene)	CT,NH,NY,ME,VA
p-Isopropyltoluene (p-Cymene)	NH,NY

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8260D in Soil</i>	
Methyl Acetate	NY,ME
Methyl tert-Butyl Ether (MTBE)	NY,ME,VA
Methyl Cyclohexane	NY
Methylene Chloride	CT,NH,NY,ME,VA
4-Methyl-2-pentanone (MIBK)	CT,NH,NY,ME,VA
Naphthalene	NH,NY,ME,VA
n-Propylbenzene	NH,NY,ME
Styrene	CT,NH,NY,ME,VA
1,1,1,2-Tetrachloroethane	CT,NH,NY,ME,VA
1,1,2,2-Tetrachloroethane	CT,NH,NY,ME,VA
Tetrachloroethylene	CT,NH,NY,ME,VA
Toluene	CT,NH,NY,ME,VA
1,2,3-Trichlorobenzene	NY,ME
1,2,4-Trichlorobenzene	NH,NY,ME,VA
1,3,5-Trichlorobenzene	ME
1,1,1-Trichloroethane	CT,NH,NY,ME,VA
1,1,2-Trichloroethane	CT,NH,NY,ME,VA
Trichloroethylene	CT,NH,NY,ME,VA
Trichlorofluoromethane (Freon 11)	CT,NH,NY,ME,VA
1,2,3-Trichloropropane	NH,NY,ME,VA
1,2,4-Trimethylbenzene	CT,NH,NY,ME,VA
1,3,5-Trimethylbenzene	CT,NH,NY,ME,VA
Vinyl Chloride	CT,NH,NY,ME,VA
m+p Xylene	CT,NH,NY,ME,VA
o-Xylene	CT,NH,NY,ME,VA
<i>SW-846 8270E in Soil</i>	
Acenaphthene	CT,NY,NH,ME,NC,VA
Acenaphthylene	CT,NY,NH,ME,NC,VA
Acetophenone	NY,NH,ME,NC,VA
Aniline	NY,NH,ME,NC,VA
Anthracene	CT,NY,NH,ME,NC,VA
Benzidine	CT,NY,NH,ME,NC,VA
Benzo(a)anthracene	CT,NY,NH,ME,NC,VA
Benzo(a)pyrene	CT,NY,NH,ME,NC,VA
Benzo(b)fluoranthene	CT,NY,NH,ME,NC,VA
Benzo(g,h,i)perylene	CT,NY,NH,ME,NC,VA
Benzo(k)fluoranthene	CT,NY,NH,ME,NC,VA
Benzoic Acid	NY,NH,ME,NC,VA
Bis(2-chloroethoxy)methane	CT,NY,NH,ME,NC,VA
Bis(2-chloroethyl)ether	CT,NY,NH,ME,NC,VA
Bis(2-chloroisopropyl)ether	CT,NY,NH,ME,NC,VA
Bis(2-Ethylhexyl)phthalate	CT,NY,NH,ME,NC,VA
4-Bromophenylphenylether	CT,NY,NH,ME,NC,VA
Butylbenzylphthalate	CT,NY,NH,ME,NC,VA
Carbazole	NC
4-Chloroaniline	CT,NY,NH,ME,NC,VA

