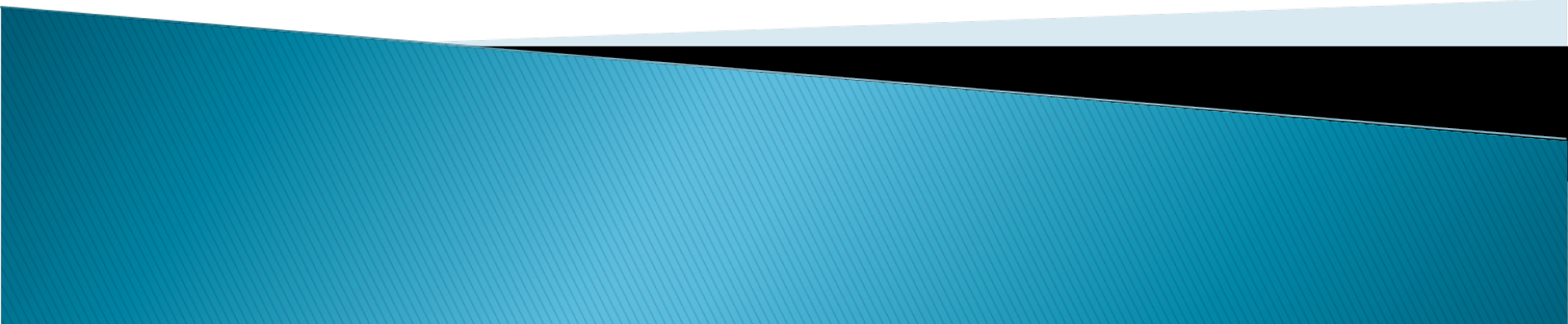


# GIS & Land Survey



# Introduction

- ▶ Personal information
- ▶ Background information
- ▶ Overview
  - Lots of survey data is used in GIS, unfortunately surveyors don't utilize GIS



# Land Surveying

- ▶ Basic Survey
  - Property Line
  - Topographic
- ▶ Survey Concepts
  - Measurements
- ▶ Techniques
  - Research
  - Field Data Collection
  - Data Processing
  - Property Line S/O



