

Charting the Course



# What's New in Lucity GIS 2014 & 2014r2





# New GIS Enabled Modules

## 2014

- **Sewer:** MACP Inspections, Overflows, Structure Inspections
- **Storm:** Weirs, BMP Asset Items, MACP Inspections, Sampling
- **Facility:** Equipment Plant
- **Water:** Hydrant Flow Tests, Hydrant Inspections, Losses, System Valve Inspections

## 2014r2

- **General:** Parcels
- **Facility:** Irrigation Valves, Irrigation Nodes, Irrigation Controllers, Irrigation Pipes
- **Park:** Art, Irrigation Nodes, Irrigation Pipes
- **Water:** Access Roads, Water Gates
- **Raw Water:** Service Manifolds, Service Boxes, Spills, Gauges, Structures, Checks, Culverts



# Supported ArcGIS Versions

## 2014

- Fully supports ArcGIS Desktop and ArcGIS for Server versions 10.0, 10.1, 10.2, 10.2.1, 10.2.2

## 2014r2

- Fully supports ArcGIS Desktop and ArcGIS for Server versions 10.1, 10.2, 10.2.1, 10.2.2
- **The Lucity Data Update SOE is no longer available for ArcGIS for Server version 10.0.**
  - You must upgrade your ArcGIS for Server to version 10.1+ or use the new Lucity feature service update option..



# 2014 Highlights





- **Lucity inspection modules can now be linked to a feature class**
  - Synchronization requires GIS Scheduled Tasks that can be defined in the Lucity Geodatabase Configuration Program
  - V2014 only supports Lucity to GIS synchronization
  - Only available for a few select inspection modules
  
- **Improved compatibility with Esri's date data type**
  - GIS field that contains both a date and time component can now be synchronized to both a Lucity Date and Lucity Time field.
  
- **Lucity Spatial– Lucity now stores work request and work order spatial information directly in the Lucity database.**
  - As work orders are created, updated, deleted a new service processes the changes and writes the spatial information directly in the Lucity database.
  - The Lucity Work Viewer tool in ArcMap allows users to create custom views to these spatial tables allowing for display of live work data in the various Lucity GIS solutions



# 2014r2 Highlights



- **New Parcel module**
  - May require some reconfiguration of Lucity GIS for clients that have both an address and parcel feature class. Previously, these feature classes could only be linked to the Customer Address module
- **Inspection feature classes now support two-way synchronization**
  - Previously, only Lucity to GIS synchronization was supported. V2014r2 also supports GIS to Lucity synchronization.
  - Synchronization requires GIS Scheduled Tasks that can be defined in the Lucity Geodatabase Configuration Program
- **New alternative to Lucity's SOE for ArcGIS for Server**
  - GIS updates from Lucity can now be accomplished via feature services.
  - Lucity's SOE on ArcGIS for Server no longer required with this option.
- **Feature Editing now available in Lucity web map**
- **Lucity's Last Sync Date field in GIS will now record times in UTC**
  - Change required to support the new Scheduled GIS Tasks processing Esri's sync enabled feature services.
- **Lucity's GIS Scheduled Tasks**
  - Includes two way synchronization options and expanded options

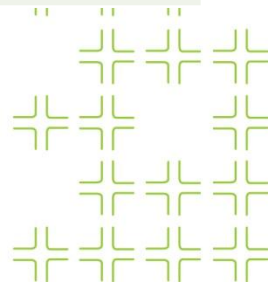
## Lucity GIS for ArcMap Changes for 2014

Button	Name	Description of change
	Create Lucy Work Layers	➤ New tool to create both Live and Static views of Work Orders, Requests, Master Projects, and PM/Templates.
	User Specific Settings	➤ Default symbology template supports new Live Lucy work layers.
	Sewer and Storm Edit Tools	<ul style="list-style-type: none"> <li>➤ Now provides warning to user if ID for merged pipe already exists.</li> <li>➤ The asset description fields for the associated pipe(s) are now updated when doing a split/merge/renumber.</li> </ul>
	Lucity Editor Extension	<ul style="list-style-type: none"> <li>➤ Storm Discharge points can now be used as a to/from node for storm conduits.</li> <li>➤ Composite GIS date fields can now be synched to both a Lucity date and a Lucity time field.</li> </ul>