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8270E in Soil</i>	
4-Chloro-3-methylphenol	CT,NY,NH,ME,NC,VA
2-Chloronaphthalene	CT,NY,NH,NC,VA
2-Chlorophenol	CT,NY,NH,ME,NC,VA
4-Chlorophenylphenylether	CT,NY,NH,ME,NC,VA
Chrysene	CT,NY,NH,ME,NC,VA
Dibenz(a,h)anthracene	CT,NY,NH,ME,NC,VA
Dibenzofuran	CT,NY,NH,ME,NC,VA
Di-n-butylphthalate	CT,NY,NH,ME,NC,VA
1,2-Dichlorobenzene	NY,NH,ME,NC,VA
1,3-Dichlorobenzene	NY,NH,ME,NC,VA
1,4-Dichlorobenzene	NY,NH,ME,NC,VA
3,3-Dichlorobenzidine	CT,NY,NH,ME,NC,VA
2,4-Dichlorophenol	CT,NY,NH,ME,NC,VA
Diethylphthalate	CT,NY,NH,ME,NC,VA
2,4-Dimethylphenol	CT,NY,NH,ME,NC,VA
Dimethylphthalate	CT,NY,NH,ME,NC,VA
4,6-Dinitro-2-methylphenol	CT,NY,NH,ME,NC,VA
2,4-Dinitrophenol	CT,NY,NH,ME,NC,VA
2,4-Dinitrotoluene	CT,NY,NH,ME,NC,VA
2,6-Dinitrotoluene	CT,NY,NH,ME,NC,VA
Di-n-octylphthalate	CT,NY,NH,ME,NC,VA
1,2-Diphenylhydrazine/Azobenzene	NY,NH,ME,NC,VA
Fluoranthene	CT,NY,NH,ME,NC,VA
Fluorene	NY,NH,ME,NC,VA
Hexachlorobenzene	CT,NY,NH,ME,NC,VA
Hexachlorobutadiene	CT,NY,NH,ME,NC,VA
Hexachlorocyclopentadiene	CT,NY,NH,ME,NC,VA
Hexachloroethane	CT,NY,NH,ME,NC,VA
Indeno(1,2,3-cd)pyrene	CT,NY,NH,ME,NC,VA
Isophorone	CT,NY,NH,ME,NC,VA
1-Methylnaphthalene	NC
2-Methylnaphthalene	CT,NY,NH,ME,NC,VA
2-Methylphenol	CT,NY,NH,ME,NC,VA
3/4-Methylphenol	CT,NY,NH,ME,NC,VA
Naphthalene	CT,NY,NH,ME,NC,VA
2-Nitroaniline	CT,NY,NH,ME,NC,VA
3-Nitroaniline	CT,NY,NH,ME,NC,VA
4-Nitroaniline	CT,NY,NH,ME,NC,VA
Nitrobenzene	CT,NY,NH,ME,NC,VA
2-Nitrophenol	CT,NY,NH,ME,NC,VA
4-Nitrophenol	CT,NY,NH,ME,NC,VA
N-Nitrosodimethylamine	CT,NY,NH,ME,NC,VA
N-Nitrosodi-n-propylamine	CT,NY,NH,ME,NC,VA
Pentachloronitrobenzene	NY,NC
Pentachlorophenol	CT,NY,NH,ME,NC,VA
Phenanthrene	CT,NY,NH,ME,NC,VA
Phenol	CT,NY,NH,ME,NC,VA

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8270E in Soil</i>	
Pyrene	CT,NY,NH,ME,NC,VA
Pyridine	CT,NY,NH,ME,NC,VA
1,2,4,5-Tetrachlorobenzene	NY,NC
1,2,4-Trichlorobenzene	CT,NY,NH,ME,NC,VA
2,4,5-Trichlorophenol	CT,NY,NH,ME,NC,VA
2,4,6-Trichlorophenol	CT,NY,NH,ME,NC,VA
2-Fluorophenol	NC
<i>SW-846 8270E in Water</i>	
Acenaphthene	CT,NY,NC,ME,NH,VA
Acenaphthylene	CT,NY,NC,ME,NH,VA
Acetophenone	NY,NC
Aniline	CT,NY,NC,ME,VA
Anthracene	CT,NY,NC,ME,NH,VA
Benzidine	CT,NY,NC,ME,NH,VA
Benzo(a)anthracene	CT,NY,NC,ME,NH,VA
Benzo(a)pyrene	CT,NY,NC,ME,NH,VA
Benzo(b)fluoranthene	CT,NY,NC,ME,NH,VA
Benzo(g,h,i)perylene	CT,NY,NC,ME,NH,VA
Benzo(k)fluoranthene	CT,NY,NC,ME,NH,VA
Benzoic Acid	NY,NC,ME,NH,VA
Bis(2-chloroethoxy)methane	CT,NY,NC,ME,NH,VA
Bis(2-chloroethyl)ether	CT,NY,NC,ME,NH,VA
Bis(2-chloroisopropyl)ether	CT,NY,NC,ME,NH,VA
Bis(2-Ethylhexyl)phthalate	CT,NY,NC,ME,NH,VA
4-Bromophenylphenylether	CT,NY,NC,ME,NH,VA
Butylbenzylphthalate	CT,NY,NC,ME,NH,VA
Carbazole	NC
4-Chloroaniline	CT,NY,NC,ME,NH,VA
4-Chloro-3-methylphenol	CT,NY,NC,ME,NH,VA
2-Chloronaphthalene	CT,NY,NC,ME,NH,VA
2-Chlorophenol	CT,NY,NC,ME,NH,VA
4-Chlorophenylphenylether	CT,NY,NC,ME,NH,VA
Chrysene	CT,NY,NC,ME,NH,VA
Dibenz(a,h)anthracene	CT,NY,NC,ME,NH,VA
Dibenzofuran	CT,NY,NC,ME,NH,VA
Di-n-butylphthalate	CT,NY,NC,ME,NH,VA
1,2-Dichlorobenzene	CT,NY,NC,ME,NH,VA
1,3-Dichlorobenzene	CT,NY,NC,ME,NH,VA
1,4-Dichlorobenzene	CT,NY,NC,ME,NH,VA
3,3-Dichlorobenzidine	CT,NY,NC,ME,NH,VA
2,4-Dichlorophenol	CT,NY,NC,ME,NH,VA
Diethylphthalate	CT,NY,NC,ME,NH,VA
2,4-Dimethylphenol	CT,NY,NC,ME,NH,VA
Dimethylphthalate	CT,NY,NC,ME,NH,VA
4,6-Dinitro-2-methylphenol	CT,NY,NC,ME,NH,VA
2,4-Dinitrophenol	CT,NY,NC,ME,NH,VA

