Conversations with Spatial Data

Image courtesy of fanfiction.net

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What to Expect Today

This Presentation is a SQL

What to Expect Today

Cats included to keep us entertained

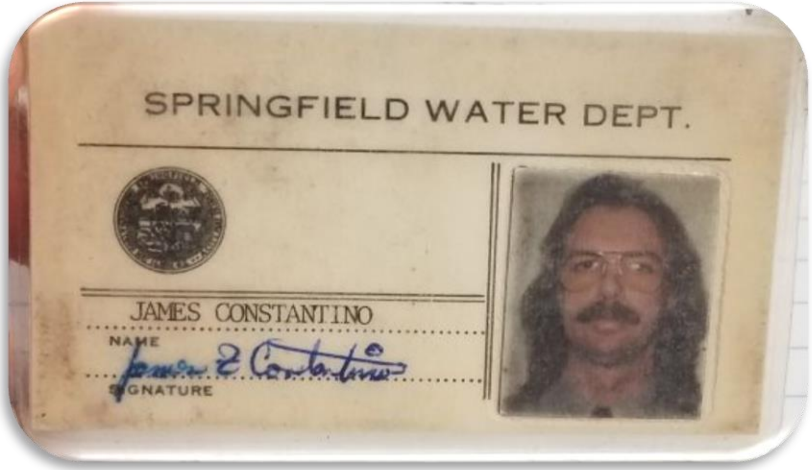
Dedicated to Moonbeam

1999-2019

Pow! Sock!
Cats & SQL!

Guiding Principle #1

The Typical End User Doesn’t Care About SQL



SPRINGFIELD WATER DEPT.

JAMES CONSTANTINO

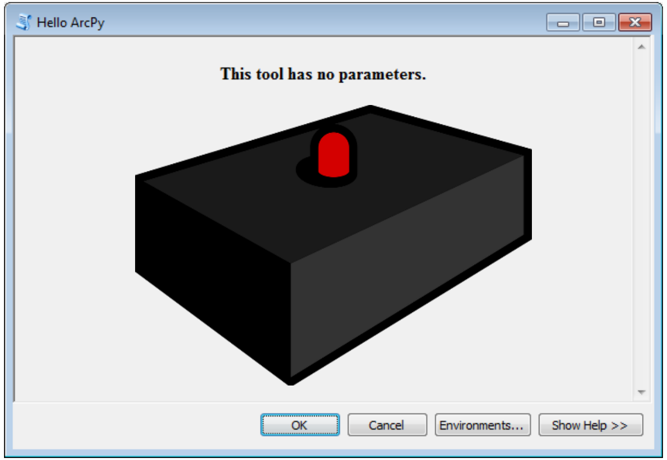
NAME

James E Constantino

SIGNATURE

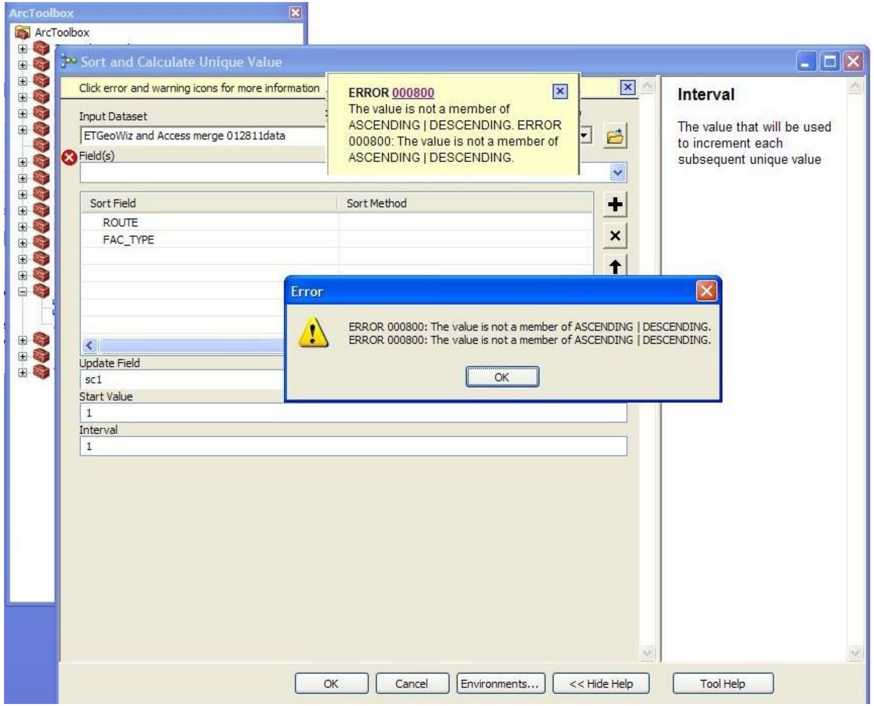
Why should we?

GIS Spatial Querying is a bit of a Black Box



Hello ArcPy

This tool has no parameters.



Click error and warning icons for more information

ERROR 000800
The value is not a member of ASCENDING | DESCENDING. ERROR 000800: The value is not a member of ASCENDING | DESCENDING.

Input Dataset: ETGeoWiz and Access merge 012811data

Field(s)

Sort Field	Sort Method
ROUTE	
FAC_TYPE	

Update Field: sc1

Start Value: 1

Interval: 1

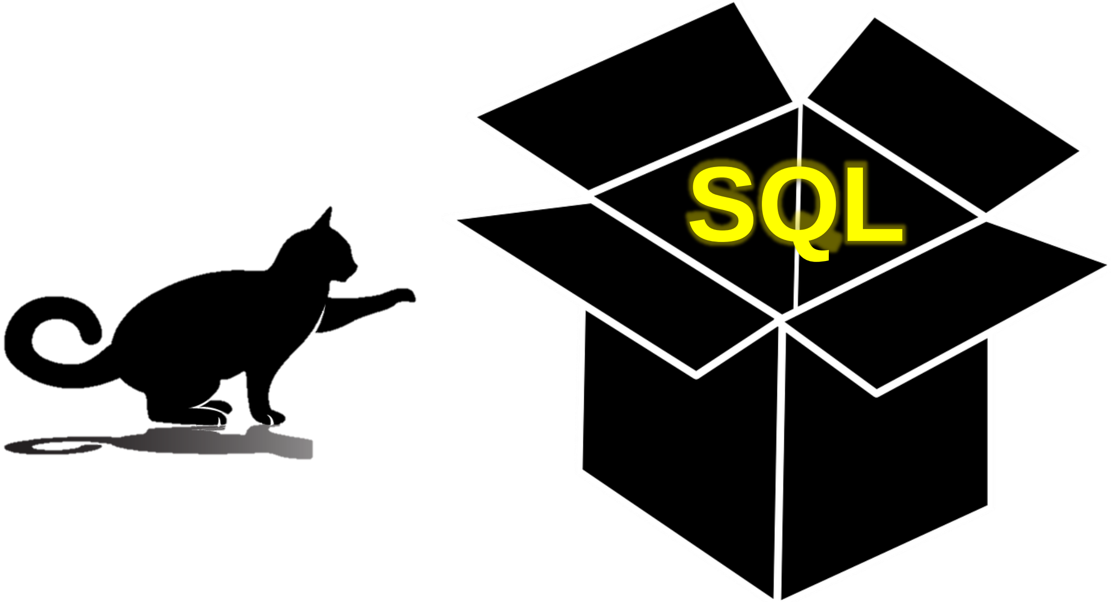
Error

ERROR 000800: The value is not a member of ASCENDING | DESCENDING.
ERROR 000800: The value is not a member of ASCENDING | DESCENDING.

