pa rural water Association

2016

WWW.PRWA.COM/CONFERENCE

PENN STATER HOTEL + CONFERENCE CENTER STATE COLLEGE, PA

MARCH 29 – APRIL 1

Schedule at http://mobile.prwa.com



Welcome!

Collection System Mapping

We're Glad You're Here!

Please put cell phones on vibrate during sessions, and take calls outside.

COLLECTION SYSTEM MAPPING

Bryon Killian, PE
bkillian@entecheng.com
Cell: 570.334.3990
Entech Engineering, Inc.

Mapping

- Must known what you have before assessing.
- At least an idea.
- Existing mapping / available data.
- Field locate MH / Pump Stations / Overflow Points (CSO & SSO) / Critical Monitoring Points / etc.
- GIS mapping.
- Database creation.
- Future prioritization.

Mapping

- Existing mapping vs. observed conditions.
- It’s on my map but I can’t find it!
  - Need reliable data.
- Do you think it is there?
  - You know it is **NOT** there.
  - It’s **POSSIBLE** it is there.

Manhole Visual Inspections









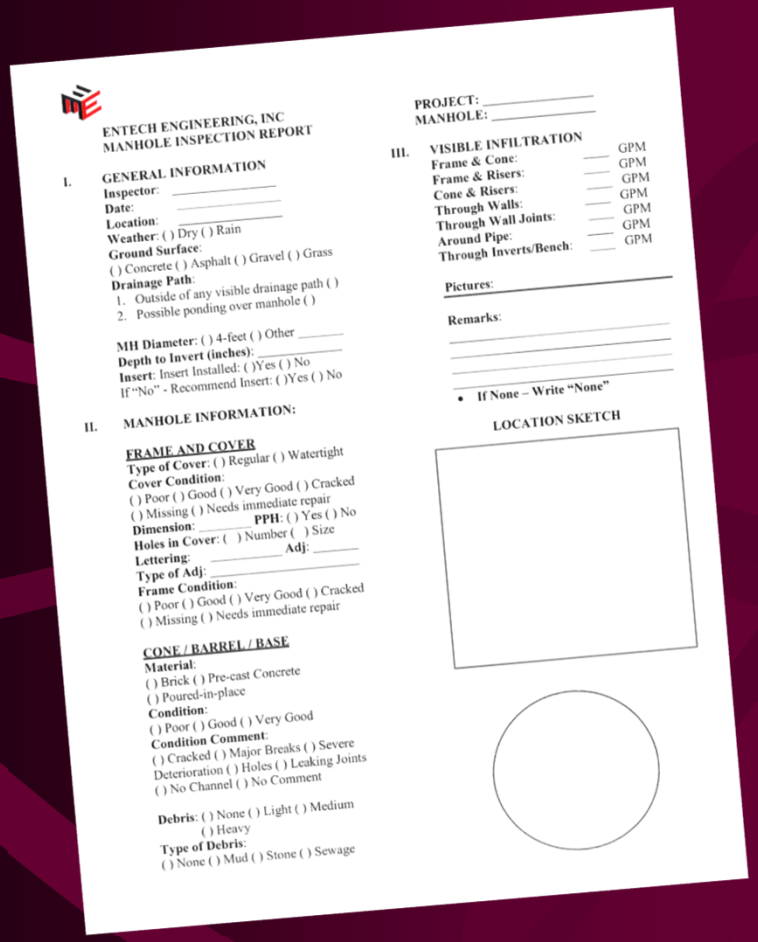


Manhole Visual Inspections

Inspections should denote:

- MH location / drainage path
- MH to MH connections
- Pipe sizes
- Structural condition
- Active or evidence of infiltration (staining/debris)
- Evidence of inflow (staining/debris)
- Cycled flow
- Clear flow
- Increase or decrease in quantity of flow
- Etc.

Report Form



ENTECH ENGINEERING, INC
MANHOLE INSPECTION REPORT

PROJECT: _____
MANHOLE: _____

I. GENERAL INFORMATION
Inspector: _____
Date: _____
Location: _____
Weather: ( ) Dry ( ) Rain
Ground Surface:
( ) Concrete ( ) Asphalt ( ) Gravel ( ) Grass
Drainage Path:
1. Outside of any visible drainage path ( )
2. Possible ponding over manhole ( )

MH Diameter: ( ) 4-feet ( ) Other _____
Depth to Invert (inches): _____
Insert: Insert Installed: ( )Yes ( ) No
If "No" - Recommend Insert: ( )Yes ( ) No

II. MANHOLE INFORMATION:

FRAME AND COVER
Type of Cover: ( ) Regular ( ) Watertight
Cover Condition:
( ) Poor ( ) Good ( ) Very Good ( ) Cracked
( ) Missing ( ) Needs immediate repair
Dimension: _____ PPH: ( ) Yes ( ) No
Holes in Cover: ( ) Number ( ) Size
Lettering: _____ Adj: _____
Type of Adj: _____
Frame Condition:
( ) Poor ( ) Good ( ) Very Good ( ) Cracked
( ) Missing ( ) Needs immediate repair

CONE / BARREL / BASE
Material:
( ) Brick ( ) Pre-cast Concrete
( ) Poured-in-place
Condition:
( ) Poor ( ) Good ( ) Very Good
Condition Comment:
( ) Cracked ( ) Major Breaks ( ) Severe
Deterioration ( ) Holes ( ) Leaking Joints
( ) No Channel ( ) No Comment