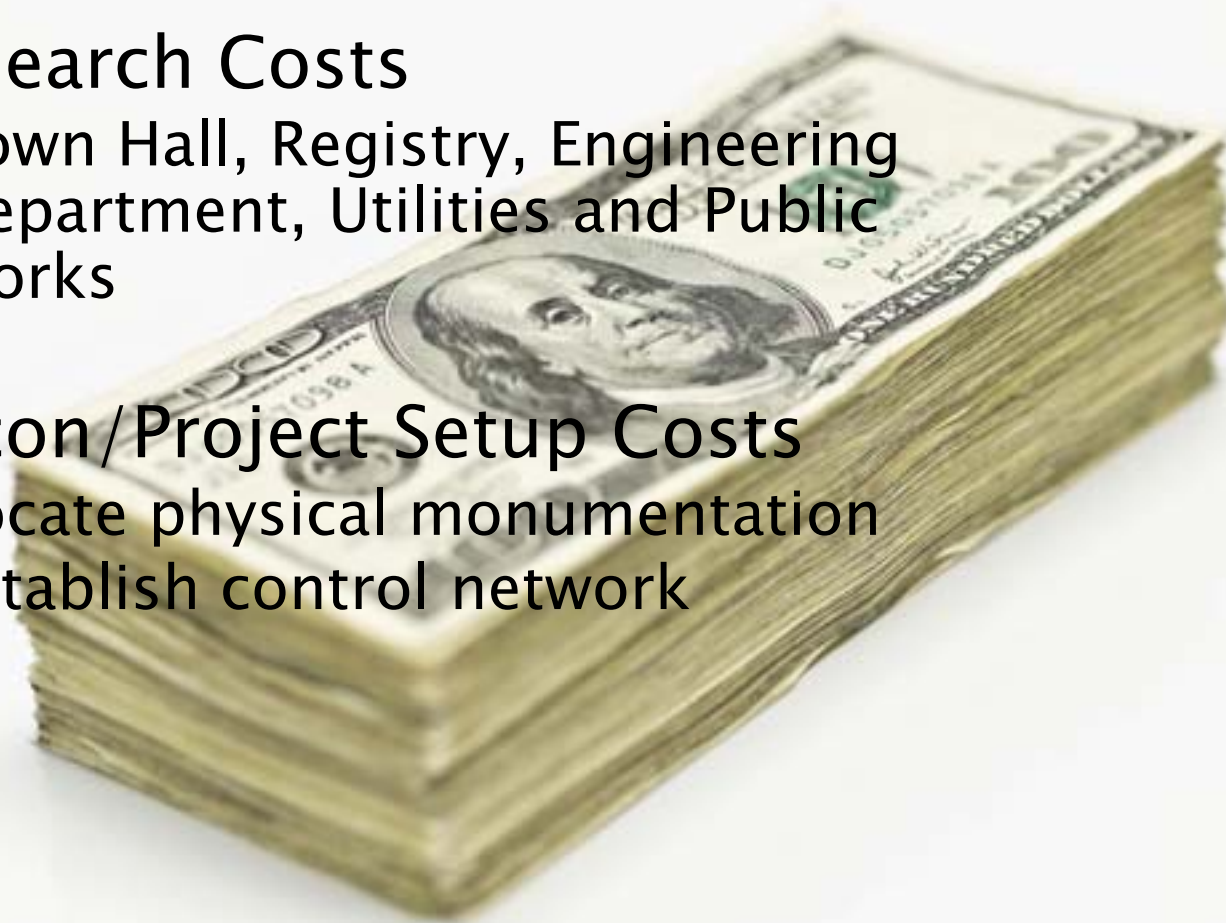
# Current Project Data Storage System

- ▶ Project info stored in boxes or file folders on network
- ▶ Project info and data not being reused
- ▶ Example: Beach St. Survey
  - Same survey
  - Same client



# Flaws of the Current Project Data Storage System

- Research Costs
  - Town Hall, Registry, Engineering Department, Utilities and Public Works
- Recon/Project Setup Costs
  - Locate physical monumentation
  - Establish control network





# Proposed Solution

- Spatially reference survey projects to one another within a GIS database.
- Info and data from completed survey projects could be used to assist in completing current projects.
- Reference job # to locate parcel, deed, property line and street layout information.
- Reference AutoCAD drawings to locate monuments and retrieve coordinates of control points.
- Examples
  - Cost and budgets
  - Time consumption
  - Proximity of jobs

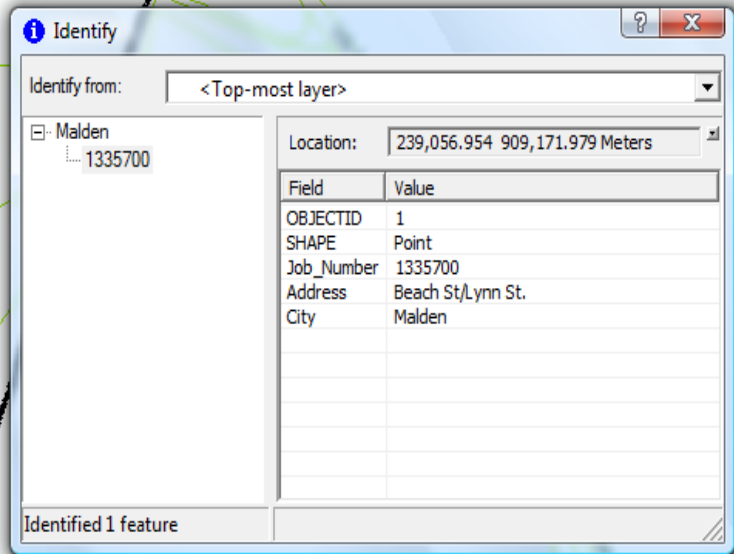
# Development Methodologies

- ▶ Method 1 – Manually create features by town
- ▶ Method 2 – State plane coordinate system
  - Small percentage of surveys are done this way
- ▶ Method 3 – Assumed coordinate manipulation
  - Most surveys are on assumed coordinate system

