

## Memorandum

To George Meservey, Director of Planning & Community Development  
Michael Domenica, PE, Program Manager

CC Betsy Shreve, AICP, AECOM Project Director  
Paula Winchell, AECOM  
Reggie Donoghue, P.E., AECOM

Subject **Town of Orleans, MA**  
**Water Quality and Wastewater Planning**  
**Task Number 10.1.C – 25% Preliminary Design Report**  
**Deliverable 10.1.C.1 – Data Accumulation Survey**

Project Number 60476644

From Thomas Parece, P.E., AECOM Project Manager

Date April 3, 2017

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Approvals	Date	Signature / Initials
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George Meservey, Orleans, MA Director of Planning & Community Development		
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Michael Domenica, PE, Water Resources Associates, Program Manager		
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### 1. Introduction

As part of the 25% Preliminary Design Report for the Downtown Orleans Wastewater Collection System, Coastal Engineering Co., Inc. was engaged by AECOM to perform a Data Accumulation Survey relative to the design of the proposed new wastewater collection system in Orleans, Massachusetts.

This Technical Memorandum outlines the scope of the Aerial Survey and Data Accumulation Survey performed by Coastal Engineering and their Subconsultant. Refer to the attachments for plans delivered to date by Coastal Engineering Co., Inc.

### 2. Goals and Objectives of the Data Accumulation Survey

The goal of the Data Accumulation Survey was to acquire additional field and aerial survey data necessary for the preparation of the 25% Preliminary Design Report and to supplement the information included in the existing conditions plans prepared by Surveying and Mapping Consultants (SMC) for the Town of Orleans.

### 3. Data Accumulation Survey

#### A. General

The Data Accumulation Survey included acquiring additional field and aerial survey data in order to supplement the information included in the existing conditions plans prepared by SMC for the Town of Orleans as necessary for the preparation of the 25% Preliminary Design Report. The aerial survey was flown for the Downtown Orleans area as well as the Meetinghouse area. The imagery acquired for the Meetinghouse area was not processed and will be saved for future use. The following is the scope of the Data Accumulation Survey:

- Perform an aerial photography fly over and photogrammetric mapping for the subject area (performed by Subconsultant to Subcontractor, with ground control provided by Subcontractor);
- Perform supplemental on-ground detailed existing conditions (strip) survey within the limits of the designated right-of-ways (Approximately 6,500 l.f. including Jones Road, Liberty Lane, Locust Road and a portion of Main Street, portion of West Road and a portion of Eldredge Park Way and portion of Lots Hollow Road);
- Perform a supplemental on-ground detailed existing conditions (strip) survey within the limits of the roundabout at Route 28/Route 6A/Canal Road (to update features since completion of the SMC survey);
- Obtain visible utility/dig-safe evidence at ground level within designated right-of-ways of supplemental strip surveys;
- Obtain pipe invert elevations from available records and via observation for accessible drainage structures within supplemental strip survey roadways;
- Establish vertical benchmarks via differential levelling within designated right-of-ways of supplemental strip surveys;
- Obtain sill elevations for buildings within service area (excepting force main portion);
- Perform field checks/survey of control points as shown on November 28, 2016 SMC survey, and review with AECOM;
- Merge photogrammetric mapping data with route portion ground survey data from SMC and the approximately 6,500 l.f. supplemental detailed strip surveys performed by Subcontractor;
- Prepare an Existing Conditions Topographical Survey for use by AECOM;
- Provide digital files of the base survey in current AutoCAD format (Civil3D 2015 or older version) including one DTM surface, XML file, and a PDF. Base survey plans will be on the Mass State Plane coordinate system and NAVD 1988; and
- Perform a (1"=40' scale) Aerial Photography Fly Over for the Meetinghouse Pond Area (performed by subcontractor) and retain imagery for future use only.

#### B. Results of the First Phase of the Data Accumulation Survey

On January 16, 2017, Coastal Engineering provided the following deliverables and relevant technical information associated with the CAD drawings and files for the first phase of the Data Accumulation Survey:

##### 1. PDF Files

- Cover Sheet based on sheet layout of SMC survey plus new supplemental layout locations for data collected from supplemental roadways; and
- Sheets 22-30 showing new supplemental survey layout pages for the 6,500+/- l.f. of new roadway survey.