Debris: ( ) None ( ) Light ( ) Medium
( ) Heavy
Type of Debris:
( ) None ( ) Mud ( ) Stone ( ) Sewage

III. VISIBLE INFILTRATION
Frame & Cone: ___ GPM
Frame & Risers: ___ GPM
Cone & Risers: ___ GPM
Through Walls: ___ GPM
Through Wall Joints: ___ GPM
Around Pipe: ___ GPM
Through Inverts/Bench: ___ GPM

Pictures: _____

Remarks:
_____
_____
_____
_____

- If None – Write "None"

LOCATION SKETCH



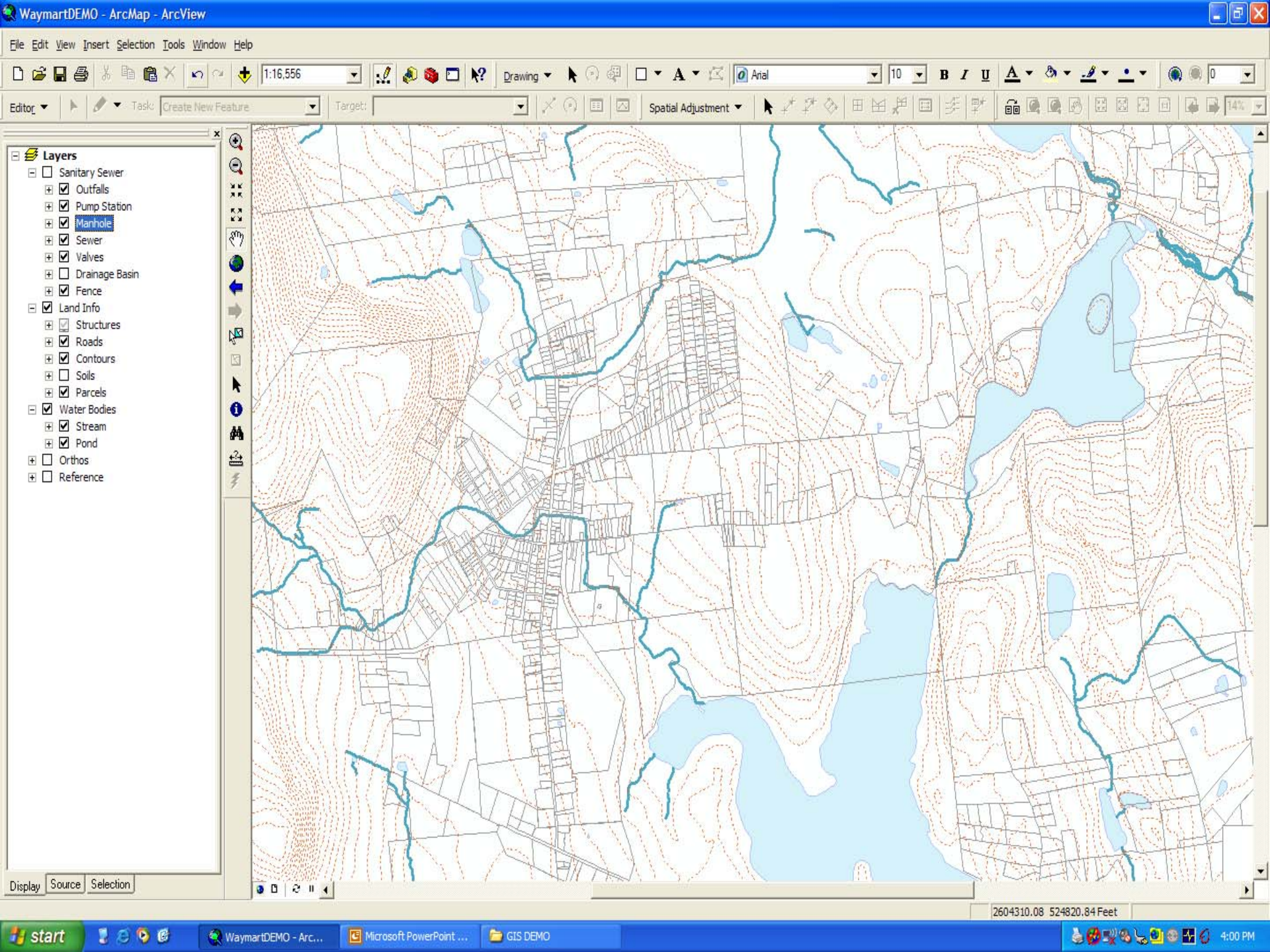
ENTECH ENGINEERING, INC
MANHOLE INSPECTION REPORT

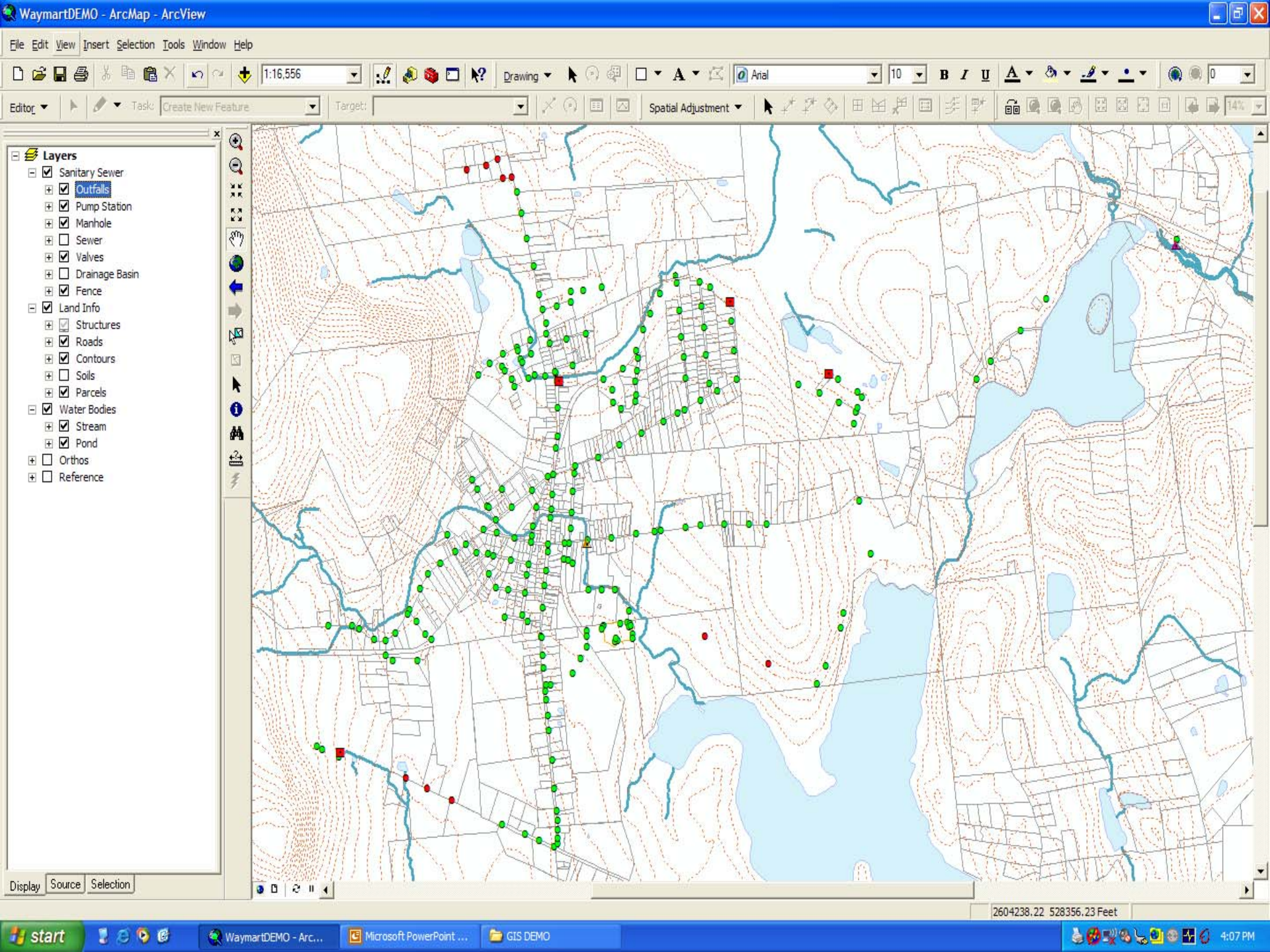
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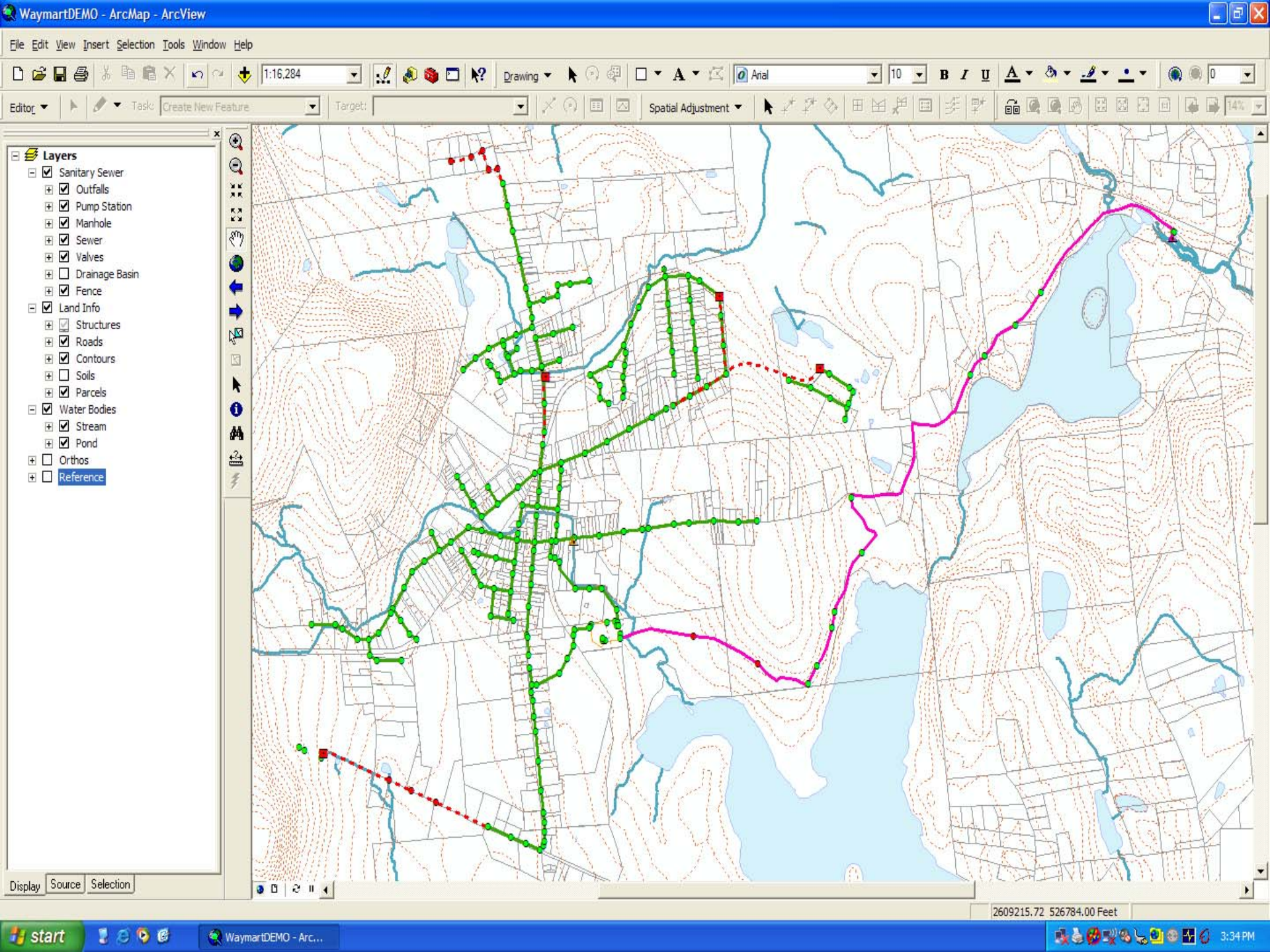
MH Diameter: ( ) 4-feet ( ) Other _____
Depth to Invert (inches): _____
Insert: Insert Installed: ( )Yes ( ) No
If "No" - Recommend Insert: ( )Yes ( ) No