Interval

The value that will be used to increment each subsequent unique value

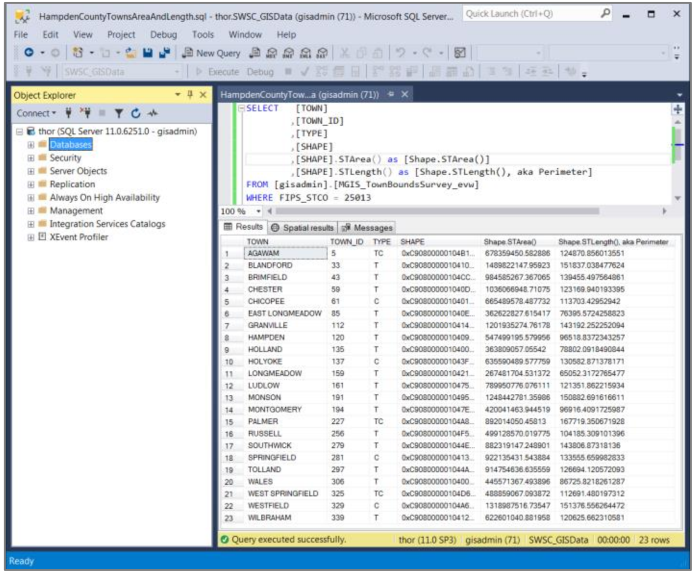
SQL is somewhere inside of the Black Box



We can speak directly with our data

Today: Spatial Queries in Two Environments

Relational Database Management System



HampdenCountyTownsAreaAndLength.sql - thor.SWSC_GISData (gisadmin (71)) - Microsoft SQL Server...
Quick Launch (Ctrl+Q)
File
Edit
View
Project
Debug
Tools
Window
Help
New Query
SWSC_GISData
Execute
Debug
Object Explorer
Connect
thor (SQL Server 11.0.6251.0 - gisadmin)
Databases
Security
Server Objects
Replication
Always On High Availability
Management
Integration Services Catalogs
XEvent Profiler
HampdenCountyTow...a (gisadmin (71))
100 %
Results
Spatial results
Messages
Ready

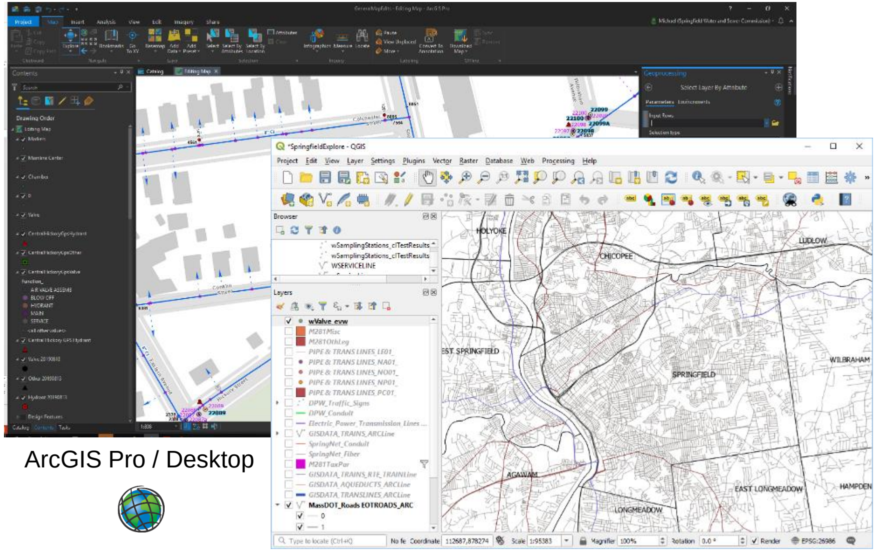
```sql
SELECT   [TOWN]
        ,[TOWN_ID]
        ,[TYPE]
        ,[SHAPE]
        ,[SHAPE].STArea() as [Shape.STArea()]
        ,[SHAPE].STLength() as [Shape.STLength(), aka Perimeter]
FROM [gisadmin].[MGIS_TownBoundsSurvey_evw]
WHERE FIPS_STCO = 25013
```

	TOWN	TOWN_ID	TYPE	SHAPE	Shape.STArea()	Shape.STLength(), aka Perimeter
1	AGAWAM	5	TC	0xC90800000104B1...	678359450.582886	124870.858013551
2	BLANDFORD	33	T	0xC90800000010410...	1489822147.95923	151837.038477624
3	BRIMFIELD	43	T	0xC90800000104CC...	984585267.367065	139455.497564861
4	CHESTER	59	T	0xC9080000001040D...	1036066948.71075	123169.940193395
5	CHICOPEE	61	C	0xC90800000010401...	665489578.487732	113703.42952942
6	EAST LONGMEADOW	85	T	0xC9080000001040E...	362622827.615417	76395.5724258823
7	GRANVILLE	112	T	0xC90800000010414...	1201935274.76178	143192.252252094
8	HAMPDEN	120	T	0xC90800000010409...	547499195.579956	96518.8372343257
9	HOLLAND	135	T	0xC90800000010400...	363809057.05542	78802.0918490844
10	HOLYOKE	137	C	0xC9080000001043F...	635590489.577759	130582.871378171
11	LONGMEADOW	159	T	0xC90800000010421...	267481704.531372	65052.3172765477
12	LUDLOW	161	T	0xC90800000010475...	789950776.076111	121351.862215934
13	MONSON	191	T	0xC90800000010495...	1248442781.35986	150882.691616611
14	MONTGOMERY	194	T	0xC9080000001047E...	420041463.944519	96916.4091725987
15	PALMER	227	TC	0xC90800000104A8...	892014050.45813	167719.350671928
16	RUSSELL	256	T	0xC90800000104F5...	499128570.019775	104185.309101396
17	SOUTHWICK	279	T	0xC9080000001044E...	882319147.248901	143806.87318136
18	SPRINGFIELD	281	C	0xC90800000010413...	922135431.543884	133555.659982833
19	TOLLAND	297	T	0xC9080000001044A...	914754636.635559	126694.120572093
20	WALES	306	T	0xC90800000010400...	445571367.493896	86725.8218261287
21	WEST SPRINGFIELD	325	TC	0xC90800000104D6...	488859067.093872	112691.480197312
22	WESTFIELD	329	C	0xC90800000104A6...	1318987516.73547	151376.556264472
23	WILBRAHAM	339	T	0xC90800000010412...	622601040.881958	120625.662310581

Query executed successfully. | thor (11.0 SP3) | gisadmin (71) | SWSC_GISData | 00:00:00 | 23 rows

SQL Server Management Studio

Desktop GIS



ArcGIS Pro / Desktop

Quantum GIS (qGIS)

Why Bother with Spatial Queries?

Be Cross-Platform: Get Spatial without using GIS Software

Normalize: Avoid hard-coding redundant fields

Stop the Geoprocessing Madness: cut down on geoprocessed data-scraps

Quiz 1: **Seql** or Original?

Answer: **Sequel (Indiana Jones and the Temple of Doom)**

Open Standards Have Provided a Common Language

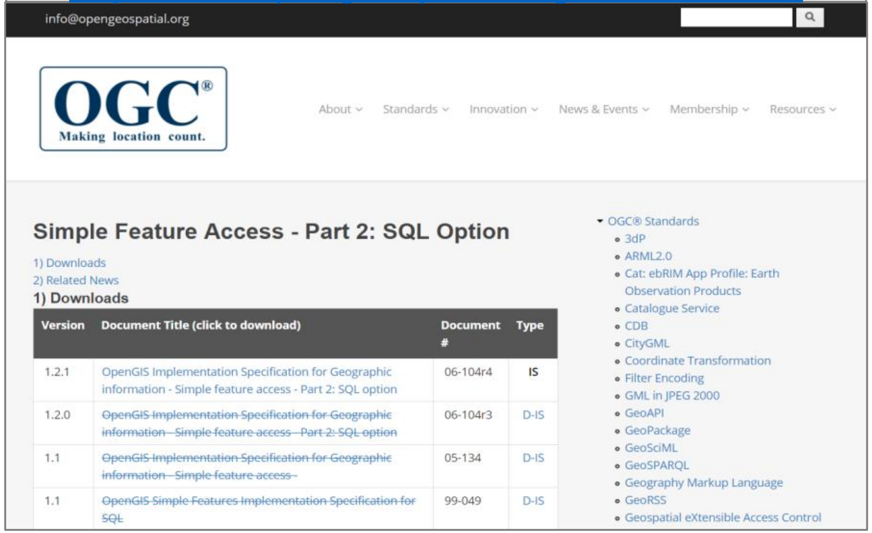
OGC Simple Feature Specification (SFS)

Standard for storing, writing & querying spatial data

Implemented in many spatial database engines, including PostGIS, MySQL, Oracle, DB2 & MS SQL Server

Basis for ST_Geometry, the default Esri Enterprise Geodb storage format (supported since ArcGIS 9.0)

http://www.opengeospatial.org/standards/sfs



Simple Feature Access - Part 2: SQL Option

1) Downloads
2) Related News

1) Downloads

Version	Document Title (click to download)	Document #	Type
1.2.1	OpenGIS Implementation Specification for Geographic information - Simple feature access - Part 2: SQL option	06-104r4	IS
1.2.0	~~OpenGIS Implementation Specification for Geographic information - Simple feature access - Part 2: SQL option~~	06-104r3	D-IS
1.1	~~OpenGIS Implementation Specification for Geographic information - Simple feature access -~~	05-134	D-IS
1.1	~~OpenGIS Simple Features Implementation Specification for SQL~~	99-049	D-IS