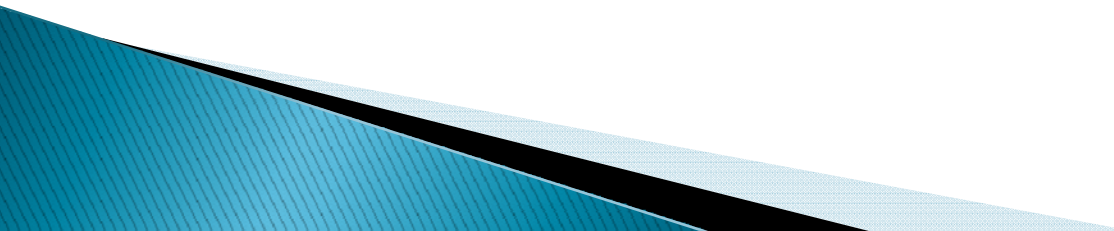
# Method 1

- ▶ Create features by town
- ▶ Include job # in attribute table
- ▶ Easiest and quickest method
- ▶ Example

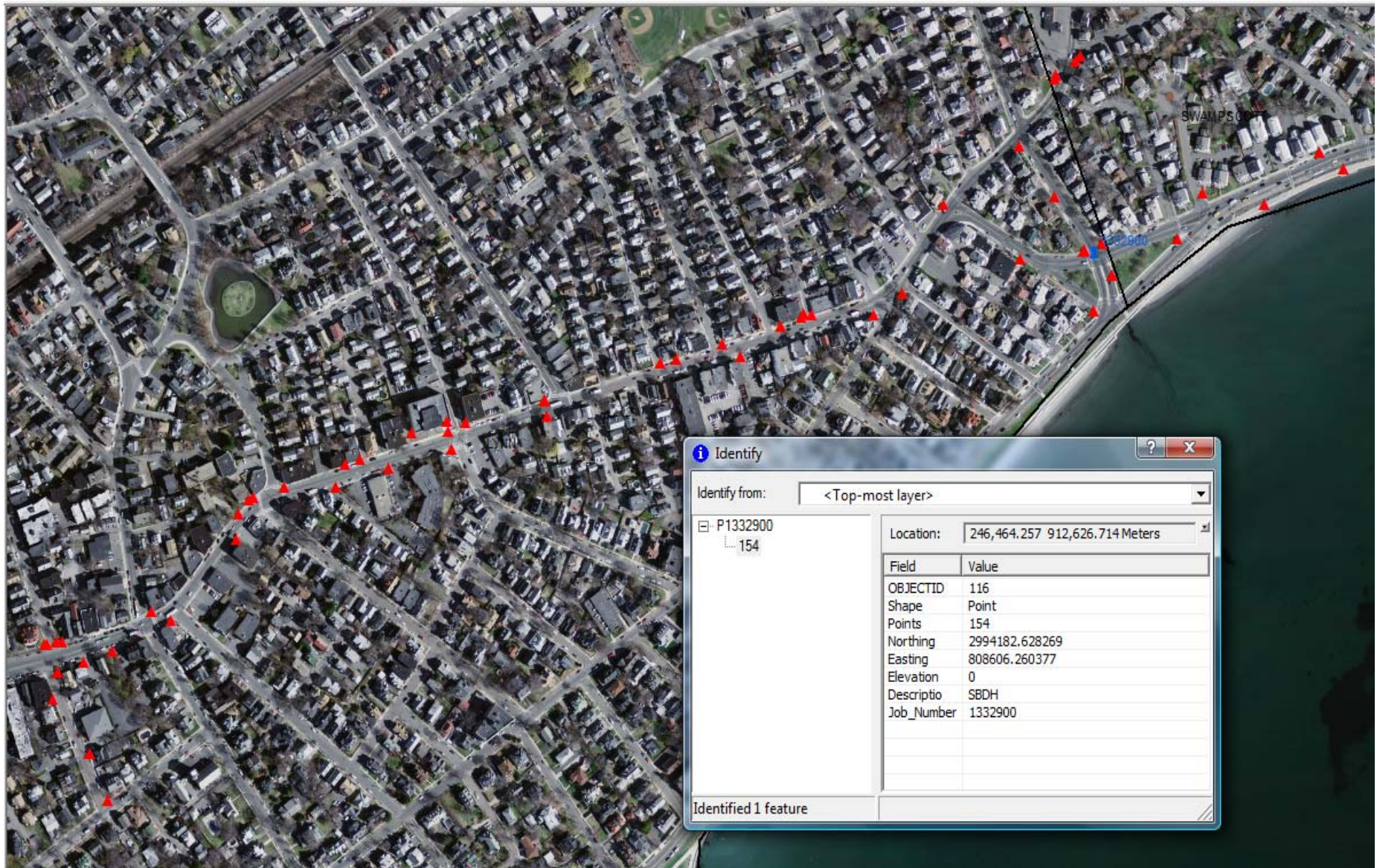




# Method 2 – State Plane Coordinates

- ▶ Option available for jobs completed in a state plane coordinate system.
