

Autodesk® Topobase™ Modules User Guide

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Autodesk Topobase Modules User Guide

1

Introduction

Autodesk® Topobase™ Water, Wastewater, and Gas enable utilities to use CAD tools to document, maintain, and present networks and infrastructure. In the process, water, wastewater, and gas utilities create attribute data associated with their assets, for example, pumps, meters, and valves. Engineering design information is GIS-ready, incorporating a dynamic utility model that enables on-the-fly topology and analysis, such as network traces. Utilities can then maintain infrastructure data in the Topobase enterprise solution built on an Oracle database, which can be accessed across the organization and used by business teams in ongoing network and asset management.

Topobase Water, Wastewater, and Gas come with a industry-specific data models comprised of the most commonly requested and used data schemas, object relationships and associations, business rules, and workflows. Each area is customizable to fit specific needs.

Topobase Water, Wastewater, and Gas workflows are designed to streamline common activities related to creating and maintaining utility networks. Designers can rely on the extensive library of workflows to perform their daily tasks.

The data models delivered with Topobase Water, Wastewater, and Gas are often customized to meet customer or project requirements in different countries and regions. This customization impacts feature class form layout, additional functions, the content of domains, and available reports. This guide describes basic functionality, not specific customizations.

Using Water Workflows

An important feature of Topobase Water is that designers have the ability to establish a comprehensive set of workflows. Workflows streamline business processes based on the water utility's current way of doing business. Workflows help guide you through common tasks and govern the way information is entered into the database. Workflows — and related business rules that are working behind the scenes — also prevent designers from leaving out required elements, choosing incorrect materials, or including incorrect material sizes, thereby reducing errors during design and data updates

Topobase Water provides four types of workflows:

Workflow Type	Definition
Acquisition Workflow	Create network points, pipes, house connectors, sites, facilities, pressure zones, and so on.
Analysis Workflow	Find connected pipes and trace the network from a designated start and stop point.
Cable Acquisition Workflow	Create control cables and points.
Report Workflow	Generate and print predefined and customized reports and export the report into HTML, ASCII, or PDF files.

You can create your own workflows.

For more information about defining and managing workflows, refer to Workflow Definition in the Topobase Administrators Guide.

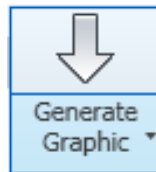
Initiate a Water Workflow


Before starting a workflow, you must make sure you've set a display model and generate graphics. Report workflows can be used without a drawing.

You can also start workflows from the shortcut menu of the related feature class.

To generate graphics and start a workflow

- 1 On the ribbon, click Home tab ► Display panel ► Display Model and do one of the following:
 - Click the arrow button and select a previously opened display model.
 - Click Open Display Model and select a display model (.tbdm file).
 - Select Open Default Display Model.



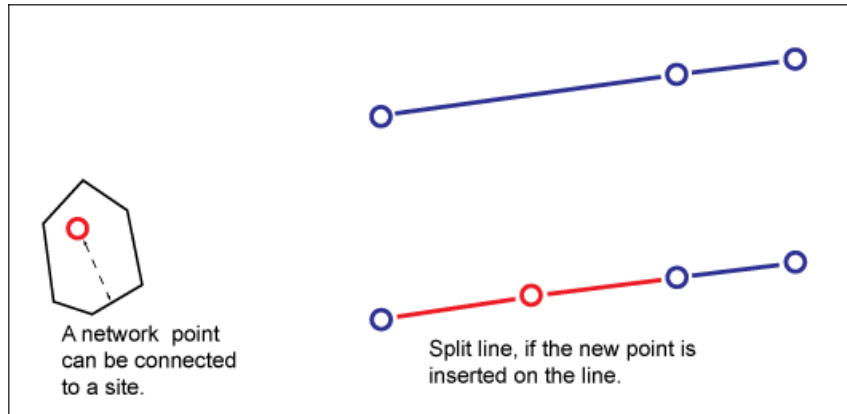
- 2 Click Generate Graphic.
- 3 In the Topobase Task Pane, click the Workflow explorer icon to display the workflows. The Workflow explorer icon is a small square icon with a light blue background and a darker blue border. It contains a white crosshair symbol and a small blue icon of a water network.
- 4 In the Workflows group, select a workflow and click Execute. Optionally, you can right-click a workflow and click Execute or simply double-click a workflow.

Acquisition Workflows

Acquisition workflows and rules help designers create features like valves, network points, pipes, meters, house connections, and so on. Acquisition workflows are also used to remove features like house connections and pips in a water network.


Network Point Creation

Use the Network Point Creation workflow to create any of the network point types.



The Network Point Creation workflow splits existing lines to keep the topology correct.

To create a network point

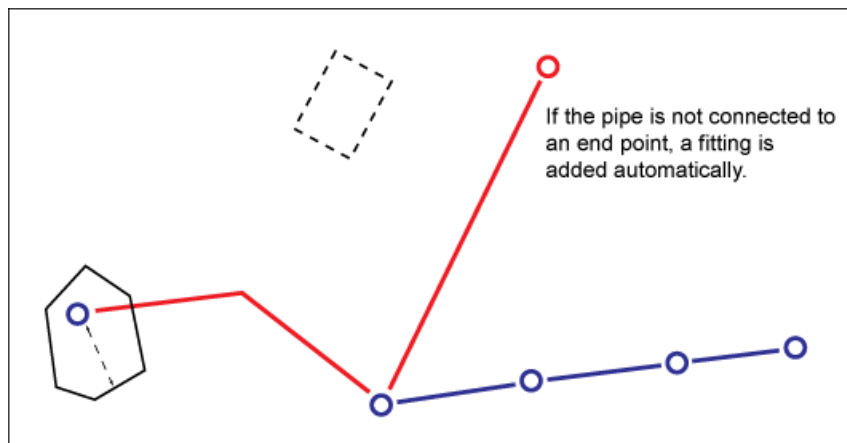
- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click the Network Point Creation workflow.
- 3 Click Execute.
- 4 In the feature class list, select the type of network point feature you want to create.
You can also double-click a point type to start digitizing with the current options.
- 5 Specify a reference record, if any.
- 6 In the Site area, click one of the following options:
 - None – Specifies no site is associated with the point.
 - Digitize – Prompts you to create a site.
If you create a new site, specify the geometry type for the site.
 - Connect To – Prompts you to select an existing site.

- 7 Click OK.
- 8 Follow the prompts to create the new point.
- 9 Press ESC to finish the workflow.
When you are finished creating geometry, the feature class form is displayed so you can add attribute data.


When you place the network point on a line feature, such as a pipe, you are prompted to create a soft split or a hard split. For more information, see [Split Lines](#) (page 25).

Network Pipe Creation

Use the Network Pipe Creation workflow to create network pipes with or without casing or anode protection.



To create a network pipe

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Network Pipe Creation.
- 3 Click Execute.
- 4 Specify a reference record, if any.

- 5 Under Choose Protections, specify whether to create casing, anode, or both when creating the pipes.
You are prompted to create the protection features. Casings are polygons and anodes are points.
- 6 Click OK.
- 7 Follow the prompts.
- 8 Press ESC to finish the workflow.
When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

Feature Rules

Feature rules ensure consistency on the Pipe attribute feature class, Pipe and on its related Line geometry feature class.

- If a vertex of the new pipe lies exactly on an existing network point feature, the pipe is soft split, see [Split Lines](#) (page 25).
- If you create a pipe with a start or end that is not connected to a network point, by default a fitting is created, see [Feature Rule: Create Start And End Nodes](#) (page 34).

See also:

- [Network Pipe with Fitting Point Creation](#) (page 7)

Network Pipe with Fitting Point Creation

Use this workflow to create network pipes. If you create a pipe with a start or end that is not connected to a network point, a fitting is created.

If you do not want to create fitting points, you can use the Network Pipe Creation workflow, see [Network Pipe Creation](#) (page 6).

To create a network pipe with a fitting point

- 1 In the Topobase Task Pane, click the Workflow explorer icon.
- 2 Right-click Network Pipe with Fitting Point Creation.

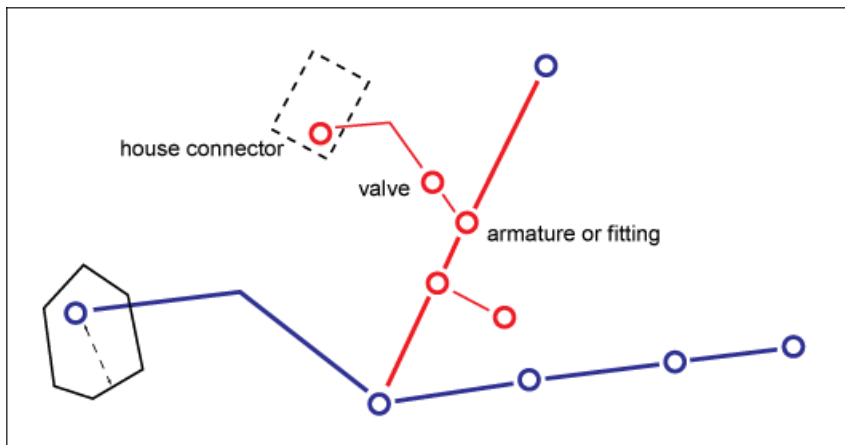


- 3 Click Execute.
- 4 Draw the pipe.
- 5 When done selecting points that make up the pipe, press ENTER.
- 6 Press ESC to finish the workflow.
When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

House Connection Creation

Use the House Connection Creation workflow to connect the house connection to the main pipe with a generated straight pipe or a pipe you create.

You can digitize an armature on the main pipe at the position where the house connection is attached to the main pipe and add a valve on the pipe.



If you do not create an armature, the system creates a fitting at the location where the house connection is attached to the main pipe. This behavior is controlled by a feature rule, see [Feature Rule: Create Start And End Nodes](#) (page 34).

To create a house connection

- 1 In the Topobase Task Pane, click the Workflow explorer icon.
- 2 Right-click House Connection Creation.



- 3 Click Execute.
- 4 Specify a reference record, if any.
- 5 Under Pipe from House Connector to Main Pipe, select Straight Pipe or Digitize Pipe.
If you choose Straight Pipe you are prompted to select the main pipe in the drawing. The connection is created as an orthogonal projection on the main pipe.
- 6 Specify whether to add an armature, or a valve on the main pipe.
- 7 Click OK.
- 8 Follow the prompts.
- 9 Press ESC to finish the workflow.
When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

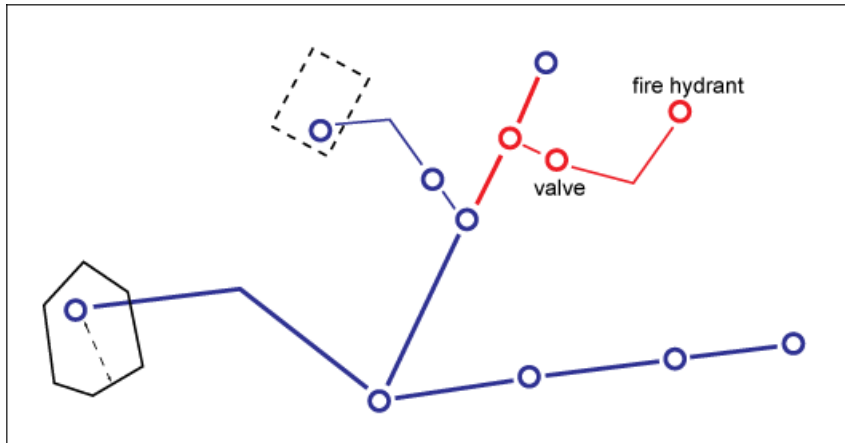
See also:

- [House Connector](#) (page 52)

Fire Hydrant Creation


Use the Fire Hydrant Creation workflow to create fire hydrants that are connected to the main pipe with a generated straight pipe or a pipe you create.

You can also digitize an armature on the main pipe or a valve on the pipe.



If you do not create an armature, the system creates a fitting at the location where the pipe is attached to the main pipe (feature rule).

To create a fire hydrant

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Fire Hydrant Creation.
- 3 Click Execute.
- 4 Specify a reference record, if any.
- 5 Under Pipe from Hydrant to Main Pipe, select Straight Pipe or Digitize Pipe.
If you choose Straight Pipe you are prompted to select the main pipe in the drawing. The connection is created as an orthogonal projection on the main pipe.
- 6 Specify whether to add an armature, or a valve on the main pipe.
- 7 Click OK.
- 8 Follow the prompts.
- 9 Press ESC to finish the workflow.
When you are finished creating geometry, the feature class form is displayed so you can add attribute data.


See also:

- [Hydrant](#) (page 54)

Site or Facility Creation

Use the Site or Facility Creation workflow to create a site that can be connected to a network point or to create a facility structure with geometry.

Creating a site or facility

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Site or Facility Creation.
- 3 Click Execute.
- 4 In the Workflows pane, click Site or Facility (With Structure).
- 5 Specify a reference record, if any.
- 6 Click a geometry type for the site or facility, either point, line, or polygon.
- 7 Click OK.
- 8 Follow the prompts.
- 9 Press ESC to finish the workflow.
When you are finished creating geometry, the feature class form is displayed so you can add attribute data.


See also:

- [Site](#) (page 60)
- [Facility](#) (page 43)
- [Facility Creation](#) (page 11)

Facility Creation

Use the Facility Creation workflow to either create and name a new structure or add facilities to an existing structure. Facilities are not related to network points or lines.

To create a facility

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Facility Creation.
- 3 Click Execute.
- 4 Under Structure Of The Facility, select the structure to add facilities to or enter a name for a new structure.
- 5 Select the type of geometry you want to create.
- 6 Click OK and follow the prompts.
- 7 Press ESC to finish the workflow.

When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

The facility includes a new structure (if selected), a new facility attribute feature, and a facility geometry feature of the selected geometry type.

- 8 In the Facility feature class form, define the facility attributes for the created features.

The facility geometry feature class is not displayed, because it does not store any special attributes.

- 9 Double-click the FID Structure attribute to open the Structure feature class form.

This is the structure associated with the facility.

Creating a facility

- 1 In the Facility feature class form, define the facility attributes for the created features. The facility geometry feature class is not displayed, because it does not store any special attributes.
- 2 Double-click the FID Structure attribute to open the Structure feature class form. This is the structure the facility belongs to.

Add Geometry and Equipment

With the Facility Creation workflow you can create facilities with one geometry feature. You can add more geometries and equipment features.

To add geometry and equipment

- 1 In the Facility feature class form, select the facility.
- 2 Click Equipment to show the Equipment feature class form. If no equipment has been created so far, the filter is empty.
- 3 On the form toolbar, click the New Record icon. Note that the FID of the facility has been inserted.
- 4 Adjust the attributes and click OK.
Repeat these steps to add more geometry features to the facility.
- 5 Click Facility Line to open the related feature class form. The filter shows all lines that are related to the current facility.
- 6 On the form toolbar, click Digitize New Feature. Follow the prompts.

See also:


- [Facility](#) (page 43)

Damage Creation

Use the Damage Creation workflow to place a damage point feature on a pipe. Optionally, you can create an armature such as a strap at the damage location. If you create an armature, the pipe is soft split.

Damage points can only be placed on a pipe.

To create a damage point feature

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Damage Creation.
- 3 Click Execute.
- 4 Specify whether to add an armature at the location of the damage.
- 5 Click OK.
- 6 Follow the prompts.
- 7 Press ESC to finish the workflow.

When you are finished creating geometry, the feature class form is displayed so you can add attribute data.


See also:

- [Damage Point](#) (page 48)

Pressure Zone Creation

Use the Pressure Zone Creation workflow to create pressure zones that subdivide the water network into sections of similar pressure.

To create a pressure zone

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Pressure Zone Creation.
- 3 Click Execute.
- 4 Follow the prompts to create one or more pressure zones.
- 5 Press ESC to finish the workflow.

When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

NOTE With the SetPressureZone feature rule you can control the assignment of pressure zones to network objects, see [Feature Rule: Set Pressure Zone](#) (page 32).


See also:

- [Pressure Zone](#) (page 36)

Protection Creation

Use the Protection Creation workflow to add casings and/or anodes to a pipe.

To create a protection casing or anode

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 

- 2 Right-click Protection Creation.
- 3 Click Execute.
- 4 Select a pipe.
- 5 Under Choose Protections, click casings, anodes, or both.
- 6 Click OK to start digitizing one or more casings (closed polylines).
- 7 Press ESC to finish digitizing casings.
- 8 If selected, you are now prompted to create anodes. Create as many anodes as needed.
- 9 Press ESC to finish the workflow.
When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

See also:

- [Protection](#) (page 59)

Analysis Workflows

Analysis workflows and rules allow designers to trace a water network from one or more designated start features to an optional stop feature. Network tracing begins from the start location and stops when all stop features have been reached. You can also set attribute-dependent stop conditions, locate point objects on a pipe, locate point objects that are not connected to the network, or pinpoint error in a network topology.

Find Connected

Trace a water network from a start feature to one or more optional stop features. The network is traced from the start feature to the stop features, if stop features are specified

TIP Network tracing is much more efficient when start and stop features are selected. Tracing a network without selecting a stop feature can take a very long time.

To find connected pipes



- 1 In the Topobase Task Pane, click the Workflow explorer icon.
- 2 Right-click Find Connected.
- 3 Click Execute.
- 4 In the Workflow pane, under Choose A Start Feature, do the following:
 - Click Choose.
 - Click one or more features at the start of the network trace.
 - Press ENTER to complete the selection.
- 5 If you do not want to trace the whole network, do the following:
 - Under Optionally Choose Stop Features, click Choose.
 - Click one or more stop features.
 - Press Enter to complete selection.
- 6 Under Options, select Include Stop Features to list all connected features including the stop features. If this check box is cleared, stop features are not included.

Start features are always included in the list of connected features.
- 7 To specify the trace direction, click Forward, Backward, or Both.
- 8 Click OK to start network tracing.

When network tracing has finished, all connected features are displayed in the feature explorer in the Workflows pane. Use the tools at the top of the Workflows pane to open the feature class form, highlight selected features, and zoom to selected features.

See also:

- [Adapting a Viewport for Feature Highlighting in the Topobase Client User Guide](#)


Find Connected with Stop Conditions

The Find Connected With Stop Condition workflow provides the same functionality as the Find Connected workflow. In addition, you can define stop features based on their attributes.

All advanced stop conditions that have been defined in the data model administrator are also available here.

For more information about stop conditions using SQL statements, see Network Tracer in the Topobase Administrator Guide.

To trace connected pipes using a stop condition

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Find Connected With Stop Conditions.
- 3 Click Execute.
- 4 In the Workflow group, under Choose a Start Feature, do the following:
 - Click Choose.
 - Click one or more features at the start of the network trace.
 - Press ENTER to complete selection.
- 5 If you do not want to trace the whole network, do the following:
 - Under Optionally Choose Stop Features, click Choose.
 - Click one or more stop features.
 - Press ENTER to complete selection.
- 6 Under Options, select Include Stop Features to list all connected features including the stop features. If this check box is cleared, stop features are not included.

Start features are always included in the list of connected features.
- 7 To specify the trace direction, click Forward, Backward, or Both.
- 8 Under Stop Conditions, click Add.
- 9 In the Stop Condition Editor dialog box, do one of the following:
 - Select an existing stop condition.

- Click New and define a new stop condition.
To learn about creating a new stop condition, see Stop Condition Editor.
- 10 Click OK to close the Stop Condition Editor dialog box.
- 11 Click OK to start network tracing.
When network tracing has finished all connected features are displayed in the feature explorer in the Workflow pane. Use the tools at the top of the Workflow pane to open the feature class form, highlight selected features, and zoom to selected features.

In the Stop Condition Editor dialog box, the list displays only the stop conditions that are not assigned to any tracing template.


See also:

- Adapting a Viewport for Feature Highlighting in the Topobase Client User Guide

Find Non Split Point on Pipe

Use Find Non Split Point On Pipe to find all point features on a pipe that is not split at these points.

Finding non split points on a pipe

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Find Non Split Point On Pipe.
- 3 Click Execute.
- 4 Select the point feature classes to locate.
Select All to search for non split points of any feature class.
- 5 To perform the search on a specific set of features, click Choose and click the point features.
- 6 Click OK.

When the search has finished, all non split points are displayed in the feature explorer in the Workflow pane. Use the tools at the top of the Workflow pane to open the feature class form, highlight selected features, to zoom to selected features, and to soft or hard split the pipes.

See also:

- [Adapting a Viewport for Feature Highlighting in the Topobase Client User Guide](#)


Cable Acquisition Workflows

Use Cable Acquisition workflows to create control cables or control points that contain information about wires, cables, and electronic system controls that are deployed throughout the water utility network. For more information, see [Control Cable](#) (page 41).

Control Cable Creation

Use the Control Cable Creation workflow to create a cable used to transmit electricity or information to system controls.

To create a control cable


- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Control Cable Creation.
- 3 Click Execute.
- 4 Follow the prompts to create one or more control cables.
- 5 When done selecting points that make up the control cables, press ENTER.
- 6 Press ESC to finish the workflow.

When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

If you create a control cable with a start or end that is not connected to a network point, a cable point is created. This is controlled by a feature rule, see [Feature Rule: Create Start And End Nodes](#) (page 34).

Control Point Creation

Use the Control Point Creation workflow to create control cable points. Optionally, you can choose to connect the control cable points to a site, or you can digitize control cabinets.

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
 - 2 Right-click Control Point Creation.
 - 3 Click Execute.
 - 4 Specify a reference record, if any.
 - 5 Specify whether to connect the points to a site.
 - 6 Specify whether to create control cabinets.
 - 7 Click OK.
 - 8 Follow the prompts to create one or more control points.
 - 9 Press ESC to finish the workflow.
- When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

See also:

- [Control Cable](#) (page 41)

Report Workflows

Report workflows are used to generate predefined or user-defined reports. Designers can quickly and easily generate reports from a list of predefined report templates. These reports include:

Predefined Report	Description
Data Model Description	Shows a complete list of all feature classes and features in the water utility database. It also shows the number of features for each feature class and how they are linked to other tables (according to the meta table TB_RELATIONS).


Predefined Report	Description
Water Hydrant Statistics	Displays hydrant information.
Water Network Statistics	Displays point and pipe information, lists other features, and provides a count.
COGO reports	Only if the COGO extension is available. For example, ARC Intersection, or Center. See Constructions: Reports.

The report templates have been created with the Topobase Report Designer. For more information, refer to Report Designer Introduction in the Topobase Administrator Guide.

Report Generation

Use the Report Generation workflow to generate predefined reports. The report templates are created by your Topobase Administrator using the Topobase Report Designer.

To generate reports

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Report Generation.
- 3 Click Execute.
- 4 In the Workflows group, select a report name and click OK.

The report is displayed in a secondary window. You can print the report or change its format to HTML, ASCII, or PDF.

Managing Water Network Topologies

Autodesk Topobase uses topologies to model objects and phenomena of the real world. Typically, a GIS user needs information about relationships between objects with topological characteristics. Models of land and other flat surfaces is a perfect application for area topology. Logical topology is appropriate wherever real world objects are connected to each other in networks








Topobase Water is based on the utility model and network topology which is used for network tracing.

For more information about defining and managing topologies, refer to Topology Introduction in the Topobase Administrator Guide.

Check Topologies

Use the Topology Checker to locate errors in a network topology.

To check a topology for errors

- 1 Click the Document explorer icon. 
- 2 Expand the Topologies listing and right-click the topology. Click Topology Checker.
Topology errors are displayed in the Logical Topology Checker Desktop dialog box.
- 3 Navigate the tree view to select specific features.
- 4 Use the Topology Checker tools to perform the following operations on selected features:
 -  Refresh the topology check after you have addressed problems.
 -  Open the feature class form.
 -   Highlight a feature or clear all highlighted features.
 -  Zoom to a selected feature in the map.
 -  Delete a selected feature.

See also:

- [Water Topologies](#) (page 64)

Explore Stop Conditions

Network topologies are comprised of predefined stop conditions. You can view them with the Topobase Administrator.

To explore stop conditions

- 1 Start Topobase Administrator and open the Water workspace.
- 2 Click Document menu ► Data Model to select the document.
- 3 In the data model explorer, expand Topologies.
- 4 Expand a topology and expand the Conditions folder.
- 5 Right-click the stop condition you want to view and click Properties. The Tracing Condition dialog box is displayed.
- 6 View or edit the setting for the stop condition or click Cancel to exit.

See also:


- Stop Condition Editor

For more information about defining conditions, see Network Tracer in the Topobase Administrator Guide.

Use Water Feature Functions

Each point and line feature class form provides functions for further processing of the selected records. These functions are available in the Function menu and the Network Tracer menu of the feature classes to which they apply.

To view available functions

- 1 Click the Document explorer icon. 
- 2 Under Topics, expand a feature. For example, Point.
- 3 Right-click a feature class. For example, Armature.
- 4 Click Show Form.


- 5 On the Armature feature class form, do one of the following:
 - Click Function menu ► *function_name*.
Where *function_name* is the name of any function available to the selected feature.
 - Click Network Tracer menu ► *menufunction_name*.

If you start a function from the feature class form, consider the current filter. You can apply the function to all features in the filter or to the current feature.

Connect Features to a Zone

Use this function to connect features that lie within a pressure zone or a supply zone. You can use a feature rule to connect the features to the pressure zone or supply zone.

To connect features to a zone

- 1 Click the Document explorer icon. 
- 2 Expand the Administration topic and do one of the following:
 - Right-click Pressure Zone.
 - Right-click Supply Zone.
- 3 Click Show Form.
- 4 Click Function menu ► Associate Related Features to the Zone.
Features are connected to the zone.

See also:

- [Pressure Zone](#) (page 36)
- [Supply Zone](#) (page 38)
- [Feature Rule: Set Pressure Zone](#) (page 32)
- [Feature Rule: Set Supply Zone](#) (page 33)


Use a Referenced Record

Use reference records to create data more quickly. Define one or more reference records for each feature class. These can be used in a workflow. You can:

- Use no reference record.
- Use the last used reference record.
- Select an available reference record.

NOTE To explore available reference records, open the related feature class form in Edit mode.

To create a reference record

- 1 Click the Document explorer icon. 
- 2 Expand the Point topic.
- 3 Right-click the feature class for the reference record you want to create. For example, House Connector.
- 4 Right-click and click Show Form.
- 5 In the form, right-click in the background and click Reference Record ► Add.
The New Reference Record dialog box is displayed.
- 6 In the Name field, enter a name, such as Digitized House Connector, and click OK.
- 7 In Reference Record mode, enter the reference values to be used, such as Accuracy = Digitized.
- 8 Click Save.

For more information about reference records, see Using Reference Records in the Topobase Client User Guide.

Split Lines

If you digitize a point feature on a line or polyline feature, the line or polyline is split to preserve a correct network topology.

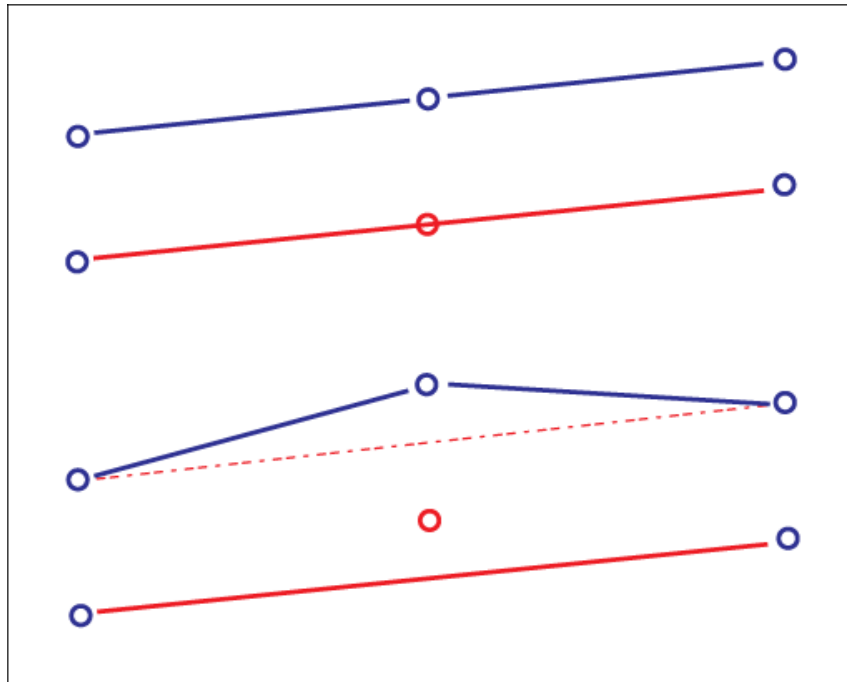
To digitize a point and split a line



- 1 Click the Document explorer icon.
- 2 Expand the topic for the line you want to split. For example, Pipe.
- 3 Right-click the Pipe feature class and do one of the following:
 - Click Soft Split (Only Geometry)
 - Click Hard Split (Also Attributes)
- 4 In the drawing, select the line representing the pipe.
- 5 In the Select dialog box, select the point feature class you want to digitize. For example, select Meter.
- 6 Digitize the point.

The new point does not need to lie exactly on the selected line. If the point lies next to the line, the line is split and the new lines move to the point. However, if the point lies on a line that is not the selected one, no splitting is performed.

NOTE Use Object Snap and Object Snap Tracking to ensure that the point is placed on the line. For more information, refer to AutoCAD Help.

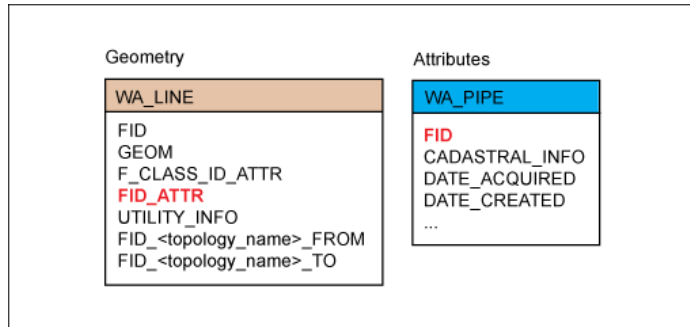


Splitting lines: When you digitize a point on a utility line or next to a utility line, the new lines move to the point.

When a pipe is digitized, normally only the start and the endpoint coordinates are known, and connected using a straight line. Then, when a new point is measured, such as a valve, this point normally does not lie exactly on the pipe, and the pipe must be adjusted to this new point.

Soft Split and Hard Split

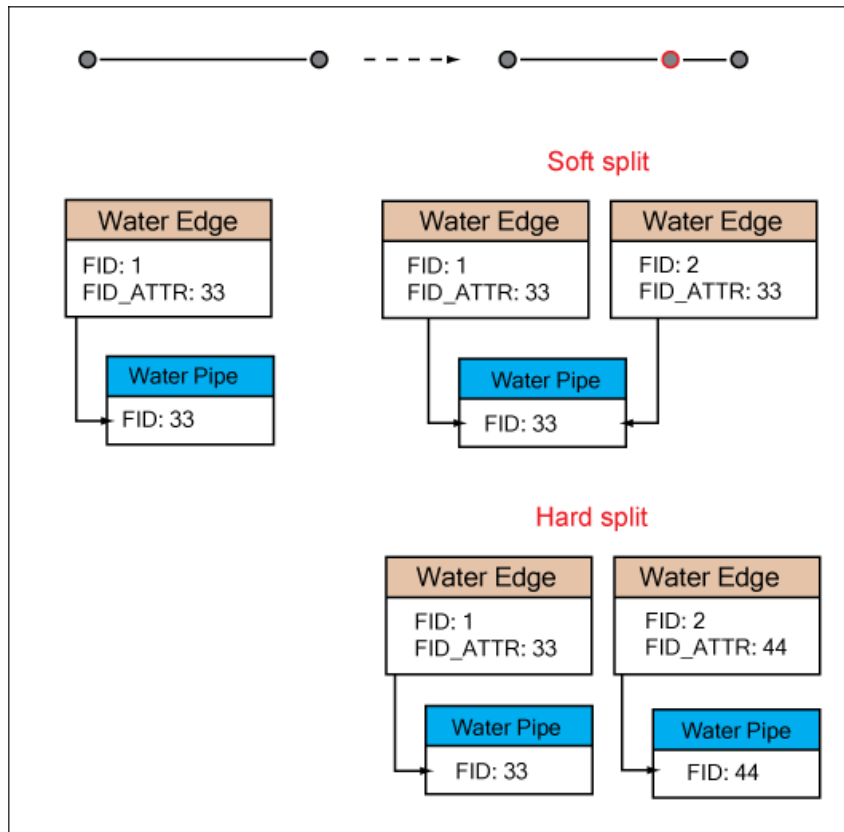
Because geometry and attributes are stored separately, one geometry feature class such as a point, can represent various attribute feature classes such as armature, emitter, and fitting. For line features, there are two different line splitting methods: soft split and hard split.



Water data model: Relation between pipe and line feature class

In a workflow you can specify whether the line is soft split or hard split. This determines how the system handles the attribute data of the two resulting features.

Split Type	Description
Soft Split	With soft split, the line is split into two separate features. Each has its own geometry (WA_LINE), but they both use the same attribute data (WA_PIPE). Use soft split for point features of minor importance and when the attributes of the pipe do not change, such as armatures.
Hard Split	With hard split, the line is split into two separate features. Each has its own geometry (WA_LINE) and each has its own attribute data (WA_PIPE). Use hard split for point features of major importance, such as a pump or a valve. Use hard split if the attributes of the pipe change, such as diameter, material, or model.



Water data model: Soft and hard split


See also:

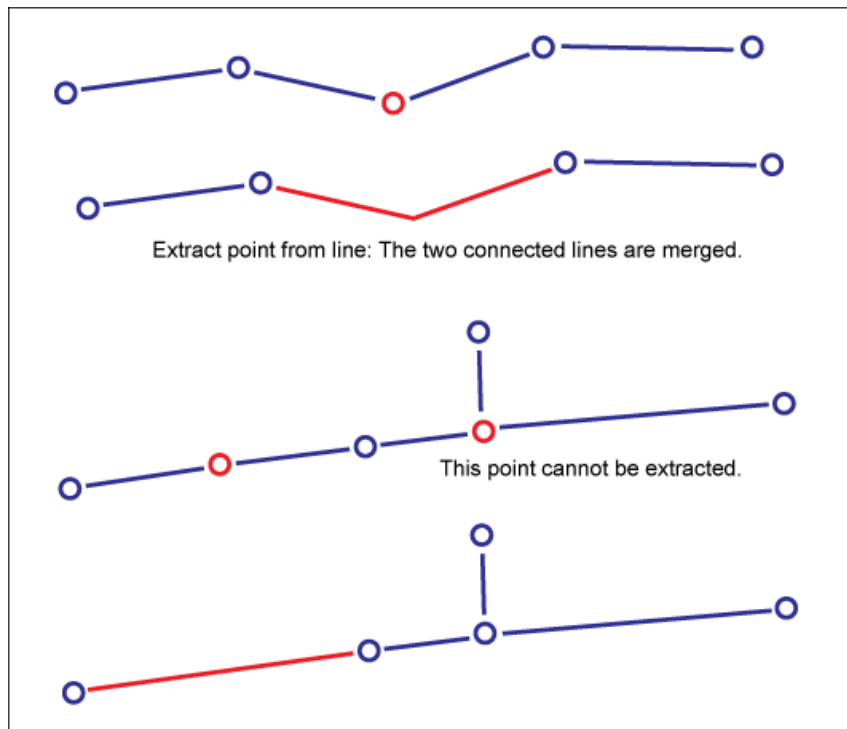
- [Water Topologies](#) (page 64)

Extract Points from Lines

If you delete a point, you must update the network topology to keep the network consistent. For example, if you delete a network point, you must merge the two connected lines. If more than two lines are connected at the point, you are not allowed to delete the point.

To extract a point

- 1 Click the Document explorer icon. 
- 2 Right-click the point feature class and click Extract From Line.
- 3 When prompted, click the point you want to delete.
The point is deleted from the database and the connected lines are merged.



Network topology: Extracting points from a network line

See also:

- [Water Topologies](#) (page 64)

Organization of Water Functions and Features

When you run Data Acquisition workflows in the Water application, the following feature rules improve the efficiency of adding features and keep data consistent.

- **Soft split** — If a network line has a network point on a vertex, the line is split. See also [Split Lines](#) (page 25).
- **Pressure zone** — Enable or disable the pressure zone rule for a feature if it is located within a zone. See [Feature Rule: Set Pressure Zone](#) (page 32).
- **Supply zone** — Enable or disable the supply zone rule for a feature if it is located within a zone. See [Feature Rule: Set Supply Zone](#) (page 33).
- **Point orientation** — If you place a point on a pipe, the symbol is oriented according to the direction of the pipe.
- **Move** — If a pipe is moved, the connected pipe and points also move.
- **Identical points** — Ensure that no water network points or cable control points are created in the same location.

For more information about feature rules, see About Feature Rules in the Topobase Administrator Guide.

Explore Water Feature Rules

Many feature classes in the water data model are comprised of feature rules. Use the data model administrator to view, enable, or disable feature rules.

To explore water feature rules

- 1 Start Topobase Administrator and open the Water workspace.
- 2 Click Document menu ► Data Model.
- 3 Expand a topic in the data model explorer.
- 4 Right-click a feature class and click Edit Feature Rules.
The Feature Rules Properties dialog box is displayed.
- 5 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.

- 6 In the Applied Rule Bases list, enable or disable the rules you want adjusted.
- 7 Click Save & Close.

For example, you can use a feature rule to automatically set the pressure zone, when a point or line feature is digitized within an existing pressure zone. By default, these rules are applied to the node feature class and the network point feature classes.

For more information about defining feature rules, see About Feature Rules in the Topobase Administrator Guide.

Feature Rule: Set Pressure Zone

When you digitize water network features, a feature rule sets the pressure zone for a feature if it is located within a zone. If the feature is located in overlapping zones, you are prompted to select a zone. If you choose Yes, you can select a zone. If you choose No, the pressure zone value is cleared.

NOTE If you digitize a pressure zone while the water network features already exist, the pipes are not updated and do not belong to the pressure zone.

You can use a feature function to update the relations. See also [Connect Features to a Zone](#) (page 24).

To enable or disable the Set Pressure Zone feature rule for a fitting

- 1 Start Topobase Administrator and open the Water workspace.
- 2 Click Document menu ► Data Model.
- 3 Expand the Utility topic and select the Point feature class.
- 4 Right-click and click Edit Feature Rules.
The Feature Rules Properties dialog box is displayed.
- 5 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.
- 6 In the Applied Rule Bases list, enable or disable the SetPressureZone_BIU and the SetPressureZone_AIU rules.
- 7 Click Save & Close.
- 8 Expand the Point topic and select the Fitting feature class.

- 9 Right-click and click Edit Feature Rules.
- 10 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.
- 11 In the Applied Rule Bases list, enable or disable the SetPressureZone_BI rule.
- 12 Click Save & Close.

See also:

- [Pressure Zone](#) (page 36)

Feature Rule: Set Supply Zone

When you digitize water network features, a feature rule sets the supply zone for a line feature if it is located within a zone. If the feature is located in overlapping zones, you are prompted to select a zone. If you choose Yes, you can select a zone. If you choose No, the pressure zone value is cleared.

NOTE If you digitize a supply zone while the water network features already exist, the pipes are not updated and do not belong to the supply zone.

You can use a feature function to update the relations. See also [Connect Features to a Zone](#) (page 24).

To enable or disable the Set Supply Zone feature rule

- 1 Start Topobase Administrator and open the Water workspace.
- 2 Click Document menu ► Data Model.
- 3 Expand the Utility topic and select the Line feature class (WA_LINE).
- 4 Right-click and click Edit Feature Rules.
The Feature Rules Properties dialog box is displayed.
- 5 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.
- 6 In the Applied Rule Bases list, enable or disable the SetSupplyZone_BIU and the SetSupplyZone_AIU rules.
- 7 Click Save & Close.

- 8 Expand the Pipe topic and select the Pipe feature class.
- 9 Right-click and click Edit Feature Rules.
- 10 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.
- 11 In the Applied Rule Bases list, enable or disable the SetSupplyZone_BI rule.
- 12 Click Save & Close.

See also:

- [Supply Zone](#) (page 38)

Feature Rule: Create Start And End Nodes

The CreateStartEndNode feature rule controls the automatic creation of network points.

If you create a pipe with a start or end that is not connected to a network point, a fitting is created. Sometimes the water network does not continue beyond a certain point. If you need to create non-ending pipes, you can disable this feature rule. Also, you can configure the feature rule, so that a network point of any type is created.

If you create a control cable with a start or end that is not connected to a network point, a cable point is created.

To enable or disable the CreateStartEndNode feature rule for pipes

- 1 Start Topobase Administrator and open the Water workspace.
- 2 Click Document menu ► Data Model.
- 3 Expand the Utility topic and select the Line feature class (WA_LINE).
- 4 Right-click and click Edit Feature Rules.
The Feature Rules Properties dialog box is displayed.
- 5 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.
- 6 In the Applied Rule Bases list, enable or disable the CreatetStartEndNode rule and click Edit.

The Edit Rule Base dialog box is displayed.

- 7 In the Edit Rule Base dialog box, do the following:
 - Select or clear the Active option.
Optionally, you can also enable or disable the feature rule in the Feature Rules Properties dialog box.
 - In the Parameters field, specify which point feature class to create.
For example, WA_FITTING.
 - Click OK.
- 8 Click Save & Close.

See also:

- [Network Pipe Creation](#) (page 6)
- [Control Cable Creation](#) (page 19)

Administration

These attribute feature classes manage contacts, customers, locations, manufacturers, and item models.

In addition, the Administration topic includes feature classes for meter areas, pressure zones, protection zones, and supply zones.

Contact

This feature class manages contact information, such as company address, contact name, and E-mail.

Contact	Description
Topic	Administration
Table name	WA_CONTACT

You can access the contact form from most of the feature class forms using a relation.

In the contact form, you can access several water network features using the link buttons in the Related Tables tab.

Location

This feature class groups water utility features by geographical relation.

Location	Description
Topic	Administration
Table name	WA_LOCATION

Manufacturer

Use the Manufacturer feature class to manage the manufacturers of the water network items.

Manufacturer	Description
Topic	Administration
Table name	WA_MANUFACTURER

Meter Area

Meter areas are used for visual grouping only.

Meter Area	Description
Topic	Administration
Table name	WA_METERAREA

Pressure Zone

Pressure zones are used to group water utility items.