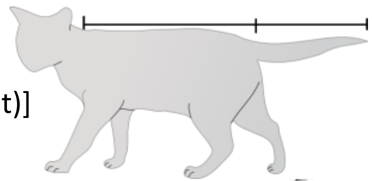
- OGC® Standards
  - 3dP
  - ARML2.0
  - Cat: ebRIM App Profile: Earth Observation Products
  - Catalogue Service
  - CDB
  - CityGML
  - Coordinate Transformation
  - Filter Encoding
  - GML in JPEG 2000
  - GeoAPI
  - GeoPackage
  - GeoSciML
  - GeoSPARQL
  - Geography Markup Language
  - GeoRSS
  - Geospatial eXtensible Access Control

Basics: Line Length & Polygon Area

- GIS software automatically displays calculated lengths & areas
  - We can do the same via queries

(fe)Line Length

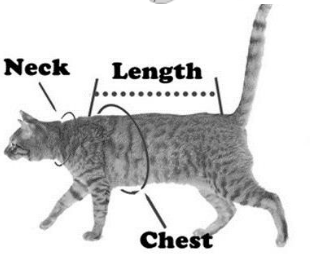
```
SELECT [SHAPE].STLength() as [Length (Ft)]
,CAST([SHAPE].STLength() as int) as [Rounded (Ft)]
```



Length (Ft)	Rounded (Ft)
1056.36436184714	1056

Polygon Area

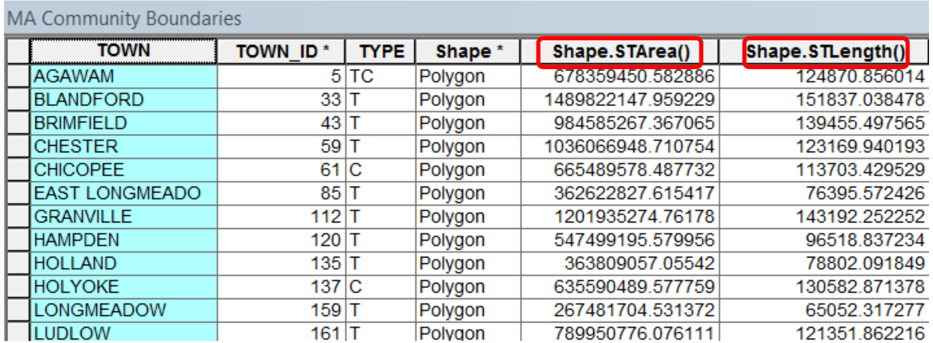
```
SELECT SHAPE.STArea() as [Area (SqFt)]
,CAST([SHAPE].STArea() as int) as [Rounded (SqFt)]
```



Area (SqFt)	Rounded (SqFt)
5165.25909423828	5165

ArcGIS Attribute Tables Include Queried Length & Area

Courtesy of the ***.STArea()*** *&* ***.STLength()*** *OGC standard SQL methods*

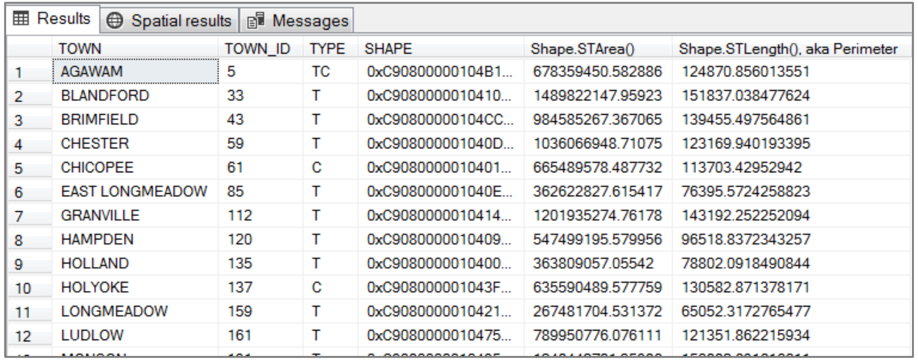


MA Community Boundaries

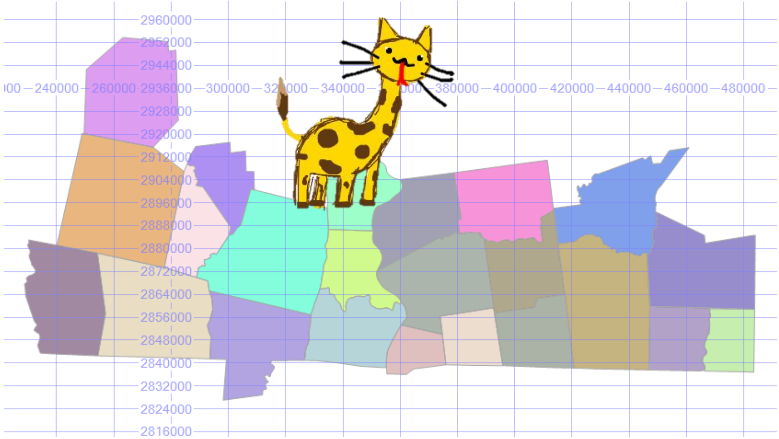
TOWN	TOWN_ID *	TYPE	Shape *	Shape.STArea()	Shape.STLength()
AGAWAM	5	TC	Polygon	678359450.582886	124870.856014
BLANDFORD	33	T	Polygon	1489822147.959229	151837.038478
BRIMFIELD	43	T	Polygon	984585267.367065	139455.497565
CHESTER	59	T	Polygon	1036066948.710754	123169.940193
CHICOPEE	61	C	Polygon	665489578.487732	113703.429529
EAST LONGMEADO	85	T	Polygon	362622827.615417	76395.572426
GRANVILLE	112	T	Polygon	1201935274.76178	143192.252252
HAMPDEN	120	T	Polygon	547499195.579956	96518.837234
HOLLAND	135	T	Polygon	363809057.05542	78802.091849
HOLYOKE	137	C	Polygon	635590489.577759	130582.871378
LONGMEADOW	159	T	Polygon	267481704.531372	65052.317277
LUDLOW	161	T	Polygon	789950776.076111	121351.862216

Using .STArea() & .STLength() in our own Query

```sql
SELECT [TOWN]
      ,[TOWN_ID]
      ,[TYPE]
      ,[Shape]
      ,[Shape].STArea() as [Shape.STArea()]
      ,[Shape].STLength() as [Shape.STLength()]
FROM [dbo].[MGIS_TownBoundsSurvey_evw]
WHERE [FIPS_STCO] = 25013
ORDER BY [TOWN]
```



	TOWN	TOWN_ID	TYPE	SHAPE	Shape.STArea()	Shape.STLength(), aka Perimeter
1	AGAWAM	5	TC	0xC90800000104B1...	678359450.582886	124870.856013551
2	BLANDFORD	33	T	0xC9080000010410...	1489822147.95923	151837.038477624
3	BRIMFIELD	43	T	0xC90800000104CC...	984585267.367065	139455.497564861
4	CHESTER	59	T	0xC908000001040D...	1036066948.71075	123169.940193395
5	CHICOPEE	61	C	0xC9080000010401...	665489578.487732	113703.42952942
6	EAST LONGMEADOW	85	T	0xC908000001040E...	362622827.615417	76395.5724258823
7	GRANVILLE	112	T	0xC9080000010414...	1201935274.76178	143192.252252094
8	HAMPDEN	120	T	0xC9080000010409...	547499195.579956	96518.8372343257
9	HOLLAND	135	T	0xC9080000010400...	363809057.05542	78802.0918490844
10	HOLYOKE	137	C	0xC908000001043F...	635590489.577759	130582.871378171
11	LONGMEADOW	159	T	0xC9080000010421...	267481704.531372	65052.3172765477
12	LUDLOW	161	T	0xC9080000010475...	789950776.076111	121351.862215934

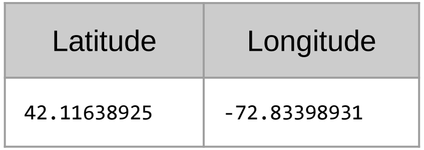


Quiz 2: **Sequel** or Original?