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SW-846 8270E in Water</i>	
2,4-Dinitrotoluene	CT,NY,NC,ME,NH,VA
2,6-Dinitrotoluene	CT,NY,NC,ME,NH,VA
Di-n-octylphthalate	CT,NY,NC,ME,NH,VA
1,2-Diphenylhydrazine/Azobenzene	NY,NC
Fluoranthene	CT,NY,NC,ME,NH,VA
Fluorene	NY,NC,ME,NH,VA
Hexachlorobenzene	CT,NY,NC,ME,NH,VA
Hexachlorobutadiene	CT,NY,NC,ME,NH,VA
Hexachlorocyclopentadiene	CT,NY,NC,ME,NH,VA
Hexachloroethane	CT,NY,NC,ME,NH,VA
Indeno(1,2,3-cd)pyrene	CT,NY,NC,ME,NH,VA
Isophorone	CT,NY,NC,ME,NH,VA
1-Methylnaphthalene	NC
2-Methylnaphthalene	CT,NY,NC,ME,NH,VA
2-Methylphenol	CT,NY,NC,NH,VA
3/4-Methylphenol	CT,NY,NC,NH,VA
Naphthalene	CT,NY,NC,ME,NH,VA
2-Nitroaniline	CT,NY,NC,ME,NH,VA
3-Nitroaniline	CT,NY,NC,ME,NH,VA
4-Nitroaniline	CT,NY,NC,ME,NH,VA
Nitrobenzene	CT,NY,NC,ME,NH,VA
2-Nitrophenol	CT,NY,NC,ME,NH,VA
4-Nitrophenol	CT,NY,NC,ME,NH,VA
N-Nitrosodimethylamine	CT,NY,NC,ME,NH,VA
N-Nitrosodi-n-propylamine	CT,NY,NC,ME,NH,VA
Pentachloronitrobenzene	NC
Pentachlorophenol	CT,NY,NC,ME,NH,VA
Phenanthrene	CT,NY,NC,ME,NH,VA
Phenol	CT,NY,NC,ME,NH,VA
Pyrene	CT,NY,NC,ME,NH,VA
Pyridine	CT,NY,NC,ME,NH,VA
1,2,4,5-Tetrachlorobenzene	NY,NC
1,2,4-Trichlorobenzene	CT,NY,NC,ME,NH,VA
2,4,5-Trichlorophenol	CT,NY,NC,ME,NH,VA
2,4,6-Trichlorophenol	CT,NY,NC,ME,NH,VA
2-Fluorophenol	NC

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2024
MA	Massachusetts DEP	M-MA100	06/30/2022
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2022
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2022
RI	Rhode Island Department of Health	LAO00373	12/30/2022
NC	North Carolina Div. of Water Quality	652	12/31/2022
NJ	New Jersey DEP	MA007 NELAP	06/30/2022
FL	Florida Department of Health	E871027 NELAP	06/30/2022
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2022
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2022
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2022
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2022
NC-DW	North Carolina Department of Health	25703	07/31/2022
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2022
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2022

I Have Not Confirmed Sample Container
Numbers With Lab Staff Before Relinquishing
Over Samples _____



con-test®
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False

Statement will be brought to the attention of the Client - State True or False

Client Weston + Sampson Eng., Inc.