Pressure Zone	Description
Topic	Administration
Table name	WA_PRESSUREZONE

Pressure Zone	Description
Shortcut Menu	Workflows: Pressure Zone Creation. For more information, see Pressure Zone Creation (page 14).

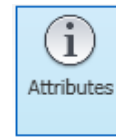
Feature Rule

Optionally, when digitizing a network feature within an existing area, the feature is related to the pressure zone. If you digitize a network feature that lies within several pressure zones, you are prompted to select the zone to connect to.


This option is controlled by the feature rule SetPressureZone. You can enable or disable this feature rule in the data model administrator. See also [Feature Rule: Set Pressure Zone](#) (page 32).

To view related pipes

- 1 Select the pressure zone in the drawing.



- 2 Click Home tab ► Quick Access panel ► Attributes.
- 3 In the Pressure Zone form, click the Related Tables tab.

- 4 Click the Pipes (WA_PIPE)  reference button.

The Pipes form is displayed showing all related pipes in the filter.

When you digitize a pressure zone while the water network features already exist, the pipes are not updated and do not belong to the pressure zone. You can use a feature function to update the relations. See also [Connect Features to a Zone](#) (page 24).

See also:

- [Pressure Zone Creation](#) (page 14)

Protection Zone

Protection zones are used for visual grouping only.

Protection Zone	Description
Topic	Administration
Table name	WA_PROTECTIONZONE

Supply Zone

Supply zones are used to group water utility items.

Supply Zone	Description
Topic	Administration
Table name	WA_SUPPLYZONE

Feature Rule

Optionally, when digitizing a pipe within an existing zone, the pipe is related to the supply zone. This is controlled by the feature rule SetSupplyZone. You can enable or disable this feature rule in the data model administrator. See also [Feature Rule: Set Supply Zone](#) (page 33).

Water Model Feature Classes

For a large number of feature types, Topobase Water provides model driven attributes. You use model tables (*_MODEL) to fill the model driven attributes. Model tables describe several types (models) of a particular network item and can be grouped by manufacturer. Create models for water network items to simplify data acquisition.

For example, in a water utility network with five kinds of valves, you would fill the model driven attributes using a predefined record from the WA_VALVE_MODEL table. In the Valve feature class form, you use the Model Selector control to fill in the model field easily.

NOTE In the Model input field, the value Choose Model indicates that you can apply a model. It does not store the model that has been applied, because at any time you can modify the model driven attributes. The attributes are stored in the main feature class, and you use the model feature class to insert a set of attributes. You can use the model table to store reference values.

BEST PRACTICE In the feature class form, use the Model table, to search for an appropriate model. Use the model list, if you are sure which model to use. In the Form Designer, modify the model table form to hide or show model attributes, or to modify the order in the grid. Modify the main feature class form to move the Model selector to another location.

See also Data Model: Model Tables.

Usually the model information is created either at the beginning of the project or during data acquisition.

The following table is an example of a pipe model table.

Table name	WA_PIPE_MODEL
CERTIFICATE	Description of DIN/ISO/DVGW/TUEV value.
DATE_CREATION	Date when the item was created.
DIAMETER_INSIDE	Inside diameter of the pipe.
DIAMETER_NOMINAL	The manufacturer's designated size, or nominal diameter, such as 1" gas hydrant, 2" meter, 6" pipe.
DIAMETER_OUTSIDE	Outside diameter of the pipe.
FID_MANUFACTURER	WA_MANUFACTURER Manufacturer of this item.
HYDRAULIC_FRICTION	Hydraulic friction or kind of roughness inside the pipe; what causes a decrease in pressure relative to the pipeline length.
ID_COATING_INSIDE	WA_COATING_TBD
ID_COATING_OUTSIDE	WA_COATING_TBD

ID_MATERIAL	WA_MATERIAL_TBD
MODEL_NUMBER	Model name or number.
NARRATIVE	A description or other unique information concerning the item.
PRESSURE_MAX	The manufacturer's or industry standard's maximum pressure rating.
THICKNESS	Thickness of the pipe wall.
USER_FLAG	An operator-defined work area. This attribute can be used by the operator for user-defined system processes. It does not affect the subject item's data integrity and should not be used to store the subject item's data.
VALUE	Short description of the model. This value is used for the domain table representation of the model.

The following table is an example of a valve model table.

Table name	WA_VALVE_MODEL
ANGULAR_DESIGN	1 = is shaped angular.
CERTIFICATE	Description of DIN/ISO/DVGW/TUEV value.
CONTINUOUS_ADJUSTMENT	Item can be adjusted continuously (yes/no).
DATE_CREATION	Date when the item was created.
FID_MANUFACTURER	WA_MANUFACTURER
ID_COATING_INSIDE	WA_COATING_TBD
ID_COATING_OUTSIDE	WA_COATING_TBD

ID_MATERIAL	WA_MATERIAL_TBD
ID_TYPE	WA_VALVE_TYPE_TBD Particular kind, class, or group of valve, such as gate, or check.
LOCKABLE	Item is lockable (yes/no).
MODEL_NUMBER	Model name or number.
NARRATIVE	A description or other unique information.
PRESSURE_MAX	The manufacturer's or industry standard's maximum pressure rating.
USER_FLAG	An operator-defined work area. This attribute can be used by the operator for user-defined system processes. It does not affect the subject item's data integrity and should not be used to store the subject item's data.
VALUE	Short description of the model. This value is used for the domain table representation of the model.
VALVE_LENGTH	Length.

Control Cable

Topobase Water contains a simple data model for the maintenance of control cables.

The data model for control cables is based on the utility model.

See also:

- [Water Topologies](#) (page 64)
- [Cable Acquisition Workflows](#) (page 19)

Control Cabinet

A cabinet for the cable where electrical nodes are located.

Control Cabinet	Description
Topic	Control Cable
Table name	WA_C_Control_Cabinet

Control Cable

A cable used to transmit electricity or information to system controls.

Control Cable	Description
Topic	Control Cable
Table name	WA_C_Cable
Shortcut menu	Reverse Direction Soft Split (Only Geometry) Hard Split (Also Attributes) For more information, see Split Lines (page 25). Workflows: Control Cable Creation. For more information, see Control Cable Creation (page 19).

Control Cable Point

A cable point that represents an electrical node.

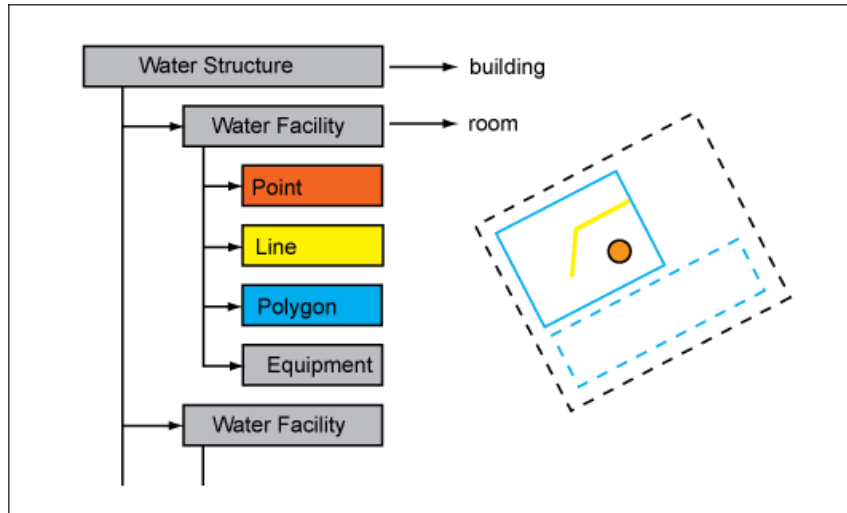
Control Cable Point	Description
Topic	Control Cable
Table name	WA_C_Cable_Point
Shortcut menu	Workflows: Control Point Creation. For more information, see Control Point Creation (page 20).

Control Cable Point	Description
	Extract Points From Lines. For more information, see Extract Points from Lines (page 29).

Facility

Topobase Water contains a simple data structure for facility management. Facility features are not part of the network topology. They are rather used for orientation or illustration purposes. The predefined feature classes come with a number of attributes. The means by which attributes are stored in the facility topic are dependant upon the project and purpose.

Facility	Description
Topic	Facility
Table name	WA_FACILITY_*
Geometry	The geometry feature classes store the geometry for the graphical representation. They do not store attributes of the facility features, except attributes to control the representation, such as line type or symbol.
Shortcut Menu	Workflows: Site or Facility Creation. For more information, see Site or Facility Creation (page 11).



A Water structure can be a building with rooms (facilities) containing equipment such as desks and chairs. The facility has geometry. Structure and equipment are attribute feature classes.

Miscellaneous

Maintenance

This feature class stores information about maintenance work. The feature class uses the maintenance type domain table. In the basic water application, this domain table contains only general maintenance types. It can be modified to meet the requirements of a customized water application.

Maintenance	Description
Topic	Miscellaneous
Table name	WA_MAINTENANCE

Use the Create Maintenance feature function to create maintenances.

Marker

Markers are not part of the network topology and therefore are recorded in a common point feature class.

Marker	Description
Topic	Miscellaneous
Table name	WA_MARKER

Pipe

The basic water application contains one water line feature, pipe. Geometry is stored in the WA_LINE line string feature class. Attribute information is stored in the WA_PIPE attribute feature class.

The pipe feature class has a set of model driven attributes. Values for the model driven attributes are stored in the model table (suffix _MODEL). For more information, see Data Model: Model Tables.

Pipe Feature Class Form

Use the basic feature class form of the water pipe to view and edit feature attributes and to view related data.

The pipe feature class form contains the following elements:

- **General tab** — Displays general feature information.
- **Details tab** — Displays detailed feature attributes and link buttons that provide links to all point features the pipe is connected to.
- **Related Tables tab** — Allows direct access to the following related tables:

Related Table	Table Name and Description
Line	WA_LINE – Contains line geometry.
Label	WA_PIPE_TBL – Contains labels for pipe features.

Related Table	Table Name and Description
Marker	WA_MARKER – Contains marker information. The marker is placed above ground to indicate the position of a pipe feature.
Anode	WA_ANODE – Contains anode for protection of the pipe.
Casing	WA_CASING – Contains casing for protection of the pipe.
Maintenance	WA_MAINTENANCE – Contains information about pipe maintenance.
Damage	WA_DAMAGE – Contains recorded damage.

- **Table tab** — Displays all controls in table form.

Some feature class forms provide functions for further processing of the selected records. These functions can be accessed via menus or control buttons. See also [Use Water Feature Functions](#) (page 23).

Pipe

Pipes are the only standard line feature of a water utility model.

Pipe	Description
Topic	Pipe
Table name	WA_PIPE
CADASTRAL_INFO	Contains the description of cadastral information.
GROUND_ELEVATION	Elevation relative to the ground.
ISOLATION	Description of isolation type.

Pipe	Description
LOCATION	Brief description where the item is located (1m of the wall).
NAME_NUMBER	Name or number of the item.
NARRATIVE	A description or other unique information concerning the subject item.
PIPE_LENGTH	Length of the pipe.
PRESSURE_OPERATING	Operating pressure of the item.
SERIAL_NUMBER	Unique serial number of the manufacturer.
SLOP_MEASURED	Slope of the pipe measured by hand. This value is not calculated.
USER_FLAG	An operator defined work area. This attribute can be used by the operator for user-defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.
Label definition	Displays the diameter, length, and material. See Define Labels (page 65).
Model driven attributes	Model driven attributes can either be filled with the information that is stored in the WA_PIPE_MODEL table, or you can enter values manually. You use the Model Selector control to select a set of attribute values. See also Water Model Feature Classes (page 38).
Shortcut Menu	Reverse Direction Soft Split (Only Geometry) Hard Split (Also Attributes) For more information, see Split Lines (page 25).

Pipe	Description
	<p>Workflows: Network Pipe Creation. For more information see, Network Pipe Creation (page 6).</p> <p>Network Point With Fitting Point Creation. For more information, see Network Pipe with Fitting Point Creation (page 7).</p> <p>Damage Creation. For more information, see Damage Creation (page 13).</p> <p>Protection Creation. For more information, see Protection Creation (page 14).</p>

Damage Point

Damage points indicate locations where damage has occurred. They can be related to a pipe. They are not part of the network topology.

Damage Point	Description
Topic	Pipe
Table name	WA_DAMAGE
Shortcut Menu	Workflows: Damage Creation. For more information, see Damage Creation (page 13).

Point

The utility points of the water data model are stored in separate attribute feature classes, one for each point type. They are grouped in the Point topic.

Geometry is stored separately from attribute data. The network point geometry is stored in the Point feature class in the Topology topic. The utility points are:

- Armature
- Emitter
- Fitting

- House Connector
- Hydrant
- Meter
- Pig Launch
- Pressure Reduction
- Pump
- Reservoir
- Sample
- Source
- Tank
- Valve
- Vent

Each point feature class has a corresponding label feature class (*_TBL) with one default label definition.

Most point feature classes have an associated model table (*_MODEL). Reservoir and Source do not have model tables. Model tables can be found in the Administration topic of the data model, under Manufacturer.

See also:

- [Water Topologies](#) (page 64)

Point Feature Class Form

Use the basic feature class forms of the Water point features to view and edit feature attributes and to view related data.

All point feature class forms contain the following elements:

- **General tab** — Displays general feature information.
- **Details tab** — Displays detailed feature attributes and link buttons that provide links to all line features (usually pipes) the points are connected to.

- **Related Tables tab** — Allows direct access to the following related tables:

Related Table	Table Name and Description
Maintenance	Contains information about network maintenance.
Marker	Contains marker information. The marker is placed above ground to indicate the position of a network part.
Label	Contains label text.
Point	Contains point geometry.

- **Table tab** — Displays all controls in table form.


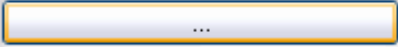
Each point feature class form provides functions for further processing of the selected records. These functions can be accessed via menu or control buttons. See also [Use Water Feature Functions](#) (page 23).

Connect Point Features to Sites

Each network point can be connected to a site. The easiest way to connect a network point to a site is to use the Network Point Creation workflow. For more information, see [Network Point Creation](#) (page 5).

If you have existing points without a site connection, you can assign them to a site.

To connect a point to a site

- 1 Click the Document explorer icon. 
- 2 Right-click the feature class, such as Armature, and click Show Form.
- 3 Select the armature to connect to the site.
- 4 Click the Related Tables tab.
- 5 Click the Point (WA_POINT)  reference button to show the related geometry feature.
- 6 In the Point feature class form, click the Details tab.

7 Under Site, select the FID of the related site.

8 Click Update (F5).

For more information about sites, see [Site](#) (page 60).

Armature

An armature is an assembly that connects pipes.

Armature	Description
Topic	Point
Table name	WA_ARMATURE
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Extract Points From Lines. For more information, see Extract Points from Lines (page 29).

Emitter

An emitter is a drip irrigation component that dispenses water to plants at a known rate.

Emitter	Description
Topic	Point
Table name	WA_EMITTER
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Extract Points From Lines. For more information, see Extract Points from Lines (page 29).

Fitting

A fitting is used to connect, cap, or plug a pipe carrying water.

Fitting	Description
Topic	Point
Table name	WA_FITTING
Label definition	Displays the name and number.
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Extract Points From Lines. For more information, see Extract Points from Lines (page 29).

House Connector

A house connector is a service connection point on or inside a building. It is the last point of a water network and represents the connection between the network and the consumer/customer.

House Connector	Description
Topic	Point
Table name	WA_HOUSE_CONNECTOR
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). House Connection Creation. For more information, see House Connection Creation (page 8) Extract Points From Lines. For more information, see Extract Points from Lines (page 29).

Manage Customer Information

The WA_HOUSE_CONNECTOR table has a Customer Number attribute. However, there is no table for managing customer information because customers often use external software (for example SAP) for this.

To manage customer information within Topobase, use the data model administrator to create the appropriate feature classes.

To manage customer information

- 1 Create a new Customer feature class in the Administration topic.
- 2 Add attributes as needed, such as Name, Address, Telephone, and E-mail.
- 3 Customize the feature class form using the Form Designer.
- 4 In the House Connector form, add a Basic ComboBox control for Customer Number and create the relation to the newly created table containing the customers.

For more information, see the Setting Up Topobase in the Topobase Administrator Guide.

Generate Customer Notifications

Topobase Water helps you generate notification letters regarding planned work or interruptions in the water network. For example, if a pipe has a defect and the water must be stopped, you might do a network tracing to find all house connectors so you can notify customers.

There are several ways to generate customer notification letters.

- Use the Topobase Report Designer.
For more information about the Topobase report designer, see the Report Designer Introduction in the Topobase Administrator Guide.
- Use Topobase Client to export to Microsoft® Word.
- Export the data to any format and use external software to generate letters.
For example, export a customer list to Microsoft® Excel®.

Hydrant

A hydrant is an apparatus that dispenses fluids.

Hydrant	Description
Topic	Point
Table name	WA_HYDRANT
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Fire Hydrant Creation. For more information, see Fire Hydrant Creation (page 9). Extract Points From Line. For more information, see Extract Points from Lines (page 29).

Meter

A meter is a device installed in a line for measuring the quantity and rate of water flowing to a facility or through a section of line.

Meter	Description
Topic	Point
Table name	WA_METER
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Extract Points From Line. For more information, see Extract Points from Lines (page 29).

You can use the related feature class WA_MAINTENANCE to create events such as meter readings, installation, mounting, or calibration. For more information, see [Maintenance](#) (page 44).

Pig Launch

A pig launch is a point where a pigging device is inserted to clean up a pipe fitting.

Pig Launch	Description
Topic	Point
Table name	WA_PIG_LAUNCH
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Extract Points From Line. For more information, see Extract Points from Lines (page 29).

Pressure Reduction

Pressure reduction is a water system component that reduces the downstream pressure of water. It is used in irrigation systems, particularly drip systems.

Pressure Reduction	Description
Topic	Point
Table name	WA_PRESSURE_REDUCTION
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Extract Points From Line. For more information, see Extract Points from Lines (page 29).

Pump

A pump is a mechanical device for a water system that draws material into itself through an entrance port and forces the material out through an exhaust port.

Pump	Description
Topic	Point
Table name	WA_PUMP
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Extract Points From Line. For more information, see Extract Points from Lines (page 29).

Reservoir

A reservoir is a body of water that supplies water to a water distribution system.

Reservoir	Description
Topic	Point
Table name	WA_RESERVOIR
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Extract Points From Line. For more information, see Extract Points from Lines (page 29).

Sample

This feature class stores point locations where one or more water samples are collected from a water utility or system.

Sample	Description
Topic	Point
Table name	WA_SAMPLE
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Extract Points From Line. For more information, see Extract Points from Lines (page 29).

Source

A source is the point from which water is supplied for processing and distribution.

Source	Description
Topic	Point
Table name	WA_SOURCE
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Extract Points From Line. For more information, see Extract Points from Lines (page 29).

Tank

A tank is an above or below grade receptacle or chamber used for holding water on a temporary basis prior to transfer or use.

Tank	Description
Topic	Point
Table name	WA_TANK
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Extract Points From Line. For more information, see Extract Points from Lines (page 29).

Valve

A valve is a fitting or device used for shutting or throttling flow through a water line.

Valve	Description
Topic	Point
Table name	WA_VALVE
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Extract Points From Line. For more information, see Extract Points from Lines (page 29).

Vent

A vent is a valve installed in a line to either release air trapped in the line, and/or allow air into a line to relieve a vacuum condition.

Vent	Description
Topic	Point
Table name	WA_VENT
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 5). Extract Points From Line. For more information, see Extract Points from Lines (page 29).

Protection

Use the anode (point) and casing (polygon) feature classes to display and manage water network protection.

Anodes and casings are usually related to a pipe. The best way to create these feature classes is to use the predefined Protection Creation workflow.

See also [Protection Creation](#) (page 14).

Anode

An anode is made of a sacrificial material that is more reactive than the material used to make a cathode (for example, a pipe). The anode is electrically connected to the cathode. When an electrical current is passed between the anode and the cathode, the current starts a chemical reaction where the anode, being the more reactive of the two materials, corrodes. This leaves the cathode undamaged.

Anode	Description
Topic	Protection
Table name	WA_ANODE

Anode	Description
Shortcut Menu	Workflows: Create an Anode. For more information, see Protection Creation (page 14).

Casing

A casing is a tube to protect cables and/or pipes.

Casing	Description
Topic	Protection
Table name	WA_CASING
Shortcut Menu	Workflows: Create Casings. For more information, see Protection Creation (page 14).

Site

A site consists of one master attribute feature class with related line, point, and polygon geometry feature classes. Each network point can be connected to a site. Sites are not part of the network topology. They are a useful means to group various features of the water utility network to make them reachable. For example, a site stores house number and location.

Site	Description
Topic	Site
Table name	WA_SITE_*
WA_SITE	Site master feature class that stores the attributes.
WA_SITE_LINE WA_SITE_*	Site geometry feature classes. These store the geometry for graphic presentation and normally do not contain any attributes except graphical attributes, such as line_type.

Site	Description
Shortcut Menu	Workflow: Create a Site

The easiest way to connect a network point to a site is to use the Network Point Creation workflow. For more information, see [Network Point Creation](#) (page 5).

With the Site or Facility Creation workflow, you can create sites that are related to one geometry feature. Add more geometry and equipment features using the feature class form. For more information, see [Site or Facility Creation](#) (page 11) and [Facility Creation](#) (page 11).

See also:

- [Connect Point Features to Sites](#) (page 50)

Understand and Work with the Water Data Model

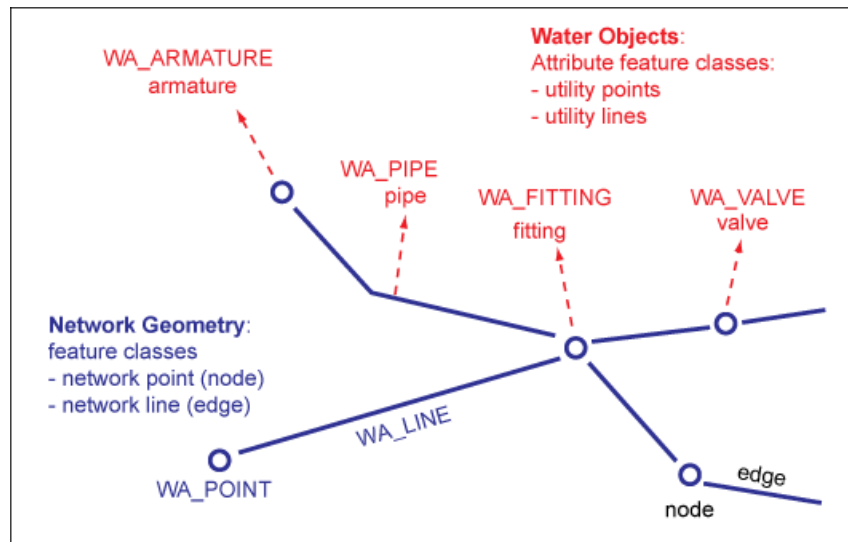
The Topobase water data model consists of the following components:

Water data model component	Feature classes
Network geometry	<p>Network geometry is stored in the WA_POINT (for nodes) and WA_LINE (for edges) feature classes. These feature classes store geometry only, not attributes. They are related to the water features for attribute information.</p> <p>The rows of these tables are managed by the Utility API. Do not enhance geometry feature classes with customer columns. The geometry feature classes build the network topology.</p>
Network topology	<p>Network topology is stored in the _NNOD (topology nodes) and _NLNK (topology links) features classes.</p> <p>Only the point feature classes of the Point topic and the pipe feature class of the Pipe topic are part of the water network topology.</p>

Water data model component	Feature classes
Water objects	Other feature classes, such as the Protection, Site, and Facility topics or the Damage feature class of the Pipe topic are not part of the network topology.
Control cables	The geometry for control cables is stored in the WA_C_LINE and WA_C_POINT feature classes. Attributes are stored in the WA_C_CABLE and WA_C_CABLE_POINT feature classes. The geometry feature classes build the network topology.
Model Tables	Model tables store several types of a particular network item and can be grouped by manufacturer. These are located in the Administration topic and have the suffix _MODEL.
Dimensioning	Dimensioning is stored in feature classes with the suffixes, _L (lines), _P (points), and _HL (help lines).
Domains	Domain tables have the suffix _TBD and contain lists of available attribute values for use in combo boxes in forms.
Labels	Label tables have the suffix _TBL and contain feature labels. See Define Labels (page 65).
Feature Rules	Client-side feature rules customize Topobase behavior.

Water data model component**Feature classes**

For more information, see [Organization of Water Functions and Features](#) (page 31).

**Water data model**

For more information about the data model administrator, see [Setting Up Topobase](#) in the Topobase Administrator Guide.

Explore the Water Data Model

With the data model administrator you can explore the data model with its topics, feature classes, topologies, and utility models.

To explore the Water data model

- 1 Start Topobase Administrator and open the Water workspace.
- 2 Select the document and click Document menu ► Data Model.
- 3 Use the data model explorer to view feature classes, attributes, label definitions, and topologies.

To view the water document structure version

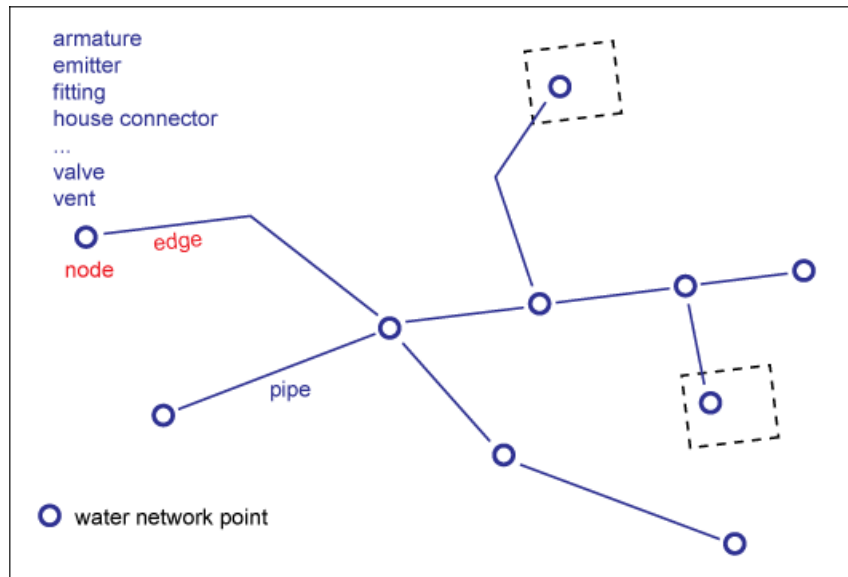
- 1 In the data model explorer, right-click the document root node and click Document Info.
- 2 Click the Water Data Model row.

Water Topologies

The Topobase Water data model contains the following two topologies:

- **Water network topology** — Built from the node feature class WA_POINT and the edge feature class WA_LINE. A water point can be related to a site (FID_SITE).
- **Control cable topology** — Built from the node feature class WA_C_POINT and the edge feature class WA_C_LINE. A cable point can be related to a site and to a control cabinet (FID_SITE, FID_CONTROL_CABINET).

The node and edge geometry feature classes are stored in the Topology topic.



Topobase Water network topology. Network points are connected with lines. Network points must not lie on a network line.

Achieving a Valid Network Topology

The topology requires that network points always lie at the start or end of a network line. A network point must never lie on a line. If you insert a network point on a network line, the line must be split at the insertion point. The consistency of the topology is maintained by feature rules.

If a network point is removed, the connecting lines must be merged.

For more information, see [Split Lines](#) (page 25) and [Extract Points from Lines](#) (page 29).

For more information about the feature rules, see [Organization of Water Functions and Features](#) (page 31).

Define Labels

The basic Water application contains one predefined label definition for most feature classes. The standard attribute for the label text is called Name Number.

NOTE By default labels are not visible in the drawing. Only labels that are defined as auto labels are created during the create feature operation. Insert labels using

Home tab ► Quick Access panel ► Create Label.



Example Pipe label — The following label definition is used to display a label containing the diameter, material, and length. The label text is queried from the tables WA_PIPE, WA_LINE, and WA_MATERIAL_TBD.

```
SELECT nvl2(max(pipe.DIAMETER_NOMINAL), '', '') || max(pipe.DIAMET
ER_NOMINAL) || ' ' || round(sum(line.LENGTH), 1) || ' ' || max(materi
al.VALUE)
FROM WA_PIPE      pipe,
WA_LINE          line,
WA_MATERIAL_TBD material
WHERE pipe.FID           = $id
AND pipe.FID            = line.FID_ATTR(+)
AND pipe.ID_MATERIAL = material.ID(+)
```

For more information about defining labels, see the [Creating a Label Definition](#) in the Topobase Administrator Guide.

Autodesk Topobase Wastewater

3

Using Wastewater Workflows

An important feature of Topobase Wastewater is that designers have the ability to establish a comprehensive set of workflows. Workflows streamline business processes based on the wastewater utility's current way of doing business. Workflows help guide you through common tasks and govern the way information is entered into the database. Workflows — and related business rules that are working behind the scenes — also prevent designers from leaving out required elements, choosing incorrect materials, or including incorrect material sizes, thus reducing errors during design and data updates.

Topobase Wastewater provides four types of predefined workflows:

Workflow Type	Definition
Acquisition Workflow	Create network points, pipes, house connections, fire hydrants, structures, facilities, and so on.
Analysis Workflow	Trace the network from a designated start point to an optionally specified end point.
Report Workflow	Generate and print predefined or customized reports. Export reports as HTML, ASCII, or PFD files.
Classification Workflow	Classify imported wastewater content.

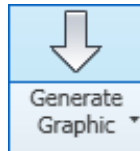
You can also create your own workflows.


For more information about defining and managing workflows, refer to Workflow Definition in the Topobase Administrator Guide.

To Initiate a Wastewater workflow

Before starting a workflow, you must make sure you've set a display model and generate graphics. Report workflows can be used without a drawing.

- 1 On the ribbon, click Home tab ► Display panel ► Display Model and do one of the following:
 - Click the arrow button and select a previously opened display model.
 - Click Open Display Model and select a display model (.tbdm file).
 - Select Open Default Display Model.



- 2 Click Generate Graphic.
- 3 In the Topobase Task Pane, click the Workflow explorer icon to display the workflows. The icon is a small square with a blue border, containing a white outline of a person standing next to a computer monitor.
- 4 In the Workflows group, select a workflow and click Execute. Optionally, you can right-click a workflow and click Execute or simply double-click a workflow.

You can also start workflows from the shortcut menu of the related feature class.


Acquisition Workflows

Acquisition workflows and rules help designers create features like manholes, network points, pipes, hydrants, house connections, and so on. Acquisition workflows are also used to remove features like house connections and sections of a wastewater network.

Manhole Creation

Use the Manhole Creation workflow to create standard and complex manholes. You can associate the manhole with a cover.

To create a manhole

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click the Manhole Creation workflow. Click Execute.
- 3 Specify a reference record, if any.
- 4 In the Cover area, click one of the following options:
 - None: Specifies that no cover is associated with the manhole.
 - Digitize: Prompts you to create a cover.
 - Connect To: Prompts you to select an existing cover.
- 5 In the Details area, specify additional details to add to the manhole.

NOTE You can add one polygon detail to a manhole and any number of line and point details. For more information, see [Point Detail Creation](#) (page 87).

- 6 Click OK.
- 7 Follow the prompts to create the manhole.
- 8 Press ESC to complete the workflow.

The manhole form is displayed so you can add attribute data.


For more information, see [Cover](#) (page 231) and [Wastewater Elevation, Slope, and Height](#) (page 335).

Network Point Creation

Use the Network Point Creation workflow to create a wastewater point.

NOTE Manholes can also be created using the Manhole Creation workflow; Intermediate points can also be created automatically in the Section Creation workflow.

To create a network point

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click the Network Point Creation workflow. Click Execute.
- 3 In the feature class list, click the type of network point feature to create.
You can also double-click a point type to start digitizing with the current options.
- 4 Specify a reference record if any.
- 5 In the Details area, specify additional details to add to the point.
For more information, see [Point Detail Creation](#) (page 87).
- 6 In the Site area, click one of the following options:
 - None: Specifies no site is associated with the point.
 - Digitize: Prompts you to create a site.
If you create a new site, specify the geometry type for the site.
 - Connect To: Prompts you to select an existing site.
- 7 Click OK.
- 8 Follow the prompts to create the point.
- 9 Press ESC to complete the workflow.


NOTE If you place the network point on a section, you are prompted to create a soft split or a hard split. For more information, see [Split Lines](#) (page 92).

The feature class form is displayed so you can add attribute data.

Section Creation

Use the Section Creation workflow to create sections of a wastewater network.

To create a section

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click the Section Creation workflow. Click Execute.

- 3 Specify whether to create intermediate points.
- 4 Click OK.
- 5 Follow the prompts to create the section.
- 6 Press ESC to complete the workflow.

Digitize sections in the flow direction. Intermediate points are created at the entries of the manholes with a soft split at the section line.


NOTE You can reverse the flow direction with the Reverse Direction command.

If a vertex of the new pipe lies exactly on an existing network point feature, the pipe is soft split.

Section Remove

Use the Section Remove workflow to delete a section from the database including all related network points.

To remove a section

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click the Section Remove workflow. Click Execute.
- 3 Specify the sections to remove.
- 4 Press ESC.


The workflow pane displays the selected sections and related features.

For more information, see [Section](#) (page 310).

House Connector Remove

Use the House Connector Remove workflow to remove a house connector.

To remove a house connector

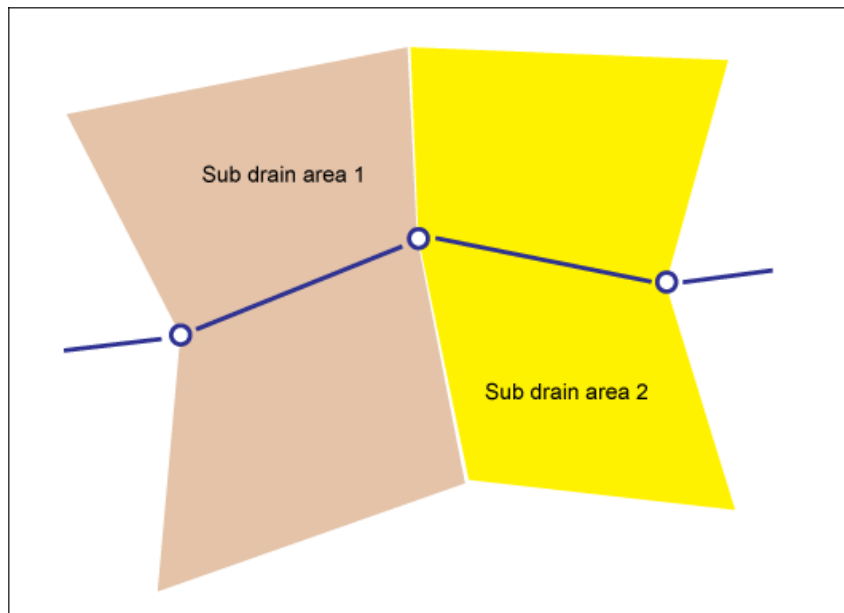
- 1 In the Topobase Task Pane, click the Workflow explorer icon. 

- 2 Right-click the House Connector Remove workflow. Click Execute.
- 3 Specify the house connectors to remove.
- 4 Press ESC.

The workflow pane displays the selected house connectors and related features.
For more information, see [House Connector](#) (page 256).


Sub Drain Area Creation

Use the Sub Drain Area Creation workflow to create a sub drain area. You can add a higher level drain area.



Sections can be assigned to sub drain areas.

To create a sub drain area

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click the Sub Drain Area Creation workflow. Click Execute.

- 3 In the Drain Area section, click one of the following options:
 - None: Specifies no drain area is associated with the sub drain.
 - Digitize: Prompts you to create a drain.
 - Connect To: Prompts you to select an existing drain.
- 4 Click OK.
- 5 Follow the prompts to create the new sub drain area.
- 6 Press ESC to finish the workflow.


The feature class form is displayed so you can add attribute data.

For more information, see [Drain Area](#) (page 131).

Site Creation

Use the Site Creation workflow to create a site. You can relate the site to a network point.

To create a site


- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click the Site Creation workflow. Click Execute.
- 3 In the Site area, specify the type of geometry to create: point, line, or polygon.
- 4 Click OK.
- 5 Follow the prompts to create the site.
- 6 Press ESC to complete the workflow.

The feature class form is displayed so you can add attribute data.

Administrative Information Creation

Use the Administrative Information Creation workflow to create administration areas, washing areas with contacts, locations, and manufacturers.

To create administrative information

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click the Create Administrative Information workflow. Click Execute.
- 3 Specify the feature class to create.
- 4 Click OK.
- 5 Follow the prompts.
- 6 Press ESC to finish the workflow.


If you create an area you can optionally relate all features contained in this area with the area. The relation is made if the corresponding feature rule is activated.

For more information, see [Administration](#) (page 117).

Protection Creation

Use the Create Protection workflow to add casings and/or anodes to a section.

To create a protection casing or anode

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click the Create Protection workflow. Click Execute.
- 3 In the Choose Type Of Protection area, click Casing or Anode.
- 4 Click OK.
- 5 Follow the prompts.
- 6 In the Next Action area, click one of the following:
 - Open Dialog.
 - Create New Protection.
 - Create New Protection On Same Section.
- 7 Click OK.

- 8 Press ESC to finish the workflow.

The feature class form is displayed so you can add attribute data.

For more information, see [Protection](#) (page 301).

Analysis Workflows


Analysis workflows and rules allow designers to trace a wastewater network from one or more designated start features to an optional end feature. Network tracing begins from the start location and ends when all end features have been reached. You can also set attribute-dependent stop conditions, locate point objects on a pipe, locate point objects that are not connected to the network, or pinpoint error in a network topology.

Find Connected

Trace a wastewater network from a start feature to one or more optional end features. The network is traced from the start feature to the end features, if end features are specified.

TIP Network tracing is much more efficient when start and end features are selected. Tracing a network without selecting an end feature can take a very long time.

To find connected features

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Find Connected.
- 3 Click Execute.
- 4 In the Workflow group, under Choose a Start Feature, do the following:
 - Click Choose.
 - Click one or more features at the start of the network trace.
 - Press ENTER to complete the selection.
- 5 If you do not want to trace the whole network, do the following:
 - Under Optionally Choose Stop Features, click Choose.

- Click one or more end features.
 - Press ENTER to complete the selection.
- 6 Under Options, select Include Stop Features to list all connected features including the end features. If this check box is cleared, end features are not included.
Start features are always included in the list of connected features.
 - 7 To specify the trace direction, select Forward, Backward or Both.
 - 8 Click OK.
 - 9 When network tracing has finished, all connected features are displayed in a tree view in the workflow pane. Use the tools at the top of the Workflows pane to open the feature class form, highlight selected features, and zoom to selected features.


Find Connected with Stop Conditions

The Find Connected with Stop Condition workflow provides the same functionality as the Find Connected workflow with the added benefit of defining advanced stop features based on their attributes.

All advanced stop conditions that have been defined in the data model administrator are also available.

For more information about stop conditions using SQL statements, see Network Tracer in the Topobase Administrator Guide.

To trace connected features using stop conditions

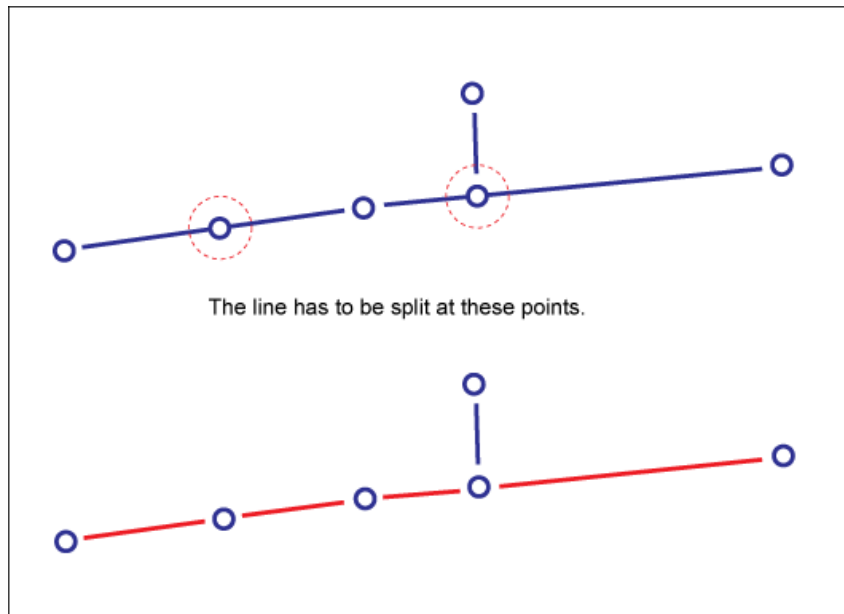
- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Find Connected With Stop Conditions.
- 3 Click Execute.
- 4 In the Workflow group, under Choose a Start Feature, do the following:
 - Click Choose.
 - Click one or more features at the start of the network trace.
 - Press ENTER to complete selection.

- 5 If you do not want to trace the whole network, do the following:
 - Under Optionally Choose Stop Features, click Choose.
 - Click one or more end features.
 - Press ENTER to complete selection.
- 6 Under Options, select Include Stop Features to list all connected features including the end features. If this check box is cleared, end features are not included.
Start features are always included in the list of connected features.
- 7 To specify the trace direction, select Forward, Backward or Both.
- 8 Under Stop Conditions, click Add.
- 9 In the Stop Condition Editor dialog box, do one of the following:
 - Select an existing stop condition.
 - Click New and define a new stop condition.
To learn about creating a new stop condition, see Stop Condition Editor.
- 10 Click OK to save the stop condition.
- 11 Click OK to start network tracing.
When network tracing has finished, all connected features are displayed in a tree view in the workflow pane. Use the tools at the top of the Workflows pane to open the feature class form, highlight selected features, and zoom to selected features.


In the Stop Condition Editor dialog box, the list displays only the stop conditions that are not assigned to any tracing template.

Find Non Split Point on Section

Use Find Non Split Point On Section to find points on a section that are not split.



To find non split points on a section

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Find Non Split Point on Section.
- 3 Click Execute.
- 4 Select the point feature classes to locate.
Select All to search for non split points of any feature class.
- 5 To perform the search on a specific set of features, click Choose and click the features.
- 6 Click OK.
The result is shown in the workflow window in an explorer view.