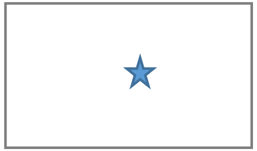
Answer: **Sequel (The Godfather Part II)**

Spatial Data Can Be Rendered Via SQL Queries

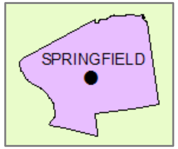
Points from X/Y or Lat/Lon fields



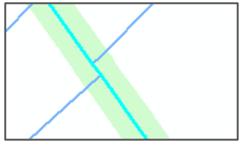
Latitude	Longitude
42.11638925	-72.83398931



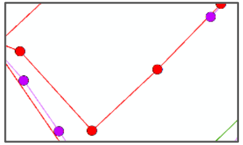
Points from Polygon Centroids



Buffers from any features



Points from line Start or End nodes



Basics: Make Your Point

Constructing a GIS-readable point from x/y or lat/long columns

```
SELECT Latitude, Longitude, SpatialRef
```

Latitude	Longitude	SpatialRef
42.11638925	-72.83398931	4326

```
SELECT GEOMETRY::STGeomFromText('POINT(' +
CONVERT(VARCHAR, Longitude) + ' ' +
CONVERT(VARCHAR, Latitude) + ')', SpatialRef)
as Shape
```

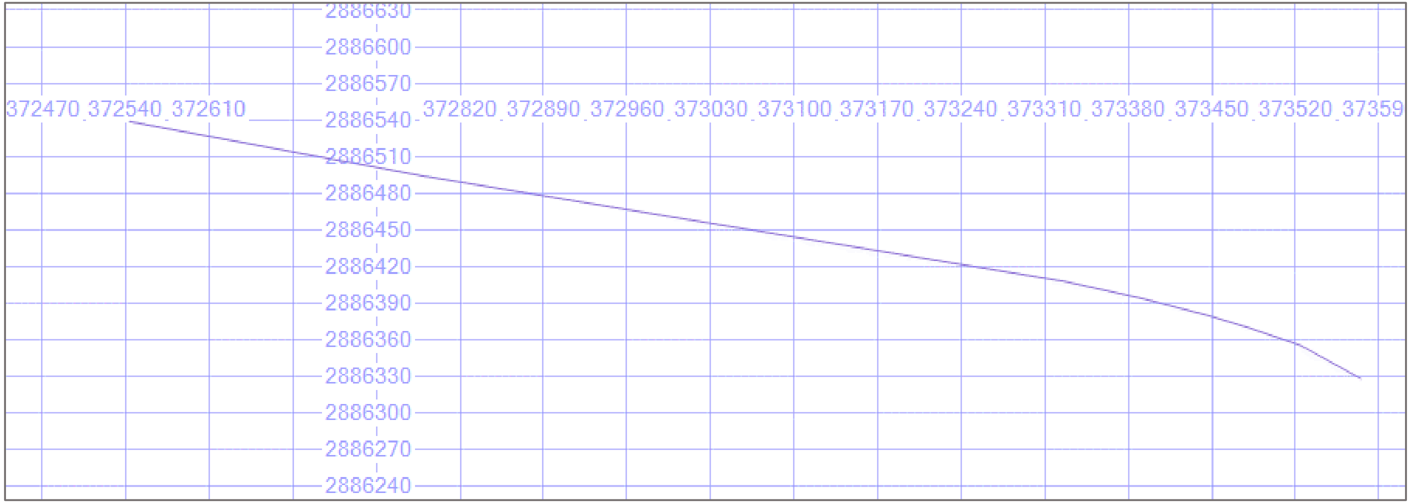
Shape
0xE6100000010C79EAB214603552C0902DC…

```
SELECT [Shape].ToString() as ShapeString
```

ShapeString
POINT (-72.83398931 42.11638925)

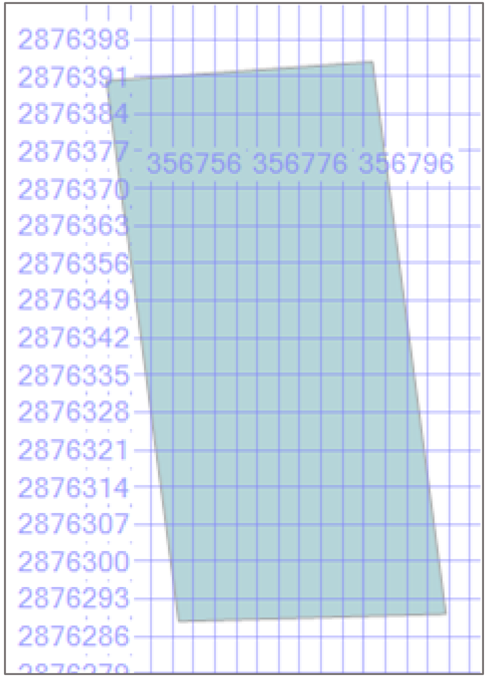
Basics: Draw The Line

```
LINESTRING (373574.7 2886328.4, 373524.0 2886355.7, 373481.9 2886369.7, 373447.6 2886379.8,
373392.2 2886393.9, 373326.7 2886407.9, 372787.8 2886494.5, 372543.0 2886538.8)
```



Basics: Create a Polygon

POLYGON ((356803.4 2876290.2, 356789.6 2876393.7, 356739.7 2876390.1, 356753.2 2876288.8, 356803.4 2876290.2))



Roll your own SHAPE field from x/y or lat/lon fields

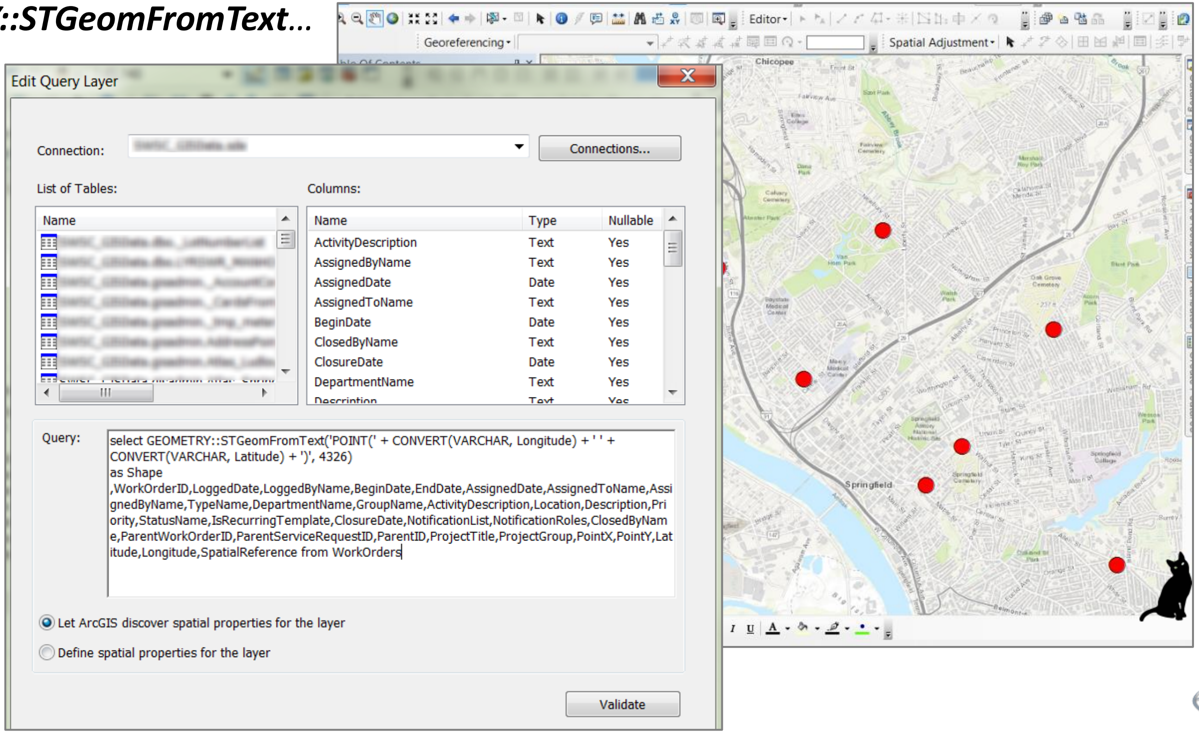
SQL Server: ***GEOMETRY::STGeomFromText…***

“Live” point data

Virtual Layer in QGIS

Query Layer in ArcMap or ArcGIS Pro

Compatible with ArcGIS Server Map Services



Edit Query Layer

Connection: [redacted] Connections...