## Lucity GIS for ArcMap Changes for 2014r2

Button	Name	Description of change
	Update Spatial Relationships	<ul style="list-style-type: none"> <li>➤ New hardcoded spatial relationship for maintaining Parcel and Address feature relationships</li> </ul>
	Lucity Editor Extension	<ul style="list-style-type: none"> <li>➤ Lucity Last Sync Date field in GIS will now be populated with value in UTC instead of local.</li> <li>➤ Park and Facility Irrigation Pipe feature classes are processed like Sewer, Storm, and Water pipes where the to/from node information is calculated automatically.</li> <li>➤ New Raw Water Pipe to/from node types have been added to include: Culverts, Checks, Structures, Gauges, Spills, Service Boxes, and Service Manifolds.</li> </ul>



## Create Lucity Work Layers- Requirements

The Create Lucity Work Layers tool provides the ability to create a query layer based upon the new spatial tables in the Lucity work database. Before using this tool Lucity Spatial must be enabled and has the following requirements:

- The Lucity Work database must be one of the following:
  - SQL Server 2008 or higher
  - Oracle with MDSYS.SDO\_GEOMETRY data type enabled
- The Lucity Services must be installed
- Each Lucity linked feature class must be assigned to a default map service
- Lucity linked feature classes must be one of the following geometry types:
  - Point
  - Line, polyline
  - Polygon
- System Settings in UI Admin must be configured





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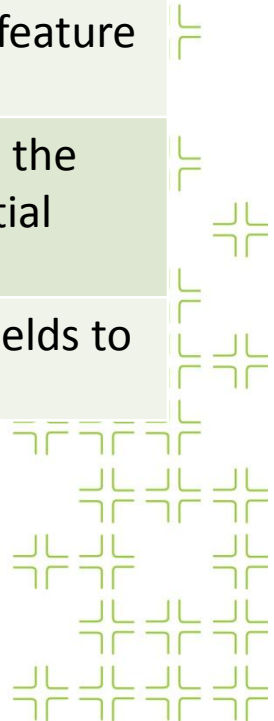
# Lucity GIS - ArcMap Demo





## Lucity Geodatabase Configuration Changes for 2014

Name	Description
Add Feature Class	➤ Now provides option to map to the following Lucity inspection modules: Storm MACP Insp., Storm Sampling, Sewer MACP Insp., Sewer Overflows, Sewer Structure Insp., Water Hydrant Flow Tests, Water Hydrant Insp., Water Losses, Water System Valve Insp.
Scheduled Tasks	➤ New tool to push inspection data from Lucity into feature class.
Edit Map Service	➤ Now provides ability to specify a feature service at the feature class level. This setting is used for the Spatial Updater service and Scheduled Tasks
Field Configuration	➤ Now supports mapping GIS composite DateTime fields to Lucity.





## Lucity Geodatabase Configuration Changes for 2014r2

Name	Description
Edit Map Service	➤ Services configured at the feature class level must now be defined in UI Admin Map Services module.
Update Feature Class Services	➤ New tool to associate map and feature services to multiple feature classes
Connection Properties	➤ The edit map service that is associated to the geodatabase can now be edited from the connection properties tab. ➤ A new Test Connection button is available with the edit map service, which will validate the map service connection.
Validations	➤ The validation results will now include testing of the map and feature service associated to the feature class.
Scheduled Tasks	➤ Added new task type “Sync- GIS to Lucity” in addition to the “Sync- Lucity to GIS” ➤ Enabled the ability to schedule the GIS Task and provides processing log details
Copy GIS Task	➤ New tool that can be used to copy a GIS Task template to other feature classes
Update Street Name Domains	➤ Adds ability to create a text domain for composite street name fields. ➤ In addition, each of the street component domains will now get applied to all feature class fields that are assigned to the corresponding street component field.
Update Work Category Domain	➤ New tool to create a domain for work category component fields. ➤ In addition, the domain will get applied to all feature class fields that are assigned to a work category component field.