You can use the icons to split points, for example, select a point and click either Soft Split on Section, or Hard Split on Section.

Report Workflows

Report workflows are used to generate predefined or user-defined reports. Designers can quickly and easily generate reports from a list of predefined report templates. These reports include:


Predefined report	Description
Data Model Description	Displays a complete list of all topics and features in the wastewater database. It also shows the number of features for each feature class and how they are linked to other tables (according to the meta-table TB_RELATIONS).
Date Creation Statistics	Displays creation dates and lengths of lines.
Error Statistics	Displays errors in the network.
Network Statistics	Displays line and point information, lists other features, and provides a count.
Manhole Statistics	Displays manhole information.
Section	Displays a wastewater section.
Section statistic	Displays section information.
COGO reports	Only if the COGO extension is available.

The report templates have been created with the Topobase Report Designer. For more information, refer to Report Designer Introduction in the Topobase Administrator Guide.

Report Generation


Use the Report Generation workflow to generate predefined and user-defined reports.

To generate reports

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Open the Report workflow, if necessary.
- 3 Right-click Report Generation. Click Execute.
- 4 In the Workflows group, select a report name and click OK.

The report is displayed in a secondary window. You can print the report or change its format to HTML, ASCII, or PDF.

To create an Error Statistics report

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Open the Report workflow, if necessary.
- 3 Right-click Report Generation. Click Execute.
- 4 Select WW Error Statistics. Click OK.

The report is displayed in a secondary window. You can print the report or change its format to HTML, ASCII, or PDF.

Classification Workflows

Classification workflows are used to determine the quality of sections and manholes based on inspection data. Damaged features are coded and quantified based on a chosen wastewater standard.


Before you can use the classification workflow, you need to import inspection data. For more information, see [Manage Inspection Data](#) (page 96).

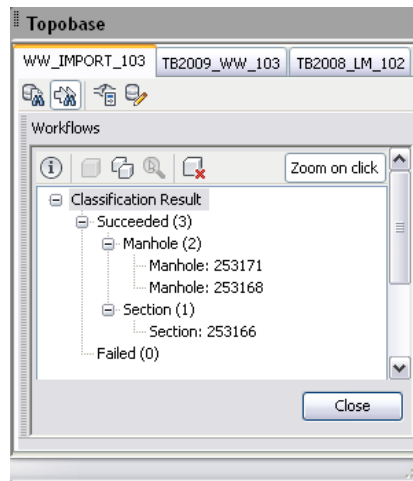
Classify Import

Use the Classify Import workflow to classify all sections and manholes in a selected set of imported information.

To classify imported information

- 1 In the Topobase Task Pane, select the intermediate document tab.

- 2 Click the Workflow explorer icon. 
- 3 Expand the Classification workflow and right-click Classify Import. Click Execute.
- 4 In the Workflows group, open the list and select the import you want to classify. Click OK.



The classification results are shown in the feature explorer.

Managing Wastewater Network Topologies

Autodesk Topobase uses topologies to model objects and phenomena of the real world. Typically, a GIS user needs information about relationships between objects with topological characteristics. Modeling of land and other flat surfaces is a perfect application for area topology. Logical topology is appropriate wherever real world objects are connected to each other in networks.








Topobase Wastewater is based on a logical topology that represents the utility networks.

For more information about defining and managing workflows, refer to Topology Introduction in the Topobase Administrator Guide.

Check Topologies

Use the Topology Checker to locate errors in a network topology.

To check a topology for errors

- 1 Click the Document explorer icon. 
- 2 Expand the Topologies listing and right-click the topology. Click Topology Checker.
Topology errors are displayed in the Logical Topology Checker Desktop dialog box.
- 3 Navigate the tree view to select specific features.
- 4 Use the Topology Checker tools to perform the following operations on selected features:
 -  Refresh the topology check after you have addressed problems.
 -  Open the feature class form.
 -   Highlight a feature or clear all highlighted features.
 -  Zoom to a selected feature in the map.
 -  Delete a selected feature.

See also:

- [Explore Wastewater Topologies](#) (page 331)

Use Wastewater Feature Functions

Feature functions are available in the Function menu, Classification menu, and the Network Tracer menu of the feature classes to which they apply.

To view available functions



- 1 Click the Document explorer icon.
- 2 Under Topics, expand a feature. For example, Point.
- 3 Right-click a feature class. For example, Basin.
- 4 Click Show Form.
- 5 On the Basin feature class form, do one of the following:
 - Click Function menu ► *function_name*.
Where *function_name* is the name of any function available to the selected feature.
 - Click Classification menu ► *function_name*.
Where *function_name* is the name of any function available to the selected feature.
 - Click Network Tracer menu ► *menufunction_name*.

If you start a function from the feature class form, consider the current filter. You can apply the function to all features in the filter or to the current feature.

See also:

- [Point Feature Class Form](#) (page 224)
- [Section Feature Class Form](#) (page 310)

Maintenance Record Creation

You can create maintenance records for several feature classes. Use this function to add maintenance information to a feature. Maintenance information is stored in the Maintenance feature class (WW_MAINTENANCE).

To create a maintenance record

- 1 Select a feature in your map. For example, a Cover.
- 2 Right-click the Cover feature and select Attributes.
The Cover feature class form is displayed.
- 3 On the Cover feature class form, do one of the following:

- 4 Click Function ► Create Maintenance.
The Maintenance feature class form is displayed with a new record.
- 5 Click the Details tab and enter a maintenance date and maintenance period.
The Next Maintenance Date is automatically calculated based on the entries you make for the maintenance date and maintenance period.
- 6 Do one of the following:
 - Click Update to accept the entries you made and keep the maintenance form open for further changes. If no further changes are necessary, close the window.
 - Click Update & Close to accept the entries you made and close the maintenance form.

See also:

- [Maintenance](#) (page 211)
- [Understand and Work with the Wastewater Data Model](#) (page 111)

Marker Creation

You can create markers that are assigned to the current feature.

To create a marker

- 1 Select a feature in your map. For example, a Point.
- 2 Right-click the Point feature and select Attributes.
The Point feature class form is displayed.
- 3 Select the features to which you want assign a marker.
- 4 Click Function menu ► Create Marker.
- 5 Follow the prompts to create the marker.
The Marker feature class form is displayed with a new record.

See also:

- [Marker](#) (page 213)

Connect a Point to a Cover

You can assign existing covers to any network points that have a relation to the cover feature class, for example: manhole, neutralizer, grit chamber. Use this function. If the covers have been measured separately from the wastewater network.

To connect a point to a site

- 1 Select a Manhole feature in your map.
- 2 Right-click the Manhole feature and select Attributes.
The Manhole feature class form is displayed.
- 3 Click Function menu ► Connect Point to Cover.
All points that lie inside the site detail polygon are connected.
- 4 Specify whether to apply the function to the current feature or to all features in the filter. Click OK.
The Cover form is displayed where you can add attributes.
The resulting covers are highlighted in the drawing. If both fields are filled, a message is displayed. Each cover can be assigned to one or two network points.
When you connect an existing cover to a manhole that has a DEPTH and a BOTTOM_ELEVATION entry, the cover Z is not automatically calculated. Use the Wastewater Error Statistics report to find inconsistencies.
- 5 Click Update (F5).

See also:

- [Cover](#) (page 231)
- [Report Generation](#) (page 79)

Cover Creation

For network points, you can create a cover that is related to a network point. The cover is stored with the same coordinate as the related point.

Use this function if you have not measured the cover coordinates and want to create them later.

To create a cover

- 1 Select a feature in your map. For example, a Manhole.
- 2 Open the feature class form.
- 3 Click Function ► Create Cover.
- 4 Specify whether to apply the function to the current feature or to all features in the filter. Click OK.
When you are finished, the Cover form is displayed so you can add attributes.

See also:

- [Cover](#) (page 231)

Show Input and Output Sections

Display the input sections or output sections for points.

To display input or output sections

- 1 Select a feature in your map. For example, a Manhole.
- 2 Right-click the Manhole feature and select Attributes.
The Manhole feature class form is displayed.
- 3 In the Manhole feature class form, do one of the following:
 - Click Function menu ► Show Input Sections.
 - Click Function menu ► Show Output Sections.

The related feature class forms are displayed and the input and output sections are highlighted in the drawing.

Show Connected Sections

You can display the input and output sections for points.

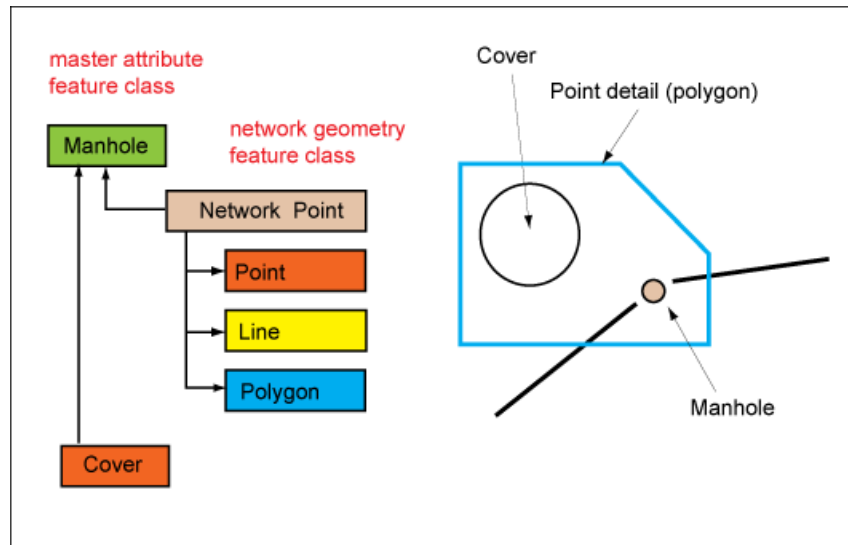
To show connected sections

- 1 Select a feature in your map. For example, a Manhole.

- 2 Right-click the Manhole feature and select Attributes.
The Manhole feature class form is displayed.
- 3 Click Function ► Show Connected Sections.
The related feature class forms are displayed and the sections are highlighted in the drawing.

Point Detail Creation

For network points, you can create geometry details, for example to illustrate complex manholes in the drawing. These are geometry feature classes that normally contain only attributes for representation, for example, line type. All other attribute data is stored with the master attribute feature class.



A network point can have related geometry in the drawing. Only the manhole is part of the network topology.

To create a point detail

- 1 Select a feature in your map. For example, a Disposal Tank.
- 2 Right-click the Disposal Tank feature and select Attributes.
The Disposal Tank feature class form is displayed.

- 3 In the Disposal Tank feature class form, do one of the following:
 - Click Function menu ► Create Point Detail.
 - Click Function menu ► Create Line Detail.
 - Click Function menu ► Create Polygon Detail.

Follow the prompts to create the point, line or polygon detail.

NOTE You can create one polygon detail for each network point. You can add any number of point and line details.

See also:

- [Manhole Creation](#) (page 69)
- [Point](#) (page 224)

Section Height Interpolation

You can interpolate the height of a section and store these values in the network point feature class.

To interpolate section height

- 1 Select a Section feature in your map.
- 2 Right-click the Section feature and select Attributes.
The Section feature class form is displayed.
- 3 Click Function menu ► Interpolate Section Height.
This function populates the BOTTOM_ELEVATION attribute for the network points that lie on the section. If a BOTTOM_ELEVATION value exists, the form is displayed so you can replace the value.

See also:

- [Section](#) (page 310)
- [Wastewater Elevation, Slope, and Height](#) (page 335)

Connect Points to Site

Use this function if you have created sites separately from the wastewater network and want to associate them.

To connect points to a site

- 1 Select a Site feature in your map.
- 2 Right-click the Site feature and select Attributes.
The Site feature class form is displayed.
- 3 Click Function menu ► Connect Point to Site.
All points that lie inside the site detail polygon are connected.

See also:

- [Site](#) (page 320)

Remove Connections from a Site

You can remove all connections that are related to a site.

To remove connections from a site

- 1 Select a Site feature in your map.
- 2 Right-click the Site feature and select Attributes.
The Site feature class form is displayed.
- 3 Click Function menu ► Remove Site.
Confirm the removal of the site and the record is removed.

See also:

- [Site](#) (page 320)

Classification

Classification can also be achieved through function forms. Individual classification can be performed on specific sections and manholes. Furthermore, manual classification is supported when done through function forms.

To classify through function forms

- 1 Select one or more sections or manholes of the wastewater network. For example, a section.
- 2 In the Section form, click Classification ► Classify.
Results are displayed in the Classification dialog box.

Network Tracer

Use the Network Tracer functions to specify start and stop features for network analysis.

To specify start and end features for network tracing

- 1 Select a feature in your map. For example, a Pipe.
- 2 Right-click the Pipe feature and select Attributes.
The Pipe form is displayed.
- 3 Open the Network Tracer menu do one of the following:
 - Click Set as Start Feature.
 - Click Set as End Feature.The Network Tracer dialog box is displayed.
- 4 In the Network Tracer dialog box, open the Tracing Template list and select a template.
- 5 Follow the on-screen instructions in the Features section. Depending on the tracing template, there are various workflows. When you are finished, click Trace.
The resulting features are highlighted in the map and listed in the Tracing Result dialog box.

The Tracing Result dialog box displays the features in an explorer tree, from which you can process the features. Expand the items, select a feature and use the buttons on the toolbar.

To learn more about attributive network topologies, see *Creating Topologies* in the *Topobase Administrator Guide*.


Use a Reference Record

Reference records are used to create data more quickly. Define one or more reference records for each feature class. These can be used in a workflow. You can:

- Use no reference record.
- Use the last used reference record.
- Select an available reference record.

NOTE To explore available reference records, open the related feature class form in edit mode.

To create a reference record


- 1 Click the Document explorer icon. 
- 2 Expand the Point topic.
- 3 Right-click the feature class for the reference record you want to create. For example, House Connector.
- 4 Right-click and click Show Form.
- 5 In the form, right-click in the background and click Reference Record ► Add.
The New Reference Record dialog box is displayed.
- 6 In the Name field, enter a name, such as Digitized House Connector, and click OK.
- 7 In Reference Record mode, enter the reference values to be used, such as Accuracy = Digitized.
- 8 Click Save.

For more information about reference records, see Using Reference Records in the Topobase Client User Guide.

Split Lines

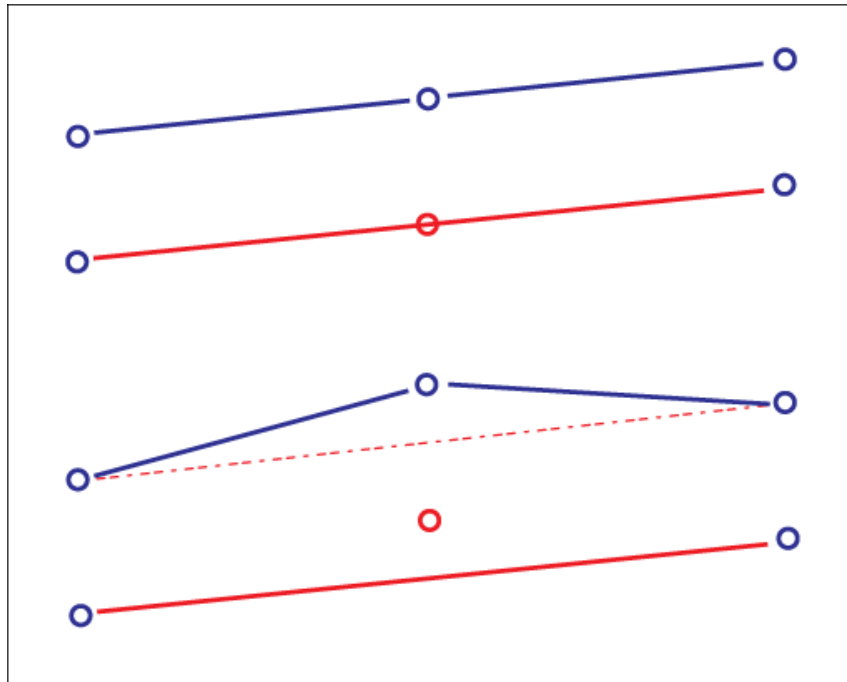
If you digitize a point feature on a line or polyline feature, the line or polyline is split to preserve a correct network topology.

To digitize a point and split a line

- 1 Click the Document explorer icon. 
- 2 Expand the topic for the line you want to split. For example, Pipe or Section.
- 3 Right-click the Pipe or Section feature class and do one of the following:
 - Click Soft Split (Only Geometry)
 - Click Hard Split (Also Attributes)
- 4 In the drawing, select the line representing the pipe or section.
- 5 In the Select dialog box, select the point feature class you want to digitize. For example, select Manhole.
- 6 Digitize the point.

The new point needs not to lie exactly on the selected line. If the point lies next to the line, the line is split and the new lines move to the point. However, if the point lies on a line that is not the selected one, no splitting is performed.

NOTE Enable Object Snap and Object Snap Tracking to ensure that the point is placed on the line. For more information, see the AutoCAD Map Help.

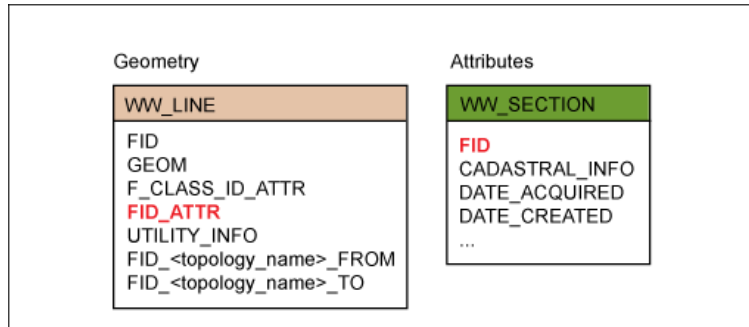


Splitting lines: When you digitize a point on a utility line or next to a utility line, the new lines move to the point.

When a section is digitized, normally only the start and the endpoint coordinates are known, and connected using a straight line. Then, when a new point is measured, such as a house connector, this point normally does not lie exactly on the pipe, and the pipe must be adjusted to this new point.

Soft Split and Hard Split

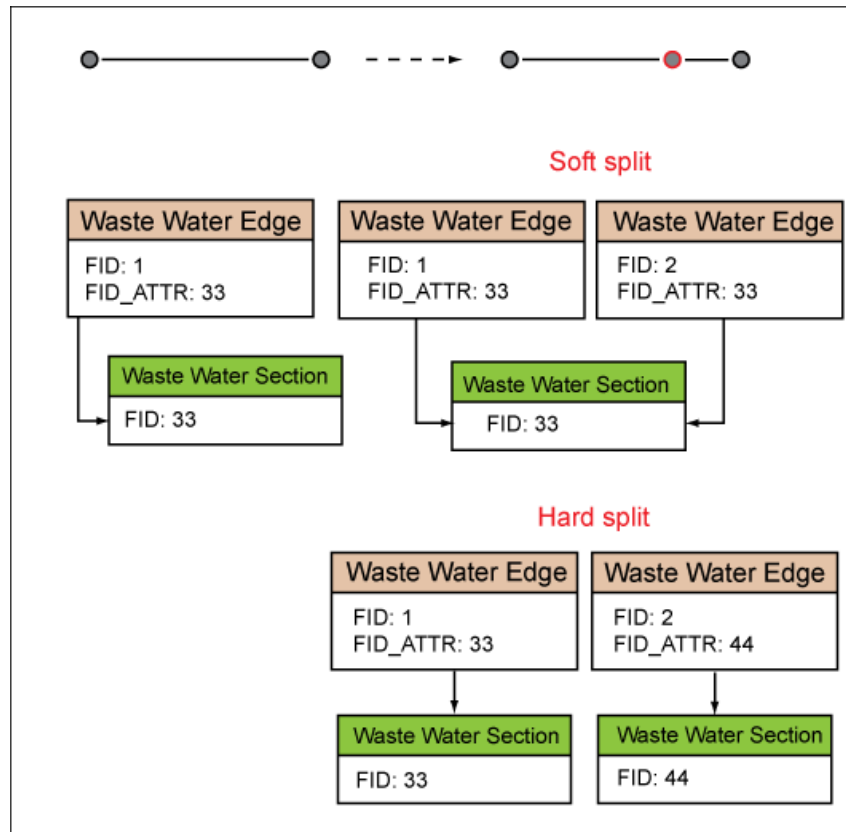
Because geometry and attributes are stored separately, one geometry features class, such a point, can reference various attribute feature classes, such as manhole, cover, fitting. For line features this allows for two different line splitting methods: soft split and hard split.



Wastewater data model: Relation between section and line feature class

Using a workflow you can decide whether the line is soft split or hard split, thus determining how the system handles the attribute data of the two resulting features.

Split	Description
Soft Split	<p>A soft split breaks the line into two separate features, each with its own geometry (WW_LINE) but sharing the same attribute data (WW_SECTION).</p> <p>Use soft split for point features of minor importance and when the attributes of the section do not change.</p>
Hard Split	<p>A hard split breaks the line into two separate features, each with its own geometry (WW_LINE) and attribute data (WW_SECTION). In a hard split the attribute data is not shared.</p> <p>Use hard split for point features of major importance or if the attributes of the section change, for example diameter, material, model.</p>



Wastewater data model: Soft and hard split

For more information, see [Explore Wastewater Topologies](#) (page 331).

Extract Points from Lines

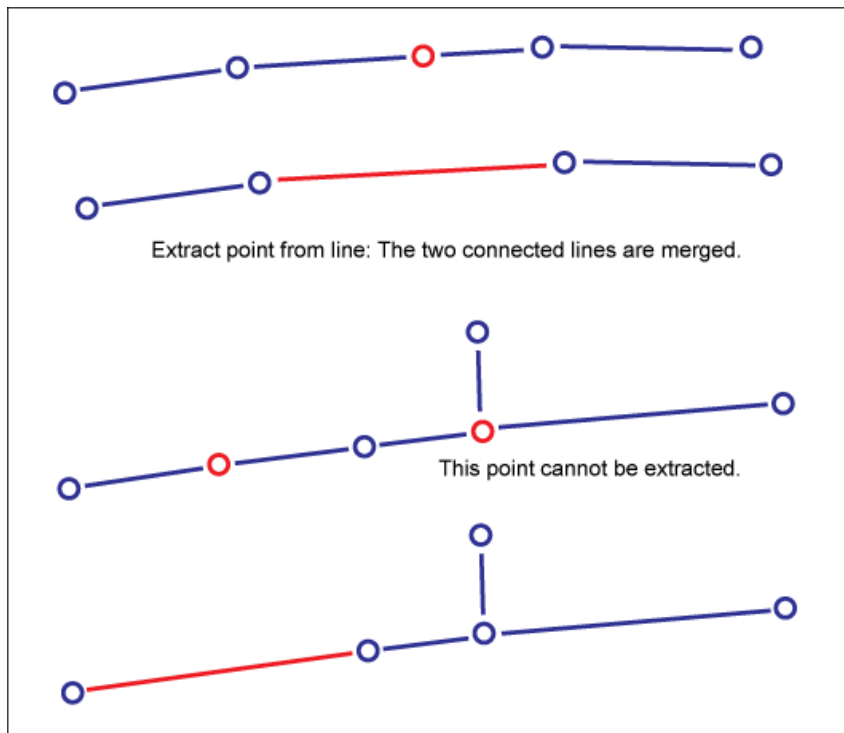
If you delete a point, be sure to maintain a valid network topology. For example, when you delete the point you must merge the two connected lines. If more than two lines connect at the point, you cannot delete the point.

To extract a point

- 1 Click the Document explorer icon.



- 2 Right-click the point feature class and click Extract From Line.
- 3 When prompted, click the feature to delete.
The point is deleted from the database and the connected lines are merged.



Network topology: Extracting points from a network line

Manage Inspection Data

In order to avoid sanitation problems or flooding damage, a wastewater network needs to be regularly inspected and, when necessary, renovated. To gauge the severity of necessary repairs and closely estimate renovation costs of damaged features, it is important to have accurate inspection data. This is done by means of importing inspection data.

Once you import inspection information into Topobase, you can perform any of the following tasks:

- Verification of wastewater inspection data.
- Classify any damage and wastewater network features.
- Import hydraulic computation results.

Process for Importing Inspection Data

When you import inspection data, several processes take place before the imported content is fully integrated with your main document.

Process	Description
Import	Inspection data is imported to a temporary data cache in the form of an <i>intermediate document</i> . The validity of the inspection file is also checked for inconsistencies.
Feature Matching	Feature matching occurs between the inspection data and GIS features of the wastewater network. If certain parameters coincide between an inspected object and a GIS feature (for example, section: NAME_NUMBER) a match is found. If no match is automatically found, you can select a matching feature.
Attribute Matching	When a conflict between an inspection feature and its GIS feature is detected, the inspection feature is considered a conflict feature. For example, a difference in section diameters between the inspection data and its comparable GIS feature. Conflicts must be resolved before the inspection data can be committed to the main document.
Data Validation	Data Validation checks the imported inspection data against the specified classification model. For example, section damage is checked if all necessary data is provided and only if section main codes are used. You can flag invalid features to be ignored. That means that an invalid feature would not prevent the rest of valid data from being imported.

Process	Description
Geometry Creation	During the geometry creation process, geometry for each damage observation in the inspection data is created.
Commit Data	All revised data is copied from the intermediate document to the main document. This process also copies any video and photo files to the server.

Prepare to import inspection data

Before you can import any inspection data, you must have a wastewater workspace that contains two wastewater documents; the main document and an intermediate document.


The main document contains the Wastewater Data Model module and your wastewater project data. The intermediate document is created using the Wastewater Data Model (for Intermediate Document) module, and is used to temporarily store the imported data.

To prepare a wastewater workspace for import capability

You create a wastewater import workspace that contains two documents: your wastewater document, and the intermediate document.

- 1 Start Topobase Administrator.
- 2 In the Administrator window, click Workspace menu ► Create.
- 3 Enter a name for the workspace, such as WS_Wastewater.
- 4 In the Documents group of the Workspace Manager pane, add your wastewater document. Do one of the following:
 - Under Available Documents In TBSYS, select your wastewater



document, and click  to add the document to the Documents In Workspace <workspace name>.

- Click New, and create a new document that contains the Wastewater Data Model module.
To learn more about creating a document, see To Create A Document in the Topobase Administrator Guide.


- 5 Create the intermediate document. In the Documents group of the Workspace Manager pane, click New. Specify the following:
 - On the General tab, specify a user name for the intermediate document, such as WW_IMPORT.
 - On the Modules tab, select Wastewater Data Model (For Intermediate Document).
- 6 Click OK.

The document is added to the wastewater import workspace.

Now you can start Topobase Client or Topobase Standalone and import inspection data.

To import inspection data using Topobase Client

To import any inspection data, you must have a wastewater workspace that contains two wastewater documents; the main document and the intermediate document.

- 1 Start Topobase Client.
- 2 In the Open Workspace dialog box, select a workspace that includes both an intermediate document and a main wastewater document. Click Open.
- 3 In the Topobase Task Pane, select the intermediate document tab. For example, WW_IMPORT.
- 4 Click the Document explorer icon. 
- 5 Right-click the intermediate document in the tree view and select Import > Wastewater Import.

Optionally, you can initialize the import process by:

 - Entering TBWWIMPORT at the command line.
 - Clicking Menu Browser > File > Import > Wastewater.
- 6 In the Select Import pane of the Wastewater Import dialog box, do one of the following:
 - Click Create to create a new import.
 - Continue with an old import. Open the list of imports, if any are present, and select an import.

Click Next.

- 7 In the Import Data - Specify Import File pane, do the following:
 - Specify the Import Type. See also [Inspection File Formats](#) (page 108).
 - Click the Add button to choose the inspection file you want to import.

TIP If there is a video file that accompanies the import file, placing them in the same folder ensures that both will import together. Storing the files on a network server gives accessibility to all who need to import the data.

Click Next to begin importing data.

NOTE This can take awhile depending upon the size the inspection file and the number of features involved.

- 8 When the file is imported, click View Log. Save the log file for further reference.
- 9 Click Next.
Features in the import file are matched against the main document.
- 10 In the Match Features pane, wait for the features to be matched against the main document and then do the following:
 - If there are feature mismatches, resolve them by excluding the features from the import, manually matching the features, or by ignoring the mismatches.
 - Once all mismatched features are resolved, click Next.
- 11 In the Match Attributes pane, wait for the validation process to finish and then do the following:
 - For any features that fail validation, fix the problems.
Conflicts can be fixed individually by selecting a feature and choosing whether the conflicting attributes should use the old or new feature values. You can also fix multiple conflicts by selecting the Attribute Values Conflicting heading and choosing whether to keep the old feature values or replace with the new feature values.
 - Click Next.
- 12 In the Validate Data pane, do the following:
 - Fix all data conflicts, or ignore the errors.

For Length Check Errors, you can specify a tolerance in the [Wastewater Document Options](#) (page 333).

- Click Next.

13 In the Create Geometry pane, wait for the geometry to be created. Click Next.

14 In the Commit Import pane, click Next to begin committing the inspection data to the main document.

Click Next to copy media files and to update the main document. Click Finish.

NOTE If you did not specify any media files, click Next to update the main document with imported features.

Optionally, if Jobs are enabled for the main wastewater document, the Import Settings pane is accessible where you can do the following:

- Select an existing job.
- Create a new job based on a predefined job template.

To import inspection data using Topobase Client Standalone

1 Start Topobase Standalone Client.

2 Click Workspace menu ► Open.

3 In the Open Workspace dialog box, select a workspace that includes both an intermediate document and a main wastewater document. Click Open.

4 Select the intermediate document tab. For example, WW_IMPORT.

5 Click the Document explorer icon. 

6 Right-click the intermediate document in the tree view and select Import ► Wastewater Import.

Optionally, you can select Document menu ► Import.

7 In the Select Import pane of the Wastewater Import dialog box, do one of the following:

- Click Create to create a new import.

- Continue with an old import. Open the list of imports, if any are present, and select an import.

Click Next.

- 8 In the Import Data - Specify Import File pane, do the following:
 - Specify the Import Type. See also [Inspection File Formats](#) (page 108).
 - Click the Add button to choose the inspection file you want to import.

TIP If there is a video file that accompanies the import file, placing them in the same folder ensures that both will import together. Storing the files on a network server gives accessibility to all who need to import the data.

Click Next to begin importing data.

NOTE This can take awhile depending upon the size the inspection file and the number of features involved.

- 9 When the file is imported, click Next.
Features in the import file are matched against the main document.
- 10 In the Match Features pane, wait for the features to be matched against the main document and then do the following:
 - If there are feature mismatches, resolve them by excluding the features from the import, manually matching the features, or by ignoring the mismatches.
 - Once all mismatched features are resolved, click Next.
- 11 In the Match Attributes pane, wait for the validation process to finish and then do the following:
 - For any features that fail validation, fix the problems.
Conflicts can be fixed individually by selecting a feature and choosing whether the conflicting attributes should use the old or new feature values. You can also fix multiple conflicts by selecting the Attribute Values Conflicting heading and choosing whether to keep the old feature values or replace with the new feature values.
 - Click Next.
- 12 In the Validate Data pane, do the following:
 - Fix all data conflicts, or ignore the errors.

For Length Check Errors, you can specify a tolerance in the [Wastewater Document Options](#) (page 333).

- Click Next.

13 In the Create Geometry pane, wait for the geometry to be created. Click Next.

14 In the Commit Import pane, click Next to begin committing the inspection data to the main document.

Click Next to copy media files and to update the main document. Click Finish.

NOTE If you did not specify any media files, click Next to update the main document with imported features.

Optionally, if Jobs are enabled for the main wastewater document, the Import Settings pane is accessible where you can do the following:

- Select an existing job.
- Create a new job based on a predefined job template.

Inspection Editor

Use the Inspection Editor to review imported information pertaining to specific sections of the wastewater network.




Inspection Editor Interface


The Inspection Editor interface is divided into three panes where you can review, edit and add observations.

- **Tools Pane** — On the left side; shows the tools for managing inspection observations.
- **Image/Information Pane** — On the right side; shows the inspection video along with descriptive information about the video content.
- **Inspection/Video Controls Pane** — Across the bottom; controls the video and selection of primary and secondary inspection data.

Inspection Editor Menus

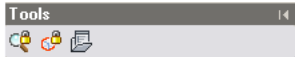
There are several menus included in the Inspection Editor.

Menu	Description	Toolbar Icon
Section	Open Report—Displays an inspection report for the current section. The report is displayed in a secondary window. You can print the report or change its format to HTML, ASCII, or PDF.	
	Observation	
	Create Point Observation—Allows you to create an observation instance occurring at a specific point in the section.	
	Create Lateral Observation—Allows you to create an observation instance occurring somewhere around the circumference of the section.	
	Create Longitudinal Observation—Allows you to create an observation instance occurring along the length of the section.	
	Auto Zoom—Automatically zooms to a selected inspection observation.	
	Auto Highlight—Automatically highlights the selected inspection observation.	
Video	Play/Pause—Starts or pauses the video.	
	Stop—Stops the video.	
	Fast Forward—Speeds up video.	
	Rewind—Rewinds the video.	
	Next—Advances the video by one frame so you can more accurately perform inspections.	

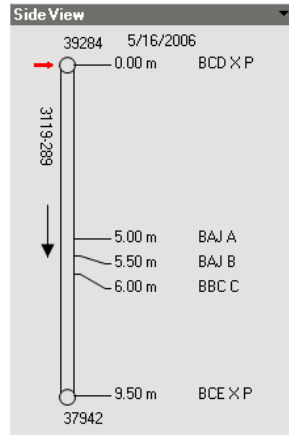
Menu	Description	Toolbar Icon
	Previous—Backs the video up by one frame.	
Dock (icon)	In/Out—An icon at the right-hand side of the menu that controls whether the Inspection Editor is docked with the form or whether it is undocked. When undocked, you can still view the Inspection Editor and choose other tabs in the form.	

Tools Pane

The Tools pane is divided into four sections; Tools, Side View, Description and Observation Editor.

Tool Pane Section	Description
Tools 	The Tools section contains several icons that duplicate some of the functionality found in the Section and Observation menus. You can choose to enable or disable automatic zoom and highlight, or you can open a report for inspection. At the right side of the Tools section is an icon you can use to collapse or expand the Tools pane. If you click the Open Report button, the inspection report is displayed in a secondary window. You can print the report or change its format to HTML, ASCII, or PDF.
Side View	The Side View section displays a graphical representation of an inspected section of pipe between a <i>from</i>

Tool Pane Section**Description**



manhole and a *to manhole* along with their unique feature IDs.

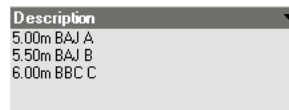
NOTE The 'from manhole' is always at the top of the side view.

To the left of the section representation is an arrow which indicates flow direction. To the right of the section representation is a list of distances and corresponding damage codes.

Double-clicking a damage code changes the description data shown in the Description section and also advances or rewinds the video to that location along the section.

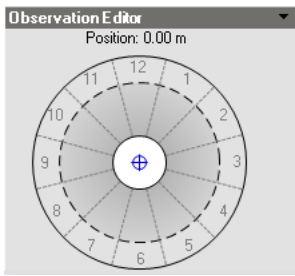
NOTE If multiple observations are within 2 meters of one another, double-clicking or moving the slider over one of the observations with auto-highlight or auto-zoom all the observations. This occurs only when Auto Highlight or Auto Zoom are active.

Hovering the cursor over a damage code displays a menu where you can choose to highlight or zoom to the damage, open a form, delete the damage observation, or fix the damage observation. Navigating the red arrows in the side view to different damage observations will also advance or rewind the video display to the selected observation.

Description

The Description section contains information regarding the currently selected damage observation. You can find the following information:

- Distance from the base manhole to the location where the damage is reported.
 - The damage code based on the wastewater standard you selected.
 - The position of the damage observation based on the Observation Editor.
 - Optionally, you can add a short description of the actual damage observation. For example, Severe lengthwise crack.
-

Tool Pane Section	Description
Observation Editor	<p>The Observation Editor section contains a graphical representation of the inside of the inspected section looking from the 'from manhole' toward the 'to manhole'. The observation editor is further delineated by twelve wedges representing positions on a clock. Observations in the observation editor are depicted as follows:</p>
	<p>Observations in the observation editor are depicted as follows:</p> <ul style="list-style-type: none"> ■ A point on the dashed line indicates a <i>point damage</i> observation. For example, a point placed at the 6-o'clock position means damage is localized to that specific point in the section. ■ A solid line running around the dashed line indicates a <i>lateral damage</i> observation. For example, a solid line running along the dashed line from 7-o'clock to 10-o'clock means damage running around the circumference of the section between the 7- and 10-o'clock positions. ■ A point with an arrow pointing toward or away from the center indicates a <i>longitudinal damage</i> observation. For example, a point at 5-o'clock with an arrow pointing toward the center means there is damage along the length of the section starting at the 5-o'clock position and running for a specified distance. ■ A dashed line running around the dashed line indicates a combination of a <i>lateral and longitudinal damage</i> observation with a beginning at one clock position and an end at another clock position. For example, a dashed line running along the dashed line from 12-o'clock to 3-o'clock means there is damage starting at the 12-o'clock position and ending some distance along the section at the 3-o'clock position.

Image/Information Pane

The Video/Information pane displays the inspection video that was imported along with the other inspection data. Along with the video, inspection and section data related to the video is displayed, such as a description of where

the video was shot, the data the inspection team recorded the video, what the section of pipe is made of and how big it is.

The video is synchronized with the documented observations noted in the Side View section of the Tools pane. This means that if you played the video and notice damage 3 meter into the section, there is likely to be a damage observation called out in the Side View.

Inspection/Video Controls Pane

The Inspection/Video Controls pane allows you to select the main and secondary inspections with which you want to work. A main inspection is always needed, but the secondary inspection is set to “None” by default. You can open the secondary inspection list and select a secondary inspection. The secondary inspection is displayed beside the main inspection in the side view where you can perform a side-by-side comparison of the two inspections. Using a secondary inspection does not advance or rewind a video file, if one is loaded.

The video control buttons beneath the video display duplicate the controls in the Video menu. When using the controls while reviewing inspection observations, you can play, pause, stop, fast forward or rewind the video. You can also move frames forward or back one frame at a time to more accurately inspect video content.

If you only want to review video of the inspection data, you can use the Inspection Editor Web. The web version displays a video window with playback controls and an inspection list where you can choose the specific inspection data you want to view.

NOTE Topobase Client uses the Windows Media Player for video playback which supports WMV and MPG file formats. Topobase Web uses the Microsoft® SilverLight™ player which only supports WMV video files.

To access the inspection editor

- 1 Double-click a section of the wastewater network.
- 2 In the Section form, click the Inspection Editor tab.

Inspection File Formats

Topobase Wastewater Import provides several Import Types to support the following damage encoding rules, and classification models. The classification

model is determined by the damage encoding rule that is used in the inspection file.

Import Type / File Format	Damage encoding rule	Classification model	Comments
ISYBAU 1996/2001	ISYBAU 1996	ISYBAU 1996	Imports ISYBAU (*.k, *.h, *.s, *.lh, *.ey, *.lk) files containing network data, and damage observations. ISYBAU 1996/2001 files are not compliant with DIN EN-13508-2
	ISYBAU 2001	ISYBAU 2001	NOTE Import Type ISYBAU 1996/2001 supports both ISYBAU 1996, and ISYBAU 2001, because the file format is identical.
ATV-M 143-2	ATV-M 143-2	ATV-M 149	Imports ISYBAU (*.k, *.h, *.s, *.lh, *.ey, *.lk) files containing network data, and damage observations that are using ATV-M 143-2 encoding. ATV-M 143-2 does not provide a file format. You can use the ISYBAU 1996/2001 file format to exchange data. The ATV-M 143-2 Import Type reads the ISYBAU file format, and sets the classification model to ATV-M 149.
ISYBAU 2006	ISYBAU 1996	ISYBAU 1996	Imports ISYBAU 2006 (*.XML) files. We recommend that you use ISYBAU 2006 file formats, and encoding rules that support DIN EN 13508, wherever it is possible.

Import Type / File Format	Damage encoding rule	Classification model	Comments
	ISYBAU 2001	ISYBAU 2001	
	DIN EN-13508-2	ISYBAU 2006	
	DWA-M 149-2	DWA-M 149-3	Supports DIN EN-13508-2.
	DIN EN-13508-2	ISYBAU 2006	
ATV-DVWK-M 150-1	ISYBAU 2001	ISYBAU 2001	Imports (*.XML) files containing network data, and damage observations.
	DWA-M 149-2	DWA-M 149-3	Encoding supports DIN EN-13508-2.
	ATV-M 143-2	ATV-M 149	
EN-13508-2	DIN EN-13508-2	ISYBAU 2006 or DWA-M 149-3	The file does not provide the classification model, that means that the default classifier will be applied. See also Set Wastewater Document Options (page 333).

Damage encoding rules (supporting DIN EN 13508)

- DWA-M 149-2: Extension of EN 13508-2 for Germany.
- ATV-DVWK-M 150: DWA-M 149-2 for ATV.

Notice that the following supported encodings are not DIN EN 13508 compliant: ISYBAU 1996, ISYBAU 2001, and ATV-M 143-2.

Classification Models

Notice that the results of ISYBAU classification models, and DWA classification models can not be compared, because they use a different classification system.

To determine the Import Type

The Import Type is based on the file format, and the damage encoding rule.

- If you have (*.k, *.h, *.s, *.lh, *.ey, *.lk) files, you select the Import Type ISYBAU 1996/2001.
- If the inspection uses damage encoding according to ATV-M 143-2, and if you have (*.k, *.h, *.s, *.lh, *.ey, *.lk) files, select the import type ATV-M 143-2 (within ISYBAU 1996/2001 files).
- If you have ISYBAU 2006 (*.XML) files, select the import type ISYBAU 2006.
- If you have ATV (*.XML) files, select the import type ISYBAU 2006.
- If you are not sure what format your inspection file has, ask your vendor who provided the file. Ask for the file format, and the damage encoding rule.