Received By DK Date 1-24-22 Time 1800

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 3 Actual Temp - 4.6

By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA

Was COC Relinquished? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all Client T Analysis T Sampler Name T

pertinent Information? Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? T Who was notified? Irma

Is there enough Volume? T

Is there Headspace where applicable? F MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? NA Acid _____ Base _____

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-	<u>4</u>	250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-	<u>8</u>	Flashpoint		Col./Bacteria		2oz Amb/Clear
DI-		Other Glass		Other Plastic		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Unused Media

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear
DI-		Other Plastic		Other Glass		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Comments:

February 17, 2022

Todd Bridgeo
Weston & Sampson Engineers MA
55 Walkers Brook Drive
Reading, MA 01867

Project Location: 2 Main St., Biddeford, ME
Client Job Number:
Project Number: ENG21-1343
Laboratory Work Order Number: 22B0686

Enclosed are results of analyses for samples as received by the laboratory on February 11, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kerry K. McGee
Project Manager

Table of Contents

Sample Summary	3
Case Narrative	4
Sample Results	5
22B0686-01	5
22B0686-02	7
22B0686-03	9
Sample Preparation Information	11
QC Data	12
TCLP - Metals Analyses	12
B301199	12
Flag/Qualifier Summary	13
Certifications	14
Chain of Custody/Sample Receipt	15

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Weston & Sampson Engineers MA
55 Walkers Brook Drive
Reading, MA 01867
ATTN: Todd Bridgeo

REPORT DATE: 2/17/2022

PURCHASE ORDER NUMBER:

PROJECT NUMBER: ENG21-1343

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22B0686

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: 2 Main St., Biddeford, ME

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
B-104 (0-8)	22B0686-01	Soil		SM 2540G SW-846 6010D	
B-104 (8-12)	22B0686-02	Soil		SM 2540G SW-846 6010D	
B-105 (8-16)	22B0686-03	Soil		SM 2540G SW-846 6010D	

CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Technical Representative

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22B0686

Date Received: 2/11/2022

Field Sample #: B-104 (0-8)

Sampled: 1/20/2022 10:00

Sample ID: 22B0686-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	84.6		% Wt	1		SM 2540G	1/25/22	1/25/22 15:47	WAT

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22B0686

Date Received: 2/11/2022

Field Sample #: B-104 (0-8)

Sampled: 1/20/2022 10:00

Sample ID: 22B0686-01

Sample Matrix: Soil

TCLP - Metals Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Lead	ND	0.10	mg/L	1		SW-846 6010D	2/15/22	2/16/22 15:30	QNW

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22B0686

Date Received: 2/11/2022

Field Sample #: B-104 (8-12)

Sampled: 1/20/2022 10:15

Sample ID: 22B0686-02

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	82.0		% Wt	1		SM 2540G	1/25/22	1/25/22 15:47	WAT

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22B0686

Date Received: 2/11/2022

Field Sample #: B-104 (8-12)

Sampled: 1/20/2022 10:15

Sample ID: 22B0686-02

Sample Matrix: Soil

TCLP - Metals Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Lead	ND	0.10	mg/L	1		SW-846 6010D	2/15/22	2/16/22 15:38	QNW

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22B0686

Date Received: 2/11/2022

Field Sample #: B-105 (8-16)

Sampled: 1/20/2022 08:45

Sample ID: 22B0686-03

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	80.4		% Wt	1		SM 2540G	1/25/22	1/25/22 15:47	WAT

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: 2 Main St., Biddeford, ME

Sample Description:

Work Order: 22B0686

Date Received: 2/11/2022

Field Sample #: B-105 (8-16)

Sampled: 1/20/2022 08:45

Sample ID: 22B0686-03

Sample Matrix: Soil

TCLP - Metals Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Lead	ND	0.10	mg/L	1		SW-846 6010D	2/15/22	2/16/22 15:44	QNW

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Sample Extraction Data

Prep Method: % Solids **Analytical Method:** SM 2540G

Lab Number [Field ID]	Batch	Date
22B0686-01 [B-104 (0-8)]	B299617	01/25/22
22B0686-02 [B-104 (8-12)]	B299617	01/25/22
22B0686-03 [B-105 (8-16)]	B299617	01/25/22

Prep Method: SW-846 3010A **Analytical Method:** SW-846 6010B **Leachates were extracted on 2/11/2022 per SW-846 1311 in Batch B300985**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22B0686-01 [B-104 (0-8)]	B301199	50.0	50.0	02/15/22
22B0686-02 [B-104 (8-12)]	B301199	50.0	50.0	02/15/22
22B0686-03 [B-105 (8-16)]	B301199	50.0	50.0	02/15/22