## Inspection Feature Class Requirements

Using the new GIS Scheduled Tasks you can transfer Lucity inspection data into the feature class. The primary purpose of this functionality is to support Esri's Local Government Maps and Apps that utilize displaying various inspection/testing data.

With v2014r2, we added support for GIS to Lucity synchronization. With this added functionality you can now take advantage of data collection outside of an ArcMap edit session, such as using Esri's Collector for ArcGIS to obtain inspection/testing results.

- Lucity's integration with inspection feature classes **require** the use of GIS Scheduled Tasks and are not processed the same as asset inventory feature classes. For example:
  - Attribute edits made in Lucity inspection modules are **not** sent to the feature class via the typical GIS Update process (Lucity SOE or via Feature Service).
  - Edits made to inspection feature classes in a Lucity GIS ArcMap edit session are **not** sent to the Lucity database when saving the edit session.

## Scheduled Tasks

Scheduled Tasks are designed to push data back and forth between Lucity and the geodatabase. There are two types of synchronizations:

1. **Lucity to GIS**- Only supported for inspection feature classes
2. **GIS to Lucity**- Supported for all GIS enabled modules

Scheduled tasks can be configured to run automatically using a new service, Lucity GIS Task Runner. This functionality greatly expands the Lucity and GIS integration capabilities with use of feature services. Edits to the feature service, regardless of who did it and what environment they did it in, can be picked up by Lucity.

- **Merges, Splits, Renumbers, and Deletes must still be done in an ArcMap editing environment with the Lucity extension enabled in order for the Lucity inspection, construction, and work history to be properly updated.**
- Number generators, spatial relationships, and any other Lucity GIS extension functionality (as found with the ArcMap editing environment) is **not** performed when Scheduled Tasks synchronize features with Lucity.
- Features must meet the Lucity module requirements in order for them to be synchronized. For example, required fields such as the Lucity common ID must be populated with a unique value.
- Scheduled Tasks interact with the feature class via map and/or feature services. Before setting up a Scheduled Task you should make sure there is a map service defined at either the feature class or geodatabase level.

## Composite DateTime Fields

Numerous date and time formats are valid using Esri's Date data type. For example, all of the following are acceptable values for an Esri's Date field:

- 7/24/2014
- 7/24/2014 12:32 PM
- 12:32 PM

FieldName	DisplayName	Field Type	MaxMask	Feature Class Field Name	Field Lookup	Lookup Lucity ID
HI_CAP_CD	Cap Condition	Short	nnnn		<input type="text"/>	
HI_CHAN_CD	Cap Chain Cond	Short	nnnn		<input type="text"/>	
HI_DAMG_CD	Damage Type	Short	nnnn		<input type="text"/>	
HI_DRN_CD	Drain Condition	Short	nnnn		<input type="text"/>	
HI_FLSH_TM	Time Flushed (m)	Double	-nnnnnnnn...		<input type="text"/>	
HI_FLUSH	Hydrant Flushed	Boolean			<input type="text"/>	
HI_HY_ID	Hydrant Rec #	Long	nnnnnnnn	FACILITYID	<input type="text"/>	<input checked="" type="checkbox"/>
HI_ID	Auto Number	Long	nnnnnnnn		<input type="text"/>	
HI_INBY_CD	Inspection By	String	5x		<input type="text"/>	
HI_INSP_BY	Inspected By	String	25x		<input type="text"/>	
HI_INSP_DT	Inspection Date	Date	mm/dd/yyyy	INSPECTDATE	<input type="text"/>	
HI_INSP_TM	Inspection Time	Time	hh:mm am	INSPECTDATE	<input type="text"/>	
HI_NMNT_DT	Next Insp Date	Date	mm/dd/yyyy		<input type="text"/>	
HI_NQZI_CD	Needs Condition	Short	nnnn		<input type="text"/>	