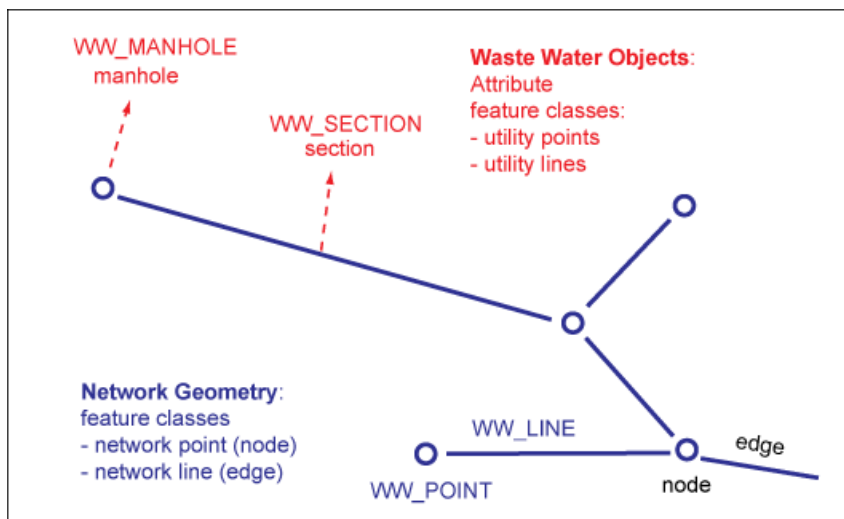
Understand and Work with the Wastewater Data Model

Topobase Wastewater is based on the Utility data model which stores geometry and attribute data separately. The data model contains topics, representations, domains, utilities, topologies, and intersections.

The Data Model Administrator lets you explore wastewater topics, representations, domains, utilities, topologies, and intersections in the data model.

Data Model Elements	Description
Topics	Topics are containers used to organize groups of feature classes and collections of feature class tables.
Representations	A representation is a template you can use to visualize a feature in different locations, and store the geometries in the database. For more information about representations (schematics), see Data Model: Schematics in the Topobase Administrator Guide.
Domains	Domains are stored in domain tables (*_TBD) and define the attribute values that are used in forms.

Data Model Elements	Description
	For more information about domains, see Data Model: Domain Tables in the Topobase Administrator Guide.
Utilities	A utility model provides basic utility network components, which are used in the wastewater application. For more information about utilities, see Overview of the Utility Model in the Topobase Administrator Guide.
Topologies	Topologies are used to model objects and phenomena found in the real world. For more information about topologies, see Topology Introduction in the Topobase Administrator Guide.
Intersections	Intersections are routines used to calculate intersections between two feature classes. For more information about intersections, see Data Model: Intersections in the Topobase Administrator Guide.



Wastewater data model

With the Data Model Administrator you can explore the data model with its topics, feature classes, topologies, and utility models.

To explore the Wastewater data model

- 1 Start Topobase Administrator and open the Wastewater workspace.
- 2 Select the document and click Document menu ► Data Model.
- 3 Use the data model explorer to view feature classes, attributes, label definitions, and topologies.

To view the Wastewater document structure version

- 1 In the data model explorer, right-click the document root node, and click Document Info.
- 2 Click the Wastewater Data Model row.

The document structure is shown in the lower information pane.

Wastewater Feature Classes and Types

The wastewater data model is comprised of feature classes that are specific to the design, implementation, and maintenance of wastewater networks.

Feature classes are the basic class for objects. For example, a section or manhole is a feature class. In a database, each feature class corresponds to one Oracle table. A feature class can have any number of attributes (Oracle columns), one of which can be of type "geometry".

The WW_POINT and WW_LINE feature classes represent the points and lines that make up the wastewater network. WW_POINT features are wastewater features such as manholes, house connectors, valves, meters and other wastewater devices. WW_LINE features are the linestring geometries that represent sections. These features carry the wastewater and control its flow.

WW_CONN is the table that stores connectivity and flow information. We strongly recommend that you do not modify this table.

Feature Class Types

Each topic in the wastewater data model contains multiple types of feature classes.

Feature Class Type	Description
Attribute	An attribute is a feature class that has no geometry. For more information, see Feature Class Type: Attribute in the Topobase Administrator Guide.
Line String	The line string feature class is normally comprised of geometry and has one attribute that can be used for stylization by means of the Display Manager. For more information, see Feature Class Type: Line String in the Topobase Administrator Guide.
Collection	A collection is a feature class for objects that can be either points, lines, or polygons. For more information, see Feature Class Type: Collection in the Topobase Administrator Guide.
Point	The point feature class is made up of points that indicate the location of features, such as manholes, fittings, valves, etc. For more information, see Feature Class Type: Point in the Topobase Administrator Guide.
Polygon	The polygon feature class is made up of line segments that form a closed region. The line segments that form the polygon have the same line attributes. Examples of the polygon feature class include the Drain Area and Sub-Drain Area. For more information, see Feature Class Type: Polygon in the Topobase Administrator Guide.
Dimension	A dimension feature class (parent attribute feature class) is related to several child feature classes that store the geometry components, such as points (symbols) and lines, and labels. Dimensioning is stored in feature classes with the suffixes, _L (lines), _P (points), and _HL (help lines). For more information, see Feature Class Type: Dimension in the Topobase Administrator Guide.

For a number of feature classes, Topobase Wastewater provides model driven attributes. You use specific model tables (*_MODEL) to fill the model driven attributes:

- Cover, manhole, meter, valve, pump
- Section
- Sub drain area, marker, casing

See also the Topobase Administrator Guide, section Data Model: Model Tables.

They are used to collect several types (models) of a particular network item and can be grouped by manufacturer.

For example, in a wastewater network with several kinds of covers, you would fill the model driven attributes using a predefined record from the WW_COVER_MODEL table. In the Cover feature class form, you use the Model Selector control to fill in the model driven attributes more quickly.

NOTE In the Model input field, the value Choose Model indicates that you can apply a model. It does not store the model that has been applied, because at any time you can modify the model driven attributes. The attributes are stored in the main feature class, and you use the model feature class to insert a set of attributes. You can use the model table to store reference values.

BEST PRACTICE In the feature class form, use the Model table, to search for an appropriate model. Use the model list, if you are sure which model to use. In the Form Designer, modify the model table form to hide or show model attributes, or to modify the order in the grid. Modify the main feature class form to move the Model selector to another location.

The following tables show sample cover and section models.

Table name	WW_COVER_MODEL
FID_MANUFACTURER	-> WW_MANUFACTURER
DIMENSION_1 and DIMENSION_2	First and second dimension
ID_AERATION	-> WW_COVER_AER_TBD To define the aeration type of the cover.
ID_COVER_SHAPE	-> WW_COVER_SHAPE_TBD

ID_LOAD_CLASS	-> WW_COVER_LOAD_TBD
ID_MATERIAL	-> WW_COVER_MAT_TBD
LOAD_LIMIT	Maximum load accepted by the cover.
NAME_NUMBER	Name or number.
NARRATIVE	A description or other unique information concerning the item.
USER_FLAG	An operator-defined work area. This attribute can be used by the operator for user-defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.
<hr/>	
Topic	Administration
Table name	WW_SECTION_MODEL
DIAMETER_INSIDE	Inside diameter of the pipe.
DIAMETER_OUTSIDE	Outside diameter of the pipe.
DIMENSION_1	First dimension.
DIMENSION_2	Second dimension.
FID_MANUFACTURER	WW_MANUFACTURER Manufacturer of this item.
HYDRAULIC_FRICTION	Hydraulic friction or kind of roughness inside the pipe; what causes a decrease in pressure relative to the pipeline length.
ID_MATERIAL	-> WW_MATERIAL_TBD
ID_PROFILE	-> WW_PROFILE_TBD
NAME_NUMBER	Model name or number.

NARRATIVE	A description or other unique information concerning the item.
THICKNESS	Thickness of the pipe wall.
USER_FLAG	An operator-defined work area. This attribute can be used by the operator for user-defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

Administration

The Administration topic contains attribute feature classes for managing contacts, customers, locations, manufacturers, and model tables.

Model tables store several types of a particular network item and can be grouped by manufacturer. Model tables have the suffix *_MODEL.

Also, there are polygon feature classes for creating washing, administration, and protection areas.

Admin Area

An Admin Area is an area approved by a federal, state, or local utility regulatory authority.

- Feature class — WW_ADMIN_AREA
- Feature type — Polygon
- Related table — WW_ADMIN_AREA_TBL

Name	Data Type	Description
AREA	Number	The area size, measured in square meters.
CO_CONNECT	Number	The commercial networking number.
DATE_CREATION	Date	The date when the item was created.

Name	Data Type	Description
DESIGN_TREAT_CAP	Number	The designed wastewater treatment capacity, measured in cubic meters.
GEOM	Geometry	Feature geometry polyline. For more information, see <i>Oracle Spatial Users Guide and Reference</i> .
ID_OWNERSHIP	Number	The owner of this item.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
POPULATION_SERVED	Number	The population served by this area.
RE_CONNECT	Number	The residential connection number.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect this item's data integrity and should not be used to store this item's data.

Contact

The Contact feature class manages contact information, for example; company name, contact person, address, and email address.

The contact form provides access to several wastewater network features using the link buttons in the Related Tables tab.

- Feature class — WW_CONTACT

- Feature type — Attribute

Name	Data Type	Description
ACTIVE	Number	Is this contact active? (Yes/No)
BANK	Varchar2	The bank associated with this record.

Name	Data Type	Description
BANK_ACCOUNT_ID	Varchar2	The bank account ID associated with this record.
BANK_CODE	Varchar2	The bank code associated with this record.
BIRTH_DATE	Date	The date of birth associated with this record.
BIRTH_NAME	Varchar2	The name at birth of this record.
BIRTH_PLACE	Varchar2	The place of birth associated with this record.
CITY	Varchar2	The city associated with this record.
COMPANY	Varchar2	The company associated with this record.
COMPANY_2	Varchar2	Additional company information for this record.
DATE_CHANGED	Date	The date of the last time this record was changed.
DATE_CREATED	Date	The date when this record was created.
DIRECT_DIALING	Varchar2	The direct dialing number for this record.
EMAIL	Varchar2	The email address associated with this record.
FAX	Varchar2	The fax number associated with this record.
FIRST_NAME	Varchar2	The first name associated with this record.
HOUSE	Varchar2	The house number associated with this record.
INTERNET	Varchar2	The homepage URL associated with this record.
JOB_DESCRIPTION	Varchar2	The job description for this record.
NAME	Varchar2	The name associated with this record.
NARRATIVE	Varchar2	A description or other unique information concerning this record.
PERSONAL_ID	Varchar2	The ID of the person associated with this record.

Name	Data Type	Description
PHONE_MOBILE	Varchar2	The mobile phone number.
PHONE_OFFICE	Varchar2	The office phone number.
PHONE_PRIVATE	Varchar2	The private phone number.
POSTAL_CODE	Varchar2	The postal code associated with this record.
STREET	Varchar2	The street associated with this record.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect this item's data integrity and should not be used to store this item's data.

Location

The Location feature class groups wastewater utility features by geographical relation.

- Feature class — WW_LOCATION
- Feature type — Attribute

Name	Data Type	Description
CITY	Varchar2	The city associated with this record.
DESIGNATION	Varchar2	The designation related to this record.
DISTRICTCODE	Number	The district code associated with this record.
DISTRICTNAME	Varchar2	The district name associated with this record.
ID_POSITION_TYPE	Number	The position type ID for this record. Related to: ■ WW_POSITION_TYPE_TBD

Name	Data Type	Description
IS_FLOOD_AREA	Number	Is this a flood zone? (Yes/No)
NAME	Varchar2	The name of the location.
NAME_NUMBER	Varchar2	The name or number of the record.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
POSTALCODE	Varchar2	The postal code of this location.
PROPERTY_NUMBER	Varchar2	The property number of this location.
STREET	Varchar2	The street associated with this location.
STREETCODE	Number	The street code related to this location.
STREETNAME	Varchar2	The street name related to this location.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect this item's data integrity and should not be used to store this item's data.
UTILIZATION	Varchar2	The utilization of this location.

Manufacturer

The Manufacturer feature class manages the manufacturer data for all materials and assemblies.

You can also create models for wastewater network items to simplify the data acquisition.

- Feature class — WW_MANUFACTURER

- Feature type — Attribute

Name	Data Type	Description
COMPANY	Varchar2	The manufacturer's company name.
COMPANY_2	Varchar2	Additional company information for this manufacturer.
DATE_CREATION	Date	The date when this item was created.
NARRATIVE	Varchar2	A description or other unique information concerning this manufacturer.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect this item's data integrity and should not be used to store this item's data.

The Manufacturer feature class provides several model tables that store various network items.

Casing Model

The manufacturer's detail information for casings.

- Model table — WW_CASING_MODEL
- Feature type — Attribute
- Parent feature class — WW_MANUFACTURER

Name	Data Type	Description
CERTIFICATE	Varchar2	A description of item's DIN/ISO/DVGW/TUEV value.
DIAMETER_INSIDE	Number	The inside diameter of the section, measured in meters.
DIAMETER_NOMINAL	Varchar2	The manufacturer's designated size, or nominal diameter, rounded to the nearest unit, for the

Name	Data Type	Description
		subject item. for example, 1" gas hydrant, 2" meter, 6" pipe.
DIAMETER_OUTSIDE	Number	The outside diameter of the section, measured in meters.
FID_MANUFACTURER	Number	The manufacturer of this item. Related to: ■ WW_MANUFACTURER
HYDRAULIC_FRICTION	Number	Hydraulic friction or the roughness inside a section which decreases the pressure relative to the length.
ID_COATING_INSIDE	Number	The type of coating used on the inside of the section. Related to: ■ WW_COATING_TBD
ID_COATING_OUTSIDE	Number	The type of coating used on the outside of the section. Related to: ■ WW_COATING_TBD
ID_MATERIAL	Number	The material used to manufacture this item.
MODEL_NUMBER	Varchar2	The model name or number of this item.
PRESSURE_MAX	Varchar2	The manufacturer's or industry standard's maximum pressure rating for this item.
THICKNESS	Varchar2	The thickness of the section wall.
VALUE	Varchar2	A short description of the model. This value is used for the domain table representation of the model.

Cover Model

The manufacturer's detail information for covers.

- Model table — WW_COVER_MODEL
- Feature type — Attribute
- Parent feature class — WW_MANUFACTURER

Name	Data Type	Description
DIMENSION_1	Number	The first dimension, measured in meters.
DIMENSION_2	Number	The second dimension, measured in meters.
FID_MANUFACTURER	Number	The manufacturer of this item. Related to: <ul style="list-style-type: none">■ WW_MANUFACTURER
ID_AERATION	Number	Defines the aeration type of the cover. Related to: <ul style="list-style-type: none">■ WW_COVER_AER_TBD
ID_COVER_SHAPE	Number	The shape of the cover. Related to: <ul style="list-style-type: none">■ WW_COVER_SHAPE_TBD
ID_COVER_TYPE	Number	The type of cover. Related to: <ul style="list-style-type: none">■ WW_COVER_TYPE_TBD
ID_LOAD_CLASS	Number	The load class of the cover. Related to: <ul style="list-style-type: none">■ WW_COVER_LOAD_TBD
ID_MATERIAL	Number	The material used to manufacture this item. Related to: <ul style="list-style-type: none">■ WW_COVER_MAT_TBD

Name	Data Type	Description
LOAD_LIMIT	Number	The maximum load, measured in kilograms, accepted by the cover.
MODEL_NAME	Varchar2	The name or number of the model.

Manhole Model

The manufacturer's detail information for manholes.

- Model table — WW_MANHOLE_MODEL
- Feature type — Attribute
- Parent feature class — WW_MANUFACTURER

Name	Data Type	Description
DEPTH	Number	The depth of the manhole.
DIMENSION_1	Number	The first dimension, measured in meters.
DIMENSION_2	Number	The second dimension, measured in meters.
FID_MANUFACTURER	Number	The manufacturer of this item. Related to: ■ WW_MANUFACTURER
ID_MANHOLE_SHAPE	Number	The shape of the manhole. Related to: ■ WW_MHOLE_SHAPE_TBD
ID_MANHOLE_TYPE	Number	The type of manhole. Related to: ■ WW_MHOLE_TYPE_TBD
ID_MATERIAL	Number	The material used to manufacture this item. Related to: ■ WW_MATERIAL_TBD

Name	Data Type	Description
MODEL_NAME	Varchar2	The name or number of the model.

Marker Model

The manufacturer's detail information for manholes.

- Model table — WW_MARKER_MODEL
- Feature type — Attribute
- Parent feature class — WW_MANUFACTURER

Name	Data Type	Description
FID_MANUFACTURER	Number	The manufacturer of this item. Related to: ■ WW_MANUFACTURER
ID_MATERIAL	Number	The material used to manufacture this item. Related to: ■ WW_MATERIAL_TBD
MODEL_NAME	Varchar2	The name or number of the model.
SIGN_HEIGHT	Number	The height dimension of the sign, measured in meters.
SIGN_WIDTH	Number	The width dimension of the sign, measured in meters.
VALUE	Varchar2	Short description of the model. This value is used for the domain table representation of the model.

Meter Model

The manufacturer's detail information for meters.

- Model table — WW_METER_MODEL
- Feature type — Attribute

■ Parent feature class — WW_MANUFACTURER

Name	Data Type	Description
DIMENSION_1	Number	The first dimension, measured in meters.
DIMENSION_2	Number	The second dimension, measured in meters.
FID_MANUFACTURER	Number	The manufacturer of this item. Related to: ■ WW_MANUFACTURER
ID_METER_TYPE	Number	The type of meter. Related to: ■ WW_METER_TYPE_TBD
MODEL_NAME	Varchar2	The name or number of the model.

Pump Model

The manufacturer's detail information for pumps.

■ Model table — WW_PUMP_MODEL

■ Feature type — Attribute

■ Parent feature class — WW_MANUFACTURER

Name	Data Type	Description
FID_MANUFACTURER	Number	The manufacturer of this item. Related to: ■ WW_MANUFACTURER
ID_COOLING_METHOD	Number	The method used to cool this pump. Related to: ■ WW_COOLING_METHOD_TBD
ID_PUMP_TYPE	Number	The type of pump. Related to:

Name	Data Type	Description
		■ WW_PUMP_TYPE_TBD
MODEL_NAME	Varchar2	The name or number of the model.
POWER	Number	The amount of power provided by this pump.

Section Model

The manufacturer's detail information for sections.

- Model table — WW_SECTION_MODEL
- Feature type — Attribute
- Parent feature class — WW_MANUFACTURER

Name	Data Type	Description
DIAMETER_INSIDE	Number	The inside diameter of the section, measured in meters.
DIAMETER_OUTSIDE	Number	The outside diameter of the section, measured in meters.
DIMENSION_1	Number	The first dimension, measured in meters.
DIMENSION_2	Number	The second dimension, measured in meters.
EXIST_SPECIAL_PROFILE	Number	The existing special profile.
FID_MANUFACTURER	Number	The manufacturer of this item. Related to: ■ WW_MANUFACTURER
HYDRAULIC_FRICTION	Number	Hydraulic friction or the roughness inside a section which decreases the pressure relative to the length.
ID_MATERIAL	Number	The material used to manufacture this item.

Name	Data Type	Description
ID_PROFILE	Number	The profile of the section.
MODEL_NAME	Varchar2	The name or number of the model.
THICKNESS	Varchar2	The thickness of the section wall.
VALUE	Varchar2	A short description of the model. This value is used for the domain table representation of the model.

Valve Model

The manufacturer's detail information for valves.

- Model table — WW_VALVE_MODEL
- Feature type — Attribute
- Parent feature class — WW_MANUFACTURER

Name	Data Type	Description
DIMENSION_1	Number	The first dimension, measured in meters.
FID_MANUFACTURER	Number	The manufacturer of this item. Related to: ■ WW_MANUFACTURER
ID_SERVICE_TYPE	Number	The service type for the valve. Related to: ■ WW_SERVICE_TYPE_TBD
ID_VALVE_TYPE	Number	The type of valve. Related to: ■ WW_VALVE_TYPE_TBD
MODEL_NAME	Varchar2	The name or number of the model.

Protection Area

Protection areas are used for visual grouping only.

- Feature class — WW_PROTECTION_AREA
- Feature type — Polygon
- Related table — WW_PROTECTION_AREA_TBL

Name	Data Type	Description
AREA	Number	The area size, measured in square meters.
DATE_CREATION	Date	The date when the item was created.
GEOM	Geometry	Feature geometry polyline. For more information, see <i>Oracle Spatial Users Guide and Reference</i> .
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect this item's data integrity and should not be used to store this item's data.

Washing Area

Defines an area used for washing sections.

Feature rules can be enabled to allow the connection of a washing area with a section and vice-versa. See [Feature Rules: Washing Area](#) (page 330).

- Feature class — WW_WASHING_AREA
- Feature type — Polygon

■ Related table — WW_WASHING_AREA_TBL

Name	Data Type	Description
AREA	Number	The area size, measured in square meters.
DATE_CREATION	Date	The date when the item was created.
GEOM	Geometry	Feature geometry polyline. For more information, see <i>Oracle Spatial Users Guide and Reference</i> .
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect this item's data integrity and should not be used to store this item's data.

Dimension

The Dimension topic contains feature classes that store dimensioning in the data base.

For more information about saving dimensioning, see [Data Model: Dimensioning](#).

Drain Area

The Drain Area topic contains polygon and attribute feature classes for creating drain and sub-drain areas in a wastewater network.

Model tables store several types of a particular network item and can be grouped by sub-drain area. Model tables have the suffix *_MODEL.

You use the [Sub Drain Area Creation](#) (page 72) workflow to digitize a drain area.

Drain Area

A drain area is a region of land where water flows into a specified body of water, such as a river, lake, sea, ocean, or sewer pipe.

A drain area is directly connected to a section and a network point. It is used for flow computations such as how much wastewater flows in the section. Its properties are collected in a model table.

Each section can be assigned to one sub drain area.

- Feature class — WW_DRAIN_AREA
- Feature type — Polygon
- Related table — WW_DRAIN_AREA_TBL

Name	Data Type	Description
AREA	Number	The area size, measured in square meters.
GEOM	Geometry	Feature geometry polyline. For more information, see <i>Oracle Spatial Users Guide and Reference</i> .
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect this item's data integrity and should not be used to store this item's data.

Sub Drain Area

A sub-drain area is directly connected to a section and a network point. It is used for flow computations such as how much water flows in the section. Its properties are collected in a model table.

Each section can be assigned to one sub-drain area.

- Feature class — WW_SUB_DRAIN_AREA

■ Feature type — Polygon

■ Related table — WW_SUB_DRAIN_AREA_TBL

Name	Data Type	Description
AREA	Number	The area size, measured in square meters.
AREA_NUMBER	Number	The number of the area.
COMMERCIAL_IN-FLOW	Number	The inflow of commercial water, measured in liters / second [l/s].
COVERED_AREA	Number	The area of the covered area, measured in square meters.
DATE_CREATION	Date	The date when the item was created.
DISCHARGE_COEFFICIENT	Number	The discharge coefficient (psi value) of the sub drain area.
DRY_WEATHER_IN-FLOW	Number	The amount of inflow water during dry weather, measured in liters / second [l/s].
FACTOR_COV_AREA	Number	The factor of the covered area.
FACTOR_FLAT_ROOF_AREA	Number	The factor of the flat roof area.
FACTOR_NOT_COV_AREA	Number	The factor of the non-covered area.
FACTOR_ROOF_AREA	Number	The factor of the roof area.
FID_DRAIN_AREA	Number	The relation with the drain area. Related to: ■ WW_DRAIN_AREA
FID_DRY_WEATHER	Number	The relation to the dry weather feature. Related to: ■ WW_DRY_WEATHER
FID_END_POINT_ATTR	Number	The relation with one point. Related to:

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_DISCHARGE ■ WW_DISPOSAL_TANK ■ WW_GREASE_TRAP ■ WW_GRIT_CHAMBER ■ WW_MANHOLE ■ WW_NEUTRALIZER ■ WW_OIL_WATER_SEP ■ WW_OUTFALL ■ WW_SEPTIC_TANK
FID_HYD_FEATURE	Number	<p>The relation to the hydraulic feature. Related to:</p> <ul style="list-style-type: none"> ■ WW_HYD_DISCHARGE ■ WW_HYD_FREE_OUTFALL ■ WW_HYD_MANHOLE ■ WW_HYD_OUTFALL ■ WW_HYD_PUMP ■ WW_HYD_RESTR_CHAR_LINE ■ WW_HYD_RESTR_DISCHARGE ■ WW_HYD_SECTION ■ WW_HYD_STORAGE_SITE ■ WW_HYD_VALVE
FID_HYDRAULIC_COLLECTION	Number	<p>The relation to a hydraulic collection. Related to:</p> <ul style="list-style-type: none"> ■ WW_HYDRAULIC_COLLECTION
FID_SECTION	Number	<p>The relation with one section. Related to:</p> <ul style="list-style-type: none"> ■ WW_SECTION
FLAT_ROOF_AREA	Number	The area of a flat roof, measured in square meters.

Name	Data Type	Description
FOUL_WATER_INFLOW	Number	The inflow of foul water, measured in liters / second [l/s].
GEOM	Geometry	Feature geometry polyline. For more information, see <i>Oracle Spatial Users Guide and Reference</i> .
HOUSE_INFLOW	Number	The amount of house water inflow, measured in liters / second [l/s].
ID_ADDED_MATERIAL	Number	The added material ID. Related to: ■ WW_ADDEDMATERIAL_TYPE_TBD
ID_DISPOSITION_STATE	Number	The disposition state of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
ID_HYD_AREA_CHAR	Number	The hydraulic area character ID. Related to: ■ WW_HYD_AREA_CHAR_TBD
ID_HYD_AREA_FUNCTION	Number	The hydraulic area function ID. Related to: ■ WW_HYD_AREA_FUNCTION_TBD
ID_HYD_AREA_TYPE	Number	The hydraulic area type ID. Related to: ■ WW_HYD_AREA_TYPE_TBD
ID_HYD_FOULING_CLASS	Number	The hydraulic fouling class ID. Related to: ■ WW_HYD_FOULING_CLASS_TBD
ID_INCLINATION_CLASS	Number	The inclination class ID. Related to:

Name	Data Type	Description
		■ WW_INCLINATION_TBD
ID_SOIL_TYPE	Number	The type of soil. Related to: ■ WW_SOIL_TYPE_TBD
ID_SUB_DRAIN_UTILISATION	Number	The utilisation of the sub-drain area. Related to: ■ WW_UTILISATION_TBD
IDENTIFIER	Varchar2	The identifier.
INDUSTRIAL_INFLOW	Number	The amount of industrial water inflow, measured in liters / second [l/s].
INFILTRATION_INFLOW	Number	The amount of infiltration water inflow, measured in liters / second [l/s].
INFILTRATION_WATER_COEFFICIENT	Number	The infiltration water coefficient.
INHABITANT	Number	The number of inhabitants in the sub-drain area.
INHABITANT_DENSITY	Number	The inhabitant density, measured in inhabitants / hectare [inhabitants/ha].
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
NOT_COVERED_AREA	Number	The area that is not covered, measured in square meters.
RAIN_INFLOW	Number	The amount of rain water inflow, measured in liters / second [l/s].
ROOF_AREA	Number	The area that is covered by a roof, measured in square meters.

Name	Data Type	Description
SLOPE	Number	The average slope of the sub-drain area.
SLOPE_CLASS	Number	The class of slope of the sub-drain area.
SURFACE_AREA	Number	The area of covered area, measured in square meters.
US-AGE_TIME_PER_DAY	Number	The average usage of water per day, measured in hours / day.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect this item's data integrity and should not be used to store this item's data.
WATER_USAGE	Number	The usage of water by inhabitants measured in liters / inhabitant / day [l/inhabitant/day].

Sub Drain Area Model

In the Sub Drain Area Model feature class, the validation checks whether the sub area factors add to 1.0. $FACTOR_COV_AREA + FACTOR_NOT_COV_AREA + FACTOR_ROOF_AREA + FACTOR_FLAT_ROOF_AREA$. In the feature class form, attributes that do not match are highlighted, and a tooltip explains the inconsistency.

NOTE In the wastewater document options, you can enable sub-drain area model validation. See [Set Wastewater Document Options](#) (page 333).

- Model table — WW_SUB_DRAIN_AREA_MODEL
- Feature type — Attribute
- Parent feature class — WW_SUB_DRAIN_AREA

Name	Data Type	Description
DISCHARGE_COEFFICIENT	Number	The discharge coefficient of the sub-drain area. This is part of the input flow which goes into the wastewater network.

Name	Data Type	Description
FACTOR_COV_AREA	Number	The covered area factor.
FACTOR_FLAT_ROOF_AREA	Number	The flat roof area factor.
FACTOR_NOT_COV_AREA	Number	The uncovered area factor.
FACTOR_ROOF_AREA	Number	The roof area factor.
FOUL_WATER_IN-FLOW	Number	The inflow of foul water, measured in liters / second [l/s].
INFILTRATION_IN-FLOW	Number	The inflow of infiltration water, measured in liters / second [l/s].
INFILTRATION_WATER_COEFFICIENT	Number	The infiltration coefficient.
INHABITANT_DENSITY	Number	The density of inhabitants, measured in inhabitants / hectares [Inhabitant/ha].
MODEL_NAME	Varchar2	The name or number of the model.
SLOPE_CLASS	Number	The class of slope of the sub-drain area.
US-AGE_TIME_PER_DAY	Number	The average usage of water per day measured in hours / day.
WATER_USAGE	Number	The usage of water by inhabitants, measured in liters / inhabitant / day [l/inhabitant/day].

See also:

- [Sub Drain Area Creation](#) (page 72)
- [Feature Rules: Sub Drain Area](#) (page 329)

Hydraulic

The Hydraulic topic contains attribute feature classes pertaining to the hydraulic capacity of a wastewater network.

Calculation

The Calculation feature class contain the information related to the capacity of the network and of the specific sections.

- Feature class — WW_CALCULATION

- Feature type — Attribute

Name	Data Type	Description
CALCULATION_MODEL	Varchar2	The calculation model.
DATE_CALCULATION	Date	The date when the calculation was made.
FID_DISCHARGER_COLLECTIVE	Number	The relation to the discharger collective. Related to: ■ WW_DISCHARGER_COLLECTIVE
FID_HYDRAULIC_COLLECTION	Number	The relation to the hydraulic collection. Related to: ■ WW_HYDRAULIC_COLLECTION
FID_PROCEDURE	Number	The relation to the procedure. Related to: ■ WW_PROCEDURE
ID_CALCULATION_PROCEDURE	Number	The calculation procedure. Related to: ■ WW_CALCULATION_PROCEDURE_TBD
ID_CALCULATION_PROCEDURE_GEN	Number	The general calculation procedure. Related to: ■ WW_CALCULATION_PROCEDURE_GEN_TBD
ID_FREQUENCY_TYPE	Number	The frequency type. Related to: ■ WW_FREQUENCY_TYPE_TBD

Name	Data Type	Description
ID_RESULTS_TYPE	Number	The results type. Related to: ■ WW_RESULTS_TYPE_TBD
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_RESPONSIBLE	Varchar2	The name responsible for this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
SIMULATION_DAYS	Number	The simulation days.
SIMULATION_HOURS	Number	The simulation hours.
SIMULATION_MINUTES	Number	The simulation minutes.
SIMULATION_YEARS	Number	The simulation years.

Discharge Computation

The discharge computation is used to link the discharge feature with the hydraulic computation.

- Computation table — WW_DISCHARGE_COMPUTATION
- Feature type — Attribute
- Parent feature class — WW_CALCULATION

Name	Data Type	Description
CAPACITY	Number	The discharge capacity, measured in cubic meters.
FID_CALCULATION	Number	The relation to calculation. Related to: ■ WW_CALCULATION

Name	Data Type	Description
FID_DISCHARGE	Number	The relation to discharge. Related to: ■ WW_DISCHARGE
FID_TARGET_VALUES	Number	The relation to target values. Related to: ■ WW_TARGET_VALUES
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: ■ WW_HYD_OBJECT_TYPE_TBD
MAX_OVERFALL	Number	The maximum overfall.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.

Free Outfall Computation

The free outfall computation is used to link the free outfall feature with the hydraulic computation.

- Computation table — WW_F_OUTFALL_COMPUTATION
- Feature type — Attribute
- Parent feature class — WW_CALCULATION

Name	Data Type	Description
CAPACITY	Number	The free outfall capacity, measured in cubic meters.
FID_CALCULATION	Number	The relation to calculation. Related to: ■ WW_CALCULATION

Name	Data Type	Description
FID_OUTFALL	Number	The relation to the outfall. Related to: ■ WW_OUTFALL
FID_TARGET_VALUES	Number	The relation to target values. Related to: ■ WW_TARGET_VALUES
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: ■ WW_HYD_OBJECT_TYPE_TBD
MAX_FLOW	Number	The maximum flow.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
OUTFALL_FREQUENCY	Number	The outfall frequency.

Manhole Computation

The manhole computation is used to link the manhole feature with the hydraulic computation.

- Computation table — WW_MANHOLE_COMPUTATION
- Feature type — Attribute
- Parent feature class — WW_CALCULATION

Name	Data Type	Description
ACCUMULATION_AMOUNT	Number	The accumulation amount, measured in cubic meters.
ACCUMULATION_DURATION	Number	The accumulation duration.

Name	Data Type	Description
ACCUMULATION_FREQUENCY	Number	The accumulation frequency.
FID_CALCULATION	Number	The relation to calculation. Related to: ■ WW_CALCULATION
FID_MANHOLE	Number	The relation to the manhole feature. Related to: ■ WW_MANHOLE
FID_TARGET_VALUES	Number	The relation to target values. Related to: ■ WW_TARGET_VALUES
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: ■ WW_HYD_OBJECT_TYPE_TBD
ID_UTIL_PARAMETERS	Number	The utility parameters ID. Related to: ■ WW_UTIL_PARAMETERS_TBD
MANHOLE_CLASS_AUTO	Number	The manhole class - automatic.
MANHOLE_CLASS_MANUAL	Number	The manhole class - manual.
MAX_WATER_LEVEL	Number	The maximum water level.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.

Name	Data Type	Description
OVER-FLOW_AMOUNT	Number	The overflow amount.
OVERFLOW_FREQUENCY	Number	The overflow frequency.

Outfall Computation

The outfall computation is used to link the outfall feature with the hydraulic computation.

- Computation table — WW_OUTFALL_COMPUTATION
- Feature type — Attribute
- Parent feature class — WW_CALCULATION

Name	Data Type	Description
CAPACITY	Number	The outfall capacity, measured in cubic meters.
FID_CALCULATION	Number	The relation to calculation. Related to: ■ WW_CALCULATION
FID_OUTFALL	Number	The relation to the outfall feature. Related to: ■ WW_OUTFALL
FID_TARGET_VALUES	Number	The relation to target values. Related to: ■ WW_TARGET_VALUES
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: ■ WW_HYD_OBJECT_TYPE_TBD
MAX_FLOW	Number	The maximum flow.

Name	Data Type	Description
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.

Pump Computation

The pump computation is used to link the pump feature with the hydraulic computation.

- Computation table — WW_PUMP_COMPUTATION
- Feature type — Attribute
- Parent feature class — WW_CALCULATION

Name	Data Type	Description
CAPACITY	Number	The pump capacity, measured in cubic meters.
DRY_FLOW	Number	The dry flow.
FID_CALCULATION	Number	The relation to calculation. Related to: ■ WW_CALCULATION
FID_PUMP	Number	The relation to the pump feature. Related to: ■ WW_PUMP
FID_TARGET_VALUES	Number	The relation to target values. Related to: ■ WW_TARGET_VALUES
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: ■ WW_HYD_OBJECT_TYPE_TBD
MAX_FLOW	Number	The maximum flow.

Name	Data Type	Description
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
WORK_DURATION	Number	The work duration.

Section Computation

The section computation is used to link the section feature with the hydraulic computation.

- Computation table — WW_SECTION_COMPUTATION
- Feature type — Attribute
- Parent feature class — WW_CALCULATION

Name	Data Type	Description
COMPLETE_FULL_FLOW	Number	The complete full flow value.
COMPLETE_FULL_SPEED	Number	The complete full speed value.
DRYWEATHER_DISCHARGE	Number	The dry weather discharge value.
DRYWEATHER_SPEED	Number	The dry weather speed value.
DW_WA- TER_LEVEL_INPUT	Number	The dry weather input water level, measured in meters.
DW_WA- TER_LEVEL_OUTPUT	Number	The dry weather output water level, measured in meters.
FID_CALCULATION	Number	The relation to calculation. Related to: ■ WW_CALCULATION

Name	Data Type	Description
FID_SECTION	Number	The relation to the section feature. Related to: ■ WW_SECTION
FID_TARGET_VALUES	Number	The relation to target values. Related to: ■ WW_TARGET_VALUES
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: ■ WW_HYD_OBJECT_TYPE_TBD
ID_UTIL_PARAMETERS	Number	The utility parameters ID. Related to: ■ WW_UTIL_PARAMETERS_TBD
MAX_OUTFLOW	Number	The maximum outflow.
MAX_SPEED	Number	The maximum speed.
MAX_WATER_LEVEL_INPUT	Number	The maximum input water level, measured in meters.
MAX_WATER_LEVEL_OUTPUT	Number	The maximum output water level, measured in meters.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
SECTION_CLASS_AUTO	Number	The section class - automatic.
SECTION_CLASS_MANUAL	Number	The section class - manual.

Name	Data Type	Description
UTILIZATION_DEGREE	Number	The utilization degree.

Storage Site Computation

The storage site computation is used to link the site feature with the hydraulic computation.

- Computation table — WW_STOR_SITE_COMPUTATION
- Feature type — Attribute
- Parent feature class — WW_CALCULATION

Name	Data Type	Description
CAPACITY_OVERFALL	Number	The capacity overfall value.
DAYS_OVERFALL	Number	The days overfall value.
DEGREE_HYD_EFFICIENCY	Number	The degree of hydraulic efficiency.
DURATION_OVERFALL	Number	The duration overfall value.
DURATION_WATER_SPEED	Number	The duration water speed value.
FID_CALCULATION	Number	The relation to calculation. Related to: ■ WW_CALCULATION
FID_FEATURE	Number	The relation to the feature. Related to: ■ WW_ACC_BASIN ■ WW_BASIN ■ WW_DISCHARGE ■ WW_DISPOSAL_TANK ■ WW_EMULSION_SPLIT

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_FRENCH_DRAINS ■ WW_MISC_PLANT ■ WW_OUTFALL ■ WW_PUMP ■ WW_RESTRICTOR ■ WW_SCREEN ■ WW_SITE ■ WW_STARCH ■ WW_STRAINER ■ WW_TREATMENT_PLANT ■ WW_VALVE
FID_TARGET_VALUES	Number	<p>The relation to target values. Related to:</p> <ul style="list-style-type: none"> ■ WW_TARGET_VALUES
FREQUENCY_OVERFALL	Number	The frequency overfall value.
HEIGHT_STACK	Number	The duration overfall value.
ID_HYD_OBJECT_TYPE	Number	<p>The type of hydraulic object. Related to:</p> <ul style="list-style-type: none"> ■ WW_HYD_OBJECT_TYPE_TBD
ID_HYD_STORAGE_SITE	Number	<p>The hydraulic storage site ID. Related to:</p> <ul style="list-style-type: none"> ■ WW_HYD_STORAGE_SITE_TBD
MAX_OVERFALL	Number	The maximum overfall.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.

Name	Data Type	Description
NUMBER_OVERFALL	Number	The number overfall value.
RATE_DISCHARGE	Number	The discharge rate.

Valve Computation

The valve computation is used to link the valve feature with the hydraulic computation.

- Computation table — WW_VALVE_COMPUTATION
- Feature type — Attribute
- Parent feature class — WW_CALCULATION

Name	Data Type	Description
CAPACITY	Number	The valve capacity, measured in cubic meters.
FID_CALCULATION	Number	The relation to calculation. Related to: ■ WW_CALCULATION
FID_TARGET_VALUES	Number	The relation to target values. Related to: ■ WW_TARGET_VALUES
FID_VALVE	Number	The relation to the valve feature. Related to: ■ WW_VALVE
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: ■ WW_HYD_OBJECT_TYPE_TBD
MAX_FLOW	Number	The maximum flow.
NAME_NUMBER	Varchar2	The name or number of this item.

Name	Data Type	Description
NARRATIVE	Varchar2	A description or other unique information concerning this item.

Computed Net

The Computed Net feature class is the computed network related to a calculation.

- Feature class — WW_COMPUTED_NET
- Feature type — Attribute

Name	Data Type	Description
FID_HYDRAULIC_COLLECTION	Number	The relation to the hydraulic collection. Related to: ■ WW_HYDRAULIC_COLLECTION
FID_MASTERDATA_COLLECTION	Number	Relation to masterdata collection. Related to: ■ WW_MASTERDATA_COLLECTION

Hydraulic Discharge

The hydraulic discharge is used to store information for the hydraulic computation.

- Computation table — WW_HYD_DISCHARGE
- Feature type — Attribute
- Parent feature class — WW_COMPUTED_NET

Name	Data Type	Description
CHAMBER_HEIGHT	Number	The chamber height, measured in meters.
CONSTANT_WATER_LEVEL	Number	The constant water level, measured in meters.

Name	Data Type	Description
FID_COMPUTED_NET	Number	The relation to the computed network. Related to: ■ WW_COMPUTED_NET
FID_DISCHARGE	Number	The relation to discharge. Related to: ■ WW_DISCHARGE
FID_INPUT_MANHOLE	Number	The relation to the input manhole feature. Related to: ■ WW_MANHOLE
FID_OUTPUT_MANHOLE	Number	The relation to the output manhole feature. Related to: ■ WW_MANHOLE
ID_BOUNDARY_CONDITION	Number	The boundary condition ID. Related to: ■ WW_BOUNDARY_CONDITION_TBD
ID_HYD_DISCHARGE_TYPE	Number	The hydraulic discharge type ID. Related to: ■ WW_HYD_DISCHARGE_TYPE_TBD
ID_HYD_MODELING	Number	The hydraulic model ID. Related to: ■ WW_HYD_MODELING_TBD
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: ■ WW_HYD_OBJECT_TYPE_TBD
INPUT_MANHOLE	Varchar2	The input manhole.
NAME_NUMBER	Varchar2	The name or number of this item.

Name	Data Type	Description
NARRATIVE	Varchar2	A description or other unique information concerning this item.
OUTPUT_MANHOLE	Varchar2	The output manhole.
OVERALL_COEFFICIENT	Number	The overall coefficient value.
THRESHOLD_HEIGHT	Number	The threshold height, measured in meters.
THRESHOLD_LENGTH	Number	The threshold length, measured in meters.