  - ▶ Points and descriptions can be brought into GIS application by adding X, Y data from excel file.
  - ▶ Job numbers must be added to attribute table.
  - ▶ Example
- 





**Identify**

Identify from:

☒ P1332900  
154

Location:

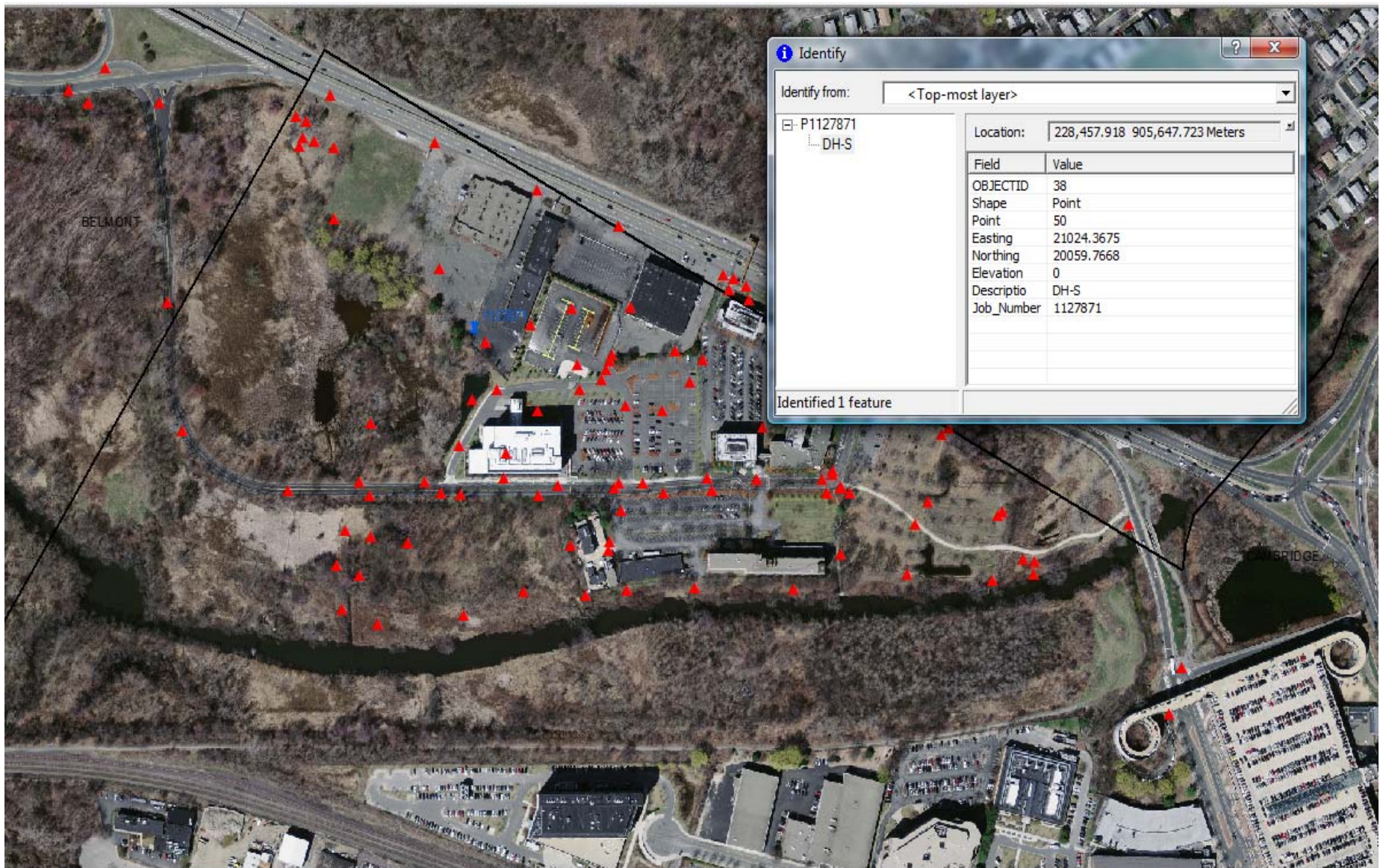
Field	Value
OBJECTID	116
Shape	Point
Points	154
Northing	2994182.628269
Easting	808606.260377
Elevation	0
Description	SBDH
Job_Number	1332900