List of Tables:

Name
[redacted]
[redacted]
[redacted]
[redacted]
[redacted]
[redacted]
[redacted]

Columns:

Name	Type	Nullable
ActivityDescription	Text	Yes
AssignedByName	Text	Yes
AssignedDate	Date	Yes
AssignedToName	Text	Yes
BeginDate	Date	Yes
ClosedByName	Text	Yes
ClosureDate	Date	Yes
DepartmentName	Text	Yes
Description	Text	Yes

Query:

```
select GEOMETRY::STGeomFromText('POINT(' + CONVERT(VARCHAR, Longitude) + ' ' +
CONVERT(VARCHAR, Latitude) + ')', 4326)
as Shape
,WorkOrderID,LoggedDate,LoggedByName,BeginDate,EndDate,AssignedDate,AssignedToName,AssignedByName,TypeName,DepartmentName,GroupName,ActivityDescription,Location,Description,Priority,StatusName,IsRecurringTemplate,ClosureDate,NotificationList,NotificationRoles,ClosedByName,ParentWorkOrderID,ParentServiceRequestID,ParentID,ProjectTitle,ProjectGroup,PointX,PointY,Latitude,Longitude,SpatialReference from WorkOrders
```

● Let ArcGIS discover spatial properties for the layer

○ Define spatial properties for the layer

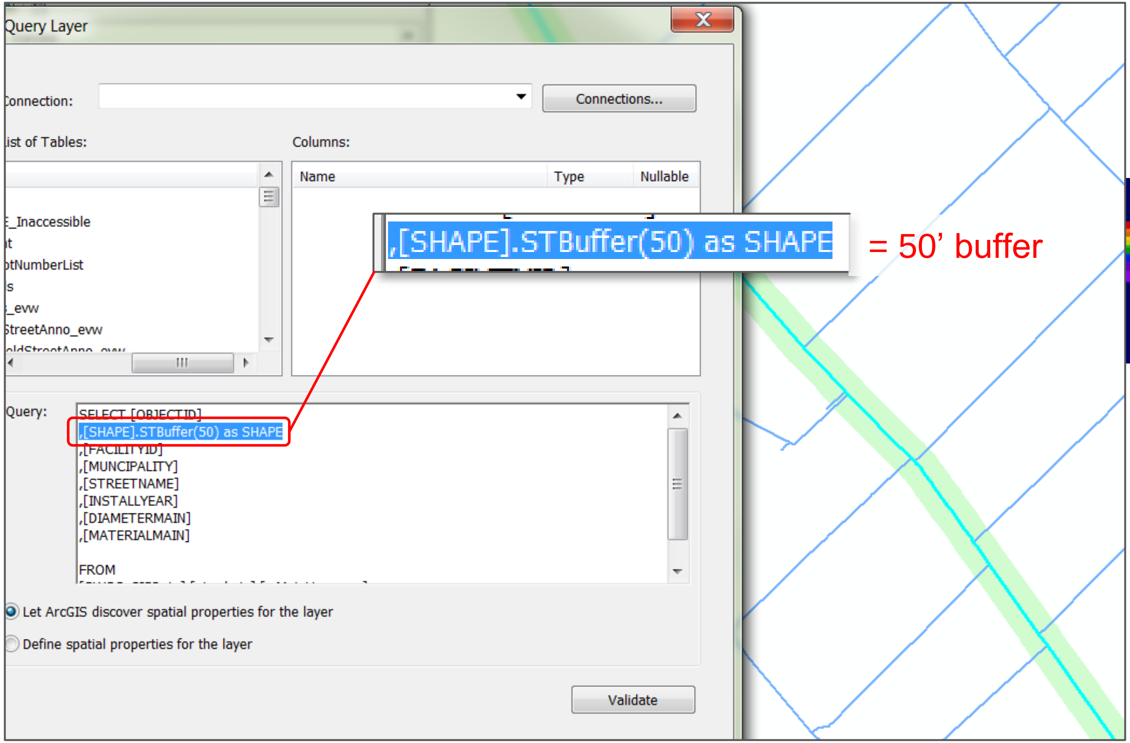
Validate

Buffer via an ArcGIS Query Layer

“Dynamic” Buffer

Not recommended for large selection sets

use a good WHERE clause to narrow the scope



```
SELECT [OBJECTID]
,[SHAPE].STBuffer(50) as SHAPE
,[FACILITYID]
,[MUNCIPALITY]
,[STREETNAME]
,[INSTALLYEAR]
,[DIAMETERMAIN]
,[MATERIALMAIN]

FROM
```

● Let ArcGIS discover spatial properties for the layer

○ Define spatial properties for the layer

,[SHAPE].STBuffer(50) as SHAPE = 50’ buffer

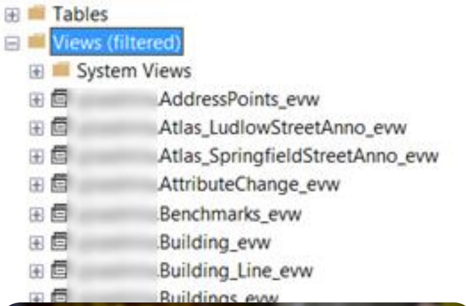
A word about querying Esri Versioned Feature Classes

Versioned Feature Classes have a “Versioned View”

The Versioned View provides the current posted Default version of the data

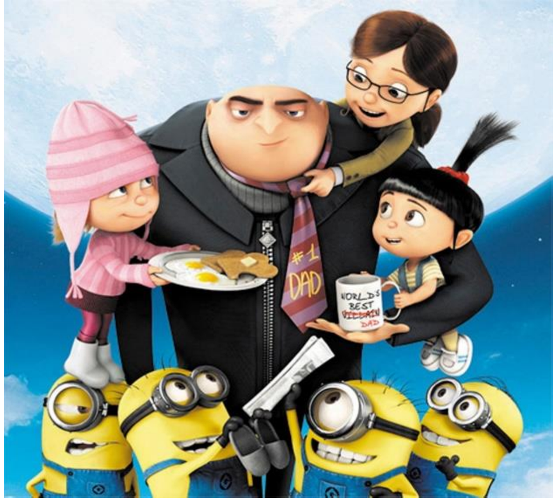
Naming convention:
<Feature Class Name>_EVW

https://desktop.arcgis.com/en/arcmap/latest/manage-data/using-sql-with-gdbs/what-is-a-versioned-view.htm



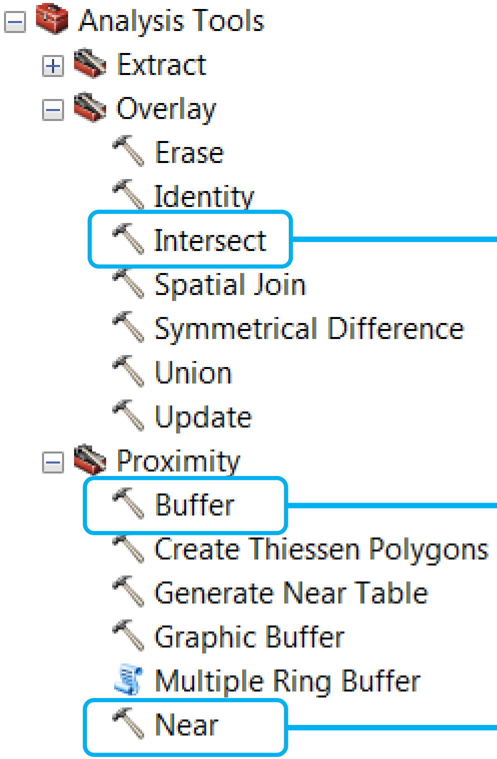
```
⊞ Tables
⊟ Views (filtered)
    ⊞ System Views
    ⊞ [redacted] AddressPoints_evw
    ⊞ Atlas_LudlowStreetAnno_evw
    ⊞ Atlas_SpringfieldStreetAnno_evw
    ⊞ AttributeChange_evw
    ⊞ Benchmarks_evw
    ⊞ Building_evw
    ⊞ Building_Line_evw
    ⊞ Buildings_evw
```

Quiz 3: Sequel or Original?