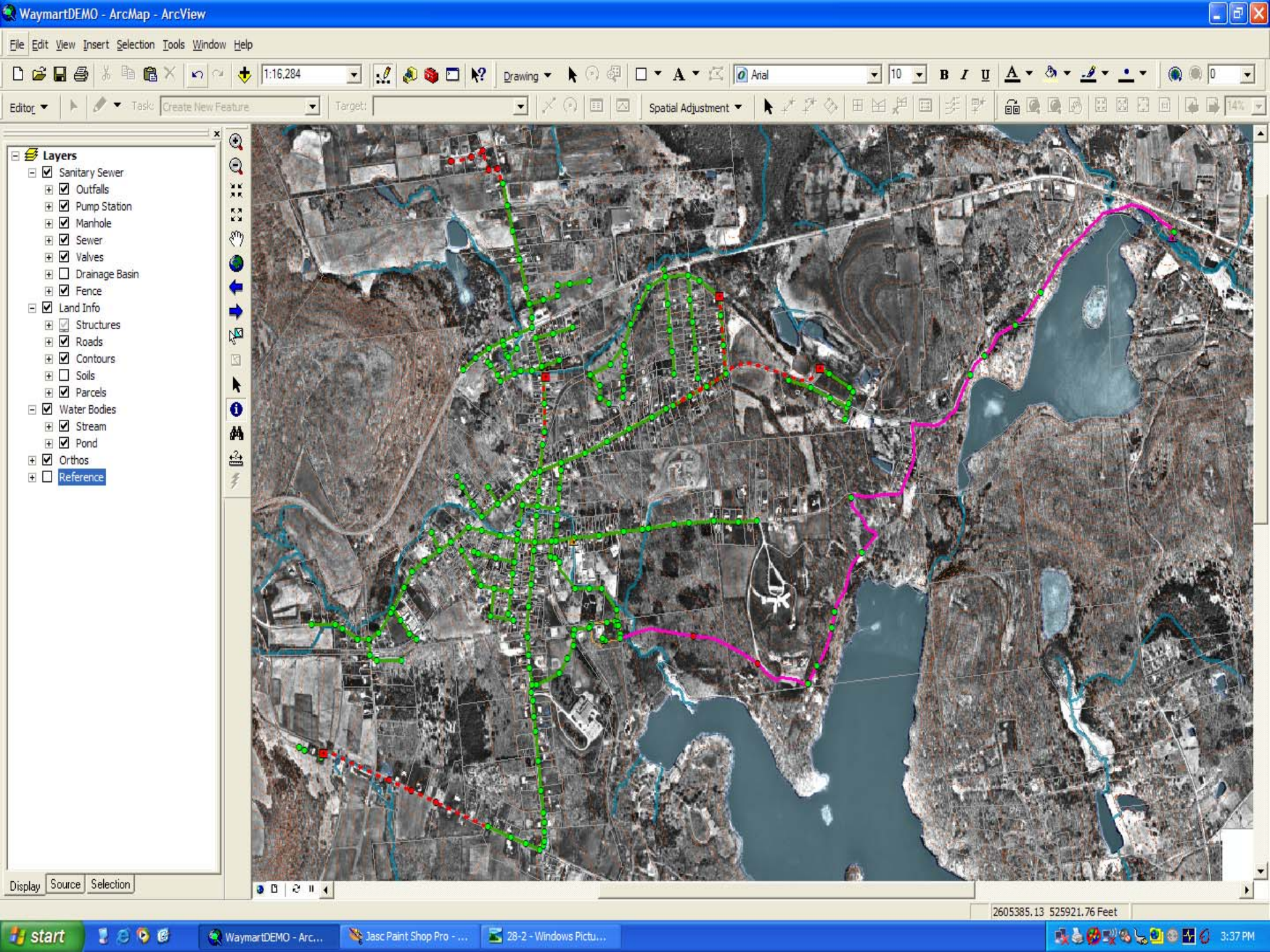
II. MANHOLE INFORMATION:

FRAME AND COVER


WaymartDEMO - ArcMap - ArcView
File Edit View Insert Selection Tools Window Help
1:16,556
Drawing
Arial
10
Editor
Task:
Create New Feature
Target:
Spatial Adjustment
Layers
Sanitary Sewer
Outfalls
Pump Station
Manhole
Sewer
Valves
Drainage Basin
Fence
Land Info
Structures
Roads
Contours
Soils
Parcels
Water Bodies
Stream
Pond
Orthos
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2604310.08 524820.84 Feet
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GIS DEMO
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WaymartDEMO - ArcMap - ArcView
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Soils
Parcels
Water Bodies
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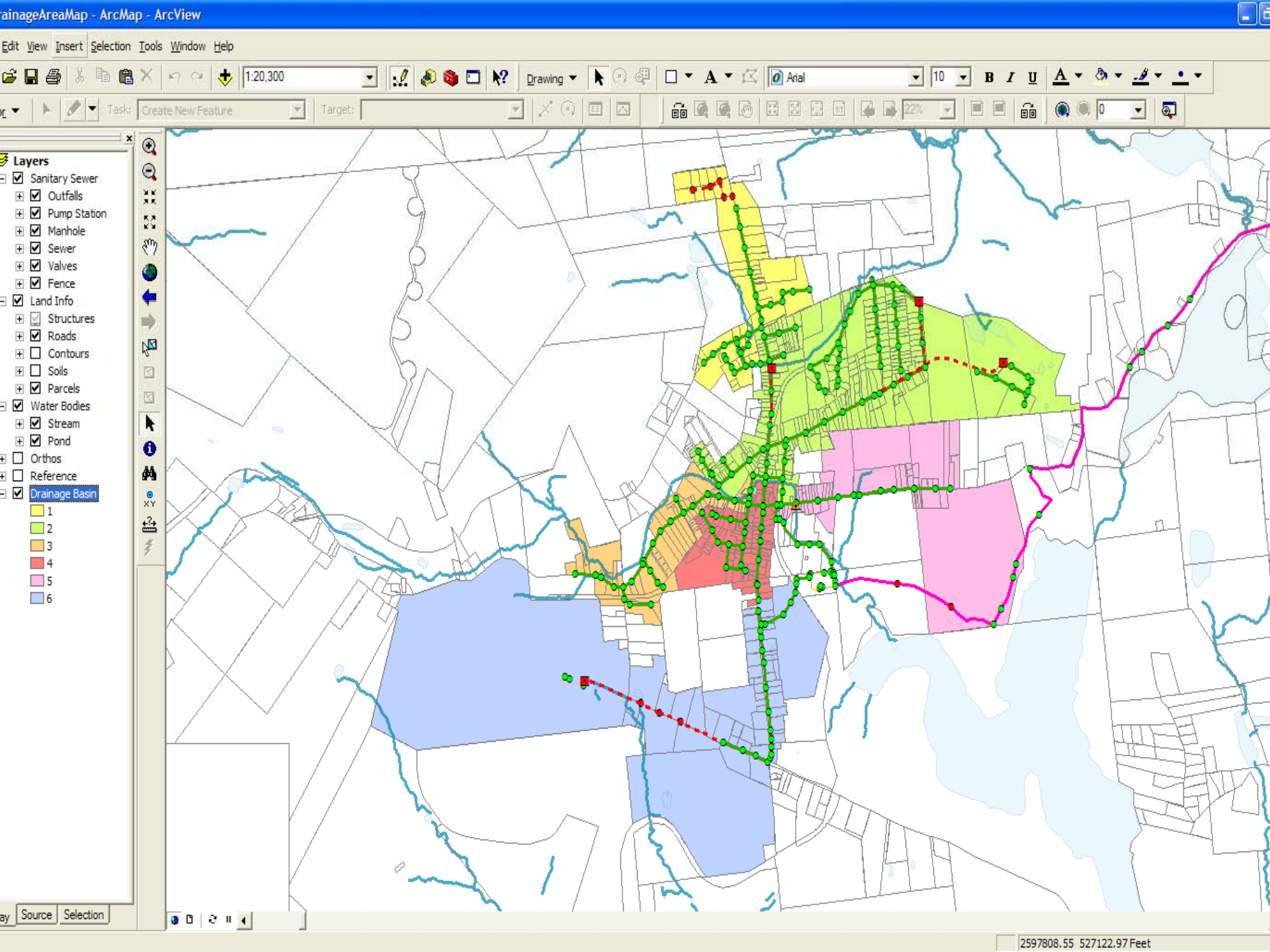