Hydraulic Free Outfall

The hydraulic free outfall is used to store information for the hydraulic computation.

- Computation table — WW_HYD_FREE_OUTFALL
- Feature type — Attribute
- Parent feature class — WW_COMPUTED_NET

Name	Data Type	Description
CONSTANT_WATER_LEVEL	Number	The constant water level, measured in meters.
FID_COMPUTED_NET	Number	The relation to the computed network. Related to: <ul style="list-style-type: none"> ■ WW_COMPUTED_NET
FID_FEATURE	Number	The relation to the feature. Related to: <ul style="list-style-type: none"> ■ WW_ACC_BASIN ■ WW_BASIN ■ WW_DISCHARGE ■ WW_DISPOSAL_TANK ■ WW_EMULSION_SPLIT ■ WW_FRENCH_DRAINS

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_MISC_PLANT ■ WW_OUTFALL ■ WW_PUMP ■ WW_RESTRICTOR ■ WW_SCREEN ■ WW_SITE ■ WW_STARCH ■ WW_STRAINER ■ WW_TREATMENT_PLANT ■ WW_VALVE
ID_BOUNDARY_CONDITION	Number	<p>The boundary condition ID.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_BOUNDARY_CONDITION_TBD
ID_HYD_FREE_OUTFALL_TYPE	Number	<p>The hydraulic free outfall type ID.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_HYD_FREE_OUTFALL_TYPE_TBD
ID_HYD_OBJECT_TYPE	Number	<p>The type of hydraulic object.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_HYD_OBJECT_TYPE_TBD
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.

Hydraulic Manhole

The hydraulic manhole is used to store information for the hydraulic computation.

- Computation table — WW_HYD_MANHOLE
- Feature type — Attribute

■ Parent feature class — WW_COMPUTED_NET

Name	Data Type	Description
FID_COMPUTED_NET	Number	The relation to the computed network. Related to: ■ WW_COMPUTED_NET
FID_MANHOLE	Number	The relation to the manhole feature. Related to: ■ WW_MANHOLE
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: ■ WW_HYD_OBJECT_TYPE_TBD
IS_COVER_PRES-SURE_TIGHT	Number	Is cover pressure tight? (Yes/No)
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.

Hydraulic Outfall

The hydraulic outfall is used to store information for the hydraulic computation.

- Computation table — WW_HYD_OUTFALL
- Feature type — Attribute
- Parent feature class — WW_COMPUTED_NET

Name	Data Type	Description
CROSS_SECTION_SURFACE	Number	The outfall cross section surface, measured in square meters.
DEPTH	Number	The outfall depth, measured in meters.

Name	Data Type	Description
DISCHARGE_COEFFICIENT	Number	The discharge coefficient value.
FID_COMPUTED_NET	Number	The relation to the computed network. Related to: ■ WW_COMPUTED_NET
FID_INPUT_MANHOLE	Number	The relation to the input manhole feature. Related to: ■ WW_MANHOLE
FID_OUTFALL	Number	The relation with the outfall. Related to: ■ WW_OUTFALL
FID_OUTPUT_MANHOLE	Number	The relation to the output manhole feature. Related to: ■ WW_MANHOLE
ID_HYD_MODELING	Number	The hydraulic modeling ID. Related to: ■ WW_HYD_MODELING_TBD
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: ■ WW_HYD_OBJECT_TYPE_TBD
ID_HYD_OUTFALL_TYPE	Number	The hydraulic outfall type ID. Related to: ■ WW_HYD_OUTFALL_TYPE_TBD
INPUT_MANHOLE	Varchar2	The input manhole.
NAME_NUMBER	Varchar2	The name or number of this item.

Name	Data Type	Description
NARRATIVE	Varchar2	A description or other unique information concerning this item.
OUTPUT_MANHOLE	Varchar2	The output manhole.

Hydraulic Pump

The hydraulic pump is used to store information for the hydraulic computation.

- Computation table — WW_HYD_PUMP
- Feature type — Attribute
- Parent feature class — WW_COMPUTED_NET

Name	Data Type	Description
CAPACITY	Number	The pump capacity, measured in cubic meters.
CONTROL_MANHOLE_DESC	Varchar2	The description of the control manhole.
FID_COMPUTED_NET	Number	The relation to the computed network. Related to: ■ WW_COMPUTED_NET
FID_INPUT_MANHOLE	Number	The relation to the input manhole feature. Related to: ■ WW_MANHOLE
FID_OUTPUT_MANHOLE	Number	The relation to the output manhole feature. Related to: ■ WW_MANHOLE
FID_PUMP	Number	The relation to the pump feature. Related to: ■ WW_PUMP

Name	Data Type	Description
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: ■ WW_HYD_OBJECT_TYPE_TBD
ID_HYD_PUMP_TYPE	Number	The hydraulic pump type ID. Related to: ■ WW_HYD_PUMP_TYPE_TBD
ID_MODELING	Number	The modeling ID. Related to: ■ WW_HYD_MODELING_TBD
INITIAL_CAPACITY	Number	The initial pump capacity, measured in cubic meters.
INPUT_MANHOLE	Varchar2	The input manhole.
LEVEL_1	Number	The level 1 value, measured in meters.
LEVEL_2	Number	The level 2 value, measured in meters.
LEVEL_3	Number	The level 3 value, measured in meters.
LEVEL_4	Number	The level 4 value, measured in meters.
LEVEL_5	Number	The level 5 value, measured in meters.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
OUTPUT_MANHOLE	Varchar2	The output manhole.
POWER_LEVEL	Number	The pump power level.
REGULATING_STEP	Number	The regulating step value.
SOIL_Z	Number	The soil elevation, measured in meters.

Name	Data Type	Description
SWITCHPOINT1_2	Number	Switchpoint1_2.
SWITCHPOINT2_1	Number	Switchpoint2_1.
SWITCHPOINT2_3	Number	Switchpoint2_3.
SWITCHPOINT3_2	Number	Switchpoint3_2.
SWITCHPOINT3_4	Number	Switchpoint3_4.
SWITCHPOINT4_3	Number	Switchpoint4_3.
SWITCHPOINT4_5	Number	Switchpoint4_5.
SWITCHPOINT5_4	Number	Switchpoint5_4.

Hydraulic Pump Line

The hydraulic pump line is used to store information for the hydraulic computation.

- Computation table — WW_HYD_PUMP_LINE
- Feature type — Attribute
- Parent feature class — WW_HYD_PUMP

Name	Data Type	Description
FID_HYD_PUMP	Number	The relation to hydraulic pump. Related to: ■ WW_HYD_PUMP
POWER_LEVEL	Number	The pump line power level.
REGULATING_STEP	Number	The regulating step value.

Hydraulic Restrictor Characteristic Line

The hydraulic restrictor characteristic line is used to store information for the hydraulic computation.

- Computation table — WW_HYD_RESTR_CHAR_LINE
- Feature type — Attribute
- Parent feature class — WW_COMPUTED_NET

Name	Data Type	Description
RESTRICTOR_DIS- CHARGE	Number	The restrictor discharge value.
FID_HYD_STOR- AGE_SITE	Number	The relation to hydraulic storage site. Related to: <ul style="list-style-type: none">■ WW_HYD_STORAGE_SITE
WATER_LEVEL	Number	The water level, measured in meters.

Hydraulic Restrictor Discharge

The hydraulic restrictor discharge is used to store information for the hydraulic computation.

- Computation table — WW_HYD_RESTR_DISCHARGE
- Feature type — Attribute
- Parent feature class — WW_COMPUTED_NET

Name	Data Type	Description
CONSTANT_OUT- FLOW	Number	The constant outflow value.
FID_HYD_STOR- AGE_SITE	Number	The relation to hydraulic storage site. Related to: <ul style="list-style-type: none">■ WW_HYD_STORAGE_SITE
HEIGHT_PIPE_BED	Number	The pipe bed height, measured in meters.

Name	Data Type	Description
RESTRICTOR_COEFFICIENT	Number	The restrictor coefficient value.
RESTRICTOR_DIAMETER	Number	The restrictor diameter, measured in meters.

Hydraulic Section

The hydraulic section is used to store information for the hydraulic computation.

- Computation table — WW_HYD_SECTION
- Feature type — Attribute
- Parent feature class — WW_COMPUTED_NET

Name	Data Type	Description
CALCULATION_LENGTH	Number	The calculation length, measured in meters.
FID_COMPUTED_NET	Number	The relation to the computed network. Related to: ■ WW_COMPUTED_NET
FID_SECTION	Number	The relation to the section feature. Related to: ■ WW_SECTION
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: ■ WW_HYD_OBJECT_TYPE_TBD
ID_LEAKAGE_A110	Number	The leakage A110 ID. Related to: ■ WW_LEAKAGE_A110_TBD

Name	Data Type	Description
ID_ROUGHNESS_METHOD	Number	The roughness method ID. Related to: ■ WW_ROUGHNESS_METHOD_TBD
IS_A110_METHOD	Number	IS A110 Method. Related to: ■ WW_LEAKAGE_A110_TBD
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
ROUGHNESS_1	Number	Roughness 1.
ROUGHNESS_2	Number	Roughness 2.

Hydraulic Storage Site

The hydraulic storage site is used to store information for the hydraulic computation.

- Computation table — WW_HYD_STORAGE_SITE
- Feature type — Attribute
- Parent feature class — WW_COMPUTED_NET

Name	Data Type	Description
BED_KF_VALUE	Number	Bed KF Value.
CAPACITY	Number	The storage site capacity, measured in cubic meters.
FID_COMPUTED_NET	Number	The relation to the computed network. Related to: ■ WW_COMPUTED_NET
FID_FEATURE	Number	The relation to the feature.

Name	Data Type	Description
		Related to: <ul style="list-style-type: none"> ■ WW_ACC_BASIN ■ WW_BASIN ■ WW_DISCHARGE ■ WW_DISPOSAL_TANK ■ WW_EMULSION_SPLIT ■ WW_FRENCH_DRAINS ■ WW_MISC_PLANT ■ WW_OUTFALL ■ WW_PUMP ■ WW_RESTRICTOR ■ WW_SCREEN ■ WW_SITE ■ WW_STARCH ■ WW_STRAINER ■ WW_TREATMENT_PLANT ■ WW_VALVE
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: <ul style="list-style-type: none"> ■ WW_HYD_OBJECT_TYPE_TBD
ID_HYD_STORAGE_SITE	Number	The hydraulic storage site ID. Related to: <ul style="list-style-type: none"> ■ WW_HYD_STORAGE_SITE_TBD
INF_SURFACE	Number	The infiltration surface, measured in square meters.
INF_WATER_LEVEL	Number	The infiltration water level, measured in meters.
INITIAL_CAPACITY	Number	The initial pump capacity, measured in cubic meters.

Name	Data Type	Description
IS_RESTRICTOR_DISCHARGE	Number	IS Restrictor Discharge.
IS_RESTRICTOR_LINE	Number	IS Restrictor Line.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
SLOPE_KF_VALUE	Number	The slope KF value.
WATER_LEVEL	Number	The water level, measured in meters.

Hydraulic Capacity Line

The hydraulic capacity line is used to store information for the hydraulic computation.

- Computation table — WW_HYD_CAPACITY_LINE
- Feature type — Attribute
- Parent feature class — WW_HYD_STORAGE_SITE

Name	Data Type	Description
CAPACITY	Number	The capacity, measured in cubic meters.
FID_HYD_STORAGE_SITE	Number	The relation to storage site. Related to: ■ WW_HYD_STORAGE_SITE
WATER_LEVEL	Number	The capacity line water level, measured in meters.

Hydraulic Infiltration Line

The hydraulic infiltration line is used to store information for the hydraulic computation.

- Computation table — WW_HYD_INFILTRATION_LINE

- Feature type — Attribute
- Parent feature class — WW_HYD_STORAGE_SITE

Name	Data Type	Description
FID_HYD-STORAGE_SITE	Number	The relation to storage site. Related to: ■ WW_HYD_STORAGE_SITE
SURFACE	Number	The infiltration line surface, measured in square meters.
WATER_LEVEL	Number	The infiltration line water level, measured in meters.

Hydraulic Valve

The hydraulic valve is used to store information for the hydraulic computation.

- Computation table — WW_HYD_VALVE
- Feature type — Attribute
- Parent feature class — WW_COMPUTED_NET

Name	Data Type	Description
DIMENSION_1	Number	The first valve dimension, measured in meters.
FID_COMPUTED_NET	Number	The relation to the computed network. Related to: ■ WW_COMPUTED_NET
FID_INPUT_MANHOLE	Number	The relation to the input manhole feature. Related to: ■ WW_MANHOLE
FID_OUTPUT_MANHOLE	Number	The relation to the input manhole feature. Related to: ■ WW_MANHOLE

Name	Data Type	Description
FID_VALVE	Number	The relation to the valve feature. Related to: ■ WW_VALVE
ID_HYD_MODELING	Number	The hydraulic modeling ID. Related to: ■ WW_HYD_MODELING_TBD
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: ■ WW_HYD_OBJECT_TYPE_TBD
ID_HYD_VALVE_TYPE	Number	The hydraulic valve type ID. Related to: ■ WW_HYD_VALVE_TYPE_TBD
INPUT_MANHOLE	Varchar2	The input manhole.
LEAKAGE_COEFFICIENT	Number	The leakage coefficient value.
MAX_STROKE_HEIGHT	Number	The maximum stroke height value.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
OUTPUT_MANHOLE	Varchar2	The output manhole.
START_VALVE	Number	The start valve value.
START_VALVE_SPEED	Number	The start valve speed value.
ZERO_POSITION	Number	The zero position of the valve.

Load

The Load feature class contains the rain quantities used for the calculation.

- Feature class — WW_LOAD
- Feature type — Attribute

Name	Data Type	Description
FID_HYDRAUL- IC_COLLECTION	Number	The relation to hydraulic collection. Related to: <ul style="list-style-type: none">■ WW_HYDRAULIC_COLLECTION

Discharger Collective

The discharger collective load is used to group one or more single discharger.

- Computation table — WW_DISCHARGER_COLLECTIVE
- Feature type — Attribute
- Parent feature class — WW_LOAD

Name	Data Type	Description
FID_LOAD	Number	The relation to the load. Related to: <ul style="list-style-type: none">■ WW_LOAD
NAME_NUMBER	Varchar2	The name or number of this item.

Single Discharger

The single discharger is used to store discharge attributes for load tests and hydraulic computation.

- Computation table — WW_SINGLE_DISCHARGER
- Feature type — Attribute

■ Parent feature class — WW_DISCHARGER_COLLECTIVE

Name	Data Type	Description
COMMERCIAL_INFLOW	Number	The commercial inflow value.
COMMERCIAL_INHABITANT	Number	The commercial inhabitant value.
DRYWEATHER_INFLOW	Number	The dryweather inflow value.
DRYWEATHER_INHABITANT	Number	The dryweather inhabitant value.
FID_DISCHARGER_COLLECTIVE	Number	The relation to the discharger collective feature. Related to: ■ WW_DISCHARGER_COLLECTIVE
FID_HYD_FEATURE	Number	The relation to the hydraulic feature. Related to: ■ WW_HYD_DISCHARGE ■ WW_HYD_FREE_OUTFALL ■ WW_HYD_MANHOLE ■ WW_HYD_OUTFALL ■ WW_HYD_PUMP ■ WW_HYD_RESTR_CHAR_LINE ■ WW_HYD_RESTR_DISCHARGE ■ WW_HYD_SECTION ■ WW_HYD_STORAGE_SITE ■ WW_HYD_VALVE
FOULWATER_INFLOW	Number	The foul water inflow value.
FOULWATER_INHABITANT	Number	The foul water inhabitant value.

Name	Data Type	Description
HOUSE_INFLOW	Number	The house inflow value.
HOUSE_INHABITANT	Number	The house inhabitant value.
INDUSTRIAL_INFLOW	Number	The industrial inflow value.
INDUSTRIAL_INHABITANT	Number	The industrial inhabitant value.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
QTR24_INFILTRATION_INFLOW	Number	The Qrt24 Infiltration inflow value.
RAINWATER_INFLOW	Number	The rainwater inflow value.

Dry Weather

The dry weather load is used to store attributes like water consumption for load tests and hydraulic computation.

- Computation table — WW_DRY_WEATHER
- Feature type — Attribute
- Parent feature class — WW_LOAD

Name	Data Type	Description
DAILY_PEAK	Number	The daily peak value.
FID_LOAD	Number	The relation to the load. Related to: ■ WW_LOAD
GROUND_INFILTRATION	Number	The ground infiltration value.

Name	Data Type	Description
GROUND_INFILTRATION_PERCENT	Number	The ground infiltration percent value.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
QTR24	Number	The quantity in 24 hours.
WATER_CONSUMPTION	Number	The water consumption value.

Precipitation

The precipitation load is used to store statistical data for modelling rain events.

- Computation table — WW_PRECIPITATION
- Feature type — Attribute
- Parent feature class — WW_LOAD

Name	Data Type	Description
BLOCKRAIN_DURATION	Number	The blockrain duration value.
BLOCKRAIN_FREQUENCY	Number	The blockrain frequency.
BLOCKRAIN_TOTAL	Number	The blockrain total.
CONTINUUMRAIN_TOTAL	Number	The continuumrain total.
DATE_END_CONTINUUMRAIN	Date	The continuumrain end date.
DATE_END_NATURALRAIN	Date	The naturalrain end date.

Name	Data Type	Description
DATE_START_CONTINUUMRAIN	Date	The continuumrain start date.
DATE_START_NATURALRAIN	Date	The naturalrain start date.
FID_LOAD	Number	The relation to the load. Related to: ■ WW_LOAD
ID_CONTINUUM_TYPE	Number	The continuum type ID. Related to: ■ WW_CONTINUUM_TYPE_TBD
ID_LOAD_TYPE	Number	The load type ID. Related to: ■ WW_LOAD_TYPE_TBD
ID_MODELRAIN_TYPE	Number	The modelrain type ID. Related to: ■ WW_MODELRAIN_TYPE_TBD
MODELRAIN_DURATION	Number	The modelrain duration.
MODELRAIN_FREQUENCY	Number	The modelrain frequency.
MODELRAIN_TOTAL	Number	The modelrain total.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
NATURALRAIN_TOTAL	Number	The naturalrain total.

Name	Data Type	Description
STATION_DESIGNATION_CONT	Varchar2	The station designation continuumrain value.
STATION_DESIGNATION_NAT	Varchar2	The station designation naturalrain value.
STATION_NAME_NUMBER_CONT	Number	The station name number continuumrain value.
STATION_NAME_NUMBER_NAT	Number	The station name number naturalrain value.

Procedure

The Procedure feature class describes the calculation method.

- Feature class — WW_PROCEDURE
- Feature type — Attribute

Name	Data Type	Description
ID_PROCEDURE_DESIGNATION	Number	The procedure designation ID. Related to: ■ WW_PROCEDURE_DESIGNATION_TBD
FID_HYDRAULIC_COLLECTION	Number	The relation to hydraulic collection. Related to: ■ WW_HYDRAULIC_COLLECTION
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.

Target Values

The target values are permissible values like rain frequency allowed for a hydraulic procedure.

- Computation table — WW_TARGET_VALUES
- Feature type — Attribute
- Parent feature class — WW_PROCEDURE

Name	Data Type	Description
FID_PROCEDURE	Number	The relation to procedure. Related to: <ul style="list-style-type: none">■ WW_PROCEDURE
ID_HYD_OBJECT_TYPE	Number	The type of hydraulic object. Related to: <ul style="list-style-type: none">■ WW_HYD_OBJECT_TYPE_TBD
ID_TARGET_TYPE	Number	The target type ID. Related to: <ul style="list-style-type: none">■ WW_TARGET_TYPE_TBD
ID_TARGET_UNIT	Number	The target unit ID. Related to: <ul style="list-style-type: none">■ WW_TARGET_UNIT_TBD
NAME_NUMBER	Varchar2	The name or number of this item.
VALUE	Number	The value.

Import

The Import topic contains feature classes that store information about imports you have made.

Import

The Import feature class stores information related specifically to the import. For example, it is possible to import data from a file in ISYBAU format.

- Feature class — WW_IMPORT
- Feature type — Attribute

Name	Data Type	Description
ADMINISTRATIVEOFFICE	Varchar2	The administrative office.
AREAOFRESPONSIBILITY	Varchar2	The area of responsibility.
BUILDINGIMPLEMENTATIONOFFICE	Varchar2	The building implementation office.
COMMENTS	Varchar2	Comments pertaining to the import.
DATE_CREATION	Date	The date when the import was made.
FID_LOCATION	Number	The location (street) where the import data was collected. Related to: ■ WW_LOCATION
FILENAME	Varchar2	The import filename.
FILEREFERENCENO	Varchar2	The file reference number for the import data.
ID_DATA_STATUS	Number	The data status ID. Related to: ■ WW_DATA_STATUS_TBD
ID_RESPONSIBILITY_TYPE	Number	The responsibility type ID. Related to: ■ WW_RESPONSIBILITY_TYPE_TBD

Name	Data Type	Description
ID_WW_ELIM_REQUIREMENTS	Number	The wastewater elimination requirements ID. Related to: ■ WW_ELIM_REQUIREMENTS_TBD
NAME	Varchar2	The name of this import.
NUMBEROFBUILDINGIMPLEMENTATION	Varchar2	The number of the building implementation.
OUTLET_DISCHARGEPERMIT	Date	The date when the outlet discharge permit was issued.
PROPERTYMANAGEMENTOFFICE	Varchar2	The property management office.
SITESUPERVISIONOFFICE	Varchar2	The site supervision office.
STEPS_COMPLETED	Number	The steps completed.
VERSION	Varchar2	The import version.
WATERAUTHORITIES	Varchar2	The water authorities.

Hydraulic Collection

The hydraulic collection is used to store hydraulic information for the related data import.

- Computation table — WW_HYDRAULIC_COLLECTION
- Feature type — Attribute
- Parent feature class — WW_IMPORT

Name	Data Type	Description
DESCRIPTION	Varchar2	The description of the item.
FID_IMPORT	Number	The relation to import. Related to:

Name	Data Type	Description
		■ WW_IMPORT
FID_DISCHARGE	Number	The relation to discharge. Related to: ■ WW_DISCHARGE
IS_CALCULATION	Number	The calculation entry.
IS_COMPUTERNET- WORK	Number	The computer network entry.
IS_DISTRICT	Number	The district entry.
IS_LOAD	Number	The load entry.
IS_PROCEDURE	Number	The procedure entry.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.

Import Media File

The import media file is used to store the media information for the related data import.

- Computation table — WW_IMPORT_MEDIA
- Feature type — Attribute
- Parent feature class — WW_IMPORT

Name	Data Type	Description
FID_IMPORT	Number	The relation to import. Related to: ■ WW_IMPORT
FILENAME	Varchar2	The import filename.

Name	Data Type	Description
ORIGINAL_PATH	Number	The original path to the import file.
SERVER_PATH	Number	The server path to the import file.

Inspection Collection

The inspection collection is used to store the inspection information for the related data import.

- Computation table — WW_INSPECTION_COLLECTION
- Feature type — Attribute
- Parent feature class — WW_IMPORT

Name	Data Type	Description
DESCRIPTION	Varchar2	The description of the import.
FID_IMPORT	Number	The relation to import. Related to: ■ WW_IMPORT
ID_REGULATIONS	Number	The regulations ID. Related to: ■ WW_REGULATIONS_TBD
IS_FILM	Number	The film entry.
IS_INSPECTION	Number	The inspection entry.
IS_LEAK_TIGHTNESS	Number	The leak tightness entry.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.

MasterData Collection

The masterdata collection is used to store the masterdata information for the related data import.

- Computation table — WW_MASTERDATA_COLLECTION
- Feature type — Attribute
- Parent feature class — WW_IMPORT

Name	Data Type	Description
DESCRIPTION	Varchar2	The description of the import.
FID_IMPORT	Number	The relation to import. Related to: ■ WW_IMPORT
ID_MASTERDATA	Number	The masterdata ID. Related to: ■ WW_MASTERDATA_TBD
IS_CONSTRUCTION-TECHNIQUE	Number	The construction technique entry.
IS_GEOMETRY	Number	The geometry entry.
IS_OUTERFIELD	Number	The outerfield entry.
IS_REHABILITATION	Number	The rehabilitation entry.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.

Operation Collection

The operation collection is used to store the operation information for the related data import.

- Computation table — WW_OPERATING_COLLECTION

- Feature type — Attribute
- Parent feature class — WW_IMPORT

Name	Data Type	Description
DESCRIPTION	Varchar2	The description of the import.
FID_IMPORT	Number	The relation to import. Related to: ■ WW_IMPORT
IS_OPERATION	Number	The operation entry.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.

Imported Feature

This feature class stores all of the imported features, and the relationship between sections, inspections and inspection collection.

- Feature class — WW_IMPORTED_FEATURE
- Feature type — Attribute

Name	Data Type	Description
DATA_MATCHING_STATE	Number	The data matching state.
F_CLASS_ID	Number	The feature class ID. TB_DICTIONARY.F_CLASS_ID.
F_CLASS_ID_PARENT	Number	The parent feature class ID.
FID_FEATURE	Number	The feature ID (master data). Related to: ■ WW_ACC_BASIN

Name	Data Type	Description
		■ WW_BASIN
		■ WW_COALESCENCE_SEP
		■ WW_DISCHARGE
		■ WW_DISPOSAL_TANK
		■ WW_EMULSION_SPLIT
		■ WW_FITTING
		■ WW_FRENCH_DRAINS
		■ WW_GREASE_TRAP
		■ WW_GRIT_CHAMBER
		■ WW_HYD_SECTION
		■ WW_HYD_STORAGE_SITE
		■ WW_HYD_PUMP
		■ WW_HYD_DISCHARGE
		■ WW_HYD_VALVE
		■ WW_HYD_MANHOLE
		■ WW_HYD_OUTFALL
		■ WW_HYD_FREE_OUTFALL
		■ WW_LINE
		■ WW_MANHOLE
		■ WW_MEASURING_STATION
		■ WW_MISC_PLANT
		■ WW_NEUTRALIZER
		■ WW_OIL_WATER_SEP
		■ WW_OUTERFIELD
		■ WW_OUTFALL
		■ WW_POINT
		■ WW_PUMP
		■ WW_RESTRICTOR
		■ WW_SCREEN
		■ WW_SECTION
		■ WW_SITE

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_SOIL_CHARACTERISTIC ■ WW_STARCH ■ WW_STRAINER ■ WW_SUB_DRAIN_AREA ■ WW_TREATMENT_PLANT ■ WW_VALVE
FID_HYDRAULIC_COLLECTION	Number	The relation to the hydraulic collection. Related to: <ul style="list-style-type: none"> ■ WW_HYDRAULIC_COLLECTION
FID_IMPORT	Number	Optional. The relation to import. Related to: <ul style="list-style-type: none"> ■ WW_IMPORT
FID_INSPECTION	Number	The relation to inspection. Related to: <ul style="list-style-type: none"> ■ WW_INSPECTION
FID_MASTERDATA_COLLECTION	Number	The relation to the masterdata collection. Related to: <ul style="list-style-type: none"> ■ WW_MASTERDATA_COLLECTION
FID_MATCHED	Number	The matched ID.
FID_MATCHED_PARENT	Number	The matched parent ID.
FID_OPERATING_COLLECTION	Number	The relation to the operating collection. Related to: <ul style="list-style-type: none"> ■ WW_OPERATING_COLLECTION
FID_PARENT	Number	The parent ID.
FROM_MANHOLE	Varchar2	The 'from' manhole.

Name	Data Type	Description
MATCHING_ATTRIBUTE	Varchar2	The matching attribute.
RESOLVED_CONFLICTS	Varchar2	The attribute used during conflict resolution.
TO_MANHOLE	Varchar2	The 'to' manhole.

Inspection

The Inspection topic contains feature classes which are related to the inspection of a wastewater network.

Contract

The Contract feature class contains data that describes an inspection session and general information related to who performed the inspection, when the inspection occurred, etc.

- Feature class — WW_CONTRACT
- Feature type — Attribute

Name	Data Type	Description
CONTRACT_NUMBER	Varchar2	The contract number of the inspection.
CONTRACTOR	Varchar2	The contractor who will perform the inspection.
DATE_CONTRACT	Date	The date when the contract was made.
DATE_END_INSPECTION	Date	The date when the inspection is completed.
DESCRIPTION	Varchar2	A description of what the inspection will cover.
FID_INSPECTION_COLLECTION	Number	The relation to inspection collection. Related to:

Name	Data Type	Description
		■ WW_INSPECTION_COLLECTION
FID_MASTER-DATA_COLLECTION	Number	The relation to the masterdata collection. Related to: ■ WW_MASTERDATA_COLLECTION
ID_CODING_SYSTEM	Number	The coding system ID. Related to: ■ WW_CODING_SYSTEM_TBD
ID_CONTRACT_REHAB	Number	The rehabilitation contract ID. Related to: ■ WW_CONTRACT_REHAB_TBD
ID_CONTRACT_TYPE	Number	The contract typeID. Related to: ■ WW_CONTRACT_TYPE_TBD
ID_INSPECTION_PURPOSE	Number	The inspection purpose ID. Related to: ■ WW_INSPECTION_PURPOSE_TBD
IDCONTRACT	Number	The identifier of the inspection contract.
INSPECTION_SITE	Varchar2	The inspection site.
OBJECTSUPPORT	Varchar2	The object support value.
QUALITYCONTROL	Varchar2	The quality control value.
SITESUPERVISION	Varchar2	The site supervision value.
SYSTEMNAME	Varchar2	The name of the system.
VERSION	Varchar2	The import version.

Film

The Film feature class contains information pertaining to the inspection video associated with the inspection. A film documents the inspection and allow the inspector to see the section and the manhole during the inspection.

- Feature class — WW_FILM
- Feature type — Attribute

Name	Data Type	Description
FID_INSPECTION_COLLECTION	Number	The relation to inspection collection. Related to: <ul style="list-style-type: none">■ WW_INSPECTION_COLLECTION
FILMPATH	Varchar2	The film path.
FILMPATHACTUALABSOLUTE	Number	The film path actual (absolute).
IDCONTRACT	Number	The identifier of the inspection contract.
VIDEOARCHIVEREFERENCE	Varchar2	The video archive reference.

Film Feature

The film feature is a film that corresponds to an inspected section.

- Computation table — WW_FILM_FEATURE
- Feature type — Attribute
- Parent feature class — WW_FILM

Name	Data Type	Description
FID_FEATURE	Number	The feature ID. Related to: <ul style="list-style-type: none">■ WW_SECTION
FID_FILM	Number	The film ID.

Name	Data Type	Description
		Related to: ■ WW_FILM
ID_INSPECTION_DIRECTION	Number	The inspection direction ID. Related to: ■ WW_INSPECTION_DIRECTION_TBD
NAME_NUMBER	Varchar2	The name or number of this item.

Film Frame

The film frame is a single, still frame of a film.

- Computation table — WW_FILM_FRAME
- Feature type — Attribute
- Parent feature class — WW_FILM

Name	Data Type	Description
END_FRAME	Number	The last frame of the inspection film.
FID_FILM	Number	The film ID. Related to: ■ WW_FILM
FPS	Number	The frame rate at which the inspection video was created, measured in frames per second (fps).
START_FRAME	Number	The first frame of the inspection film.

Film Offset

The film offset is used to synchronize the MPEG frame number with a video time counter.

- Computation table — WW_FILM_OFFSET
- Feature type — Attribute

- Parent feature class — WW_FILM

Name	Data Type	Description
FID_FILM	Number	The film ID. Related to: ■ WW_FILM
MPEGFRAMENO	Number	The MPEG frame number.
TCFRAMENO	Number	The TC frame number.

Inspection

The Inspection feature class is the control for the wastewater network components (such as sections and manholes) which checks their operating capabilities.

- Feature class — WW_INSPECTION

- Feature type — Attribute

Name	Data Type	Description
DATE_INSPECTION	Date	The date when the inspection was made.
FID_INSPECTION_COLLECTION	Number	The relation to inspection collection. Related to: ■ WW_INSPECTION_COLLECTION
FID_LOCATION	Number	The location to inspection (street). Related to: ■ WW_LOCATION
ID_INSPECTION_DIRECTION	Number	The inspection direction ID. Related to: ■ WW_INSPECTION_DIRECTION_TBD

Name	Data Type	Description
ID_INSPECTION_PROCEDURE	Number	The inspection procedure ID. Related to: ■ WW_INSPECTION_PROCEDURE_TBD
ID_INSPECTION_TYPE	Number	The inspection type ID. Related to: ■ WW_INSPECTION_TYPE_TBD
ID_PIPING_TYPE	Number	The piping type ID. Related to: ■ WW_PIPING_TYPE_TBD
ID_REF_POINT_POSITION	Number	The reference point position ID. Related to: ■ WW_REF_POINT_POSITION_TBD
ID_VIDEO_REFERENCE	Number	The video reference ID. Related to: ■ WW_VIDEO_REFERENCE_TBD
ID_VIDEOSTORAGE_MEDIUM	Number	The video storage medium ID. Related to: ■ WW_VIDEOSTORAGE_MEDIUM_TBD
ID_WATERDRAINAGE	Number	The water drainage ID. Related to: ■ WW_WATERDRAINAGE_TBD
ID_WEATHER_TYPE	Number	The weather type ID. Related to: ■ WW_WEATHER_TYPE_TBD
ID_CONTRACT	Number	The identifier of the contract.
INSPECTION_GROUP	Number	The inspection group.

Name	Data Type	Description
INSPECTORNAME	Varchar2	The identifier of the contract.
IS_CLEANED	Number	The cleaned entry.
LENGTHOFINSPEC- TION	Number	The length of the inspection, measured in meters.
NAME_NUMBER	Varchar2	The name or number of this item.
REMARKS	Varchar2	Remarks pertaining to the inspection.
TEMPERATURE	Number	The temperature during the inspection.
TIME	Date	The time when the inspection was performed.
VIDEOARCHIVEREFER- ENCE	Varchar2	The video archive reference.

Inspection Leakage Test

The inspection leakage test is used to store leakage test information of an inspected section. For example, the information may include detected corrosion or pitting of the section.

- Computation table — WW_LEAKAGE_TEST
- Feature type — Attribute
- Parent feature class — WW_INSPECTION

Name	Data Type	Description
DATE_TEST	Date	The date when the leakage test was performed.
DEVICEOPERATOR	Varchar2	The device operator.
FID_INSPECTION	Number	The inspection ID. Related to: ■ WW_INSPECTION

Name	Data Type	Description
ID_TEST_PROCEDURE	Number	The test procedure ID. Related to: ■ WW_TEST_PROCEDURE_TBD
ID_TEST_REASON	Number	The test reason ID. Related to: ■ WW_TEST_REASON_TBD
ID_TEST_REGULATION	Number	The test regulation ID. Related to: ■ WW_TEST_REGULATION_TBD
ID_TEST_SCOPE	Number	The test scope ID. Related to: ■ WW_TEST_SCOPE_TBD
IDCONTRACT	Number	The identifier of the contract.
IS_SUCCESFUL	Number	The successful entry.

Manhole Classification

Manhole classification is used to store all classification information related to the inspection of a manhole.

- Computation table — WW_MANHOLE_CLASSIFICATION
- Feature type — Attribute
- Parent feature class — WW_INSPECTION

Name	Data Type	Description
ADDITIONALPOINTS	Number	Additional points.
AUTHORITATIVEDAMAGE	Varchar2	The authoritative damage value.

Name	Data Type	Description
AUTHORITATIVEQUANTIFICATION	Number	The authoritative quantification value.
CLASSAUTOMATIC	Number	The automatic class value.
CLASSMANUAL	Number	The manual class value.
DATE_EVALUATION	Date	The date when the evaluation was performed.
FID_INSPECTION	Number	The inspection ID. Related to: ■ WW_INSPECTION
FID_MANHOLE	Number	The manhole ID. Related to: ■ WW_MANHOLE ■ WW_FITTING
ID_EVAL_PROCEDURE	Number	The evaluation procedure ID. Related to: ■ WW_EVAL_PROCEDURE_TBD
NUMBERFINAL	Number	The final number.
NUMBERPRELIMINARY	Number	The preliminary number.

Manhole Observation

Manhole observation is used to store all observed information related to the inspection of a manhole.

- Computation table — WW_MANHOLE_OBSERVE
- Feature type — Collection

■ Parent feature class — WW_INSPECTION

Name	Data Type	Description
CHARACTERIZATION1	Varchar2	The characterization 1 value.
CHARACTERIZATION2	Varchar2	The characterization 2 value.
DAMAGE_NUMBER	Number	The damage number.
FID_INSPECTION	Number	The inspection ID. Related to: ■ WW_INSPECTION
FID_MANHOLE	Number	The manhole ID. Related to: ■ WW_MANHOLE ■ WW_FITTING
FID_MANHOLE_REHABILITATION	Number	The manhole rehabilitation ID. Related to: ■ WW_MANHOLE_REHABILITATION
FRAME	Varchar2	The frame value.
ID_DAK_CLEAN_UP	Number	The DAK clean up ID. Related to: ■ WW_DAK_CLEAN_UP_TBD
ID_DAL_CLEAN_UP	Number	The DAL clean up ID. Related to: ■ WW_DAL_CLEAN_UP_TBD
ID_MANHOLE_AREA	Number	The manhole area ID. Related to: ■ WW_MANHOLE_AREA_TBD

Name	Data Type	Description
ID_PHOTO_MEDIUM	Number	The photo medium ID. Related to: ■ WW_PHOTO_MEDIUM_TBD
ID_PROC_RESTRUC- TURING_N	Number	The process restructuring N ID. Related to: ■ WW_PROC_RESTRUCTURING_N_TBD
ID_SECTION_DAM- AGE	Number	The section damage ID. Related to: ■ WW_SECTION_DAMAGE_TBD
MAXSKEAUTO	Number	The MAXSKEAUTO entry.
MAXSZEAUTO	Number	The MAXSZEAUTO entry.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
OBSERVA- TION_CODE	Varchar2	The observation code.
POSITIONFROM	Number	The from position entry.
POSITIONTO	Number	The to position entry.
QUANTIFICA- TION_1_NUMERIC	Number	The quantification 1 numeric value.
QUANTIFICA- TION_1_TEXT	Varchar2	The quantification 1 text entry.
QUANTIFICA- TION_2_NUMERIC	Number	The quantification 2 numeric value.
QUANTIFICA- TION_2_TEXT	Varchar2	The quantification 2 text entry.

Name	Data Type	Description
REHABILITATION_DESIGNATION	Varchar2	The rehabilitation designation.
SKBEAUTO	Number	The SKBE auto entry.
SKBVAUTO	Number	The SKBV auto entry.
SKBVMANU	Number	The SKBV manual entry.
SKDEAUTO	Number	The SKDE auto entry.
SKDVAUTO	Number	The AKDV auto entry.
SKDVMANU	Number	The SKDV manual entry.
SKSEAUTO	Number	The SKSE auto entry.
SKSVAUTO	Number	The SKSV auto entry.
SKSVMANU	Number	The SKSV manual entry.
STANDARD_ANNOTATION_DWA	Varchar2	Standard annotation used only for DWA classification.
STATUS_RESTRUCTURING	Number	The restructuring status.
SZBEAUTO	Number	The SZBE auto entry.
SZBVAUTO	Number	The SZBV auto entry.
SZDEAUTO	Number	The SZDE auto entry.
SZDVAUTO	Number	The SZDV auto entry.
SZSEAUTO	Number	The SZSE auto entry.
SZSVAUTO	Number	The SZSV auto entry.
TIMECODE	Varchar2	The time code.

Name	Data Type	Description
VERTICALPOSITION	Number	The vertical position value.
VIDEO_COUNTER	Varchar2	The video counter.

Manhole Rehabilitation

Manhole rehabilitation is used to indicate when a damaged, deteriorated, or worn item needs rehabilitation.

- Computation table — WW_MANHOLE_REHABILITATION
- Feature type — Attribute
- Parent feature class — WW_INSPECTION

Name	Data Type	Description
CHEMICALRESIST- ANCE	Varchar2	The chemical resistance value.
CLEAR_WIDTH_1	Number	The first clear width, measured in square meters.
CLEAR_WIDTH_2	Number	The second clear width, measured in square meters.
DATE_ACCEPTANCE	Date	The acceptance date for the manhole rehabilitation.
DATE_COMPLETION	Date	The completion date for the manhole rehabilitation.
DATE_STARTUP	Date	The date when the manhole rehabilitation begins.
END_STATIONNING	Number	The end stationing entry.
FID_CONTRACT	Number	The relation with contract. Related to: ■ WW_CONTRACT
FID_MANHOLE	Number	The manhole ID. Related to:

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_MANHOLE
FLEXIBLEE_MODULE	Number	The flexible module.
FLEXURAL_STRENGTH	Number	The flexural strength.
ID_DOC_DIRECTION	Number	The doc direction ID. Related to: <ul style="list-style-type: none"> ■ WW_DOC_DIRECTION_TBD
ID_LOAD	Number	The load ID. Related to: <ul style="list-style-type: none"> ■ WW_LOAD_TBD
ID_MATERIAL	Number	The material ID. Related to: <ul style="list-style-type: none"> ■ WW_MATERIAL_TBD
ID_MATERIAL_BOND_1	Number	The material bond 1 ID. Related to: <ul style="list-style-type: none"> ■ WW_MATERIAL_BOND_TBD
ID_MATERIAL_BOND_2	Number	The material bond 2 ID. Related to: <ul style="list-style-type: none"> ■ WW_MATERIAL_BOND_TBD
ID_PROFILE	Number	The profile ID. Related to: <ul style="list-style-type: none"> ■ WW_PROFILE_TBD
ID_REHABILITATION_SCOPE	Number	The rehabilitation scope ID. Related to: <ul style="list-style-type: none"> ■ WW_REHABILITATION_SCOPE_TBD

Name	Data Type	Description
ID_REHABILITATION_TYPE	Number	The rehabilitation type ID. Related to: ■ WW_REHABILITATION_TYPE_TBD
ID_SITE_PART	Number	The site part ID. Related to: ■ WW_SITE_PART_TBD
ID_WATER_PERMEABILITY	Number	The water permeability ID. Related to: ■ WW_WATER_PERMEABILITY_TBD
IS_LEAKAGE_TEST	Number	The leakage test entry.
MATERIAL_STRENGTH	Number	The material strength value.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
NARRATIVE_POSITION	Varchar2	The narrative position value.
POSITIONFROM	Number	The from position entry.
POSITIONTO	Number	The to position entry.
REHABILITATION_PERIOD	Number	The rehabilitation period.
RING_RIGIDITY	Number	The ring rigidity value.
START_STATIONING	Number	The start stationing entry.
WALL_THICKNESS	Number	The wall thickness value.
WARRANTY_END	Date	The date when the warranty ends.