INSPECTDATE = "7/24/2014"

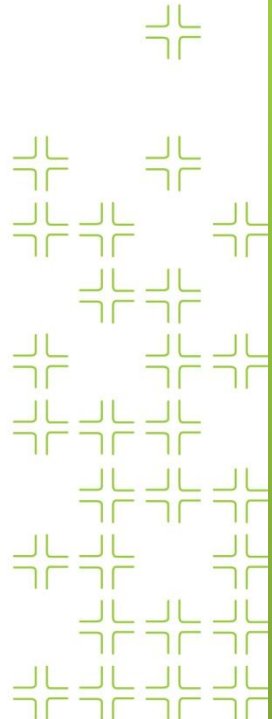
HI\_INSP\_DT = 7/24/2014 and HI\_INSP\_TM = null

INSPECTDATE = "7/24/2014 12:32 PM"

HI\_INSP\_DT = 7/24/2014 and HI\_INSP\_TM = 12:32 PM

INSPECTDATE = "12:32 PM"

HI\_INSP\_DT = null and HI\_INSP\_TM = 12:32 PM



## Validations

Starting with v2014r2, validations in the Lucity Geodatabase Configuration tool now include checks against map and feature services.

There are now three parts to the validation process:



The screenshot shows the 'Validation Results' window with three distinct sections, each highlighted by a red box and an arrow:

- Validation of Lucity requirements:** This section shows the validation of setup requirements. It lists 'Lucity Module' as 'Water Site' and 'Feature Class Name' as 'wtSite'.
- Validation against geodatabase:** This section shows the validation of setup against the geodatabase. It displays retrieved GIS database connection information:
  - SERVER = LCT-ARCSRV-01
  - INSTANCE = sde sqlserver LCT-ARCSRV-01\SQLEXPRESS
  - DATABASE = LucityGISDev
  - VERSION = dbo.DEFAULT
  - USER = GISEditor
  - PASSWORD = \*\*\*\*\*
 It also lists 'Lucity Module' as 'Water Site' and 'Feature Class Name' as 'wtSite'.
- Validation against service:** This section shows the validation of setup against a web service. It indicates that it may take a few moments to connect to the service(s). It lists 'Lucity Module' as 'Water Site', 'Feature Class Name' as '(Alias Name List)', and 'wtSite' as '(Water Site)'. It also lists 'Criteria Fields' as 'FACILITYID' and 'Data Fields' as 'NAME, SITETYPE, LOCDESC, STRUCTYPE, USER\_AREA, LastSynDate, LUCITYID, INLUCITY'. A warning is displayed: 'Warning: Lucity field [ ] is mapped to GIS field [LastSynDate] which does not exist in the service layer: [http://act-arcsv-01-5080/arcsv/rest/services/LucityGISDev\\_AsFeatureService/FeatureServer/152](http://act-arcsv-01-5080/arcsv/rest/services/LucityGISDev_AsFeatureService/FeatureServer/152). This may cause issues with Lucity tools that interact with this feature layer. Note: Field names are case sensitive. UniqueField: ST\_NUMBER. Is Required = True'.