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

QUALITY CONTROL
TCLP - Metals Analyses - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD Limit	Notes
Batch B301199 - SW-846 3010A								
Blank (B301199-BLK1)				Prepared: 02/15/22 Analyzed: 02/16/22				
Lead	ND	0.10	mg/L					
LCS (B301199-BS1)				Prepared: 02/15/22 Analyzed: 02/16/22				
Lead	0.507	0.10	mg/L	0.500	101	80-120		
LCS Dup (B301199-BSD1)				Prepared: 02/15/22 Analyzed: 02/16/22				
Lead	0.519	0.10	mg/L	0.500	104	80-120	2.44	20

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications		
SW-846 6010D in Water			
Lead	NY,CT,ME,NC,NH,VA		
Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:			
Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2024
MA	Massachusetts DEP	M-MA100	06/30/2022
CT	Connecticut Department of Public Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2022
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2023
RI	Rhode Island Department of Health	LAO00373	12/30/2022
NC	North Carolina Div. of Water Quality	652	12/31/2022
NJ	New Jersey DEP	MA007 NELAP	06/30/2022
FL	Florida Department of Health	E871027 NELAP	06/30/2022
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2022
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2022
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2022
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2022
NC-DW	North Carolina Department of Health	25703	07/31/2022
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2022
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2022

22A1249

22B0686

http://www.pacelabs.com

Doc # 381 Rev 5_07/13/2021

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Page 1 of 1



Phone: 413-525-2332

Fax: 413-525-6405

Access COC's and Support Requests

Company Name: **Weston & Sampson Eng., Inc.**Address: **106 International Dr., Portsmouth, NH**Phone: **978-532-1900**Project Name: **Saco River Wall Replacement**Project Location: **2 Main St, Biddeford, ME**Project Number: **ENG21-1343**Project Manager: **Todd Bridges**

Pace Quote Name/Number:

Invoice Recipient: **Todd Bridges**Sampled By: **Aaron Chabot**

Requested Turnaround Time		Dissolved Metals Samples	
7-Day ☒	10-Day ☐	☐ Field Filtered	☐ Lab to Filter
PFAS 10-Day (std) ☐	Due Date:		
Rush Approval Required		Orthophosphate Samples	
1-Day ☐	3-Day ☐	☐ Field Filtered	☐ Lab to Filter
2-Day ☐	4-Day ☐		
Data Delivery		PCB ONLY	
Format: PDF ☒ EXCEL ☒	SOXHLET ☒		
Other:	NON SOXHLET ☐		
CLP Like Data Pkg Required: ☐			
Email To: bridges@westoneng.com			
Fax To #:			

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	VOCs - 8260	SVOC - 8270	TPH - 8100	PCB - 8082	RCRA METALS - 6010	PH	React	Ignita	Herbi - 8154	Pesti - 8081	Speci
01	B-104 (0-8')	1/20/21	10:00	C	S	U	0	3	0				X	X	X	X	X	X	X	X	X	X
02	B-104 (2-4')	1/20/21	10:00	G	S	U	3	0	0			X										
	B-104 (8-12')	1/20/21	10:15	C	S	U	0	3	0				X	X	X	X	X	X	X	X	X	X
	B-104 (8-10')	1/20/21	10:15	G	S	U	3	0	0			X										
	B-105 (0-8')	1/20/21	8:15	C	S	U	0	3	0				X	X	X	X	X	X	X	X	X	X
03	B-105 (0.5-2')	1/20/21	8:00	G	S	U	3	0	0			X										
	B-105 (8-16')	1/20/21	8:45	C	S	U	0	3	0				X	X	X	X	X	X	X	X	X	X
	B-105 (14-15')	1/20/21	8:45	G	S	U	3	0	0			X										

2 Preservation Code	
Courier Use Only	
Total Number Of:	
VIALS	
GLASS	
PLASTIC	
BACTERIA	
ENCORE	
Glassware in the fridge? Y/N	
Glassware in freezer? Y/N	
Prepackaged Cooler? Y/N	

*Pace Analytical is not responsible for missing samples from prepacked coolers

1 Matrix Codes:
 GW = Ground Water
 WW = Waste Water
 DW = Drinking Water
 A = Air
 S = Soil
 SL = Sludge
 SOL = Solid
 O = Other (please define)

2 Preservation Codes:
 I = Iced

H = HCL

M = Methanol

N = Nitric Acid

S = Sulfuric Acid

B = Sodium Bisulfate

X = Sodium Hydroxide

T = Sodium Thiosulfate

O = Other (please define)