Section Classification

Section classification is used to store all classification information related to an inspection for the section.

- Computation table — WW_SECTION_CLASSIFICATION
- Feature type — Attribute
- Parent feature class — WW_INSPECTION

Name	Data Type	Description
ADDITIONALPOINTS	Number	The additional points value.
AUTHORITATEDAMAGE	Varchar2	The authoritative damage entry.
AUTHORITATIVEQUANTIFICATION	Number	The authoritative quantification entry.
CLASSAUTOMATIC	Number	The automatic class value.
CLASSMANUAL	Number	The manual class value.
DATE_EVALUATION	Date	The evaluation date for the section classification.
FID_INSPECTION	Number	The relation with inspection. Related to: ■ WW_INSPECTION
FID_SECTION	Number	The relation with section. Related to: ■ WW_SECTION
ID_EVAL_PROCEDURE	Number	The evaluation procedure ID. Related to: ■ WW_EVAL_PROCEDURE_TBD
NUMBERFINAL	Number	The final number value.

Name	Data Type	Description
NUMBERPRELIMINARY	Number	The preliminary number value.

Section Observation

Section observation is used to store all observation information related to an inspection for the section including observation code, etc.

- Computation table — WW_SECTION_OBSERVE
- Feature type — Collection
- Parent feature class — WW_INSPECTION

Name	Data Type	Description
AREA	Number	The area of the polygon, measured in square meters.
CHARACTERIZATION1	Varchar2	The characterization 1 value.
CHARACTERIZATION2	Varchar2	The characterization 2 value.
DAMAGE_NUMBER	Number	The damage number entry.
FID_END_OBSERVE	Number	The relation with section observation. Related to: ■ WW_SECTION_OBSERVE
FID_INSPECTION	Number	The relation with inspection. Related to: ■ WW_INSPECTION
FID_SECTION	Number	The relation with section. Related to: ■ WW_SECTION

Name	Data Type	Description
FID_SECTION_REHABILITATION	Number	The relation with section rehabilitation. Related to: ■ WW_SECTION_REHABILITATION
FRAME	Varchar2	The frame entry.
ID_BAK_CLEAN_UP	Number	The BAK clean up ID. Related to: ■ WW_BAK_CLEAN_UP_TBD
ID_BAL_CLEAN_UP	Number	The BAL clean up ID. Related to: ■ WW_BAL_CLEAN_UP_TBD
ID_CANCELLATION_REASON	Number	The cancellation reason ID. Related to: ■ WW_CANCELLATION_REASON_TBD
ID_PHOTO_MEDIUM	Number	The photo medium ID. Related to: ■ WW_PHOTO_MEDIUM_TBD
ID_PROC_RESTRUCTURING	Number	The process restructuring ID. Related to: ■ WW_PROC_RESTRUCTURING_TBD
ID_SECTION_DAMAGE	Number	The section damage ID. Related to: ■ WW_SECTION_DAMAGE_TBD
IS_CONNECTION	Number	The connection entry.
MAXSKEAUTO	Number	The MAXSKEAUTO entry.
MAXSZEAUTO	Number	The MAXSZEAUTO entry.

Name	Data Type	Description
NARRATIVE	Varchar2	A description or other unique information concerning this item.
OBSERVATION_CODE	Varchar2	The observation code.
POSITION	Number	The position value.
POSITIONFROM	Number	The from position entry.
POSITIONTO	Number	The to position entry.
QUANTIFICATION_1_NUMERIC	Number	The first numeric quantification value.
QUANTIFICATION_1_TEXT	Varchar2	The first text quantification value.
QUANTIFICATION_2_NUMERIC	Number	The second numeric quantification value.
QUANTIFICATION_2_TEXT	Varchar2	The second text quantification value.
REHABILITATION_DESIGNATION	Varchar2	The rehabilitation designation.
SKBEAUTO	Number	The SKBE auto entry.
SKBVAUTO	Number	The SKBV auto entry.
SKBVMANU	Number	The SKBV manual entry.
SKDEAUTO	Number	The SKDE auto entry.
SKDVAUTO	Number	The AKDV auto entry.
SKDVMANU	Number	The SKDV manual entry.
SKSEAUTO	Number	The SKSE auto entry.

Name	Data Type	Description
SKSVAUTO	Number	The SKSV auto entry.
SKSVMANU	Number	The SKSV manual entry.
STANDARD_ANNOTATION_DWA	Varchar2	Standard annotation used only for DWA classification.
STATUS_RESTRUCTURING	Number	The restructuring status.
SZBEAUTO	Number	The SZBE auto entry.
SZBVAUTO	Number	The SZBV auto entry.
SZDEAUTO	Number	The SZDE auto entry.
SZDVAUTO	Number	The SZDV auto entry.
SZSEAUTO	Number	The SZSE auto entry.
SZSVAUTO	Number	The SZSV auto entry.
TIMECODE	Varchar2	The time code.
VIDEO_COUNTER	Varchar2	The video counter.

Section Rehabilitation

Section rehabilitation is used to indicate when a damaged, deteriorated, or worn item needs rehabilitation.

- Computation table — WW_SECTION_REHABILITATION
- Feature type — Attribute
- Parent feature class — WW_INSPECTION

Name	Data Type	Description
CHEMICALRESISTANCE	Varchar2	The chemical resistance value.

Name	Data Type	Description
CLEAR_WIDTH_1	Number	The first clear width, measured in square meters.
CLEAR_WIDTH_2	Number	The second clear width, measured in square meters.
DATE_ACCEPTANCE	Date	The acceptance date for the manhole rehabilitation.
DATE_COMPLETION	Date	The completion date for the manhole rehabilitation.
DATE_STARTUP	Date	The date when the manhole rehabilitation begins.
END_STATIONNING	Number	The end stationing value.
FID_CONTRACT	Number	The relation with contract. Related to: ■ WW_CONTRACT
FID_SECTION	Number	The manhole ID. Related to: ■ WW_SECTION
FLEXIBLEE_MODULE	Number	The flexible module.
FLEXURAL_STRENGTH	Number	The flexural strength.
ID_DOC_DIRECTION	Number	The doc direction ID. Related to: ■ WW_DOC_DIRECTION_TBD
ID_LOAD	Number	The load ID. Related to: ■ WW_LOAD_TBD
ID_MATERIAL	Number	The material ID. Related to:

Name	Data Type	Description
		■ WW_MATERIAL_TBD
ID_MATERIAL_BOND_1	Number	The material bond 1 ID. Related to: ■ WW_MATERIAL_BOND_TBD
ID_MATERIAL_BOND_2	Number	The material bond 2 ID. Related to: ■ WW_MATERIAL_BOND_TBD
ID_PROFILE	Number	The profile ID. Related to: ■ WW_PROFILE_TBD
ID_REHABILITATION_SCOPE	Number	The rehabilitation scope ID. Related to: ■ WW_REHABILITATION_SCOPE_TBD
ID_REHABILITATION_TYPE	Number	The rehabilitation type ID. Related to: ■ WW_REHABILITATION_TYPE_TBD
ID_SITE_PART	Number	The site part ID. Related to: ■ WW_SITE_PART_TBD
ID_WATER_PERMEABILITY	Number	The water permeability ID. Related to: ■ WW_WATER_PERMEABILITY_TBD
IS_LEAKAGE_TEST	Number	The leakage test entry.
MATERIAL_STRENGTH	Number	The material strength value.

Name	Data Type	Description
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
NARRATIVE_POSITION	Varchar2	The narrative position entry.
POSITIONFROM	Number	The from position entry.
POSITIONTO	Number	The to position entry.
REHABILITATION_PERIOD	Number	The rehabilitation period.
RING_RIGIDITY	Number	The ring rigidity value.
START_STATIONING	Number	The start stationing value.
WALL_THICKNESS	Number	The wall thickness value.
WARRANTY_END	Date	The date when the warranty ends.

Site Observation

Site observation is used to store all observation information related to an inspection for the site.

- Computation table — WW_SITE_OBSERVE
- Feature type — Collection
- Parent feature class — WW_INSPECTION

Name	Data Type	Description
AREA	Number	The area of the polygon, measured in square meters.
FID_FEATURE	Number	The feature ID. Related to: ■ WW_ACC_BASIN

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_BASIN ■ WW_DISCHARGE ■ WW_DISPOSAL_TANK ■ WW_EMULSION_SPLIT ■ WW_FITTING ■ WW_FRENCH_DRAINS ■ WW_MISC_PLANT ■ WW_OUTFALL ■ WW_PUMP ■ WW_RESTRICTOR ■ WW_SCREEN ■ WW_SITE ■ WW_STARCH ■ WW_STRAINER ■ WW_TREATMENT_PLANT ■ WW_VALVE
FID_INSPECTION	Number	<p>The relation with inspection. Related to:</p> <ul style="list-style-type: none"> ■ WW_INSPECTION
FID_SITE_REHABILITATION	Number	<p>The relation with section rehabilitation. Related to:</p> <ul style="list-style-type: none"> ■ WW_SITE_REHABILITATION
ID_PHOTO_MEDIUM	Number	<p>The photo medium ID. Related to:</p> <ul style="list-style-type: none"> ■ WW_PHOTO_MEDIUM_TBD
NARRATIVE	Varchar2	A description or other unique information concerning this item.

Name	Data Type	Description
REHABILITATION_DESIGNATION	Varchar2	The rehabilitation designation.

Site Rehabilitation

Site rehabilitation is used to indicate when a damaged, deteriorated, or worn item needs rehabilitation.

- Computation table — WW_SITE_REHABILITATION
- Feature type — Attribute
- Parent feature class — WW_INSPECTION

Name	Data Type	Description
CHEMICALRESISTANCE	Varchar2	The chemical resistance value.
CLEAR_WIDTH_1	Number	The first clear width, measured in square meters.
CLEAR_WIDTH_2	Number	The second clear width, measured in square meters.
DATE_ACCEPTANCE	Date	The acceptance date for the manhole rehabilitation.
DATE_COMPLETION	Date	The completion date for the manhole rehabilitation.
DATE_STARTUP	Date	The date when the manhole rehabilitation begins.
END_STATIONNING	Number	The end stationing entry.
FID_CONTRACT	Number	The relation with contract. Related to: ■ WW_CONTRACT
FID_SITE	Number	The manhole ID. Related to: ■ WW_SITE

Name	Data Type	Description
FLEXIBLEE_MODULE	Number	The flexible module.
FLEXURAL_STRENGTH	Number	The flexural strength.
ID_DOC_DIRECTION	Number	The doc direction ID. Related to: ■ WW_DOC_DIRECTION_TBD
ID_LOAD	Number	The load ID. Related to: ■ WW_LOAD_TBD
ID_MATERIAL	Number	The material ID. Related to: ■ WW_MATERIAL_TBD
ID_MATERIAL_BOND_1	Number	The material bond 1 ID. Related to: ■ WW_MATERIAL_BOND_TBD
ID_MATERIAL_BOND_2	Number	The material bond 2 ID. Related to: ■ WW_MATERIAL_BOND_TBD
ID_PROFILE	Number	The profile ID. Related to: ■ WW_PROFILE_TBD
ID_REHABILITATION_SCOPE	Number	The rehabilitation scope ID. Related to: ■ WW_REHABILITATION_SCOPE_TBD
ID_REHABILITATION_TYPE	Number	The rehabilitation type ID. Related to: ■ WW_REHABILITATION_TYPE_TBD

Name	Data Type	Description
ID_SITE_PART	Number	The site part ID. Related to: ■ WW_SITE_PART_TBD
ID_WATER_PERMEABILITY	Number	The water permeability ID. Related to: ■ WW_WATER_PERMEABILITY_TBD
IS_LEAKAGE_TEST	Number	The leakage test entry.
MATERIAL_STRENGTH	Number	The material strength value.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
NARRATIVE_POSITION	Varchar2	The narrative position value.
POSITIONFROM	Number	The from position entry.
POSITIONTO	Number	The to position entry.
REHABILITATION_PERIOD	Number	The rehabilitation period.
RING_RIGIDITY	Number	The ring rigidity value.
START_STATIONING	Number	The start stationing entry.
WALL_THICKNESS	Number	The wall thickness value.
WARRANTY_END	Date	The date when the warranty ends.

Miscellaneous

The Miscellaneous topic contains feature classes which are related to environmental parameter, maintenance, markers, outerfields, and filtration and sludge beds.

Env Parameter

Env parameters are pieces of information that include the wastewater type, the soil type, ground water distribution, or water protection area.

- Computation table — WW_ENV_PARAMETERS
- Feature type — Attribute

Name	Data Type	Description
ID_GROUND_WA- TER_DIST	Number	The ground water distribution ID. Related to: ■ WW_GROUND_WATER_DIST_TBD
ID_SOIL_TYPE	Number	The soil type ID. Related to: ■ WW_SOIL_TYPE_TBD
ID_WASTEWA- TER_SOL_TYPE	Number	The wastewater soil type ID. Related to: ■ WW_WASTEWATER_SOL_TYPE_TBD
ID_WASTEWA- TER_TYPE	Number	The wastewater type ID. Related to: ■ WW_WASTEWATER_TYPE_TBD
ID_WA- TER_PROT_AREA	Number	The water protection area ID. Related to: ■ WW_WATER_PROT_AREA_TBD

Filtration Bed

A below-grade system consisting of perforated piping installed in sand, gravel beds, or trenches designed to permit the uniform distribution and absorption or effluent from a septic tank or aerobic unit into the soil.

- Computation table — WW_FILTRATION_BED
- Feature type — Polygon

Name	Data Type	Description
AREA	Number	The area of the filtration bed, measured in square meters.
DATE_CREATION	Date	The date when the item was created.
FID_CONSESSION-AIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item Related to: ■ WW_CONTACT
NAME_NUMBER	Varchar2	The name or number of this item.

Name	Data Type	Description
NARRATIVE	Varchar2	A description or other unique information concerning this item.
USER_FLAG	Varchar2	An operator defined work area. This attribute is used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

Maintenance

You can administer maintenance work for all wastewater network features, except the intermediate points. The Maintenance feature class stores information about completed maintenance work. The feature class uses the maintenance type domain table. In the basic wastewater application, this domain table only contains general maintenance types. It can easily be enhanced to meet the requirements of the customized wastewater application.

- Computation table — WW_MAINTENANCE
- Feature type — Attribute

Name	Data Type	Description
FID_FEATURE	Number	The relation with network points and lines. Related to: <ul style="list-style-type: none"> ■ WW_ANODE ■ WW_ANODE_TEST_STATION ■ WW_CASING ■ WW_COVER ■ WW_DISCHARGE ■ WW_DISPOSAL_TANK ■ WW_FILTRATION_BED ■ WW_FITTING ■ WW_GREASE_TRAP ■ WW_GRIT_CHAMBER ■ WW_HOUSE_CONNECTOR

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_INTERMEDIATE_POINT ■ WW_LAGOON ■ WW_MANHOLE ■ WW_MARKER ■ WW_METER ■ WW_NEUTRALIZER ■ WW_OIL_WATER_SEP ■ WW_OUTFALL ■ WW_PUMP ■ WW_SECTION ■ WW_SEPTIC_TANK ■ WW_SITE ■ WW_SLUDGE_BED ■ WW_TREATMENT_PLANT ■ WW_VALVE
ID_MAINTEN- ANCE_TYPE	Number	The type of maintenance for this item. Related to: <ul style="list-style-type: none"> ■ WW_MAINTENANCE_TYPE_TBD
MAINTEN- ANCE_DATE	Date	The date when the maintenance occurred.
MAINTEN- ANCE_NEXT_DATE	Date	The date when the next maintenance is sched- uled.
MAINTENANCE_PERI- OD	Number	The maintenance period [day].
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information con- cerning this item.

Name	Data Type	Description
USER_FLAG	Varchar2	An operator defined work area. This attribute is used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

Marker

A sign, or concrete monument installed either directly above or immediately adjacent to underground lines, bends, or fittings to indicate the presence of waste water.

- Computation table — WW_MARKER
- Feature type — Point

Name	Data Type	Description
DATE_ACQUIRED	Date	The date when the data was acquired.
DATE_CREATION	Date	The date when the item was created.
DATE_STARTUP	Date	The date when responsibility of the item was taken.
FID_CONSESSION-AIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_FEATURE	Number	The relation with network points and lines. Related to: ■ WW_ANODE ■ WW_ANODE_TEST_STATION ■ WW_COVER ■ WW_DISCHARGE ■ WW_DISPOSAL_TANK ■ WW_FILTRATION_BED

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_FITTING ■ WW_GREASE_TRAP ■ WW_GRIT_CHAMBER ■ WW_HOUSE_CONNECTOR ■ WW_INTERMEDIATE_POINT ■ WW_LAGOON ■ WW_MANHOLE ■ WW_MARKER ■ WW_METER ■ WW_NEUTRALIZER ■ WW_OIL_WATER_SEP ■ WW_OUTFALL ■ WW_PROTECTION_AREA ■ WW_PUMP ■ WW_SEPTIC_TANK ■ WW_SITE ■ WW_SLUDGE_BED ■ WW_TREATMENT_PLANT ■ WW_VALVE
FID_INSTALLER	Number	<p>The enterprise in charge of building the item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_CONTACT
FID_LOCATION	Number	<p>The location of the item (street).</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_LOCATION
FID_MAINTENANCE	Number	<p>The company that is responsible for the maintenance of this item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_CONTACT

Name	Data Type	Description
FID_MANUFACTURER	Number	The manufacturer of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item Related to: ■ WW_CONTACT
GROUND_ELEVATION	Number	The date when the maintenance occurred.
HOUSE	Varchar2	The house number.
HOUSE_SUPPLEMENT	Varchar2	The house number supplement.
ID_ACCURACY	Number	How the current position of the item was determined. For example, exactly, by positioning, unknown, or inexactly. Related to: ■ WW_ACCURACY_TBD
ID_CONDITION	Number	The condition of the item. For example, broken, leaking, etc. Related to: ■ WW_CONDITION_TBD
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD

Name	Data Type	Description
ID_FOUNDATION	Number	The type of foundation for this item. Related to: ■ WW_FOUNDATION_TBD
ID_FUNCTION	Number	How the item is used. Related to: ■ WW_MARKER_FUNCTION_TBD
ID_MATERIAL	Number	The type of material composition of the anode or anode packet. Related to: ■ WW_MATERIAL_TBD
ID_POLE_MATERIAL	Number	The material composition of the pole. For example wood, steel, concrete, etc. Related to: ■ WW_MARKER_POLE_MAT_TBD
ID_ROCK_CONDITION	Number	The condition of the rock relative to the rocks strength and integrity. For example, high, low, or medium. Related to: ■ WW_MARKER_ROCK_COND_TBD
ID_SIGN_MATERIAL	Number	The material composition of the sign. For example, concrete, wood, etc. Related to: ■ WW_MATERIAL_TBD
ID_SOIL_CONDITION	Number	The soil condition indicating the soil's strength and integrity. Related to: ■ WW_SOIL_CONDITION_TBD
LOCATION	Varchar2	A brief description of where the item is located. For example, 1m from the wall.

Name	Data Type	Description
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
POLE_DEPTH	Number	The depth, in meters, that the pole is buried into the foundation; usually the ground surface.
POLE_HEIGHT	Number	The distance, in meters, that the pole extends above the foundation; usually the ground surface.
QUALITY	Number	The quality of the sign.
SIGN_HEIGHT	Number	The height dimension of the sign.
SIGN_TEXT	Number	The text on the sign.
SIGN_WIDTH	Number	The width dimension of the sign.
USER_FLAG	Varchar2	An operator defined work area. This attribute is used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.
VALUE	Varchar2	A short description of the model. This value is used for the domain table representation of the model.

OuterField

- Computation table — WW_OUTERFIELD
- Feature type — Point

Name	Data Type	Description
DATE_HIGHWASSER	Date	The date when water reached its highest mark.
EXPLANATION	Varchar2	The explanation of this item.

Name	Data Type	Description
FID_MASTER-DATA_COLLECTION	Number	The relation to masterdata collection. Related to: ■ WW_MASTERDATA_COLLECTION
ID_INCLINATION	Number	The inclination ID. Related to: ■ WW_INCLINATION_TBD
ID_POINT_ATTRIBUTE	Number	The point attribute ID. Related to: ■ WW_POINT_ATTRIBUTE_TBD
ID_UTILIZATION	Number	The utilization ID. Related to: ■ WW_UTILIZATION_TBD
ID_WATER_PROTECTION_AREA	Number	The water protection area ID. Related to: ■ WW_WATER_PROTECTION_AREA_TBD
MAX_HIGHWASSER	Number	The maximum high water level.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
QTYGKFVALUE	Number	Qtygkfvalue.
QTYSOILTYPE	Varchar2	The soil type quality.
QUALITY	Number	The quality of the point.

Sludge Bed

An area used for spreading and drying waste sludge.

- Computation table — WW_SLUDGE_BED
- Feature type — Polygon

Name	Data Type	Description
AREA	Number	The area of the sludge bed, measured in square meters.
CAPACITY	Number	The capacity of the sludge bed, measured in cubic meters.
DATE_ACQUIRED	Date	The date when the data was acquired.
DATE_CREATION	Date	The date when the item was created.
DATE_STARTUP	Date	The date when responsibility of the item was taken.
DIMENSION_1	Number	The first dimension, measured in meters.
DIMENSION_2	Number	The second dimension, measured in meters.
FID_CONSESSION-AIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item

Name	Data Type	Description
		Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item Related to: ■ WW_CONTACT
ID_DISPOSITION_STATE	Number	The disposition state of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
USER_FLAG	Varchar2	An operator defined work area. This attribute is used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

Operation

Measuring Station

A measuring station is used to store statistical information at one specific location.

- Computation table — WW_MEASURING_STATION
- Feature type — Point

Name	Data Type	Description
DATE_CREATION	Date	The date when the item was created.

Name	Data Type	Description
DEPTH_FILTER	Number	The depth of the filter, measured in meters.
DIAMETER	Number	The diameter, measured in meters.
ELEVATION_EDGE	Number	The edge elevation, measured in meters.
END_FILTER	Number	The end of the filter.
FID_OPERATING_COLLECTION	Number	The relation to the operating collection Related to: ■ WW_OPERATING_COLLECTION
ID_ACCURACY	Number	How the current position of the item was determined. For example, exactly, by positioning, unknown, or inexactly. Related to: ■ WW_ACCURACY_TBD
ID_CYCLE	Number	The cycle ID. Related to: ■ WW_CYCLE_TBD
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
ORIENTATION	Number	The orientation of the measuring station.
OUTERFIELD_DESCRIPTION	Varchar2	The description of the outerfield .
SOIL_CHARACTERISTIC	Varchar2	The characteristics of the soil.
START_FILTER	Number	The start of the filter.

Measuring

The measuring feature class is used for storing the measured values of the measuring station.

- Computation table — WW_MEASURING
- Feature type — Attribute
- Parent feature class — WW_MEASURING_STATION

Name	Data Type	Description
DATE_ACQUIRED	Date	The date when the data was acquired.
FID_MEASURING_STATION	Number	The relation to the measuring station Related to: <ul style="list-style-type: none">■ WW_MEASURING_STATION
MEASURED_VALUE	Number	The measured value.
NARRATIVE	Varchar2	A description or other unique information concerning this item.

Soil Characteristic

The soil characteristic feature class is used for storing statistical information about the soil at one specific location.

- Computation table — WW_SOIL_CHARACTERISTIC
- Feature type — Point

Name	Data Type	Description
FID_OPERATING_COLLECTION	Number	The relation to the operating collection. Related to: <ul style="list-style-type: none">■ WW_OPERATING_COLLECTION
GW_DISTANCE	Number	The ground distance, measured in meters.

Name	Data Type	Description
ID_ACCURACY	Number	How the current position of the item was determined. For example, exactly, by positioning, unknown, or inexactly. Related to: ■ WW_ACCURACY_TBD
ID_ANALYSIS_TYPE	Number	The analysis type ID. Related to: ■ WW_ANALYSIS_TYPE_TBD
KFVALUE	Number	The KF value.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
ORIENTATION	Number	The orientation of the measuring station.
OUTERFIELD	Varchar2	The description of the outerfield .
QUALITY	Number	The quality of the point.
SOIL_TYPE	Varchar2	The type of the soil.

Soil Layer

The soil layer is used to store each characteristic value of a soil.

- Computation table — WW_SOIL_LAYER
- Feature type — Attribute
- Parent feature class — WW_SOIL_CHARACTERISTIC

Name	Data Type	Description
FID_SOIL_CHARACTERISTIC	Number	The relation to the soil characteristic. Related to: ■ WW_SOIL_CHARACTERISTIC

Name	Data Type	Description
ID_METHOD_KF	Number	The method KF ID. Related to: ■ WW_METHOD_KF_TBD
KFVALUE	Number	The KF value.
LOWER_LIMIT	Number	The lower limit of the soil layer.
NARRATIVE	Varchar2	A description or other unique information concerning this item.
SOIL_TYPE	Varchar2	The type of the soil.
UPPER_LIMIT	Number	The upper limit of the soil layer.

Point

Point feature classes store geometry only; not attributes. They are related to the wastewater feature, WW_POINT.FID_ATTR. Network geometry is stored separately in the WW_POINT feature class.

NOTE The records of the geometry feature classes are maintained by Topobase. Do not enhance geometry feature classes by adding customer attributes. The geometry feature classes build the network topology.

Utility points of the wastewater data model are stored in attribute feature classes; one for each point type.

Each point feature class has a label feature class and many of the point feature classes have an associated model table. Model tables can be found in the Administration topic of the data model, under [Manufacturer](#) (page 121).

Point Feature Class Form

Use the basic feature class forms of the wastewater point features to view and edit the feature attributes and to view related data.

All point feature class forms contain the following elements:

- **General tab** — Displays general feature information.

- **Details tab** — Displays detailed feature attributes and link buttons that provide links to all line features (sections) the points are connected to.
- **Related Tables tab** — Allows direct access to the following related tables:

Related Table	Table Name and Description
Maintenance	WW_MAINTENANCE. Contains information about network maintenance. See Maintenance (page 211).
Marker	WW_MARKER. Contains marker information. The marker is placed above ground to indicate the position of a network part. See Marker (page 213).
Cover	WW_COVER. Contains related cover information. See Cover (page 231).

- **Table tab** — Displays all attributes in table form.



Each point feature class form provides functions for further processing of the selected records. For more information, see [Use Wastewater Feature Functions](#) (page 82).

Connecting Point Features to Sites

Each network point can be connected to a site. The easiest way to connect a network point to a site is to use the Network Point Creation workflow. For more information, see [Network Point Creation](#) (page 69).

If you have an existing point without a site connection, you can assign it to a site.

To connect a point to a site

- 1 Click the Document explorer icon. 
- 2 Right-click the feature class, such as Manhole, and click Show Form.
- 3 Select the manhole to connect to the site.
- 4 Click the Related Tables tab.
- 5 Click the Point (WW_POINT)  reference button to display the related geometry feature.

- 6 In the Point feature class form, click the Details tab.
- 7 Under Site, select the FID of the related site.
- 8 Click Update (F5).

For more information about sites, see [Site](#) (page 320).

Accumulation Basin

An accumulation basin is a low region where water flows. Its main purpose is to decelerate the water flow.

- Computation table — WW_ACC_BASIN
- Feature type — Attribute

Name	Data Type	Description
CAPACITY	Number	The capacity of the accumulation basin, measured in cubic meters.
DEPTH	Number	The depth of the accumulation basin, measured in meters.
DIMENSION_1	Number	The first dimension of the accumulation basin, measured in meters.
DIMENSION_2	Number	The second dimension of the accumulation basin, measured in meters.
FID_ENV_PARAMETERS	Number	The relation to the environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_LOCATION	Number	The location of the item (street). Related to: ■ WW_LOCATION
FID_SITE	Number	Relation with the site. Related to: ■ WW_SITE

Name	Data Type	Description
ID_INSTALLATION_TYPE	Number	Type of installation. Related to: ■ WW_INSTALLATION_TYPE_TBD
ID_MATERIAL	Number	The type of material composition used for the accumulation basin. Related to: ■ WW_MATERIAL_TBD
INPUT_ELEVATION	Number	The input elevation, measured in meters.
IS_PUMP	Number	Is a pump present?
NAME_NUMBER	Varchar2	The name or number of this item.
OUTFLOW	Number	The outflow value.
OUTPUT_ELEVATION	Number	The output elevation, measured in meters.
SEP_VOLUME	Number	The separation volume, measured in cubic meters.

Basin

A basin is a region of land or a receptacle into which waste water flows.

- Computation table — WW_BASIN
- Feature type — Attribute

Name	Data Type	Description
ADDRESSOFMANUFACTURER	Varchar2	The basin manufacturer's address.
CAPACITY	Number	The capacity of the basin, measured in cubic meters.

Name	Data Type	Description
DATE_CREATION	Date	The date when the item was created.
FID_ENV_PARAMETERS	Number	The relation to the environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_LOCATION	Number	The location of the item (street). Related to: ■ WW_LOCATION
FILTERLAYER	Number	The basin filter layer.
FOOTPRINT	Number	The basin foot print.
ID_ARRANGEMENT	Number	The arrangement of the basin. Related to: ■ WW_ARRANGEMENT_TBD
ID_BASIN_DESIGN	Number	The basin design ID. Related to: ■ WW_BASIN_DESIGN_TBD
ID_BASIN_FUNCTION	Number	The basin function ID. Related to: ■ WW_BASIN_FUNCTION_TBD
ID_BASIN_SHAPE	Number	The basin shape ID. Related to: ■ WW_BASIN_SHAPE_TBD
ID_BASIN_TYPE	Number	The basin type ID. Related to: ■ WW_BASIN_TYPE_TBD
ID_BASIN_VERSION	Number	The basin version ID. Related to:

Name	Data Type	Description
		■ WW_BASIN_VERSION_TBD
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
ID_FILTER_MATERIAL	Number	The filter material ID. Related to: ■ WW_FILTER_MATERIAL_TBD
ID_HYDRAULIC_FUNCTION	Number	The hydraulic function of the item. Related to: ■ WW_HYDRAULIC_FUNCTION_TBD
ID_PLANTING	Number	The planting ID. Related to: ■ WW_PLANTING_TBD
IS_HANDOVER	Number	Is there a handover?
LISA_GUID	Varchar2	The LISA unique identifier.
MANUFACTURER_TYPE	Varchar2	A description of the manufacturer type.
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_NUMBER_1	Varchar2	Additional name number of the item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
NUMBEROFCHAMBERS	Number	The number of chambers.
NUMBEROFINLETS	Number	The number of inlets.

Name	Data Type	Description
NUMBEROFOUTLETS	Number	The number of outlets.
SEQUENCEID	Number	The unique sequence identifier.
SITE_DEPTH	Number	The site depth, measured in meters.
SITE_LENGTH	Number	The site length, measured in meters.
SITE_WIDTH	Number	The site width, measured in meters.
SLOPEINCLINATION	Number	The slope inclination.
SPACE_ABOVE_GROUND	Number	The space above ground, measured in meters.
SPACE_BELOW_GROUND	Number	The space below ground, measured in meters.
UFIS_CONSTRUCTIONNUMBER	Number	The UFIS construction number.

Coalescence Separator

A coalescence separator is the part of a site where large wastewater particulates, like oil and water, get separated.

- Computation table — WW_COALESCENCE_SEP
- Feature type — Attribute

Name	Data Type	Description
DEPTH	Number	The depth of the coalescence separator, measured in meters.
DIMENSION_1	Number	The first dimension of the coalescence separator, measured in meters.
DIMENSION_2	Number	The second dimension of the coalescence separator, measured in meters.

Name	Data Type	Description
FID_ENV_PARAMETERS	Number	The relation to the environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_LOCATION	Number	The location of the item (street). Related to: ■ WW_LOCATION
FID_SITE	Number	Relation with the site. Related to: ■ WW_SITE
ID_INSTALLATION_TYPE	Number	Type of installation. Related to: ■ WW_INSTALLATION_TYPE_TBD
ID_MATERIAL	Number	The type of material composition used for the coalescence separator. Related to: ■ WW_MATERIAL_TBD
INPUT_ELEVATION	Number	The input elevation, measured in meters.
NAME_NUMBER	Varchar2	The name or number of this item.
OUTPUT_ELEVATION	Number	The output elevation, measured in meters.

Cover

The cover feature classes stores cover information for network points, such as a manhole.

Covers are stored in a separate point feature class that is not part of the network topology.

- Computation table — WW_COVER

■ Feature type — Point

Name	Data Type	Description
DIMENSION_1	Number	The first dimension of the cover, measured in meters.
DIMENSION_2	Number	The second dimension of the cover, measured in meters.
FID_CONSESSION-AIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_FEATURE_1	Number	The connection with the first manhole. Related to: ■ WW_DISCHARGE ■ WW_DISPOSAL_TANK ■ WW_GREASE_TRAP ■ WW_GRIT_CHAMBER ■ WW_MANHOLE ■ WW_NEUTRALIZER ■ WW_OIL_WATER_SEP ■ WW_OUTFALL ■ WW_SEPTIC_TANK ■ WW_FRENCH_DRAINS ■ WW_SITE
FID_FEATURE_2	Number	The connection with the first manhole. Related to: ■ WW_DISCHARGE ■ WW_DISPOSAL_TANK ■ WW_GREASE_TRAP ■ WW_GRIT_CHAMBER ■ WW_MANHOLE ■ WW_NEUTRALIZER

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_OIL_WATER_SEP ■ WW_OUTFALL ■ WW_SEPTIC_TANK ■ WW_FRENCH_DRAINS ■ WW_SITE
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_MANUFACTURER	Number	The manufacturer of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item Related to: ■ WW_CONTACT
HEIGHT_SUPPORT_RINGS	Number	The height of the support rings, measured in meters.
ID_ACCURACY	Number	How the current position of the item was determined. For example, exactly, by positioning, unknown, or inexactly. Related to: ■ WW_ACCURACY_TBD

Name	Data Type	Description
ID_AERATION	Number	Defines the aeration type of the cover. Related to: ■ WW_COVER_AER_TBD
ID_COVER_SHAPE	Number	The cover shape. Related to: ■ WW_COVER_SHAPE_TBD
ID_COVER_TYPE	Number	The cover type. Related to: ■ WW_COVER_TYPE_TBD
ID_HEIGHT_ACCURACY	Number	The accuracy of the elevation. Related to: ■ WW_HEIGHT_ACCURACY_TBD
ID_LOAD_CLASS	Number	The load class. Related to: ■ WW_COVER_LOAD_TBD
ID_LOCK	Number	Defines if a lock exists on the cover. Related to: ■ WW_COVER_LOCK_TBD
ID_MATERIAL	Number	The material of this item. Related to: ■ WW_COVER_MAT_TBD
IS_DIRTTRAP	Number	Is there a dirt trap?
LOAD_LIMIT	Number	The maximum load accepted by the cover.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.

Name	Data Type	Description
NUMBER_SUPPORT_RINGS	Number	The number of support rings.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.
Z	Number	The cover height value.

NOTE You must enable the automatic update of the cover Z in the wastewater document options. See [Set Wastewater Document Options](#) (page 333).

When you create a cover that is related to a manhole, or when you connect a cover to a manhole, the cover height Z will not be calculated automatically. Existing values of Z, DEPTH, or BOTTOM_ELEVATION are not changed. Only when you update either Z, DEPTH, or BOTTOM_ELEVATION, the values are updated.

Use the Manhole Creation workflow to create a related cover. For more information, see the following topics:

- [Manhole Creation](#) (page 69)
- [Connect a Point to a Cover](#) (page 85)
- [Cover Creation](#) (page 85)
- [Wastewater Elevation, Slope, and Height](#) (page 335)

Discharge

A discharge is the location where wastewater pipes directly discharge effluent.

- Computation table — WW_DISCHARGE

■ Feature type — Attribute

Name	Data Type	Description
ADDRESSOFMANUFACTURER	Varchar2	The discharge manufacturer's address.
BOTTOM_ELEVATION	Number	The elevation of the bottom part of the item relative to the section.
DATE_CREATION	Date	The date when the item was created.
FID_CONSESSIONAIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_ENV_PARAMETERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_LOCATION	Number	The street location of this item. Related to: ■ WW_CONTACT
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item

Name	Data Type	Description
		Related to: ■ WW_CONTACT
ID_DISCHARGE_CREST	Number	The discharge crest. Related to: ■ WW_DISCHARGE_CREST_TBD
ID_DISCHARGE_FUNCTION	Number	Defines the discharge function. Related to: ■ WW_DISCHARGE_FUNCTION_TBD
ID_DISCHARGE_TYPE	Number	Defines the type of discharge. Related to: ■ WW_DISCHARGE_TYPE_TBD
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
ID_HYDRAULIC_FUNCTION	Number	The hydraulic function of the item. Related to: ■ WW_HYDRAULIC_FUNCTION_TBD
ID_OWNERSHIP	Number	The owner of this item. Related to: ■ WW_OWNERSHIP_TBD
IS_HANDOVER	Number	Is there a handover?
LENGTH_THRESHOLD	Number	The length of the threshold.
LISA_GUID	Varchar2	The LISA unique identifier.
MANUFACTURER_TYPE	Varchar2	The description of the manufacturer type.

Name	Data Type	Description
MAX_THRESHOLD_ELEVATION	Number	The maximum threshold elevation.
MIN_THRESHOLD_ELEVATION	Number	The minimum threshold elevation.
MOVING_SPEED	Number	The moving speed of the discharge.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
SEQUENCEID	Number	The unique sequence identifier.
UFIS_CONSTRUCTIONNUMBER	Number	The UFIS construction number.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.
WIDTH_OPENING	Number	The width of the discharge opening.

For more information, see [Network Point Creation](#) (page 69).

Disposal Tank

A disposal tank is an above- or below-grade receptacle or chamber for holding wastewater on a temporary basis prior to transfer or use.

- Computation table — WW_DISPOSAL_TANK
- Feature type — Attribute

Name	Data Type	Description
ADDRESSOFMANUFACTURER	Varchar2	The disposal tank manufacturer's address.

Name	Data Type	Description
AREA	Number	The area of the disposal tank, measured in square meters.
BOTTOM_ELEVATION	Number	The elevation of the bottom part of the item relative to the section, measured in meters.
CAPACITY	Number	The capacity of the disposal tank, measured in cubic meters.
CONNECTED_AREA	Number	The connected area of the disposal tank.
DATE_CREATION	Date	The date when the item was created.
DEPTH	Number	The depth of the disposal tank, measured in meters.
DETENTION_CAPACITY	Number	The detention capacity of the disposal tank, measured in cubic meters.
DIAMETER	Number	The diameter of the disposal tank, measured in meters.
DIMENSION_1	Number	The first dimension of the disposal tank, measured in meters.
DIMENSION_2	Number	The second dimension of the disposal tank, measured in meters.
ELEVATION	Number	The elevation of the disposal tank, measured in meters.
FID_CONSESSIONAIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_ENV_PARAMETERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_INSTALLER	Number	The enterprise in charge of building the item.

Name	Data Type	Description
		Related to: ■ WW_CONTACT
FID_LOCATION	Number	The street location of this item. Related to: ■ WW_CONTACT
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item Related to: ■ WW_CONTACT
ID_DISPOSAL_FUNCTION	Number	Defines the disposal function. Related to: ■ WW_DISPOSAL_FUNCTION_TBD
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
ID_FILTER_TYPE	Number	Defines the filter type. Related to: ■ WW_FILTER_TYPE_TBD
ID_HYDRAULIC_FUNCTION	Number	The hydraulic function of the item. Related to:

Name	Data Type	Description
		■ WW_HYDRAULIC_FUNCTION_TBD
ID_INSTALLATION_TYPE	Number	Defines the type of installation. Related to: ■ WW_INSTALLATION_TYPE_TBD
ID_MATERIAL	Number	The material used to construct this item. Related to: ■ WW_MATERIAL_TBD
ID_SURFACE_CONNECTION	Number	The surface connection for this item. Related to: ■ WW_SURFACE_CONNECTION_TBD
ID_TYPE	Number	The type of disposal tank. Related to: ■ WW_DISPOSAL_TANK_TYPE_TBD
ID_USAGE	Number	The usage of this item. Related to: ■ WW_DISPOSAL_TANK_USAGE_TBD
IS_HANDOVER	Number	Is there a handover?
LISA_GUID	Varchar2	The LISA unique identifier.
MANUFACTURER_TYPE	Varchar2	The description of the manufacturer type.
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_NUMBER_1	Varchar2	An additional name number of the item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.

Name	Data Type	Description
NORMAL_HEAD_DIMENSION	Number	The normal head dimension, measured in meters.
NORMAL_PRESSURE	Number	The normal operating pressure rate.
OVERFLOW_ELEVATION	Number	The overflow elevation, measured in meters.
RESTRICTOR_DISCHARGE	Number	The restrictor discharge.
SEQUENCEID	Number	The unique sequence identifier.
UFIS_CONSTRUCTIONNUMBER	Number	The UFIS construction number.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

Emulsion Split

- Computation table — WW_EMULSION_SPLIT
- Feature type — Attribute

Name	Data Type	Description
DEPTH	Number	The depth of the emulsion split, measured in meters.
DIMENSION_1	Number	The first dimension of the emulsion split, measured in meters.
DIMENSION_2	Number	The second dimension of the emulsion split, measured in meters.

Name	Data Type	Description
FID_ENV_PARAMETERS	Number	The relation to the environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_LOCATION	Number	The location of the item (street). Related to: ■ WW_LOCATION
FID_SITE	Number	Relation with the site. Related to: ■ WW_SITE
FLOCCULANT	Varchar2	The chemical used to produce flocculation of suspended particles.
ID_INSTALLATION_TYPE	Number	Type of installation. Related to: ■ WW_INSTALLATION_TYPE_TBD
ID_MATERIAL	Number	The type of material composition used for the coalescence separator. Related to: ■ WW_MATERIAL_TBD
INPUT_ELEVATION	Number	The input elevation, measured in meters.
NAME_NUMBER	Varchar2	The name or number of this item.
OUTFLOW	Number	Defines the outflow.
OUTPUT_ELEVATION	Number	The output elevation, measured in meters.
POPULATIONEQUIVALENTS	Number	The population equivalents.