Identified 1 feature

# Method 3 – Assumed Coordinates

- Most survey jobs are performed using assumed coordinates.
- Transformation of assumed coordinates is conducted:
  - Feature points are visually selected on a map.
  - Feature points are moved to correlate to points on the GIS map and then rotated to fit.
- Job numbers must be added to attribute table.
- Drawbacks to this method
  - Scale factor
  - Assumed locations
  - Possibility of creating false data
- Example





**Identify**

Identify from: <Top-most layer>

[-] P1127871  
    DH-S

Location: 228,457.918 905,647.723 Meters

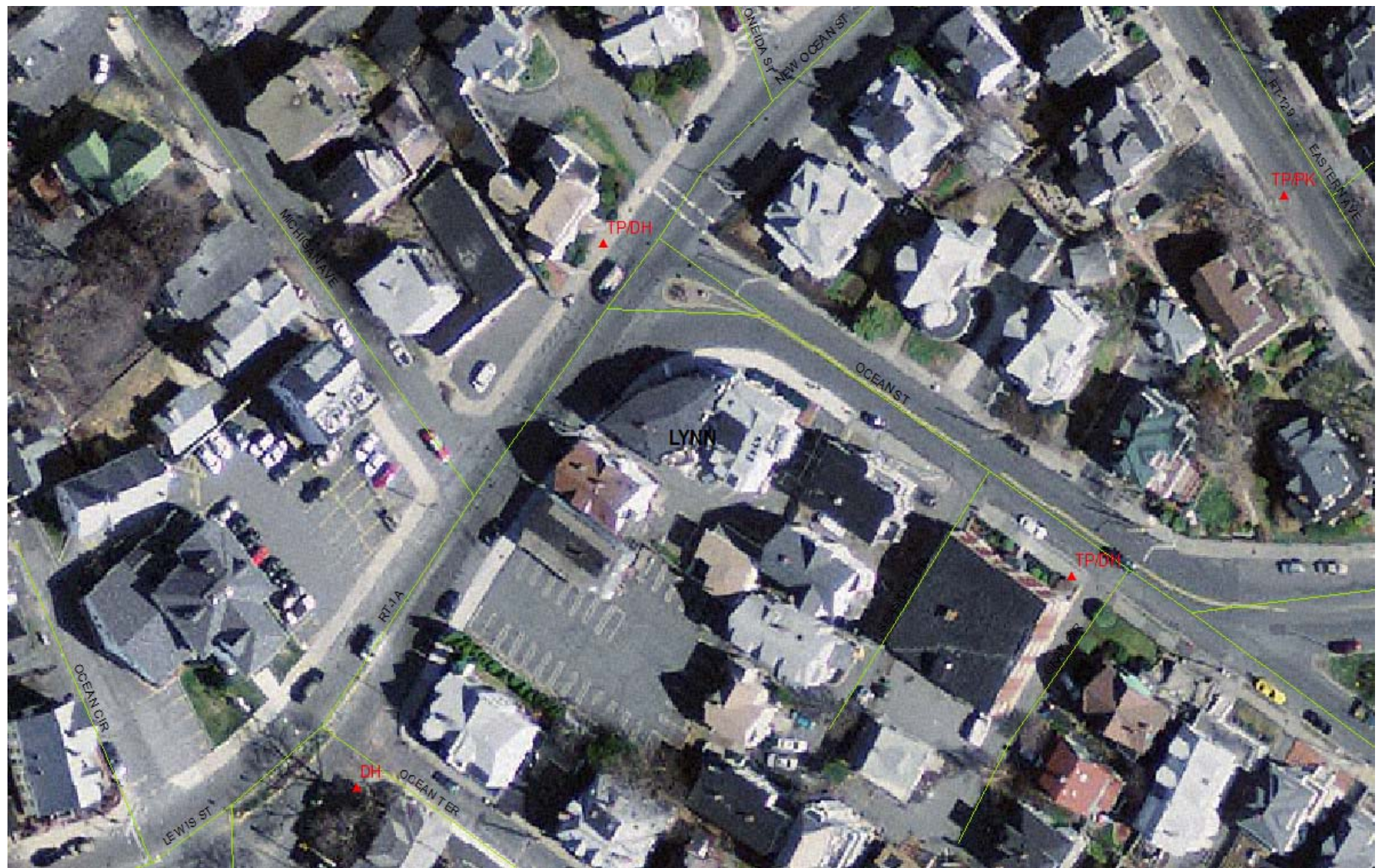
Field	Value
OBJECTID	38
Shape	Point
Point	50
Easting	21024.3675
Northing	20059.7668
Elevation	0
Description	DH-S
Job_Number	1127871

Identified 1 feature

# Feasibility

- ▶ Established company would require significant time and resources to retrieve project info and input data into GIS application.