Answer: **Sequel (Despicable Me 2)**

Spatial Querying: The Toolbox through a new lense



- Analysis Tools
  - Extract
  - Overlay
    - Erase
    - Identity
    - Intersect
    - Spatial Join
    - Symmetrical Difference
    - Union
    - Update
  - Proximity
    - Buffer
    - Create Thiessen Polygons
    - Generate Near Table
    - Graphic Buffer
    - Multiple Ring Buffer
    - Near

Layer1.Shape.**STIntersection**(Layer2.Shape)

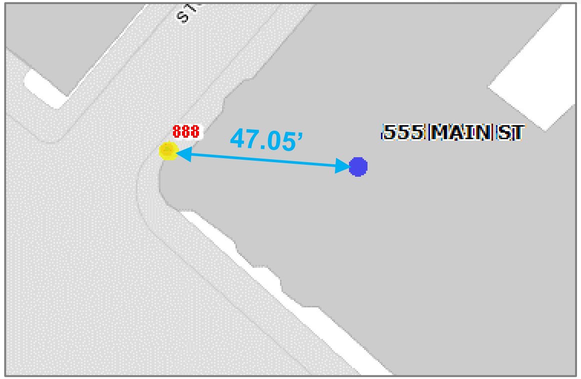
Layer1.**STBuffer**(<distance>)

various ways, using **STDistance**

Distance: Point to Point

Where’s the Nearest Hydrant?

```
DECLARE @Addr VARCHAR(50)
SET @Addr = ‘555 MAIN ST’
DECLARE @PT GEOMETRY
SET @PT = (SELECT SHAPE FROM AddressPts
                  WHERE Address = @Addr)

SELECT TOP 1 @Addr as Address, h.HydrantID
,h.SHAPE.STDistance(@PT) as Distance
,h.SHAPE.ToString() as HydrantGeometry
FROM Hydrants as h
ORDER BY h.SHAPE.STDistance(@PT)
```



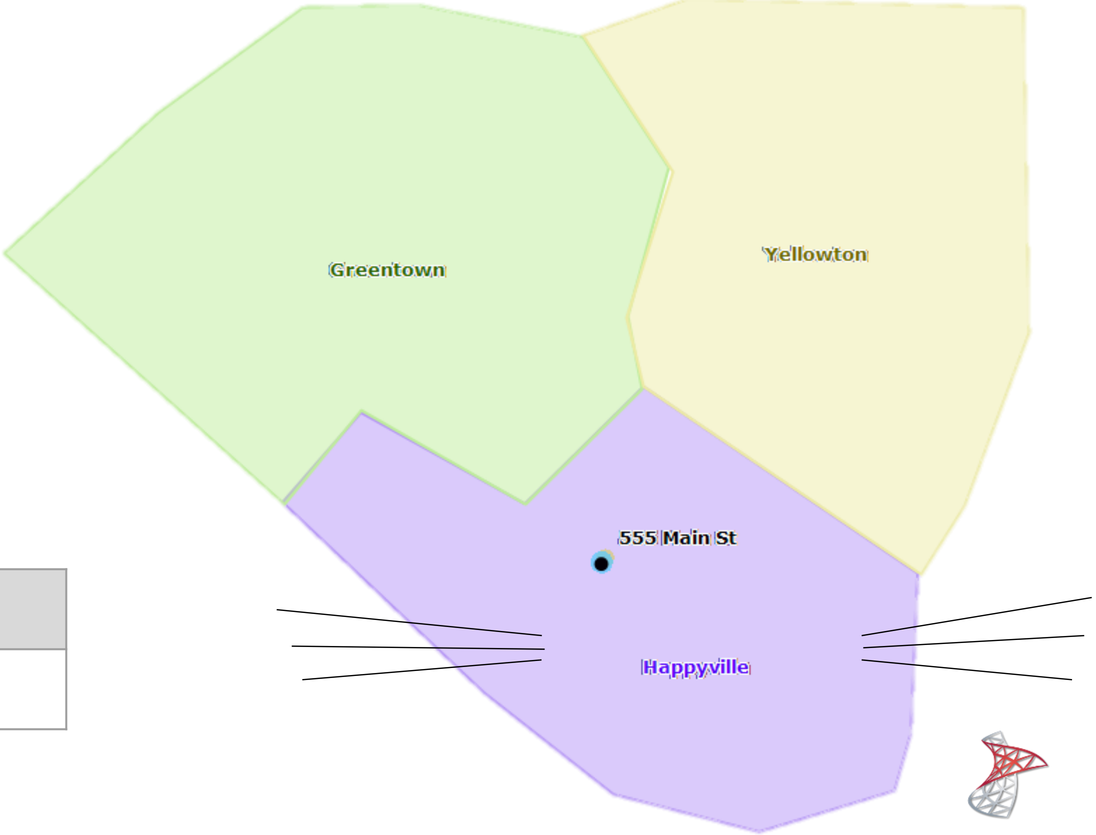
Address	HydrantID	Distance	HydrantGeometry
555 MAIN ST	888	47.05	POINT (361358.95999999344 2863573.450000003)

Point in Polygon

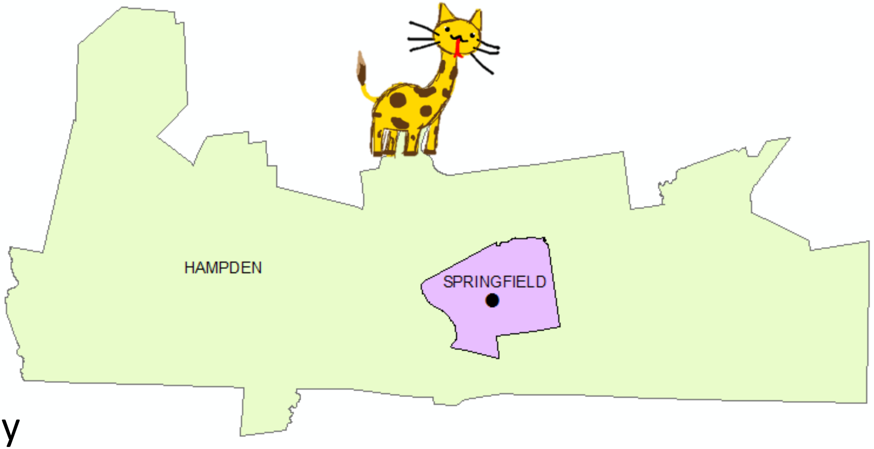
In which neighborhood is this address?

```
SELECT a.Address, n.Neighborhood
FROM AddressPts as a
JOIN Neighborhoods as n
ON n.Shape.STContains(a.Shape) = 1
WHERE a.Address = '555 MAIN ST'
```

Address	Neighborhood
555 MAIN ST	Happyville



Polygon Center in Polygon



Example: Town in County

```
SELECT t.TOWN as Community ,c.COUNTY as County
,format((t.SUM_ACRES / c.AREA_ACRES),'P1') as [% Coverage of County]
FROM MGIS_TOWNBOUNDSSURVEY as t
JOIN MGIS_COUNTYBOUNDARIES as c
ON c.shape.STIntersects(t.shape.STCentroid()) = 1
WHERE t.TOWN = 'SPRINGFIELD'
```

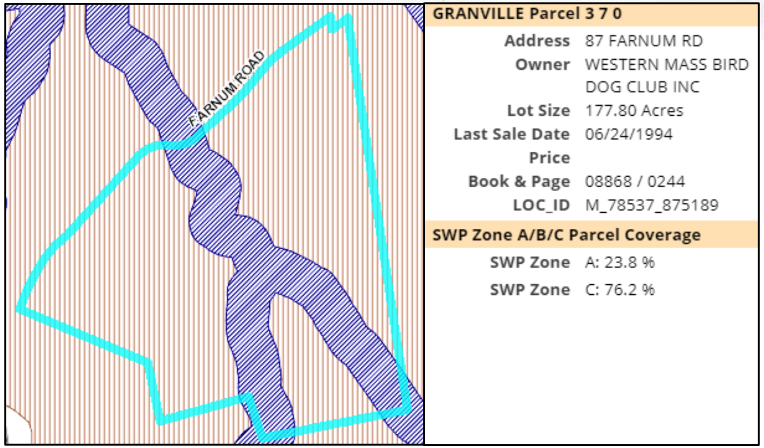
Community	County	% Coverage of County
SPRINGFIELD	HAMPDEN	5.2 %

Polygon Overlap Area

Percentage of parcel in Zone A, B or C watershed protection area

```
SELECT DISTINCT swp.SWPZONE as [SWP Zone]
,format(sum(swp.Shape.STIntersection(p.Shape).STArea()) / p.Shape.STArea(), 'P1') as [Overlap Pct]
FROM [MGIS_Parcels] as p
JOIN [MGIS_SurfaceWaterProtection_ZoneABC] as swp
ON p.Shape.STIntersection(swp.shape).STArea() > 0
WHERE p.LOC_ID = 'M_78537_875189'
GROUP BY swp.SWPZONE, p.Shape.STArea()
```