Fitting

A fitting is used to connect, cap, plug, or otherwise alter a pipe carrying wastewater.

■ Computation table — WW_FITTING

■ Feature type — Attribute

Name	Data Type	Description
BOTTOM_ELEVATION	Number	The elevation of the bottom part of the item relative to the section, measured in meters.
DATE_CREATION	Date	The date when the item was created.
DIMENSION_1	Number	The first dimension of the fitting, measured in meters.
DIMENSION_2	Number	The second dimension of the fitting, measured in meters.
FID_CONSESSON-AIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_ENV_PARAMETERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_LOCATION	Number	The street location of this item. Related to: ■ WW_CONTACT
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item.

Name	Data Type	Description
		Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item Related to: ■ WW_CONTACT
ID_ACCURACY	Number	How the current position of the item was determined. For example, exactly, by positioning, unknown, or inexactly. Related to: ■ WW_ACCURACY_TBD
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
ID_FUNCTION	Number	How the item is used. Related to: ■ WW_FITTING_FUNCTION_TBD
ID_HEIGHT_ACCURACY	Number	The elevation accuracy. Related to: ■ WW_HEIGHT_ACCURACY_TBD
ID_HYDRAULIC_FUNCTION	Number	The hydraulic function of the item. Related to: ■ WW_HYDRAULIC_FUNCTION_TBD

Name	Data Type	Description
ID_MATERIAL	Number	The type of material composition used for the fitting. Related to: ■ WW_MATERIAL_TBD
LISA_GUID	Varchar2	The LISA unique identifier.
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_NUMBER_1	Varchar2	An additional name number of the item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
SEQUENCEID	Number	The unique sequence identifier.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

French Drains

A drainage trench filled to ground level with gravel, rock, fragments of brick, etc.

- Computation table — WW_FRENCH_DRAINS
- Feature type — Attribute

Name	Data Type	Description
ADDRESSOFMANUFACTURER	Varchar2	The french drain manufacturer's address.
BASIN_AREA	Number	The basin area of the french drain, measured in square meters.

Name	Data Type	Description
BASIN_AREA_PERMANENT	Number	The permanent basin area of the french drain, measured in square meters.
BASIN_CAPACITY	Number	The basin capacity of the french drain, measured in cubic meters.
BASIN_DEPTH	Number	The basin depth of the french drain, measured in meters.
BASIN_DIMENSION_1	Number	The first basin dimension of the french drain, measured in meters.
BASIN_DIMENSION_2	Number	The second basin dimension of the french drain, measured in meters.
BASIN_HEIGHT_PERMANENT	Number	The permanent basin height of the french drain, measured in meters.
BASIN_MAX_HEIGHT	Number	The maximum basin height of the french drain, measured in meters.
BASIN_SLOPE	Number	The basin slope of the french drain.
BASIN_SPILLOVER	Number	The basin spillover of the french drain.
BASIN_THICKNESS_BASELAYER	Number	The basin baselayer thickness of the french drain.
CADASTRAL_INFO	Varchar2	Description of cadastral information, such as land boundaries, structure locations, boundary dimensions, etc.
DATE_COMMISSIONING	Date	The date when the item was commissioned.
DATE_CREATION	Date	The date when the item was created.
DIMENSION_1	Number	The first dimension of the item, measured in meters.

Name	Data Type	Description
DIMENSION_2	Number	The second dimension of the item, measured in meters.
DITCH_CAPACITY	Number	The capacity of the ditch, measured in cubic meters.
DITCH_CAPACITY_COEFFICIENT	Number	The ditch capacity coefficient.
DITCH_DEPTH	Number	The depth of the ditch, measured in meters.
DITCH_DIMENSION_1	Number	The first dimension of the ditch, measured in meters.
DITCH_NUMBER_PIPES	Number	The number of pipes laid in the ditch.
DITCH_PIPE_DIAMETER	Number	The pipe diameter, measured in meters.
DITCH_RESTRICTOR_DISCHARGE	Number	The restrictor discharge of the ditch.
DITCH_RESTRICTOR_MANHOLE	Varchar2	The restrictor manhole of the ditch.
DITCH_SPILLOVER	Varchar2	The ditch spillover amount.
FID_ENV_PARAMETERS	Number	The relation to the environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_LOCATION	Number	The location of the item (street). Related to: ■ WW_LOCATION
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD

Name	Data Type	Description
ID_DITCH_FILLING_MATERIAL	Number	The ditch fill material ID. Related to: ■ WW_FILLING_MATERIAL_TBD
ID_DITCH_RESTR_MANHOLE	Number	The ditch restr manhole ID. Related to: ■ WW_DITCH_RESTR_MANHOLE_TBD
ID_HYDRAULIC_FUNCTION	Number	The hydraulic function of the item. Related to: ■ WW_HYDRAULIC_FUNCTION_TBD
ID_INFILTRATION_SYSTEM	Number	The infiltration system ID. Related to: ■ WW_INFILTRATION_SYSTEM_TBD
ID_MHOLE_FILLING_MATERIAL	Number	The manhole fill material ID. Related to: ■ WW_FILLING_MATERIAL_TBD
ID_MHOLE_INF_TYPE	Number	The manhole infiltration type ID. Related to: ■ WW_MHOLE_INF_TBD
ID_PIPE_MATERIAL	Number	The pipe material ID. Related to: ■ WW_MATERIAL_TBD
ID_SURFACE_CONNECTION	Number	The surface connection ID. Related to: ■ WW_SURFACE_CONNECTION_TBD
IS_BASIN_SPILLOVER	Number	Is there a basin spillover?

Name	Data Type	Description
IS_DITCH_SPILLOVER	Number	Is there a ditch spillover?
IS_HANDOVER	Number	Is there a handover?
IS_MHOLE_FILTER	Number	Is there a manhole filter?
IS_MHOLE_SPILLOVER	Number	Is there a manhole spillover?
IS_SURF_SPILLOVER	Number	Is there a surface spillover?
LISA_GUID	Varchar2	The LISA unique identifier.
MANUFACTURER_TYPE	Varchar2	A description of the manufacturer type.
MAX_INFILTRATION	Number	The maximum infiltration of the item.
MEASUREMENT_FREQUENCY	Number	How frequently are measurements taken?
MHOLE_AREA	Number	The manhole area, measured in square meters.
MHOLE_DEPTH	Number	The manhole depth, measured in meters.
MHOLE_DIMENSION_2	Number	The second manhole dimension, measured in meters.
MHOLE_MAX_HEIGHT	Number	The manhole height, measured in meters.
MHOLE_RESTRICTOR_DISCHARGE	Number	The restrictor discharge of the manhole.
MHOLE_SPILLOVER	Varchar2	The manhole spillover amount.
MHOLE_STORAGE	Number	The manhole storage capacity, measured in cubic meters.
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_NUMBER_1	Varchar2	Additional name number of the item.

Name	Data Type	Description
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
SEQUENCEID	Number	The unique sequence identifier.
SURF_DIMENSION_1	Number	The first surface dimension, measured in meters.
SURF_DIMENSION_2	Number	The second surface dimension, measured in meters.
SURF_SPILLOVER	Varchar2	The surface spillover amount.
UFIS_CONSTRUCTIONNUMBER	Number	The UFIS construction number.

Grease Trap

A grease trap is a tank that separates grease from water, collects the grease for removal, and allows the water to exit.

- Computation table — WW_GREASE_TRAP
- Feature type — Attribute

Name	Data Type	Description
BOTTOM_ELEVATION	Number	The elevation of the bottom part of the item relative to the section, measured in meters.
CAPACITY	Number	The capacity of the grease trap, measured in cubic meters.
DATE_CREATION	Date	The date when the item was created.
DIMENSION_1	Number	The first dimension of the grease trap, measured in meters.
DIMENSION_2	Number	The second dimension of the grease trap, measured in meters.

Name	Data Type	Description
FID_CONSESSON-AIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_LOCATION	Number	The location of the item (street). Related to: ■ WW_LOCATION
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item Related to: ■ WW_CONTACT
FID_SITE	Number	The relation of the item with the site. Related to: ■ WW_SITE
FLOW_RATE	Number	The flow rate.
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD

Name	Data Type	Description
ID_INSTALLATION_TYPE	Number	Defines the type of installation. Related to: ■ WW_INSTALLATION_TYPE_TBD
ID_MATERIAL	Number	The material used to construct this item. Related to: ■ WW_MATERIAL_TBD
ID_STRUCT_CONDITION	Number	The structural condition of this item. Related to: ■ WW_STRUCT_CONDITION_TBD
INPUT_ELEVATION	Number	The input elevation, measured in meters.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
NOMINAL_SIZE	Number	The nominal size of the grease trap.
OUTPUT_ELEVATION	Number	The output elevation.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

Grit Chamber

A grit chamber is a chamber designed to remove sand, gravel, or other heavy solids that have subsiding velocities or specific gravities substantially greater than those of the organic solids in the wastewater system.

- Computation table — WW_GRIT_CHAMBER

■ Feature type — Attribute

Name	Data Type	Description
BOTTOM_ELEVATION	Number	The elevation of the bottom part of the item relative to the section, measured in meters.
CAPACITY	Number	The capacity of the grit chamber, measured in cubic meters.
DATE_CREATION	Date	The date when the item was created.
DEPTH	Number	The depth of the grit chamber, measured in meters.
DIMENSION_1	Number	The first dimension of the grit chamber, measured in meters.
DIMENSION_2	Number	The second dimension of the grit chamber, measured in meters.
FID_CONSESSOR	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_ENV_PARAMETERS	Number	The relation to the environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item Related to:

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_CONTACT
FID_OWNER	Number	The owner of this item Related to: <ul style="list-style-type: none"> ■ WW_CONTACT
FID_SITE	Number	The relation of the item with the site. Related to: <ul style="list-style-type: none"> ■ WW_SITE
FLOW_CAPACITY	Number	The flow capacity.
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: <ul style="list-style-type: none"> ■ WW_DISPOSITION_STATE_TBD
ID_INSTALLATION_TYPE	Number	Defines the type of installation. Related to: <ul style="list-style-type: none"> ■ WW_INSTALLATION_TYPE_TBD
ID_MATERIAL	Number	The material used to construct this item. Related to: <ul style="list-style-type: none"> ■ WW_MATERIAL_TBD
INPUT_ELEVATION	Number	The input elevation, measured in meters.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
NOMINAL_SIZE	Number	The nominal size.
OUTPUT_ELEVATION	Number	The output elevation.
SEPARATE_OIL	Number	Will the grit chamber also separates oil?

Name	Data Type	Description
STORAGE_CAPACITY	Number	The storage capacity, measured in cubic meters.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

House Connector

A house connector is the point at which a service connects to a house.

- Computation table — WW_HOUSE_CONNECTOR
- Feature type — Attribute

Name	Data Type	Description
BOTTOM_ELEVATION	Number	The elevation of the bottom part of the item relative to the section, measured in meters.
CADASTRAL_INFO	Varchar2	Description of cadastral information, such as land boundaries, structure locations, boundary dimensions, etc.
CONNECTION_FEE	Number	The connection fee for the house connection.
DATE_ACQUIRED	Date	The acquisition date of the data.
DATE_CREATION	Date	The date when the item was created.
DATE_STARTUP	Date	The date when responsibility for the item was taken.
FID_CONSESSIONAIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT

Name	Data Type	Description
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_LOCATION	Number	The location of the item (street). Related to: ■ WW_LOCATION
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item Related to: ■ WW_CONTACT
HOUSE	Varchar2	The house number.
HOUSE_SUPPLEMENT	Varchar2	The house number supplement.
ID_ACCURACY	Number	How the current position of the item was determined. For example, exactly, by positioning, unknown, inexactly, etc. Related to: ■ WW_ACCURACY_TBD
ID_CONDITION	Number	The condition of the item. For example, broken, leaking, etc. Related to: ■ WW_CONDITION_TBD

Name	Data Type	Description
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
ID_OWNERSHIP	Number	The owner of this item. Related to: ■ WW_OWNERSHIP_TBD
ID_PRE_TREATMENT	Number	The type of pre-treatment made before the house connection. Related to: ■ WW_PRE_TREATMENT_TBD
JURISTIC_NAME_NUMBER	Varchar2	The juristic name or number (construction number).
LOCATION	Varchar2	A brief description of where the item is located. For example, 1m of the wall.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
PUMP_POWER	Number	The power of the pump used at the house connection.
RETENSION_CAPACITY	Number	The retention capacity for the house connection measured in cubic meters.
ROUTE_NUMBER	Varchar2	The meter-reading route/area for the house connection meter.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

Manage Customer Information

The WW_HOUSE_CONNECTOR table has a Customer Number attribute. However, there is no table for managing customer information because customers often use external software (for example, SAP) for this purpose.

To manage customer information in Topobase, use the Data Model Administrator to create the appropriate feature classes.

To manage customer information

- 1 Create a new Customer feature class in the Administration topic.
- 2 Add attributes as needed, for example Name, Address, Telephone, and Email.
- 3 Customize the feature class form using the Form Designer.
- 4 In the House Connector form, add a Basic ComboBox control for Customer Number and create the relation to the newly created table containing the customers.

For more information, see the Form Designer Introduction in the Topobase Administrator Guide.

Generate Customer Notifications

Topobase Wastewater helps you generate notification letters regarding planned work or problems in the wastewater network. For example, you might do a network trace to find all house connectors in an affected area so you can notify customers.

There are three ways to generate customer notification letters.

- Use the Topobase Report Designer.
For more information about the Topobase report designer, see the Report Designer Introduction in the Topobase Administrator Guide.
- Use Topobase Client to export to Microsoft® Word.
- Export the data to any format and use external software to generate letters.
For example, export a customer list to Microsoft® Excel®.

Intermediate Point

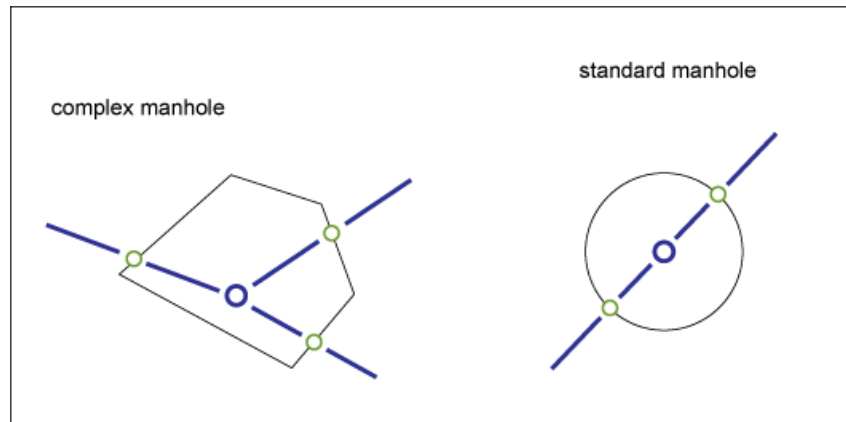
Intermediate points of a section are the points where pipes meet the structure of a manhole.

- Computation table — WW_INTERMEDIATE_POINT
- Feature type — Attribute

Name	Data Type	Description
BOTTOM_ELEVATION	Number	The elevation of the bottom part of the item relative to the section, measured in meters.
DATE_CREATION	Date	The date when the item was created.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

Intermediate points can be created automatically in the Section Creation workflow.



For complex manholes, the intermediate point is the intersection between the section and the polygon detail. For standard manholes the intermediate point is calculated from the diameter (stored in the `WW_MANHOLE_MODEL.diameter1`).

For more information, see [Section Creation](#) (page 70) and [Wastewater Elevation, Slope, and Height](#) (page 335).

Lagoon

A shallow, man-made pool or pond for the purpose of providing treatment of domestic wastewater.

- Computation table — `WW_LAGOON`
- Feature type — Attribute

Name	Data Type	Description
AERATOR	Number	Will the lagoon also have an aerator?
AERATOR_POWER	Number	The power of the aerator.
AREA	Number	The area of the lagoon, measured in square meters.
BOTTOM_ELEVATION	Number	The elevation of the bottom part of the item relative to the section, measured in meters.

Name	Data Type	Description
DATE_ANALYSIS	Date	The analysis date.
DATE_CONSTRUCTION	Date	The date when construction on the item begins.
DATE_CREATION	Date	The date when the item was created.
DIMENSION_1	Number	The first dimension of the lagoon, measured in meters.
DIMENSION_2	Number	The second dimension of the lagoon, measured in meters.
FID_CONSESSAIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item Related to: ■ WW_CONTACT
ID_LAGOON_TYPE	Number	Describes the type of lagoon. Related to: ■ WW_LAGOON_TYPE_TBD

Name	Data Type	Description
ID_SEWAGE_TEST	Number	The sewage test ID. Related to: ■ WW_SEWAGE_TEST_TBD
ID_SOIL_CONDITION	Number	The soil condition ID. Related to: ■ WW_SOIL_CONDITION_TBD
ID_SOIL_EROSION_COEFFICIENT	Number	The soil erosion ID. Related to: ■ WW_SOIL_EROSION_COEFF_TBD
ID_SOIL_FAMILY	Number	The soil family ID. Related to: ■ WW_SOIL_FAMILY_TBD
ID_SOIL_TEXTURE	Number	The soil texture ID. Related to: ■ WW_SOIL_TEXTURE_TBD
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
NR_PUMPS	Number	The number of pumps.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

Manhole

Allows physical access to the wastewater network. A section intersects in a manhole.

■ Computation table — WW_MANHOLE

■ Feature type — Attribute

Name	Data Type	Description
BOTTOM_ELEVATION	Number	The elevation of the bottom of the item, measured in meters.
DATE_CREATION	Date	The date when the item was created.
DEPTH	Number	The depth of the manhole, measured in meters.
DIMENSION_1	Number	The first dimension of the manhole.
DIMENSION_2	Number	The second dimension of the manhole.
FID_CONSESSON-AIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_ENV_PARAMET-ERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_LOCATION	Number	The street location of this item. Related to: ■ WW_LOCATION
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item.

Name	Data Type	Description
		Related to: ■ WW_CONTACT
FID_MANUFACTURER	Number	The manufacturer of this item. Related to: ■ WW_MANUFACTURER
FID_OPERATOR	Number	The operator of this item Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item Related to: ■ WW_CONTACT
FID_TREATMENT_PLANT	Number	The treatment plant related to this item Related to: ■ WW_TREATMENT_PLANT
ID_ACCESS_AID	Number	The access aid ID. Related to: ■ WW_MHOLE_ACCESS_AID_TBD
ID_ACCESSIBILITY	Number	The accessibility ID. Related to: ■ WW_MHOLE_ACCESSIBILITY_TBD
ID_ACCURACY	Number	How the current position of the item was determined. For example, exactly, by positioning, unknown, inexactly, etc. Related to: ■ WW_ACCURACY_TBD
ID_BOTTOM_ACCURACY	Number	The accuracy of the bottom elevation. Related to:

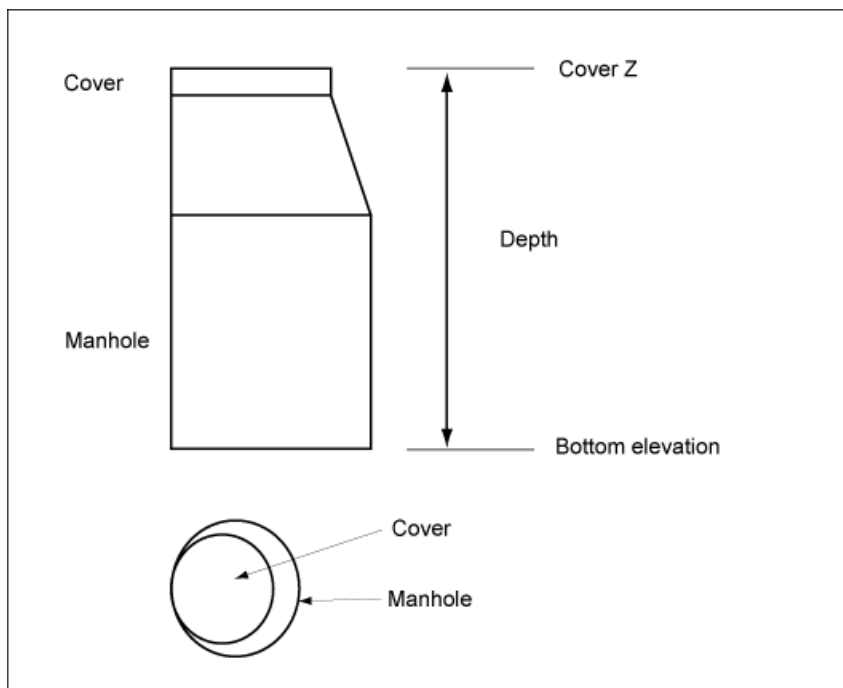
Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_ACCURACY_TBD
ID_CHANNEL_SHAPE	Number	<p>The channel shape ID.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_CHANNEL_SHAPE_TBD
ID_COATING_INSIDE	Number	<p>The inside coating used for the manhole.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_COATING_TBD
ID_COATING_MATERIAL	Number	<p>The type of material used to coat the manhole.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_MATERIAL_TBD
ID_COATING_OUTSIDE	Number	<p>The outside coating used for the manhole.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_COATING_TBD
ID_DATA_ORIGIN	Number	<p>The data origination ID.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_DATA_ORIGIN_TBD
ID_DISPOSITION_STATE	Number	<p>The state of the disposition of the item. For example, death, planed, etc.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_DISPOSITION_STATE_TBD
ID_FLOODPLAIN	Number	<p>Defines whether the section is in a floodplain.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_FLOODPLAIN_TBD
ID_FUNCTION	Number	<p>The function ID.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_MHOLE_FUNCTION_TBD

Name	Data Type	Description
ID_GROUNDWATER	Number	Define whether ground water is present around the section. Related to: ■ WW_GROUNDWATER_TBD
ID_HEIGHT_ACCURACY	Number	The accuracy of the manhole height. Related to: ■ WW_HEIGHT_ACCURACY_TBD
ID_HYDRAULIC_FUNCTION	Number	The hydraulic function of the item. Related to: ■ WW_HYDRAULIC_FUNCTION_TBD
ID_LAYING_TYPE	Number	Describes how the item is placed at its location. Related to: ■ WW_MHOLE_LAYING_TYPE_TBD
ID_LINING	Number	The lining ID. Related to: ■ WW_LINING_TBD
ID_LOWER_MATERIAL	Number	The lower material ID. Related to: ■ WW_MATERIAL_TBD
ID_MANHOLE_SHAPE	Number	The shape of the manhole. Related to: ■ WW_MHOLE_SHAPE_TBD
ID_MANHOLE_TYPE	Number	The manhole type. Related to: ■ WW_MHOLE_TYPE_TBD
ID_MATERIAL	Number	The material used for constructing this item. Related to:

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_MATERIAL_TBD
ID_MATERIAL_CHANNEL	Number	The material channel ID. Related to: <ul style="list-style-type: none"> ■ WW_MATERIAL_TBD
ID_MATERIAL_ENTRYAID	Number	The material entry aid ID. Related to: <ul style="list-style-type: none"> ■ WW_MHOLE_ACCESS_AID_TBD
ID_MATERIAL_LOWER_PART	Number	The material lower part ID. Related to: <ul style="list-style-type: none"> ■ WW_MATERIAL_TBD
ID_MHOLE_LOWER_PART_SHAPE	Number	The manhole lower part shape ID. Related to: <ul style="list-style-type: none"> ■ WW_MHOLE_LOWER_SHAPE_TBD
ID_MHOLE_LOWER_SHAPE	Number	The manhole lower shape ID. Related to: <ul style="list-style-type: none"> ■ WW_MHOLE_LOWER_SHAPE_TBD
ID_OWNERSHIP	Number	The owner of this item. Related to: <ul style="list-style-type: none"> ■ WW_OWNERSHIP_TBD
ID_TRAFFIC_STATE	Number	The state of the traffic on the manhole. Related to: <ul style="list-style-type: none"> ■ WW_MHOLE_TRAFFIC_STATE_TBD
ID_UTILISATION	Number	The utilization of the manhole. Related to: <ul style="list-style-type: none"> ■ WW_MHOLE_UTILISATION_TBD

Name	Data Type	Description
ID_WATER_PROTECTION	Number	The water protection ID. Related to: ■ WW_WATER_PROTECTION_TBD
IS_CONE	Number	Is there a cone?
IS_COVERPLATE	Number	Is there a cover plate?
IS_ENTRYAID	Number	Is there an entry aid?
IS_LOWER_PART_CONE	Number	Is there a lower part of the cone?
IS_MEASUREMENT	Number	Is there a measurement?
IS_PEDESTAL	Number	Is there a pedestal?
IS_TRANSFER_MANHOLE	Number	Is there a transfer manhole?
IS_TRANSITION_PLATE	Number	Is there a transition plate?
LISA_GUID	Varchar2	The LISA unique identifier.
LOWERHEIGHT	Varchar2	The lower height of the item, measured in meters.
LOWERLENGTH	Number	The lower length of the item, measured in meters.
LOWERPARTHEIGHT	Number	The height of the lower part, measured in meters.
LOWERPARTLENGTH	Number	The length of the lower part, measured in meters.
LOWERPARTWIDTH	Number	The width of the lower part, measured in meters.
LOWERWIDTH	Number	The width of the item, measured in meters.
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_NUMBER_1	Varchar2	The additional name number of the item.

Name	Data Type	Description
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
NR_INPUT_SECTION	Number	The number of inputs to the manhole.
NR_OUTPUT_SECTION	Number	The number of outputs from the manhole.
NR_STEP_IRON	Number	The number of step irons in the manhole.
SEQUENCEID	Number	The unique sequence identifier.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.



The cover height is stored in the attribute `WW_COVER.Z`, the terrain elevation of the manhole is stored in `WW_POINT.Z`. The soil elevation of the manhole is stored in `BOTTOM_ELEVATION`. The difference between soil elevation and terrain elevation is the depth.

See also:

- [Manhole Creation](#) (page 69)
- [Network Point Creation](#) (page 69)
- [Wastewater Elevation, Slope, and Height](#) (page 335)
- [Extract Points from Lines](#) (page 95)
- [Feature Rules: Manhole](#) (page 328)

Meter

A device installed in a line for measuring the quantity and/or rate of water through a section of line.

- Computation table — `WW_METER`
- Feature type — Attribute

Name	Data Type	Description
<code>BOTTOM_ELEVATION</code>	Number	The elevation of the bottom of the item, measured in meters.
<code>DATE_CREATION</code>	Date	The date when the item was created.
<code>DIMENSION_1</code>	Number	The first dimension of the meter.
<code>DIMENSION_2</code>	Number	The second dimension of the meter.
<code>FID_CONSESSOR-AIRE</code>	Number	The concessionaire of this item. Related to: ■ <code>WW_CONTACT</code>
<code>FID_INSTALLER</code>	Number	The enterprise in charge of building the item. Related to:

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_CONTACT
FID_MAINTENANCE	Number	<p>The company that is responsible for the maintenance of this item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_CONTACT
FID_MANUFACTURER	Number	<p>The manufacturer of this item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_MANUFACTURER
FID_OPERATOR	Number	<p>The operator of this item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_CONTACT
FID_OWNER	Number	<p>The owner of this item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_CONTACT
ID_METER_TYPE	Number	<p>The type of meter.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_METER_TYPE_TBD
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

Miscellaneous Plant

- Computation table — WW_MISC_PLANT
- Feature type — Attribute

Name	Data Type	Description
DEPTH	Number	The depth of the item, measured in meters.
DIMENSION_1	Number	The first dimension of the item.
DIMENSION_2	Number	The second dimension of the item.
FID_ENV_PARAMETERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_LOCATION	Number	The street location of this item. Related to: ■ WW_LOCATION
FID_SITE	Number	The relation to the site. Related to: ■ WW_SITE
ID_INSTALLATION_TYPE	Number	The type of installation. Related to: ■ WW_INSTALLATION_TYPE_TBD
ID_MATERIAL	Number	The material used to construct this item. Related to: ■ WW_MATERIAL_TBD
INPUT_ELEVATION	Number	The elevation of the input, measured in meters.
NAME_NUMBER	Varchar2	The name or number of this item.
OUTPUT_ELEVATION	Number	The elevation of the output, measured in meters.

For more information, see [Network Point Creation](#) (page 69).

Neutralizer

A receptacle or chamber where chemicals react with reactant materials. The chemically neutralized liquid waste then passes through the wastewater system.

- Computation table — WW_NEUTRALIZER
- Feature type — Attribute

Name	Data Type	Description
BOTTOM_ELEVATION	Number	The elevation of the bottom of the neutralizer, measured in meters.
CAPACITY	Number	The capacity of the neutralizer, measured in cubic meters.
DATE_CREATION	Date	The date when the item was created.
DEPTH	Number	The depth of the neutralizer, measured in meters.
DIMENSION_1	Number	The first dimension of the neutralizer, measured in meters.
DIMENSION_2	Number	The second dimension of the neutralizer, measured in meters.
FID_CONSESSIONAIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_ENV_PARAMETERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT

Name	Data Type	Description
FID_LOCATION	Number	The street location of this item. Related to: ■ WW_LOCATION
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item. Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item. Related to: ■ WW_CONTACT
FID_SITE	Number	The relation with the site. Related to: ■ WW_SITE
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
ID_INSTALLATION_TYPE	Number	The type of installation. Related to: ■ WW_INSTALLATION_TYPE_TBD
ID_MATERIAL	Number	The material used for constructing this item. Related to: ■ WW_MATERIAL_TBD

Name	Data Type	Description
ID_NEUTRALIZATION_AGENT	Number	The neutralization agent ID. Related to: ■ WW_NEUTRALIZATION_AGENT_TBD
ID_TYPE_NEUTRALIZER	Number	The type of neutralizer. Related to: ■ WW_NEUTRALIZER_TYPE_TBD
INPUT_ELEVATION	Number	The elevation of the input, measured in meters.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
NEUTRALIZER_AGENT	Varchar2	The name of the neutralizing agent.
NR_PIPES	Number	The number of pipes.
OUTFLOW	Number	The neutralizer outflow.
OUTPUT_ELEVATION	Number	The elevation of the output, measured in meters.
PHVALUE	Number	The Ph value.
REACTANT_QUANTITY	Number	The amount of reactant, measured in cubic meters.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

Oil Water Separator

A device or structure placed in the wastewater stream to separate water from oil products.

■ Computation table — WW_OIL_WATER_SEP

■ Feature type — Attribute

Name	Data Type	Description
ALARMSYSTEMCOMMENTS	Varchar2	Comments about alaram system.
AREA	Number	The area of the item, measured in square meters.
BOTTOM_ELEVATION	Number	The elevation of the bottom of the section, measured in meters.
CAPACITY	Number	The capacity of the item, measured in cubic meters.
DATE_CREATION	Date	The date when the item was created.
DEPTH	Number	The depth of the item, measured in meters.
DIMENSION_1	Number	The first dimension of the separator, measured in meters.
DIMENSION_2	Number	The second dimension of the separator, measured in meters.
FID_CONSESSIONAIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_ENV_PARAMETERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to:

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_CONTACT
FID_LOCATION	Number	<p>The street location of this item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_LOCATION
FID_MAINTENANCE	Number	<p>The company that is responsible for the maintenance of this item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_CONTACT
FID_OPERATOR	Number	<p>The operator of this item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_CONTACT
FID_OWNER	Number	<p>The owner of this item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_CONTACT
FID_SITE	Number	<p>The relation with the site.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_SITE
ID_ALARM_SYSTEM	Number	<p>The alarm system ID.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_ALARM_SYSTEM_TBD
ID_DISPOSITION_STATE	Number	<p>The state of the disposition of the item. For example, death, planed, etc.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_DISPOSITION_STATE_TBD
ID_INSTALLATION_TYPE	Number	<p>The type of installation.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_INSTALLATION_TYPE_TBD

Name	Data Type	Description
ID_MATERIAL	Number	The material used for constructing this item. Related to: ■ WW_SEPARATOR_MAT_TBD
ID_SEPARATOR_TYPE	Number	The type of separator. Related to: ■ WW_SEPARATOR_TYPE_TBD
INPUT_ELEVATION	Number	The elevation of the input, measured in meters.
INPUT_ELEVATION_1	Number	The elevation of the first input, measured in meters.
INPUT_ELEVATION_2	Number	The elevation of the second input, measured in meters.
IS_CLOSEOFF	Number	Is there a close off?
LAYERTHICKNESS	Number	The thickness of the layer.
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
NOMINAL_SIZE	Number	The nominal size of the item, measured in meters.
OUTPUT_ELEVATION	Number	The elevation of the outflow.
OUTPUT_ELEVATION	Number	The elevation of the outflow, measured in meters.
SEP_CODE	Number	The separator code.
SEP_PROCESS_NAME	Number	The separator process name.
SEP_VOLUME	Number	The separator volume, measured in cubic meters.
TEMP_OPTIM	Number	The optimum operating temperature, measured in degrees Celsius.

Name	Data Type	Description
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

Outfall

An outlet of a river, drain, or a sewer where it discharges into the sea or lake.

- Computation table — WW_OUTFALL
- Feature type — Attribute

Name	Data Type	Description
ADDRESSOFMANUFACTURER	Varchar2	The manufacturer address.
BOTTOM_ELEVATION	Number	Elevation of the bottom part of the item relative to the section, measured in meters.
DATE_CREATION	Date	The date when the item was created.
DEPTH	Number	The depth of the item, measured in meters.
DIMENSION_1	Number	The first dimension of the outfall, measured in meters.
DIMENSION_2	Number	The second dimension of the outfall, measured in meters.
FID_CONSESSIONAIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_ENV_PARAMETERS	Number	The environmental parameters. Related to:

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_ENV_PARAMETERS
FID_INSTALLER	Number	<p>The enterprise in charge of building the item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_CONTACT
FID_LOCATION	Number	<p>The street location of this item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_LOCATION
FID_MAINTENANCE	Number	<p>The company that is responsible for the maintenance of this item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_CONTACT
FID_OPERATOR	Number	<p>The operator of this item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_CONTACT
FID_OWNER	Number	<p>The owner of this item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_CONTACT
FLOW_ACTUAL	Number	The actual flow rate.
ID_BANK_PROTECTION	Number	<p>The bank protection ID.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_BANK_PROTECTION_TBD
ID_DISPOSITION_STATE	Number	<p>The state of the disposition of the item. For example, death, planed, etc.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_DISPOSITION_STATE_TBD

Name	Data Type	Description
ID_GRATING_PROTECTION	Number	The grating protection ID. Related to: ■ WW_GRATING_PROTECTION_TBD
ID_HYDRAULIC_FUNCTION	Number	The hydraulic function of the item. Related to: ■ WW_HYDRAULIC_FUNCTION_TBD
ID_MATERIAL	Number	The material used in the construction of this item. Related to: ■ WW_SEPARATOR_MAT_TBD
ID_OUTFALL_TYPE	Number	The outfall type. Related to: ■ WW_OUTFALL_TYPE_TBD
ID_OUTLET_TYPE	Number	The outlet type. Related to: ■ WW_OUTLET_TYPE_TBD
ID_SOIL_PROTECTION	Number	The soil protection ID. Related to: ■ WW_SOIL_PROTECTION_TBD
INCLINATION	Number	The inclination.
IS_HANDOVER	Number	Is there a handover?
LISA_GUID	Varchar2	The LISA unique identifier.
MANUFACTURER_TYPE	Varchar2	A description of the manufacturer type.
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_NUMBER_1	Varchar2	The additional name number of the item.

Name	Data Type	Description
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
OUTFALL_COEFFICIENT	Number	The outfall coefficient.
OUTPUT_ELEVATION	Number	The elevation of the outflow, measured in meters.
SEQUENCEID	Number	The unique sequence identifier.
UFIS_CONSTRUCTIONNUMBER	Number	The UFIS construction number.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

Pump

A mechanical device for wastewater systems that draws material into itself through an entrance port and forces the material out through an exhaust port.

- Computation table — WW_PUMP
- Feature type — Attribute

Name	Data Type	Description
ADDRESSOFMANUFACTURER	Varchar2	The manufacturer address.
BOTTOM_ELEVATION	Number	Elevation of the bottom part of the item relative to the section, measured in meters.
DATE_CREATION	Date	The date when the item was created.

Name	Data Type	Description
FID_CONSESSON-AIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_ENV_PARAMET-ERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_LOCATION	Number	The street location of this item. Related to: ■ WW_LOCATION
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_MANUFAC-TURER	Number	The manufacturer of this item. Related to: ■ WW_MANUFACTURER
FID_OPERATOR	Number	The operator of this item. Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item. Related to: ■ WW_CONTACT
ID_COOLING_METH-OD	Number	The cooling method. Related to:

Name	Data Type	Description
		<ul style="list-style-type: none"> ■ WW_COOLING_METHOD_TBD
ID_DISPOSITION_STATE	Number	<p>The state of the disposition of the item. For example, death, planed, etc.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_DISPOSITION_STATE_TBD
ID_HYDRAULIC_FUNCTION	Number	<p>The hydraulic function of the item.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_HYDRAULIC_FUNCTION_TBD
ID_PUMP_TYPE	Number	<p>The type of pump.</p> <p>Related to:</p> <ul style="list-style-type: none"> ■ WW_PUMP_TYPE_TBD
IS_HANDOVER	Number	Is there a handover?
LISA_GUID	Varchar2	The LISA unique identifier.
MANOMETRIC_ELEVATION	Number	The menometric elevation, measured in meters.
MANUFACTURER_TYPE	Varchar2	A description of the manufacturer type.
MEASURED_OUTFLOW	Number	The measured flow of the pump.
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_NUMBER_1	Varchar2	The additional name number of the item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
NR_PUMPS	Number	The number of pumps.
POWER	Number	The power of the model.

Name	Data Type	Description
PUMP_ELEVATION	Number	The elevation of the item relative to the ground, measured in meters.
RATED_OUTFLOW	Number	The flow rating of the pump.
SEQUENCEID	Number	The unique sequence identifier.
UFIS_CONSTRUCTIONNUMBER	Number	The UFIS construction number.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

Restrictor

- Computation table — WW_RESTRICTOR

- Feature type — Attribute

Name	Data Type	Description
ADDRESSOFMANUFACTURER	Varchar2	The manufacturer address.
DATE_CREATION	Date	The date when the item was created.
FID_ENV_PARAMETERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_LOCATION	Number	The street location of this item. Related to: ■ WW_LOCATION

Name	Data Type	Description
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
ID_HYDRAULIC_FUNCTION	Number	The hydraulic function of the item. Related to: ■ WW_HYDRAULIC_FUNCTION_TBD
ID_RESTRICTOR_OUTLET	Number	The restrictor outlet ID. Related to: ■ WW_RESTRICTOR_OUTLET_TBD
IS_HANDOVER	Number	Is there a handover?
LISA_GUID	Varchar2	The LISA unique identifier.
MANUFACTURER_TYPE	Varchar2	A description of the manufacturer type.
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_NUMBER_1	Varchar2	The additional name number of the item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
NOMINAL_OUTPUT	Number	The nominal output.
SEQUENCEID	Number	The unique sequence identifier.
UFIS_CONSTRUCTIONNUMBER	Number	The UFIS construction number.

For more information, see [Network Point Creation](#) (page 69).

Screen

■ Computation table — WW_SCREEN

■ Feature type — Attribute

Name	Data Type	Description
ADDRESSOFMANUFACTURER	Varchar2	The manufacturer address.
DATE_CREATION	Date	The date when the item was created.
DEPTH	Number	The depth of the item, measured in meters.
DIMENSION_1	Number	The first dimension of the item.
DIMENSION_2	Number	The second dimension of the item.
FID_ENV_PARAMETERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_LOCATION	Number	The street location of this item. Related to: ■ WW_LOCATION
ID_CLEANER_INTERVENTION	Number	The cleaner intervention ID. Related to: ■ WW_CLEANER_INTERVENTION_TBD
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
ID_GRATING_TYPE	Number	The grating type ID. Related to: ■ WW_GRATING_TYPE_TBD

Name	Data Type	Description
ID_HYDRAUL- IC_FUNCTION	Number	The hydraulic function of the item. Related to: ■ WW_HYDRAULIC_FUNCTION_TBD
ID_INSTALLA- TION_TYPE	Number	The type of installation. Related to: ■ WW_INSTALLATION_TYPE_TBD
ID_MATERIAL	Number	The material used to construct this item. Related to: ■ WW_MATERIAL_TBD
ID_SCREEN_TYPE	Number	The screen type ID. Related to: ■ WW_SCREEN_TYPE_TBD
IS_HANDOVER	Number	Is there a handover?
LISA_GUID	Varchar2	The LISA unique identifier.
MANUFAC- TURER_TYPE	Varchar2	A description of the manufacturer type.
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_NUMBER_1	Varchar2	The additional name number of the item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
SOIL_PERCOLA- TION_RATE	Number	The soil percolation rate.
UFIS_CONSTRUC- TIONNUMBER	Number	The UFIS construction number.

For more information, see [Network Point Creation](#) (page 69).

Septic Tank

Typically a below-grade receptacle or chamber in which solid organic waste is decomposed and purified by anaerobic bacteria.

■ Computation table — WW_SEPTIC_TANK

■ Feature type — Attribute

Name	Data Type	Description
AREA	Number	The area of the item, measured in square meters.
BOTTOM_ELEVATION	Number	Elevation of the bottom part of the item relative to the section, measured in meters.
CAPACITY	Number	The capacity of the item, measured in cubic meters.
DATE_CREATION	Date	The date when the item was created.
DIMENSION_1	Number	The first dimension of the item.
DIMENSION_2	Number	The second dimension of the item.
FID_CONSESSIONAIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item. Related to: ■ WW_CONTACT

Name	Data Type	Description
FID_OWNER	Number	The owner of this item. Related to: ■ WW_CONTACT
FLOW_RATE	Number	The rate of flow of the item.
ID_MATERIAL	Number	The material used to construct this item. Related to: ■ WW_MATERIAL_TBD
ID_STRUCT_CONDITION	Number	The structural condition of the item. Related to: ■ WW_STRUCT_CONDITION_TBD
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
SEQUENCEID	Number	The unique sequence identifier.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

Starch

- Computation table — WW_STARCH

■ Feature type — Attribute

Name	Data Type	Description
CAPACITY	Number	The capacity of the item, measured in cubic meters.
DEPTH	Number	The depth of the item, measured in meters.
DIMENSION_1	Number	The first dimension of the item, measured in meters.
DIMENSION_2	Number	The second dimension of the item, measured in meters.
FID_ENV_PARAMETERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_LOCATION	Number	The street location of this item. Related to: ■ WW_LOCATION
FID_SITE	Number	The relation of the item to the site. Related to: ■ WW_SITE
ID_FRESH_WATER	Number	The fresh water ID. Related to: ■ WW_FRESH_WATER_TBD
ID_INSTALLATION_TYPE	Number	The type of installation. Related to: ■ WW_INSTALLATION_TYPE_TBD
ID_MATERIAL	Number	The material used to construct this item. Related to: ■ WW_MATERIAL_TBD

Name	Data Type	Description
INPUT_ELEVATION	Number	The input elevation, measured in meters.
NAME_NUMBER	Varchar2	The name or number of this item.
NOMINAL_SIZE	Number	The nominal size.
OUTPUT_ELEVATION	Number	The output elevation of the out flow, measured in meters.