WaymartDEMO - ArcMap - ArcView
File Edit View Insert Selection Tools Window Help
1:16,284
Drawing
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Editor
Task:
Create New Feature
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Spatial Adjustment
Layers
Sanitary Sewer
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Contours
Soils
Parcels
Water Bodies
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WaymartDEMO - ArcMap - ArcView
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Task:
Create New Feature
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Structures
Roads
Contours
Soils
Parcels
Water Bodies
Stream
Pond
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Easier to Chew

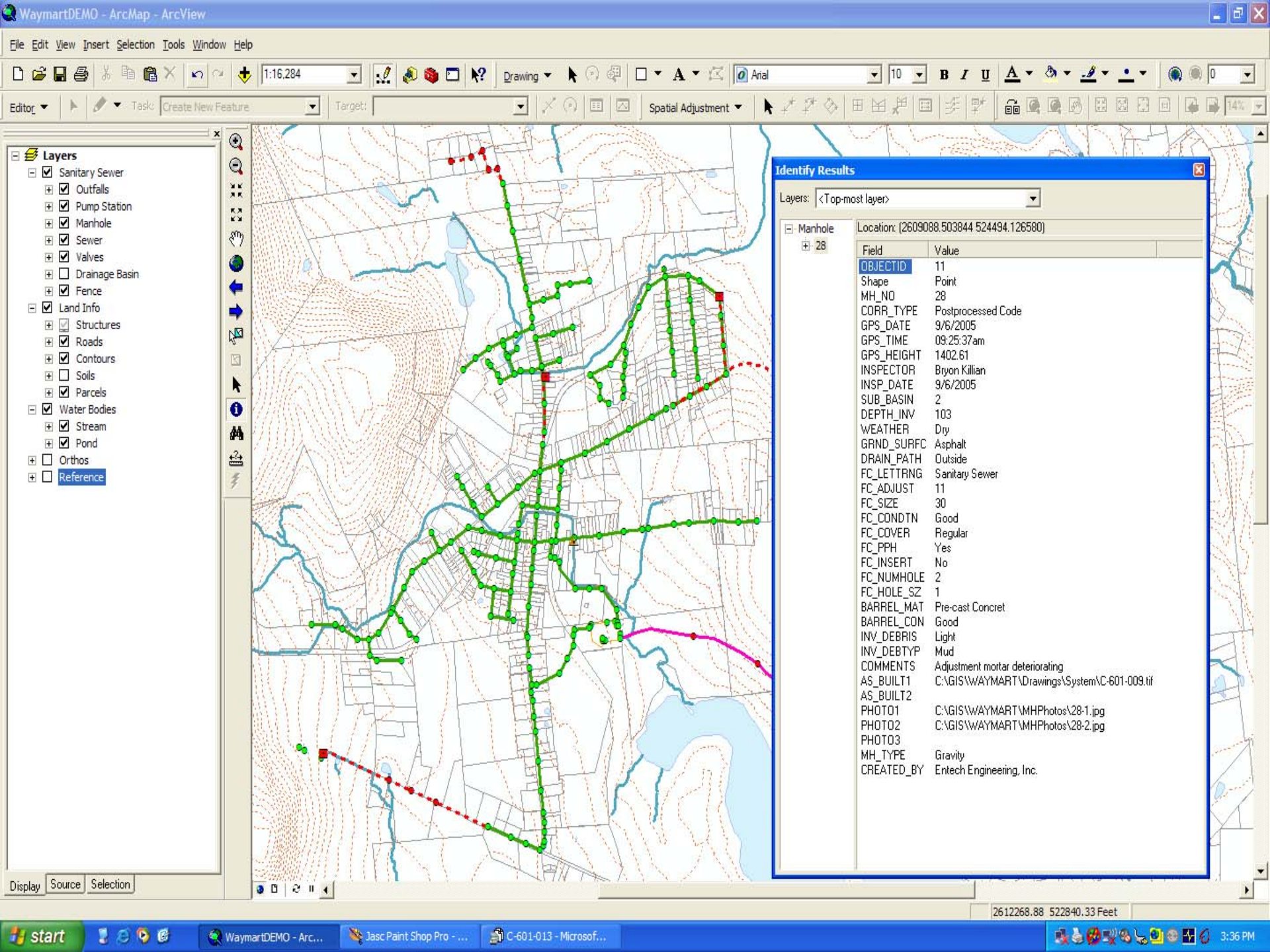
- Sanitary sewer system should be broken down into basins (multiple pump stations).
- Sub-basins later for future investigation.