## 2. ACAD Files

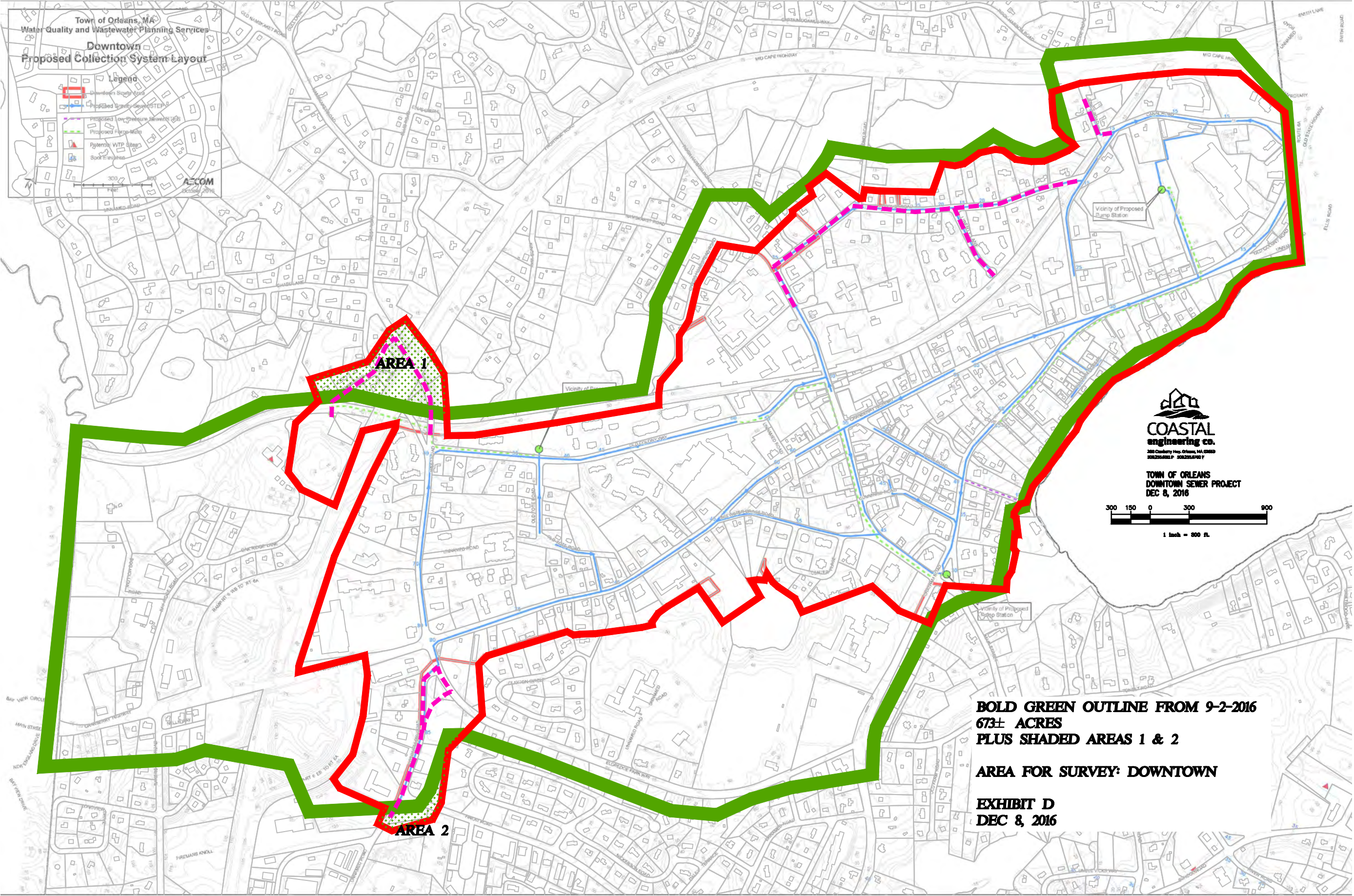
- Drawing File (generated in Civil3D 2016, saved in v2013 format)
- The drawing file contains the following:
  - Edge of Pavement and centerline with elevation points for supplemental roadways;
  - Spot Grades for cross country portion between West Road and Salty Ridge Road;
  - Contours of supplemental areas;
  - Sill elevation labels for entire service area (or thresholds and floor elevations, where appropriate);
  - Point labels and data noting the observation point location of sills/floor/threshold measured;
  - Layout key sheet for service area; and
  - Miscellaneous building footprints and property line data from Mass GIS outside of the limits of the SMC survey area.