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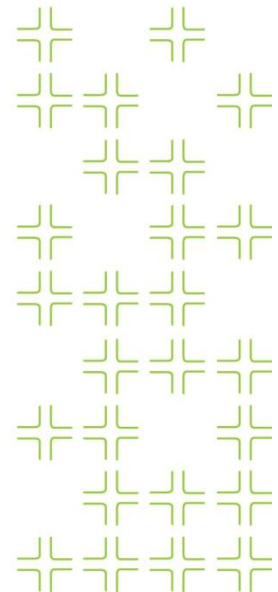
# Lucity GIS - ArcCatalog Demo













## Lucity Web Map Changes for 2014

Button	Name	Description of change
	Relationships	➤ Tool has been updated to support the live work order layers created with Lucity's Create Work Layers tool in ArcMap

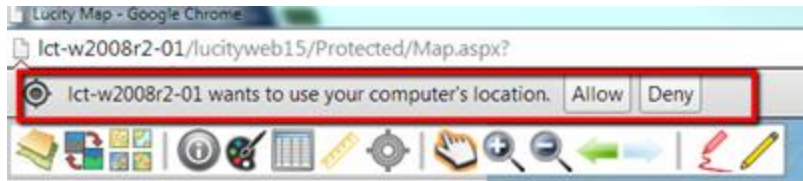


## Lucity Web Map Changes for 2014r2

Button	Name	Description of change
	TOC tools	A new zoom to layer tool has been added in the Table of Contents
	Swap Web Map	A new tool has been added to allow loading of different web maps
	Geolocate	A new tool has been added to show current location
	Edit Tools	New tool that provides editing capabilities for feature services in map
	Selection Tools	<ul style="list-style-type: none"> <li>• A new select by rectangle tool is available</li> <li>• New button to switch between selection options (select by rectangle, select by polygon, select by point).</li> <li>• Last used selection option is now a saved setting</li> </ul>
	Water Isolation Valve Trace	A new tool that provides an isolation valve pipe trace
	Property Viewer	A new property viewer tool is now available in the feature data grid and identify results windows
	Create Inspections	A Create inspection tool is now available in the feature data grid and identify results windows

## Geolocate Tool

- A new tool has been added allowing users to show their current location on the map. This tool uses the W3C Geolocation API (<http://www.w3.org/TR/geolocation-API/>).
- Enabling this tool will cause the web page to try and access the user's location information.
  - Since this could compromise a user's privacy, permission must be obtained before the web map can gain access. Each browser has its own policies and methods for requesting the user's permission.



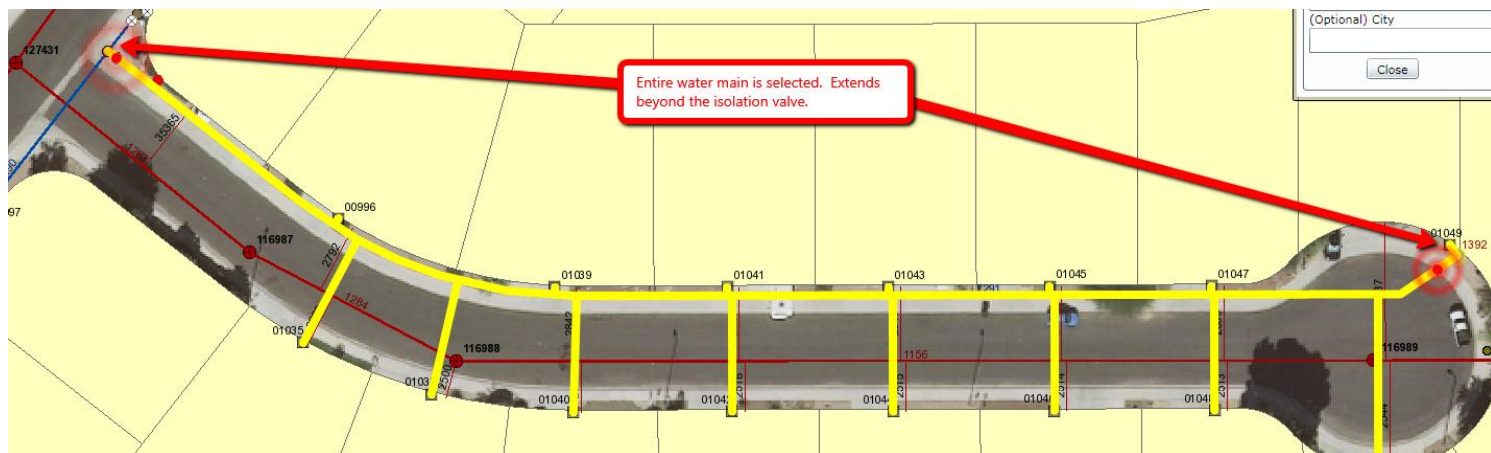
- The API is unaware of the underlying location information source.
  - Common sources of location include GPS and location derived from network signals such as IP address, RFID, WiFi and Bluetooth MAC addresses, and GSM/CDMA cell IDs.