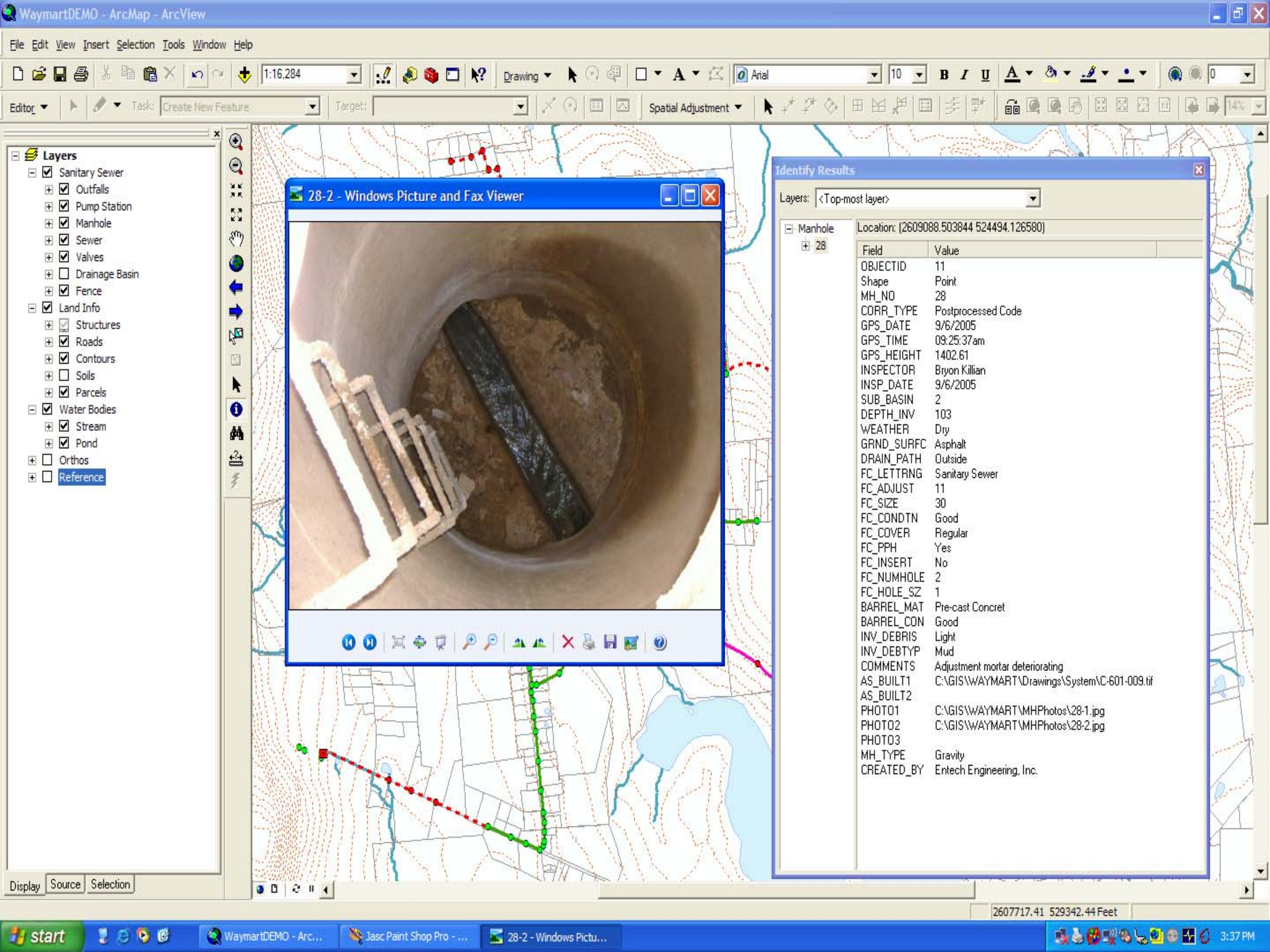



rainageAreaMap - ArcMap - ArcView
Edit View Insert Selection Tools Window Help
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Drawing
Arial
10
Task:
Create New Feature
Target:
Layers
Sanitary Sewer
Outfalls
Pump Station
Manhole
Sewer
Valves
Fence
Land Info
Structures
Roads
Contours
Soils
Parcels
Water Bodies
Stream
Pond
Orthos
Reference
Drainage Basin
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2597808.55 527122.97 Feet

GIS Database Development

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WaymartDEMO - ArcMap - ArcView
File Edit View Insert Selection Tools Window Help
Layers
Sanitary Sewer
Outfalls
Pump Station
Manhole
Sewer
Valves
Drainage Basin
Fence
Land Info
Structures
Roads
Contours
Soils
Parcels
Water Bodies
Stream
Pond
Orthos
Reference
Display Source Selection
Identify Results
Layers: <Top-most layer>
Manhole
28
Location: (2609088.503844 524494.126580)
Field Value
OBJECTID 11
Shape Point
MH_NO 28
CORR_TYPE Postprocessed Code
GPS_DATE 9/6/2005
GPS_TIME 09:25:37am
GPS_HEIGHT 1402.61
INSPECTOR Bryon Killian
INSP_DATE 9/6/2005
SUB_BASIN 2
DEPTH_INV 103
WEATHER Dry
GRND_SURFC Asphalt
DRAIN_PATH Outside
FC_LETTRNG Sanitary Sewer
FC_ADJUST 11
FC_SIZE 30
FC_CONDTN Good
FC_COVER Regular
FC_PPH Yes
FC_INSERT No
FC_NUMHOLE 2
FC_HOLE_SZ 1
BARREL_MAT Pre-cast Concret
BARREL_CON Good
INV_DEBRIS Light
INV_DEBTYP Mud
COMMENTS Adjustment mortar deteriorating
AS_BUILT1 C:\GIS\WAYMART\Drawings\System\C-601-009.tif
AS_BUILT2
PHOTO1 C:\GIS\WAYMART\MHPhotos\28-1.jpg
PHOTO2 C:\GIS\WAYMART\MHPhotos\28-2.jpg
PHOTO3
MH_TYPE Gravity
CREATED_BY Entech Engineering, Inc.
2612268.88 522840.33 Feet
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WaymartDEMO - ArcMap - ArcView
File Edit View Insert Selection Tools Window Help
Layers
Sanitary Sewer
Outfalls
Pump Station
Manhole
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Valves
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Reference
Display Source Selection
28-2 - Windows Picture and Fax Viewer
Identify Results
Layers: <Top-most layer>
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AS_BUILT1 C:\GIS\WAYMART\Drawings\System\C-601-009.tif
AS_BUILT2
PHOTO1 C:\GIS\WAYMART\MHPhotos\28-1.jpg
PHOTO2 C:\GIS\WAYMART\MHPhotos\28-2.jpg
PHOTO3
MH_TYPE Gravity
CREATED_BY Entech Engineering, Inc.
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28-2 - Windows Pictu...
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WaymartDEMO - ArcMap - ArcView