- ▶ Start-up company could do easily and would benefit greatly.





23  
404



PLAN BOOK 404 PLAN 23

ESSENCES OF RECORDS DO NOT  
RECORD  
JAN 4, 2007  
WILKINS  
CC Realty  
VROST  
REV 02/05/17 P 1.1

John G. Gorman  
Surveyor of Records

I CERTIFY THAT THE PROPERTY LINES SHOWN ARE THE LINES  
HAVING EXISTING OWNERSHIP AND THE LINES OF STREETS  
AND WAYS SHOWN ARE THOSE OF PUBLIC & PRIVATE STREETS  
AND WAYS ALREADY ESTABLISHED AND I FURTHER CERTIFY THAT  
NO NEW LINES FOR THE DIVISION OF OWNERSHIP OR FOR NEW  
WAYS ARE SHOWN.

DAIR

I CERTIFY THAT THIS PLAN CONFORMS TO THE RULES  
AND REGULATIONS OF THE REGISTRY OF DEEDS.

DAIR



PLAN OF LAND  
IN  
LYNN, MA  
SHOWING RIGHT OF WAY

SCALE 1" = 10' DEC. 12, 2006

CC REALTY TRUST  
LANDMARK  
ENGINEERING & SURVEYING, INC.  
583 CHESTNUT STREET  
LYNN, MA 01904  
(781)592-7016

DATE	REVISION	BY