SWP Zone	Overlap Pct
A	23.8 %
C	76.2 %



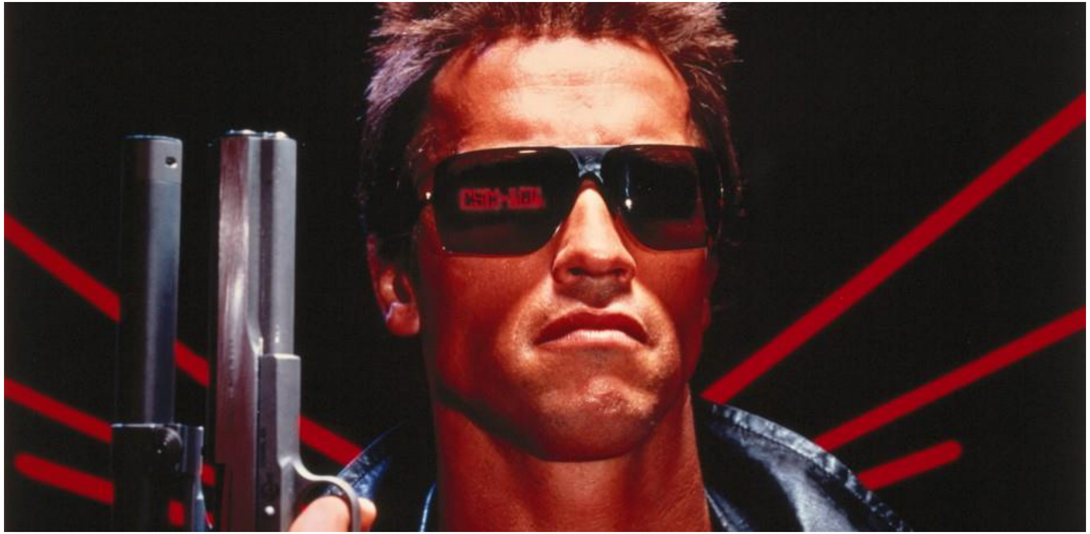
GRANVILLE Parcel 3 7 0

Address	87 FARNUM RD
Owner	WESTERN MASS BIRD DOG CLUB INC
Lot Size	177.80 Acres
Last Sale Date	06/24/1994
Price	
Book & Page	08868 / 0244
LOC_ID	M_78537_875189

SWP Zone A/B/C Parcel Coverage

SWP Zone	A: 23.8 %
SWP Zone	C: 76.2 %

Quiz 4: **Sequel** or Original?

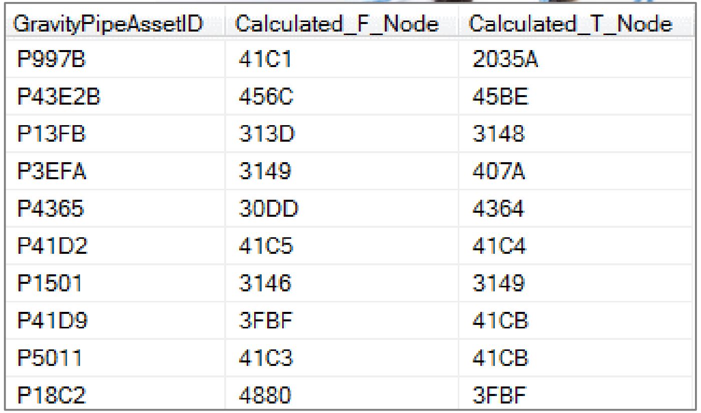


Answer: **Original (The Terminator)**

Line / Point Connectivity

Selecting upstream / downstream manhole IDs by joining to the coincident start & end nodes of the pipes

```
SELECT    g.[ASSETID] as GravityPipeAssetID
          ,F_MH_XY.ASSETID as Calculated_F_Node
          ,T_MH_XY.ASSETID as Calculated_T_Node
 FROM [GRAVITYPIPE] as g
 JOIN [MANHOLE] as F_MH_XY
          on        (g.Shape.STStartPoint()).STX = F_MH_XY.Shape.STX
          and       (g.Shape.STStartPoint()).STY = F_MH_XY.Shape.STY
 JOIN [MANHOLE] as T_MH_XY
          on        (g.Shape.STEndPoint()).STX = T_MH_XY.Shape.STX
          and       (g.Shape.STEndPoint()).STY = T_MH_XY.Shape.STY
```

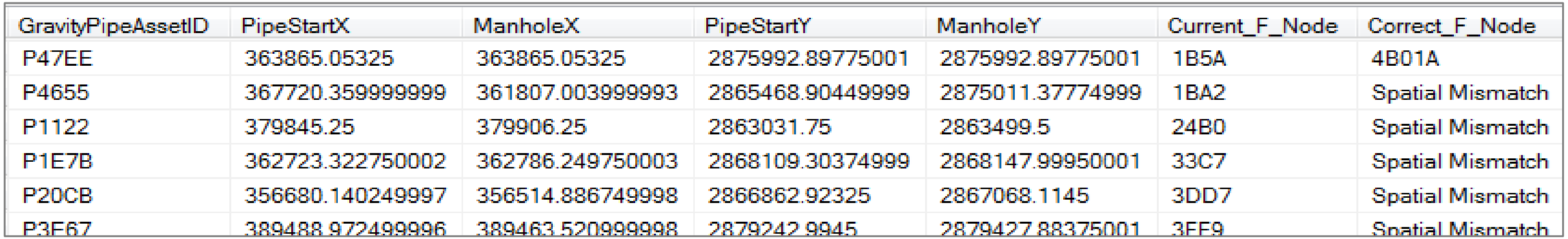


GravityPipeAssetID	Calculated_F_Node	Calculated_T_Node
P997B	41C1	2035A
P43E2B	456C	45BE
P13FB	313D	3148
P3EFA	3149	407A
P4365	30DD	4364
P41D2	41C5	41C4
P1501	3146	3149
P41D9	3FBF	41CB
P5011	41C3	41CB
P18C2	4880	3FBF

Line / Point Connectivity

Detecting errors or miscodes with upstream/downstream node values

```
SELECT      g.[ASSETID] as GravityPipeAssetID ,(g.Shape.STEndPoint()).STX as PipeStartX, m.Shape.STX  as ManholeX
            ,(g.Shape.STEndPoint()).STY as PipeStartY, m.Shape.STY as ManholeY, g.[F_NODE] as Current_F_Node
            ,case isnull(mxy.ASSETID,'') WHEN '' THEN 'Spatial Mismatch' ELSE mxy.ASSETID END as Correct_F_Node
FROM GRAVITYPIPE as g
join SMH as m on g.F_NODE = m.ASSETID
join SMH as mxy
on (g.Shape.STStartPoint()).STX = mxy.Shape.STX and (g.Shape.STStartPoint()).STY = mxy.Shape.STY
where m.Shape.STX <> (g.Shape.STStartPoint()).STX and m.Shape.STY <> (g.Shape.STStartPoint()).STY
```

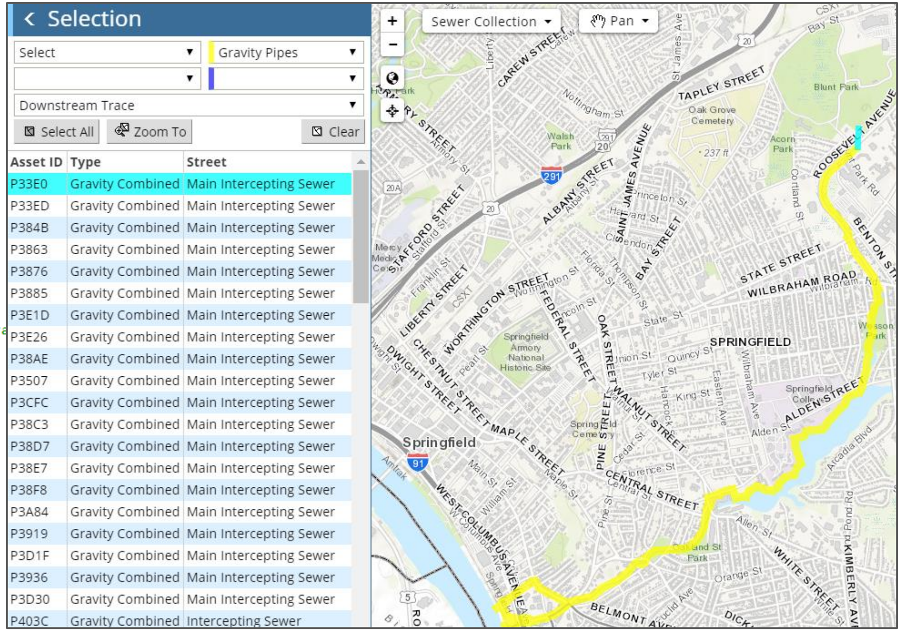


GravityPipeAssetID	PipeStartX	ManholeX	PipeStartY	ManholeY	Current_F_Node	Correct_F_Node
P47EE	363865.05325	363865.05325	2875992.89775001	2875992.89775001	1B5A	4B01A
P4655	367720.359999999	361807.003999993	2865468.90449999	2875011.37774999	1BA2	Spatial Mismatch
P1122	379845.25	379906.25	2863031.75	2863499.5	24B0	Spatial Mismatch
P1E7B	362723.322750002	362786.249750003	2868109.30374999	2868147.99950001	33C7	Spatial Mismatch
P20CB	356680.140249997	356514.886749998	2866862.92325	2867068.1145	3DD7	Spatial Mismatch
P3E67	389488.972499996	389463.520999998	2879242.9945	2879427.88375001	3EE9	Spatial Mismatch