## Water Isolation Valve Trace Tool

A new tool has been added allowing users to perform a trace on their water main network showing locations of the nearest operational isolation valves. This tool could help determine which valves need to be closed in response to water main breaks and other leaks.

- This tool does not use the GIS environment to perform the trace, instead it performs the trace based upon the relationships between mains, valves, hydrants, and service laterals as they are defined in the Lucity database.
- For best results- water mains should be split at all isolation valves. If mains are not broken at isolation valves, the trace will still work, it is just that the entire main will be shown selected, extending the selection past the isolation valve.



## Edit Tools

- Editing capabilities are only available for web maps that contain map services that have been configured to allow editing. This configuration is done with new options in the UI Admin Map Services and Map Setup modules.
- The edit toolset can be configured to work with any map service that has feature access enabled.
- The edit toolset can work on both Lucity linked and non-Lucity data.
- The edit toolset found in the Lucity web map is an Esri out-of-the-box edit toolset. We currently haven't implemented any custom code or modifications to these tools.
- Note: When the Edit Toolset is active, the Lucity tools (Identify, Select, etc.) will not function on the edit layers.



### If editing Lucity linked data:

- Lucity is not directly aware of the edits being made. **The Lucity database is not updated when you save your edits.** In order for Lucity to be updated with the edits made in the web map you **must do one** of the following:
  - Setup a GIS Scheduled Task (new functionality available with 2014r2) against the underlying feature classes.

or

  - In ArcMap, using the Lucity Editor Extension run the Force Sync tool on the features that have been edited.
  
- Only basic editing tasks supported. Due to the nature of maintaining inspection and work history along with feature relationships the following edits are not supported and should not be performed in the web map:
  - **Renumber** (changing the FacilityID/CommonID value for an existing feature)
  - **Delete** (deleting an existing feature)
  - **Split** (splitting a sewer pipe, storm conduit, water pipe, or a street segment/subsegment/supersegment)
  - **Merge** (merging sewer pipes, storm conduits, water pipes, or street segments/subsegments/supersegments)

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# Lucity GIS - Web Map Demo



## Other GIS Sessions

### ❑ **Lucity Webmap Overview**

- Mon 1-1:50pm, Wed 3-3:50pm
- Provides in-depth look at the tools available with the Lucity Webmap

### ❑ **GIS Administration for Web and Mobile Maps**

- Mon 2-2:50pm
- Provides an overview of how to setup and configure the various settings used with the Lucity Web and Mobile Maps. This section will include how to configure services to enable editing in the Lucity Web map.

### ❑ **Lucity GIS Administrative Tools Part 1**

- Mon 3-3:50pm
- Provides an overview of the configuration and various tools used to configure Lucity GIS applications.

### ❑ **Lucity GIS Administrative Tools Part 2**

- Mon 4-4:50pm
- In-depth look at the new Lucity GIS tools that interact with map and feature services: Lucity Spatial , Lucity to GIS Updates via Feature Services, and GIS Scheduled Tasks.

### ❑ **ArcGIS Server Administration Part 1-2**

- Tues 2-2:50pm
- Details on the various settings and items to consider when creating map and feature services plus much more.



# Lucity GIS Integration