## 3. Data Files

- XML files and ASCII point files for each individual surface of supplemental roadway area;
- Coordinate files of data points used to generate surface/topographical information and building information; and
- Miscellaneous support files generated by ACAD e-transmit export of drawing file information.

### **C. Results of the Second Phase of the Data Accumulation Survey**

The deliverable date for Coastal Engineering Co., Inc. to provide the remaining Data Accumulation and Aerial survey is April 21, 2017. Coastal Engineering Co., Inc. has recently confirmed that they are on track for completion by the deliverable date.



Town of Orleans, MA  
 Water Quality and Wastewater Planning Services  
**Downtown  
 Proposed Collection System Layout**

**Legend**

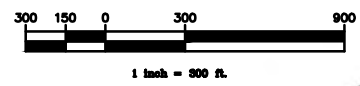
- Downtown Study Area
- Proposed Gravity Sewer (STEP 0)
- - - Proposed Low-Pressure Sewer (STEP 0)
- - - Proposed High-Pressure
- Potential WTP Sites
- Sewer Elevations

300 Feet  
 AECOM  
 October 2016



300 Chantry Way, Orleans, MA 01920  
 508.250.0011 • 508.250.0107

**TOWN OF ORLEANS  
 DOWNTOWN SEWER PROJECT  
 DEC 8, 2016**



**BOLD GREEN OUTLINE FROM 9-2-2016  
 673± ACRES  
 PLUS SHADED AREAS 1 & 2**

**AREA FOR SURVEY: DOWNTOWN**

**EXHIBIT D  
 DEC 8, 2016**



January 16, 2017

Project No.: C18686.00

AECOM Technical Services, Inc.  
Attn: Martin R. Donoghue, P.E.  
9 Jonathan Bourne Drive  
Pocasset, MA 02559  
VIA EMAIL: Martin.Donoghue@aecom.com  
T: 508-833-6967, C: 508-237-7161

Re: Summary of Deliverables Provided  
Supplemental Topographical Survey (Limited In-Fill and Sills)  
Downtown Wastewater Collection System  
Downtown Area of Orleans, MA

**The following is a listing of the accompanying deliverable items and relevant technical information associated with the drawings and/or files provided for this phase:**

All points, data, surfaces, and information provided are based on NAVD 88 vertical datum and NAD 83 horizontal datum, and are supplemental for use in conjunction with the Existing Base Plan prepared by SMC dated November 28, 2016. The supplemental roadways are: a portion of Lots Hollow Road, Locust Road, a portion of Main Street, Liberty Lane, Jones Road, a portion of West Road, a section across a town owned parcel, and a portion of Salty Ridge Road.

PDF Files:

- Cover Sheet: Sheet layout of SMC survey, plus new/supplemental layout locations for supplemental roadways.
- Sheets 22-30: New/supplemental layout pages for the 6,500+ l.f. of supplemental roadways.

ACAD Files:

- Drawing file (generated in Civil3D 2016, saved in v2013 format) containing:
  - EOP and centerline with elevation points for supplemental roadways.
  - Spot grades for "cross-country" portion between West Rd and Salty Ridge Rd.
  - Contours of supplemental areas.
  - Sill elevation labels for entire services area. (or thresholds and floor elevations, where appropriate).
  - Point labels and data noting the observation point location of sills/floor/threshold measured.
  - Layout key sheet for service area.
  - Misc. buildings and property lines from Mass GIS data outside of SMC survey area.

Data Files:

- XML files and ASCII point files for each individual surface of supplemental roadway surveys.
- Coordinate files of data points used to generate surface/topographical information and building information.
- Misc. support files generated by e-transmit export of drawing information.