File Edit View Insert Selection Tools Window Help

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Editor | Task: Create New Feature

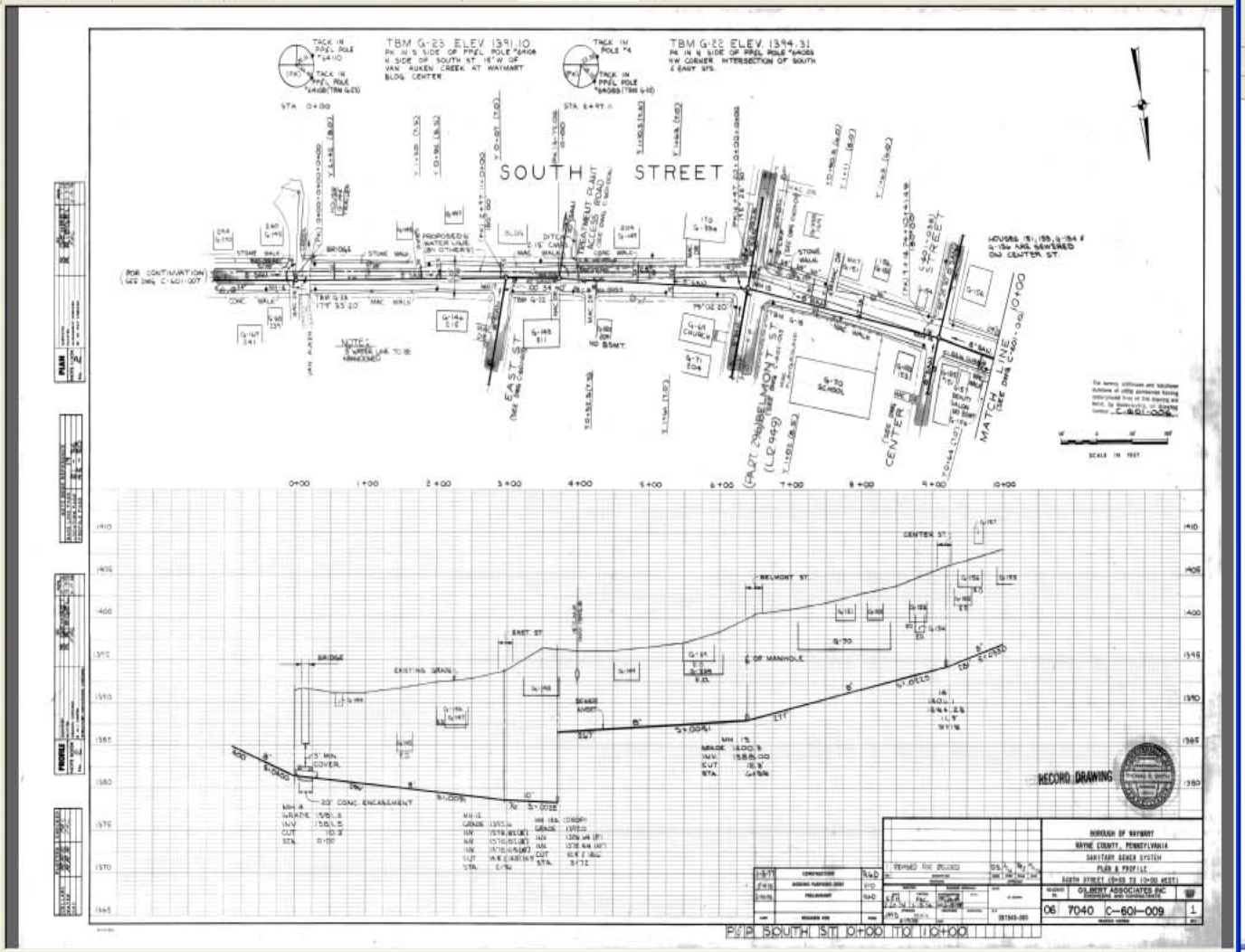
Layers
- Sanitary Sewer
  - Outfalls
  - Pump Station
  - Manhole
  - Sewer
  - Valves
  - Drainage Basin
  - Fence
- Land Info
  - Structures
  - Roads
  - Contours
  - Soils
  - Parcels
- Water Bodies
  - Stream
  - Pond
- Orthos
- Reference

Display | Source | Selection

C-601-009 - Microsoft Office Document Imaging

File Edit View Window Help

Page: 1 of 1 | Zoom: Entire Page



Ready | NUM

2612777.74 520352.56 Feet

start | WaymartDEMO - Arc... | Jasc Paint Shop Pro - ... | C-601-009 - Microsof... | 3:37 PM

Mapping

- 100% Complete Sewer Map.
  - Loch Ness Monster, Big Foot, Aliens.
- Continually update and revise.



Database Example