Relinquished by: (signature)	Date/Time:	Client Comments:
<i>[Signature]</i>	1/20/21 15:00	Reactivate samples -01, -03 & -07 for TCLP Pb per Lexy H. -KKM 2/11/22
Received by: (signature)	Date/Time:	
<i>[Signature]</i>	1/24/22 1045	
Relinquished by: (signature)	Date/Time:	
<i>[Signature]</i>	1/24/22 1900	
Received by: (signature)	Date/Time:	
<i>[Signature]</i>	1/24/22 1900	
Relinquished by: (signature)	Date/Time:	
<i>[Signature]</i>		
Received by: (signature)	Date/Time:	
<i>[Signature]</i>		
Relinquished by: (signature)	Date/Time:	
<i>[Signature]</i>		
Received by: (signature)	Date/Time:	
<i>[Signature]</i>		

Detection Limit Requirements		Special Requirements	
☐		MA MCP Required	
☐		MCP Certification Form Required	
☐		CT RCP Required	
☐		RCP Certification Form Required	
Other: ME RESIDENTIAL REMEDIAL ACTION GUIDELINES		MA State DW Required	
Project Entity		NELAC and AIHA-LAP, LLC Accredited	
Government ☐	Municipality ☐	MWRA ☐	WRTA ☐
Federal ☐	21 J ☐	School ☐	
City ☐	Brownfield ☐	MBTA ☐	
		Other ☐ Chromatogram ☐ AIHA-LAP, LLC	

Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. The Chain of Custody is a legal document that must be complete and accurate and is used to determine what analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pace Analytical values your partnership on each project and will try to assist with missing information, but will not be held accountable.

I Have Not Confirmed Sample Container
Numbers With Lab Staff Before Relinquishing
Over Samples _____



con-test®
ANALYTICAL LABORATORY

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False

Statement will be brought to the attention of the Client - State True or False

Client Weston + Sampson Eng., Inc.

Received By DK Date 1-24-22 Time 1800

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____

Direct from Sampling _____ Ambient _____ Melted Ice _____

Were samples within Temperature? 2-6°C T By Gun # 3 Actual Temp - 4.6

By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? NA Were Samples Tampered with? NA

Was COC Relinquished? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all Client T Analysis T Sampler Name T

pertinent Information? Project T ID's T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? T Who was notified? Irma

Is there enough Volume? T

Is there Headspace where applicable? F

Proper Media/Containers Used? T MS/MSD? F

Were trip blanks received? F Is splitting samples required? F

Do all samples have the proper pH? NA On COC? F

Acid _____ Base _____

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-	<u>4</u>	250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-	<u>8</u>	Flashpoint		Col./Bacteria		2oz Amb/Clear
DI-		Other Glass		Other Plastic		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Unused Media

Vials	#	Containers:	#	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear
DI-		Other Plastic		Other Glass		Encore
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:
Sulfuric-		Perchlorate		Ziplock		

Comments:

April 4, 2022

Mr. Brian Phinney
Chief Operating Officer
City of Biddeford
205 Main St
Biddeford, ME 04005

RE: BIDDEFORD RIVERWALK RETAINING WALL REPLACEMENT – HIGH LEVEL REVIEW

Dear Mr. Phinney:

The report provided by Weston & Sampson, “Alternatives Analysis Report – Riverwalk Retaining Walls Replacement” dated March 25th, 2022, has been reviewed. It is understood that this is a conceptual design and more information is needed before proceeding with Final Design Plans.

James W. Sewall Company (SEWALL) is in general agreement with the report findings, alternatives presented in Section 4.2, and preliminary design recommendations in Section 4.5. Based on our knowledge of existing site conditions and previous work in the area, the full wall replacement appears to be the safest, most effective option. Limiting excavation, disturbance behind the wall, and impact to existing adjacent walls and structures that are still structurally sound should remain priority, as well as, remaining conscious of the environmental impact. SEWALL recommends moving forward with the Final Design and Permitting of the Soldier Pile and Lagging Wall replacement. Final Design and Permitting should take into consideration the additional in water work needed to complete the Riverwalk upstream, or just north of the replacement, and ways to reuse as much of the “contaminated” soil as possible.

Please reach out if there are any questions or if you need additional information.

Sincerely,
JAMES W. SEWALL COMPANY



Heather Hayes, PE, - *Structural Engineer*