Practical Benefits of Start/End Node Attributes

Upstream / Downstream Trace

```
SET @NewInsertCount = @@ROWCOUNT;

-- the tree traversal:

WHILE @NewInsertCount > 0
-- enter the loop if there was something inserted in the previous statement

BEGIN
    --We insert into #CHILDREN all ASSETIDs which are "children"
    --The @NewInsertCount will indicate how many children are added for each iteration; va
    INSERT INTO #CHILDREN(ID, ASSETID, Location, F_NODE, T_NODE, PipeType )
        SELECT  @NewInsertCount, ASSETID, Location, F_NODE, T_NODE
                ,[PipeSubType] as [PipeType]
                FROM [redacted]Pipes WHERE EXISTS
               (SELECT  ASSETID, Location, F_NODE, T_NODE, PipeSubType FROM #CHILDREN
                WHERE [redacted]Pipes.F_NODE = #CHILDREN.T_NODE)
         AND  NOT EXISTS
              (SELECT  ASSETID, Location, F_NODE, T_NODE, PipeSubType FROM #CHILDREN
               WHERE [redacted]Pipes.ASSETID = #CHILDREN.ASSETID);

         SET @NewInsertCount = @@ROWCOUNT;
    -- if the value is 0 then there were no new children inserted thus no "grandchildren"

END
```



Selection

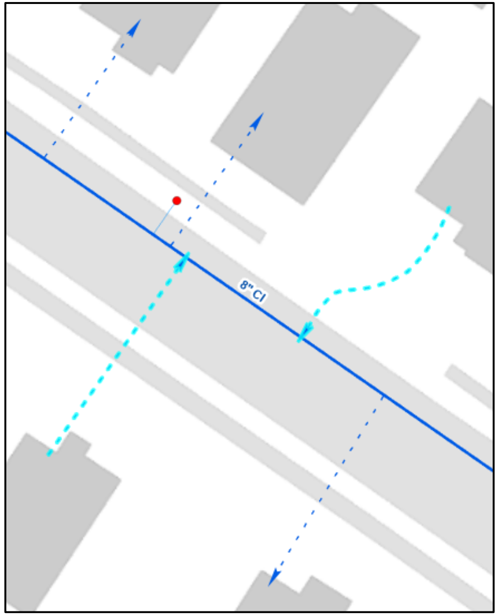
Select ▾ | Gravity Pipes ▾

Downstream Trace ▾

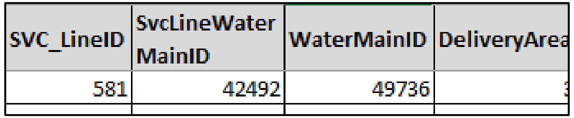
Asset ID	Type	Street
P33E0	Gravity Combined	Main Intercepting Sewer
P33ED	Gravity Combined	Main Intercepting Sewer
P384B	Gravity Combined	Main Intercepting Sewer
P3863	Gravity Combined	Main Intercepting Sewer
P3876	Gravity Combined	Main Intercepting Sewer
P3885	Gravity Combined	Main Intercepting Sewer
P3E1D	Gravity Combined	Main Intercepting Sewer
P3E26	Gravity Combined	Main Intercepting Sewer
P38AE	Gravity Combined	Main Intercepting Sewer
P3507	Gravity Combined	Main Intercepting Sewer
P3CFC	Gravity Combined	Main Intercepting Sewer
P38C3	Gravity Combined	Main Intercepting Sewer
P38D7	Gravity Combined	Main Intercepting Sewer
P38E7	Gravity Combined	Main Intercepting Sewer
P38F8	Gravity Combined	Main Intercepting Sewer
P3A84	Gravity Combined	Main Intercepting Sewer
P3919	Gravity Combined	Main Intercepting Sewer
P3D1F	Gravity Combined	Main Intercepting Sewer
P3936	Gravity Combined	Main Intercepting Sewer
P3D30	Gravity Combined	Main Intercepting Sewer
P403C	Gravity Combined	Intercepting Sewer

Advanced: Spatial Joining by Start or End of a Line

Problem: How can we detect lines that have improper directionality?



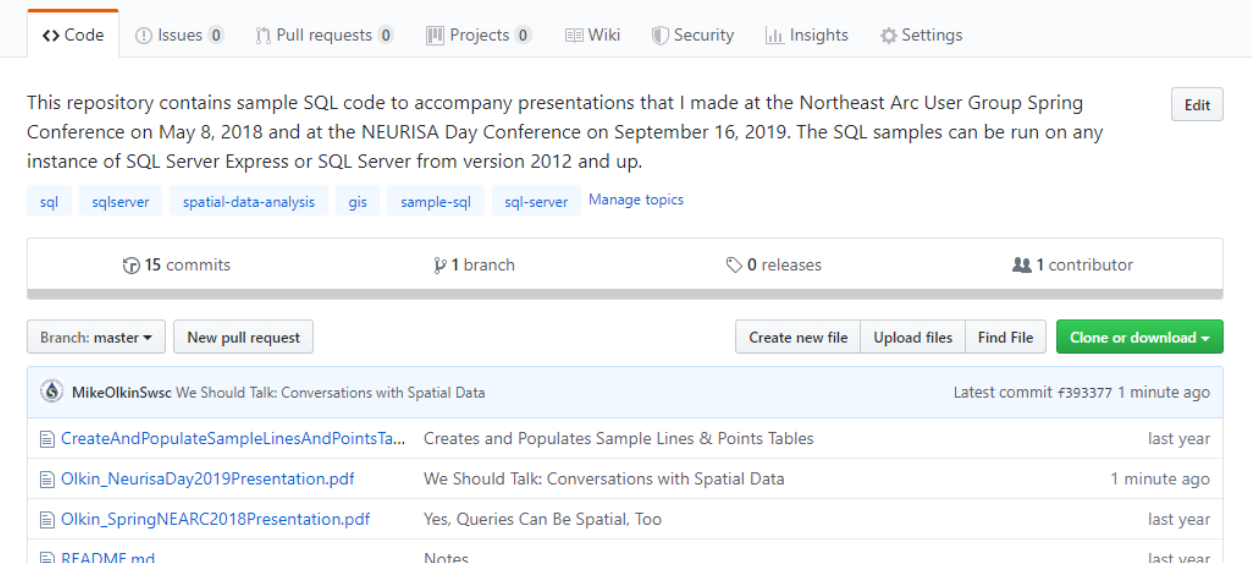
```
SELECT sL.SVC_LineID ,sL.WtrMainID as SvcLineWaterMainID
,wM.FACILITYID as WaterMainID, sL.DeliveryArea

FROM  [dbo].[wServiceLine_evw] sL --Water Service Lines
LEFT OUTER JOIN [dbo].[wMainLine_evw] wM --Water Mains

--Joining STEndPoint or STStartPoint is processor intensive.
--Best to avoid running in a production environment.
ON sL.Shape.STEndPoint().STIntersects(wM.SHAPE) = 1

—-Only show the backward service lines
WHERE wm.FACILITYID is not null
```



SVC_LineID	SvcLineWater MainID	WaterMainID	DeliveryArea
581	42492	49736	3

Practice Data & Sample Code

https://github.com/MikeOlkinSwsc/SpatialSQL



This repository contains sample SQL code to accompany presentations that I made at the Northeast Arc User Group Spring Conference on May 8, 2018 and at the NEURISA Day Conference on September 16, 2019. The SQL samples can be run on any instance of SQL Server Express or SQL Server from version 2012 and up.

15 commits | 1 branch | 0 releases | 1 contributor

MikeOlkinSwsc We Should Talk: Conversations with Spatial Data — Latest commit f393377 1 minute ago

CreateAndPopulateSampleLinesAndPointsTa...	Creates and Populates Sample Lines & Points Tables	last year
Olkin_NeurisaDay2019Presentation.pdf	We Should Talk: Conversations with Spatial Data	1 minute ago
Olkin_SpringNEARC2018Presentation.pdf	Yes, Queries Can Be Spatial, Too	last year
README.md	Notes	last year

Questions?

Image courtesy of fanfiction.net

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