For more information, see [Network Point Creation](#) (page 69).

Strainer

A strainer is a type of sieve typically associated with separating liquids from solids.

■ Computation table — WW_STRAINER

■ Feature type — Attribute

Name	Data Type	Description
ADDRESSOFMANUFACTURER	Varchar2	The manufacturer address.
DATE_CREATION	Date	The date when the item was created.
FID_ENV_PARAMETERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_LOCATION	Number	The street location of this item. Related to: ■ WW_LOCATION
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD

Name	Data Type	Description
ID_HYDRAUL- IC_FUNCTION	Number	The hydraulic function of the item. Related to: ■ WW_HYDRAULIC_FUNCTION_TBD
ID_INSTALLATION	Number	The installation ID. Related to: ■ WW_INSTALLATION_TBD
ID_INSTALLA- TION_TYPE	Number	The type of installation. Related to: ■ WW_INSTALLATION_TYPE_TBD
ID_MATERIAL	Number	The material used to construct this item. Related to: ■ WW_MATERIAL_TBD
ID_STRAINER_BODY	Number	The strainer body ID. Related to: ■ WW_STRAINER_BODY_TBD
ID_STRAINER_FACE	Number	The strainer face ID. Related to: ■ WW_STRAINER_FACE_TBD
ID_STRAINER_TYPE	Number	The strainer type ID. Related to: ■ WW_STRAINER_TYPE_TBD
IS_HANDOVER	Number	Is there a handover?
LISA_GUID	Varchar2	The LISA unique identifier.
MANUFAC- TURER_TYPE	Varchar2	A description of the manufacturer type.
NAME_NUMBER	Varchar2	The name or number of this item.

Name	Data Type	Description
NAME_NUMBER_1	Varchar2	The additional name number of the item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
SEQUENCEID	Number	The unique sequence identifier.
UFIS_CONSTRUCTIONNUMBER	Number	The UFIS construction number.

For more information, see [Network Point Creation](#) (page 69).

Treatment Plant

A structure containing equipment used to treat or remove unwanted constituents from wastewater.

- Computation table — WW_TREATMENT_PLANT
- Feature type — Attribute

Name	Data Type	Description
ADDRESSOFMANUFACTURER	Varchar2	The manufacturer address.
AREA	Number	The area of the item, measured in square meters.
BOTTOM_ELEVATION	Number	Elevation of the bottom part of the item relative to the section, measured in meters.
DATE_CREATION	Date	The date when the item was created.
DIMENSION_1	Number	The first dimension of the item.
DIMENSION_2	Number	The second dimension of the item.
FID_CONSESSIONAIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT

Name	Data Type	Description
FID_ENV_PARAMETERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_LOCATION	Number	The street location of this item. Related to: ■ WW_LOCATION
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item. Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item. Related to: ■ WW_CONTACT
FLOW_ACTUAL	Number	The actual rate of flow of the item.
FLOW_RATED	Number	The rated flow of the item.
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
ID_HYDRAULIC_FUNCTION	Number	The hydraulic function of the item. Related to:

Name	Data Type	Description
		■ WW_HYDRAULIC_FUNCTION_TBD
ID_STRUCT_CONDITION	Number	The structural condition of the item. Related to: ■ WW_STRUCT_CONDITION_TBD
ID_TREATMENT_PLANT_TYPE	Number	The type of treatment plant. Related to: ■ WW_TREATMENT_PLANT_TYPE_TBD
IS_HANDOVER	Number	Is there a handover?
LISA_GUID	Varchar2	The LISA unique identifier.
MANUFACTURER_TYPE	Varchar2	A description of the manufacturer type.
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_NUMBER_1	Varchar2	The additional name number of the item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
NR_PUMPS	Number	The number of pumps.
POPULATIONEQUIVALENTS	Number	The population equivalents.
SEQUENCEID	Number	The unique sequence identifier.
UFIS_CONSTRUCTIONNUMBER	Number	The UFIS construction number.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

For more information, see [Network Point Creation](#) (page 69).

Valve

A fitting or device that is used for controlling flow through a wastewater line.

- Computation table — WW_VALVE
- Feature type — Attribute

Name	Data Type	Description
ADDRESSOFMANUFACTURER	Varchar2	The manufacturer address.
BOTTOM_ELEVATION	Number	Elevation of the bottom part of the item relative to the section, measured in meters.
DATE_CREATION	Date	The date when the item was created.
DIMENSION_1	Number	The first dimension of the item.
FID_CONSESSIONAIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_ENV_PARAMETERS	Number	The environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_LOCATION	Number	The street location of this item. Related to: ■ WW_LOCATION

Name	Data Type	Description
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_MANUFACTURER	Number	The manufacturer of this item. Related to: ■ WW_MANUFACTURER
FID_OPERATOR	Number	The operator of this item. Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item. Related to: ■ WW_CONTACT
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
ID_HYDRAULIC_FUNCTION	Number	The hydraulic function of the item. Related to: ■ WW_HYDRAULIC_FUNCTION_TBD
ID_SERVICE_TYPE	Number	The service type of the valve. Related to: ■ WW_SERVICE_TYPE_TBD
ID_VALVE_STATE	Number	The state of the valve. Related to: ■ WW_VALVE_STATE_TBD
ID_VALVE_TYPE	Number	The type of valve.

Name	Data Type	Description
		Related to: <ul style="list-style-type: none"> ■ WW_VALVE_TYPE_TBD
IS_HANDOVER	Number	Is there a handover?
LISA_GUID	Varchar2	The LISA unique identifier.
MANUFACTURER_TYPE	Varchar2	A description of the manufacturer type.
MAX_STROKE_ELEVATION	Number	The maximum stroke elevation.
MOVING_SPEED	Number	The moving speed.
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_NUMBER_1	Varchar2	The additional name number of the item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
SEQUENCEID	Number	The unique sequence identifier.
UFIS_CONSTRUCTIONNUMBER	Number	The UFIS construction number.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.
ZERO_POSITION	Number	The zero position of the item.

For more information, see [Network Point Creation](#) (page 69).

Wastewater Network Point

A wastewater point stores the network points that are the network topology nodes. These points can be related to a site and can have one or more related geometry details (WW_POINT_DETAIL_xx).

Wastewater Network Point	Description
Topic	Topology
Table name	WW_POINT, point feature class.
FID_SITE	You can assign a site to describe the location.
Z	Standard attribute to store a height, for example, terrain elevation of a manhole.

Profile

The Profile topic stores the profile feature classes.

Name	Description
TB_PROFILE	A profile system table used to store the profile origin.
TB_PROFILE_AXIS	A profile system table used to store the profile axis.
WW_XXX_PRO	Profile feature classes used to store the profile drawing.

For more information, see [Working with Profiles](#).

Protection

Use three basic feature classes to display and manage wastewater network protection: anode (point), anode test station (point), and casing (polygon).

Both anodes and casings are usually related to a section. The best way to access those feature classes is to use the predefined Protection Creation workflow.

For more information, see [Protection Creation](#) (page 74).

Anode

An anode is made of a sacrificial material that is more reactive than the material used to make a cathode (for example, a pipe). The anode is electrically connected to the cathode. When an electrical current is passed between the anode and the cathode, the current starts a chemical reaction where the anode, being the more reactive of the two materials, corrodes. This leaves the cathode undamaged.

■ Computation table — WW_ANODE

■ Feature type — Point

Name	Data Type	Description
ANODE_WEIGHT	Number	The anode weight quantity, measured in kilograms.
DATE_CREATION	Date	The date when the item was created.
DATE_INSPECTED	Date	The date when the item was inspected.
FID_CONSESSION-AIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item. Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item.

Name	Data Type	Description
		Related to: ■ WW_CONTACT
FID_SECTION	Number	The relation with the section. Related to: ■ WW_SECTION
GEOM	Geometry	Feature geometry polyline. For more information, see <i>Oracle Spatial Users Guide and Reference</i> .
ID_ANODE_MATERIAL	Number	The anode material ID. Related to: ■ WW_HYDRAULIC_FUNCTION_TBD
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.

Anode Test Station

A central location where anodes are tested for performance in wastewater systems.

- Computation table — WW_ANODE_TEST_STATION
- Feature type — Point

Name	Data Type	Description
DATE_CREATION	Date	The date when the item was created.

Name	Data Type	Description
FID_CONSESSON-AIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item. Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item. Related to: ■ WW_CONTACT
GEOM	Geometry	Feature geometry polyline. For more information, see <i>Oracle Spatial Users Guide and Reference</i> .
ID_INSULATION_TYPE	Number	The insulation type code. Related to: ■ WW_INSULATION_TYPE_TBD
ID_TYPE	Number	The type of anode test station. Related to: ■ WW_ANODE_TEST_STATION_TBD
NAME_NUMBER	Varchar2	The name or number of this item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.

Name	Data Type	Description
NO_TERMINAL	Number	The number of terminals.
ORIENTATION	Number	The orientation of the anode test station.
QUALITY	Number	The quality of the sign.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.
WIRE_SIZE	Number	The size of the wire, measured in meters.
WIRE_TYPE	Number	The type of anode test station. Related to: ■ WW_WIRE_TYPE_TBD
Z	Number	The height value, measured in meters.

Casing

A material used to encase and protect sections of the wastewater system.

- Computation table — WW_CASING
- Feature type — Polygon

Name	Data Type	Description
AREA	Number	The area of the item, measured in square meters.
CADASTRAL_INFO	Varchar2	Description of cadastral information, such as land boundaries, structure locations, boundary dimensions, etc.
CASING_LENGTH	Number	The length of the item, measured in square meters.

Name	Data Type	Description
CERTIFICATE	Varchar2	A description of the item's DIN/ISO/DVGW/TUEV value.
CROSSED_OBJECT	Varchar2	A description of objects which are crossed (below surface) by this item. for example, roads, rivers, buildings, railways, etc.
DATE_ACQUIRED	Date	The date when the data was acquired.
DATE_CREATION	Date	The date when the item was created.
DATE_STARTUP	Date	The date when responsibility of the item was taken.
DIAMETER_INSIDE	Number	The inside diameter of the section.
DIAMETER_NOMINAL	Varchar2	The manufacturer's designated size, or nominal diameter (rounded to the nearest unit), for the subject item. For example, 1" gas hydrant, 2" meter, 6" pipe, etc.
DIAMETER_OUTSIDE	Number	The outside diameter of the section.
FID_CONSESSION-AIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_MANUFAC-TURER	Number	The manufacturer of this item. Related to: ■ WW_MANUFACTURER

Name	Data Type	Description
FID_OPERATOR	Number	The operator of this item. Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item. Related to: ■ WW_CONTACT
FID_SECTION	Number	The relation with one section. Related to: ■ WW_SECTION
GEOM	Geometry	Feature geometry polyline. For more information, see <i>Oracle Spatial Users Guide and Reference</i> .
GROUND_ELEVATION	Number	The elevation of the item relative to the ground.
HOUSE	Varchar2	The house address.
HOUSE_SUPPLEMENT	Varchar2	The house address supplement.
HYDRAULIC_FRICTION	Number	The hydraulic friction or roughness along the inside the section; what decreases the pressure relative to the length.
ID_ACCURACY	Number	How the current position of the item was determined. For example, exactly, by positioning, unknown, or inexactly. Related to: ■ WW_ACCURACY_TBD
ID_COATING_INSIDE	Number	The type of coating along the inside of the section. Related to: ■ WW_COATING_TBD

Name	Data Type	Description
ID_COATING_OUTSIDE	Number	The type of coating along the outside of the section. Related to: ■ WW_COATING_TBD
ID_CONDITION	Number	The condition of the item. For example, broken, leaking, etc. Related to: ■ WW_CONDITION_TBD
ID_DISPOSITION_STATE	Number	The state of the disposition of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
ID_FOUNDATION_TYPE	Number	The type of foundation for this item. Related to: ■ WW_FOUNDATION_TBD
ID_LAYING_TYPE	Number	How was the item placed at its location. For example, open ditch, laying on ground, etc. Related to: ■ WW_LAYING_TYPE_TBD
ID_LOCATION	Number	The location of the item (street). Related to: ■ WW_LOCATION
ID_MATERIAL	Number	The material used to manufacture this item.
LOCATION	Varchar2	A brief description of where the item is located. For example, 1m from the wall.
MODEL_NUMBER	Varchar2	The model name or number of the item.
NAME_NUMBER	Varchar2	The name or number of this item.

Name	Data Type	Description
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
PRESSURE_MAX	Number	The manufacturer's or industry standard's maximum pressure rating for the subject item.
SERIAL_NUMBER	Varchar2	The unique serial number of the manufacturer.
THICKNESS	Number	The thickness of the section wall.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.
VALUE	Varchar2	A short description of the model. This value is used for the domain table representation of the model.

Section

The basic wastewater application contains one wastewater line feature; the section. Network geometry is stored separately in the WW_LINE feature class. This feature class stores geometry only; not attributes, and is related to the wastewater feature, WW_LINE.FID_ATTR.

NOTE The records of the geometry feature classes are maintained by Topobase. Do not enhance geometry feature classes by adding customer attributes. The geometry feature classes build the network topology.

- WW_LINE: line string feature class – network line; geometry
- WW_SECTION: attribute feature class – utility line

Section feature models: The section feature class has a model table (WW_SECTION_MODEL).

Section Feature Class Form

Use the basic feature class form of the wastewater section to view and edit the feature attributes and to view related data.

The Section feature class form contains the following elements:

- **General tab** — Displays general feature information.
- **Details tab** — Displays detailed feature attributes and links to all point features the section is connected to.
- **Related Tables tab** — Provides direct access to the following related tables:

Related Table	Description
Maintenance	Information about section maintenance (WW_MAINTENANCE)
Casing	Casing for protection of the section (WW_CASING)
Anode	Anode for protection of the section (WW_ANODE)
Sub Drain Area	(WW_SUB_DRAIN_AREA)
Line	Line geometry (WW_LINE)
Label	Label for pipe features (WW_PIPE_TBL)

- **Inspection Editor tab** — Displays the inspection editor. See [Inspection Editor](#) (page 103).
- **Table tab** — Displays all attributes in table form.

Some feature class forms provide functions for further processing of the selected records. These functions can be accessed via menu or control buttons. See [Use Wastewater Feature Functions](#) (page 82).

Section

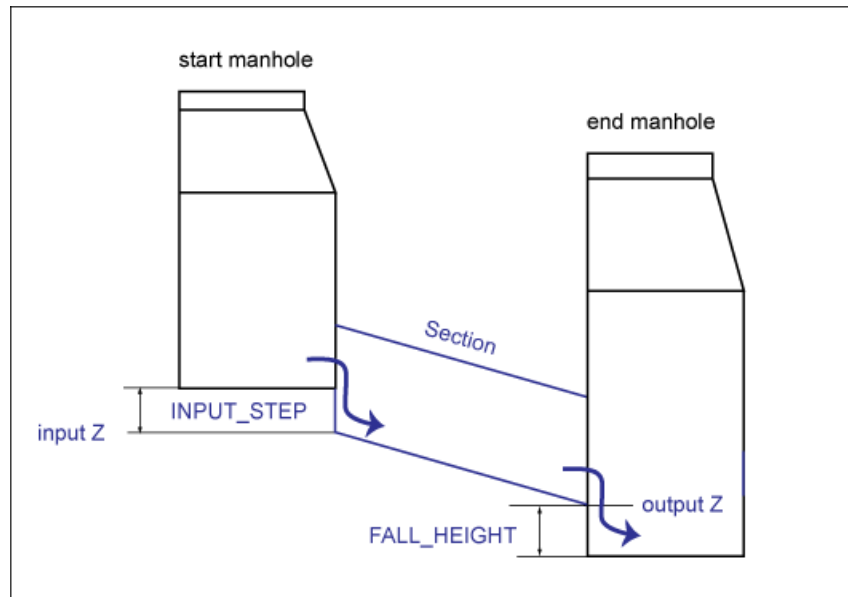
A section is a wastewater channel or pipe between network points. Sections are the only standard line feature of a wastewater utility model.

The data model stores both real pipe geometry and the network topology, which is a more abstract view. Physically, a pipe runs between two manhole structures and a manhole has a certain diameter. Topologically, a section runs from manhole (center) to manhole (center).

Use intermediate points to add detail so the line from manhole to manhole is more accurate.

NOTE In the wastewater document options, you can enable manhole/section validation. See [Set Wastewater Document Options](#) (page 333).

The manhole/section validation checks the consistency of the bottom height in the section and manhole feature class. In the feature class form, attributes that do not match are highlighted, and a tooltip explains the inconsistency.



Wastewater data model: Section between two manholes. Physically the section is represented by a pipe that runs between the manhole structures.

- Computation table — WW_SECTION
- Feature type — Attribute

Name	Data Type	Description
AVG_DEPTH	Number	The average depth of the section.

Name	Data Type	Description
CADASTRAL_INFO	Varchar2	Description of cadastral information, such as land boundaries, structure locations, boundary dimensions, etc.
CONNECTION_COMMENTS	Varchar2	Connection comments pertaining to the section.
CONNECTION_DESIGNATION	Varchar2	Description of cadastral information, such as land boundaries, structure locations, boundary dimensions, etc.
CONNECTION_DISTANCE	Number	The average depth of the section.
CONNECTION_FIXING	Varchar2	Description of cadastral information, such as land boundaries, structure locations, boundary dimensions, etc.
DATE_ACQUIRED	Date	The date when the data was acquired.
DATE_CREATION	Date	The date when the item was created.
DATE_STARTUP	Date	The date when responsibility of the item was taken.
DIAMETER_INSIDE	Number	The inside diameter of the section.
DIAMETER_OUTSIDE	Number	The outside diameter of the section.
DIMENSION_1	Number	The first dimension of the item, measured in meters.
DIMENSION_2	Number	The second dimension of the item, measured in meters.
DISTANCE	Number	The distance covered by the section, measured in meters.
END_Z	Number	The height above sea-level of the end point of the section, measured in meters.

Name	Data Type	Description
EXIST_SPECIAL_PROFILE	Number	The existing special profile of the section.
FALL_HEIGHT	Number	The water fall height at the end of the section, measured in meters.
FID_CONSESSIONAIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT
FID_DRAIN_AREA	Number	The drain area of the section. Related to: ■ WW_DRAIN_AREA
FID_ENV_PARAMETERS	Number	The relation to the environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_LOCATION	Number	The location of the item (street). Related to: ■ WW_LOCATION
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_MANUFACTURER	Number	The manufacturer of this item. Related to: ■ WW_MANUFACTURER
FID_OPERATOR	Number	The operator of this item.

Name	Data Type	Description
		Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item. Related to: ■ WW_CONTACT
FID_TREATMENT_PLANT	Number	The treatment plant related to this item. See Treatment Plant (page 295) Related to: ■ WW_TREATMENT_PLANT
FID_WASHING_AREA	Number	The washing area in which the section is placed. See Washing Area (page 130). Related to: ■ WW_WASHING_AREA
FILE_NAME	Varchar2	The file related to this item.
FIXING	Varchar2	The fixing entry.
GROUP_SECTION	Varchar2	The group section.
HYDRAULIC_FRICTION	Number	Hydraulic friction or the roughness inside a section which decreases the pressure relative to the length.
ID_ACCURACY	Number	How the current position of the item was determined. For example, exactly, by positioning, unknown, or inexactly. Related to: ■ WW_ACCURACY_TBD
ID_CATHODIC_PROTECTION	Number	The type of cathodic protection applied to the section. For example, victim anode, AC, DC, etc. Related to: ■ WW_CATHODIC_PROTECTION_TBD

Name	Data Type	Description
ID_COATING_INSIDE	Number	The type of coating along the inside of the section. Related to: ■ WW_COATING_TBD
ID_COATING_OUTSIDE	Number	The type of coating along the outside of the section. Related to: ■ WW_COATING_TBD
ID_CONDITION	Number	The condition of the item. For example, broken, leaking, etc. Related to: ■ WW_CONDITION_TBD
ID_CONNECTION_EDGE_TYPE	Number	The connection edge type ID. Related to: ■ WW_CONNECTION_EDGE_TYPE_TBD
ID_CONNECTION_TYPE	Number	The connection type ID. Related to: ■ WW_CONNECTION_TYPE_TBD
ID_CONSTR_PROFILE	Number	The additional constructed element on the profile. Related to: ■ WW_CONSTR_PROFILE_TBD
ID_DATA_ORIGIN	Number	The data origin ID. Related to: ■ WW_DATA_ORIGIN_TBD
ID_DISPOSITION_STATE	Number	The disposition state of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD

Name	Data Type	Description
ID_DRAIN_PATTERN	Number	The drainage pattern code. Related to: ■ WW_DRAIN_PATTERN_TBD
ID_FLOODPLAIN	Number	Defines whether the section is in a floodplain. Related to: ■ WW_FLOODPLAIN_TBD
ID_FOUNDATION	Number	The type of foundation. Related to: ■ WW_FOUNDATION_TBD
ID_FUNCTION	Number	The function ID. Related to: ■ WW_FUNCTION_TBD
ID_GROUNDWATER	Number	The groundwater ID. Related to: ■ WW_GROUNDWATER_TBD
ID_HEIGHT_ACCURACY	Number	The accuracy of the elevation. Related to: ■ WW_HEIGHT_ACCURACY_TBD
ID_HYDRAULIC_FUNCTION	Number	The hydraulic function of the item. Related to: ■ WW_HYDRAULIC_FUNCTION_TBD
ID_LAYING_TYPE	Number	Describes how the item was placed on its location. For example, open ditch, laying on ground, etc. Related to: ■ WW_LAYING_TYPE_TBD
ID_LINING	Number	The lining ID.

Name	Data Type	Description
		Related to: ■ WW_LINING_TBD
ID_LINING_MATERIAL	Number	The lining material ID. Related to: ■ WW_MATERIAL_TBD
ID_MARKER_TYPE	Number	Describes how the item is marked on the ground. For example, marker, magnetic tape, tape, etc. Related to: ■ WW_MARKER_TYPE_TBD
ID_MATERIAL	Number	The material used to construct this item. Related to: ■ WW_MATERIAL_TBD
ID_MATERIAL_ORIGIN	Number	The material origin ID. Related to: ■ WW_MATERIAL_ORIGIN_TBD
ID_OTHER_CONSTRUCTION	Number	Describes any other construction placed in the section. Related to: ■ WW_OTHER_CONSTR_TBD
ID_OWNERSHIP	Number	The owner of this item. Related to: WW_OWNERSHIP_TBD
ID_PRESSURE_PROCEDURE	Number	The pressure procedure ID. Related to: WW_PRESSURE_PROCEDURE_TBD
ID_PROFILE	Number	Describes the profile of the section. Related to: WW_PROFILE_TBD

Name	Data Type	Description
ID_PROFILE_ORIGIN	Number	The profile origin ID. Related to: WW_PROFILE_ORIGIN_TBD
ID_RENOVATION	Number	Describes the restoration or replacement of the section. For example, concrete, epoxy, fitting, etc. Related to: WW_RENOVATION_TBD
ID_SOIL_TYPE	Number	The type of soil. Related to: ■ WW_SOIL_TYPE_TBD
ID_TRAFFIC_SITUATION	Number	The state of the traffic passing over the section. Related to: ■ WW_TRAFFIC_SITUATION_TBD
ID_UTILISATION	Number	The utilization of the section. Related to: ■ WW_UTILISATION_TBD
ID_WATER_PROTECTION	Number	The degree of water protection. Related to: ■ WW_WATER_PROTECTION_TBD
INPUT_DEPTH	Number	The depth of the section at the start of the section, measured in meters.
INPUT_STEP	Number	The difference between the soil elevation and the input elevation in the start manhole, measured in meters.
INPUT_Z	Number	The height above sea level at the input point of the section, measured in meters.
LISA_GUID	Varchar2	The LISA unique identifier.

Name	Data Type	Description
LOCATION	Varchar2	A brief description of where the item is located. For example, 1m from the wall.
MAX_FLOW	Number	The maximum flow possible through the section.
MAX_PRESSURE	Number	The maximum pressure rating of the section.
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_NUMBER_1	Varchar2	Additional name number of the item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
OUTPUT_DEPTH	Number	The depth of the section at the end of the section, measured in meters.
OUTPUT_Z	Number	The height above sea level at the output point of the section, measured in meters.
PIPE_LENGTH	Number	The length of the physical pipe, measured in meters.
PIPE_SLOPE	Number	The slope of the physical pipe.
RATEDPRESSURE	Number	The pressure rating of the section.
REGULARINDIVIDU- ALPIPELENGTH	Number	The regular individual pipe length.
SEQUENCEID	Number	The unique sequence identifier.
SERIAL_NUMBER	Varchar2	The unique serial number of the manufacturer.
START_Z	Number	The height above sea level at the start point of the section, measured in meters.
THICKNESS	Number	The thickness of the pipe wall.

Name	Data Type	Description
TOTAL_LENGTH	Number	The 2D length of the section; the total length between the manholes, measured in document units.
TOTAL_SLOPE	Number	The computed slope of the section.
TRANS-IT_RIGHT_DOCUMENT	Varchar2	The reference to the transit right document on private parcel.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.
VALUE	Varchar2	A short description of the model. This value is used for the domain table representation of the model.

See also:

- [Wastewater Elevation, Slope, and Height](#) (page 335)
- [Section Creation](#) (page 70)
- [Intermediate Point](#) (page 260)
- [Section Remove](#) (page 71)

Site

A site consists of one master feature class (attribute) with related line, point and polygon feature classes. Each network point can be connected to a site.

Sites are not part of the network topology. They are a useful means to group various features of the utility network to make them reachable. A site stores for example house number and location.

The easiest way to connect a network point to a site is to use the Network Point Creation workflow.

Use the Site Creation workflow to create sites that by default are related to one geometry feature. However, you can add more geometries and equipment features using the feature class form.

See also:

- [Site Creation](#) (page 73)
- [Connect Points to Site](#) (page 89)
- [Remove Connections from a Site](#) (page 89)

Construction Part

The construction part feature class manages additional attributes of the structural part of a manhole.

- Feature class — WW_CONSTRUCTION_PART
- Feature type — Attribute

Name	Data Type	Description
FID_MANHOLE	Number	The relation to the manhole feature. Related to: ■ WW_MANHOLE
HEIGHT	Number	The height value.
ID_CONSTRUCTION_SHAPE	Number	Describes the shape of the construction. Related to: ■ WW_CONSTRUCTION_SHAPE_TBD
ID_MATERIAL	Number	The material used to construct this item. Related to: ■ WW_MATERIAL_TBD
ID_STRUCTURAL_PART	Number	The structural part ID. Related to: ■ WW_STRUCTURAL_PART_TBD

Name	Data Type	Description
LENGH	Number	The length value.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
NR_STRUCTUREL_PARTS	Number	The number of structural parts.
WIDTH	Number	The width value.

Site

The Site feature class is used to enclose assemblies and make them reachable by fittings, valves, etc.

- Feature class — WW_SITE
- Feature type — Attribute

Name	Data Type	Description
ADDRESSOFMANUFACTURER	Varchar2	The site manufacturer's address.
DATA_TRANSMISSION	Number	Data transmission? [yes/no].
DATE_ACQUIRED	Date	The date when the data was acquired.
DATE_CREATION	Date	The date when the item was created.
DATE_STARTUP	Date	The date when responsibility of the item was taken.
FID_CONSESSIONAIRE	Number	The concessionaire of this item. Related to: ■ WW_CONTACT

Name	Data Type	Description
FID_ENV_PARAMETERS	Number	The relation to the environmental parameters. Related to: ■ WW_ENV_PARAMETERS
FID_INSTALLER	Number	The enterprise in charge of building the item. Related to: ■ WW_CONTACT
FID_LOCATION	Number	The location of the item (street). Related to: ■ WW_LOCATION
FID_MAINTENANCE	Number	The company that is responsible for the maintenance of this item. Related to: ■ WW_CONTACT
FID_OPERATOR	Number	The operator of this item. Related to: ■ WW_CONTACT
FID_OWNER	Number	The owner of this item. Related to: ■ WW_CONTACT
FID_SITE	Number	Use to store the site in site. Related to: ■ WW_SITE
FID_TREATMENT_PLANT	Number	The treatment plant related to this item. See Treatment Plant (page 295) Related to: ■ WW_TREATMENT_PLANT
FOOTPRINT	Number	The site footprint.

Name	Data Type	Description
GROUND_ELEVATION	Number	The elevation of the item relative to the ground, measured in meters.
HOUSE	Varchar2	The house number.
HOUSE_SUPPLEMENT	Varchar2	The house number supplement.
ID_ACCURACY	Number	How the current position of the item was determined. For example, exactly, by positioning, unknown, or inexactly. Related to: ■ WW_ACCURACY_TBD
ID_CONDITION	Number	The condition of the item. For example, broken, leaking, etc. Related to: ■ WW_CONDITION_TBD
ID_DISPOSITION_STATE	Number	The disposition state of the item. For example, death, planed, etc. Related to: ■ WW_DISPOSITION_STATE_TBD
ID_FOUNDATION	Number	The type of foundation. Related to: ■ WW_FOUNDATION_TBD
ID_FUNCTION	Number	The function ID. Related to: ■ WW_FUNCTION_TBD
ID_HYDRAULIC_FUNCTION	Number	The hydraulic function of the item. Related to: ■ WW_HYDRAULIC_FUNCTION_TBD

Name	Data Type	Description
ID_LAYING_TYPE	Number	Describes how the item was placed on its location. For example, open ditch, laying on ground, etc. Related to: ■ WW_LAYING_TYPE_TBD
ID_LOCATION	Number	The street location of this item. Related to: ■ WW_LOCATION
ID_MARKER_TYPE	Number	Describes how the item is marked on the ground. For example, marker, magnetic tape, tape, etc. Related to: ■ WW_MARKER_TYPE_TBD
ID_MATERIAL	Number	The material used to construct this item. Related to: ■ WW_MATERIAL_TBD
ID_OWNERSHIP	Number	The owner of this item. Related to: WW_OWNERSHIP_TBD
ID_PLANT_COMBINATION	Number	The plant combination ID. Related to: WW_PLANT_COMBINATION_TBD
ID_TYPE	Number	Describes the kind of site. Related to: WW_SITE_TYPE_TBD
IS_BYPASS	Number	Is there a bypass?
IS_PLANT_COMBINATION	Number	Is there a plant combination?
IS_HANDOVER	Number	Is there a handover?

Name	Data Type	Description
LISA_GUID	Varchar2	The LISA unique identifier.
LOCATION	Varchar2	A brief description of where the item is located. For example, 1m from the wall.
MANUFAC-TURER_TYPE	Varchar2	A description of the manufacturer type.
NAME_NUMBER	Varchar2	The name or number of this item.
NAME_NUMBER_1	Varchar2	Additional name number of the item.
NARRATIVE	Varchar2	A description or other unique information concerning the subject item.
SEQUENCEID	Number	The unique sequence identifier.
SERIAL_NUMBER	Varchar2	The unique serial number of the manufacturer.
SERVICE	Varchar2	The service provided by this site.
SITE_DEPTH	Number	The depth dimension of the item, measured in meters.
SITE_LENGTH	Number	The length dimension of the item, measured in meters.
SITE_WIDTH	Number	The width dimension of the item, measured in meters.
SPACE_ABOVE_GROUND	Number	The space above ground, measured in meters.
SPACE_BE-LOW_GROUND	Number	The space below ground, measured in meters.
UFIS_CONSTRUC-TIONNUMBER	Number	The UFIS construction number.
USER_FLAG	Varchar2	An operator defined work area. This attribute can be used by the operator for user defined system processes. It does not effect the subject item's

Name	Data Type	Description
		data integrity and should not be used to store the subject item's data.

Utility

The utility model allows you to separate the geometries from attributes. This lets you maintain complex network topologies with soft and hard split points.

For example, a house connection is connected to one main section. If you connect an additional house, you don't want to split the main. Instead, you should connect the new house connection to the main pipe. In this case, the connection is done using a soft split.

The utility model has several feature rules which maintain the network.

Utility	Description
Topic	Utility
Table name	WW_POINT, point feature class. WW_LINE, line geometry.

Wastewater Feature Rules

Many feature classes in the wastewater data model are comprised of feature rules. Use the data model administrator to view, enable, or disable feature rules.

Feature rules are methods and triggers that process data according to predefined algorithms. For example, feature rules perform consistency and dependency checks at certain events, such as before inserting or after modifying a feature class. A number of predefined feature rules are available, or you can define your own server-side feature rules or create client-side feature rules.

When you run Data Acquisition workflows in the wastewater application, feature rules improve the efficiency of adding feature classes and ensuring data consistency.

To explore wastewater feature rules

- 1 Start Topobase Administrator and open the Wastewater workspace.

- 2 Start the data model administrator. Select the document. Click Document menu ► Data Model.
- 3 In the data model explorer, right-click the feature class. Click Edit Feature Rules.
- 4 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.

To disable or enable a feature rule

- 1 Start the data model administrator and select the document.
- 2 In the data model explorer under the Administration topic, select the feature class, such as Washing Area.
- 3 Right-click the feature class and click Edit Feature Rules.
- 4 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.
- 5 To enable or disable a feature rule, do one of the following:
 - In the Applied Rule Bases list, select or clear the feature rule.
 - In the Rule Base Definitions list, click a definition row and click Add to move the item to the Applied Rule Bases list.
- 6 Click Save and Close.

For more information regarding feature rules, see the Topobase Feature Rules Reference.

Feature Rules: Manhole

The manhole feature rules check the number of sections, section elevation and cover elevation values when a manhole is added or modified.

- **Compute Number of Sections** — For new manholes, calculates the number of incoming and outgoing sections and stores the number in the attributes NR_INPUT_SECTION and NR_OUTPUT_SECTION.
- **Compute Section Elevation** — Computes some values of the section, its manholes, and their covers.

NOTE You must configure the computation of elevation, slope, and heights in the wastewater document options. See [Set Wastewater Document Options](#) (page 333).

To learn more about section elevation, see [Wastewater Elevation, Slope, and Height](#) (page 335).

- **Compute Elevation** — The cover height is stored in a Cover Z attribute which is the difference between the soil elevation and the terrain elevation. To learn more about height, see [Wastewater Elevation, Slope, and Height](#) (page 335).

See also:

- [Manhole](#) (page 264)

Feature Rules: Sub Drain Area

The sub drain area feature rules check the sub-drain area, sub-drain area drains, sub-drain area sections, sub-drain area manholes, and the transferal of values from the model table to the sub-drain area table.

Each sub-drain area can belong to one drain area. This relation is stored in the attribute `WW_SUB_DRAIN_AREA.FID_DRAIN_AREA`.

Also, feature rules calculate some values, transfer values from the model table, and connect the sub-drain area to a section or a manhole.

- **Compute Sub Drain Area** — Calculates the following significant values:
 $COVERED_AREA = AREA * DISCHARGE_COEFFICIENT$
 $NOT_COVERED_AREA = AREA * (1-DISCHARGE_COEFFICIENT)$
 $INHABITANT_DENSITY = INHABITANT/HECTARE [ha]$
See `WW_ComputeSubDrainArea_BIU`.
- **Connect Sub Drain Area Drain Area** — Connects a sub-drain area to the drain area, when you digitize a sub-drain area that lies within a drain area. When two or more drain areas are found, they are highlighted and you can select which one to assign. See `WW_ConnSubAreaWDrainArea_BIU`.
- **Connect Sub Drain Area Section** — Connects a section with a sub-drain area if it is contained in the sub-drain area. Also, this rule checks whether the utilization for the sub-drain area and the section match. See

WW_ConnSubDrainAreaSection_BU or
WW_ConnSubDrainAreaSection_BU.

- **Connect Sub Drain Area Manhole** — Connects the start manhole or end manhole of a section with a sub-drain area if it is contained in this area. Also, this rule checks whether the utilization for the sub-drain area and the manhole match. See WW_ConnSubDrainAreaManhole_BIU.
- **Transfer Value from Model** — When you select a model for the sub-drain area, this rule transfers the corresponding value from the model table to the sub-drain area table.

In Topobase Administrator, you can disable the feature rules. See [Wastewater Feature Rules](#) (page 327).

See also:

- [Sub Drain Area](#) (page 132)

Feature Rules: Washing Area

The washing area feature rules allow you to connect washing areas to sections or sections to a washing area. (WW_SECTION.FID_WASHING_AREA).

- **Connect Washing Area to a Section** — When a washing area is specified, this rule automatically connects existing sections that fall within that washing area. See WW_ConnWashingAreaSection_BIU.
- **Connect Section to a Washing Area** — When a section is added that lies within an existing washing area, this rule connects the section to the washing area. When two or more washing areas are found, they are highlighted so you can select which one to assign to the section. See WW_ConnSectionWashingArea_BI.

Use the Topobase Administrator to enable and disable feature rules.

Explore Stop Conditions

Network topologies are comprised of predefined stop conditions. You can view them with the Data Model administrator.

To explore stop conditions

- 1 Start Topobase Administrator and open the Wastewater workspace.
- 2 Click Document menu ► Data Model to select the document.
- 3 In the data model explorer, expand Topologies.
- 4 Expand a topology and expand the Conditions folder.
- 5 Right-click the stop condition you want to view and click Properties. The Tracing Condition dialog box is displayed.
- 6 View or edit the setting for the stop condition or click Cancel to exit.

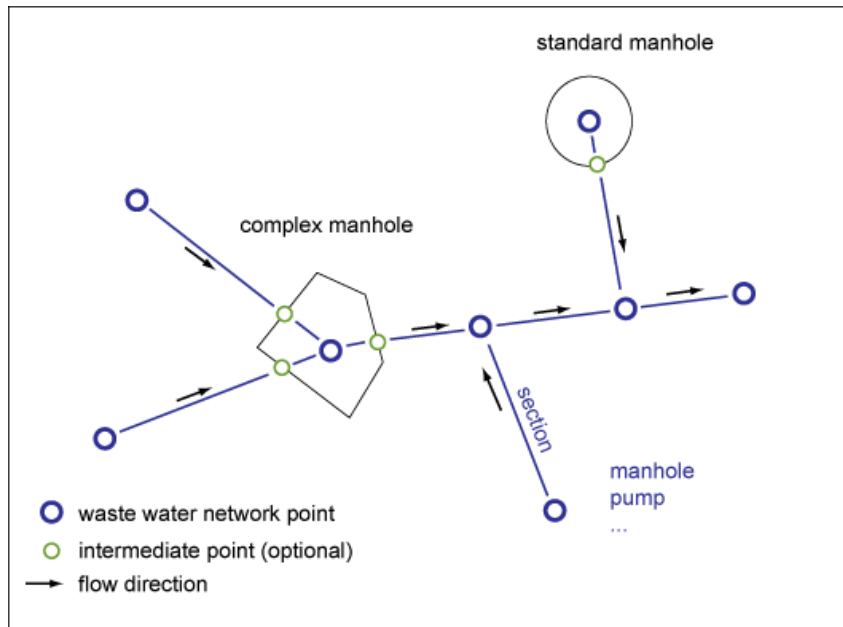
For more information about defining conditions, see Network Tracer.

See also:

- Stop Condition Editor

Explore Wastewater Topologies

The Topobase wastewater data model contains the wastewater network topology, which is built from the point feature class (WW_POINT) and the section feature class (WW_LINE).



Topobase Wastewater network topology

Only the point feature classes of the Point topic and the section feature class of the Section topic are part of the wastewater network topology.

Network topology tables have the suffixes `_NNOD` (topology nodes) and `_NLNK` (topology links).

Other feature classes, such as the Protection or the Site feature classes, are not part of the network topology.

Achieving a Valid Network Topology

The topology requires that network points always lie at the start or end of a network line. A network point must never lie on a line. If you insert a network point on a network line, the line must be split at the insertion point. The consistency of the topology is maintained by feature rules.

If you remove a network point, you must merge the connecting lines.

For more information, see [Intermediate Point](#) (page 260), [Split Lines](#) (page 92), and [Extract Points from Lines](#) (page 95).

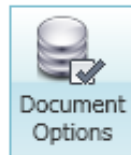
For more information about the feature rules, see [Understand and Work with the Wastewater Data Model](#) (page 111)

Set Wastewater Document Options

Use the wastewater document options to specify how feature rules and functions of features shall be applied.

To set wastewater document options

- 1 On the ribbon, click Settings tab ► Setup panel ► Document Options.



- 2 In the tree view, click Wastewater.
- 3 Make one or more of the following types of settings:
 - Click the General tab to specify general options.
 - Click the Elevation Computation Priority tab to specify which elevation values get calculated automatically.
 - Click the Inspection Management tab to specify the default classification model.

Select options as shown in the following table

Wastewater Document Options	Description
General tab	
Tolerances	Specifies the search distance for the automatic connection of points and covers.
Validation	Enables or disables validation. Select Manhole/Section to check height consistency. See Section (page 310). Select Sub Drain Area Model to check the model parameters. See Sub Drain Area (page 132).
Elevation Computation Priority tab	Specifies the values that are calculated automatically, such as cover height, section fall height. Select the values and use the arrow buttons to change the priority.

Wastewater Document Options	Description
	<p>To aid in PIPE_LENGTH and TOTAL_LENGTH calculations, use the Copy Values option to specify if the INPUT_Z and OUTPUT_Z values are automatically copied to START_Z and END_Z values, respectively.</p> <p>See also Wastewater Elevation, Slope, and Height (page 335).</p>
Inspection Management tab	
Classification	<p>Select one of the classification models. When Topobase cannot find the import data types, the selected classification model is used as default to classify imported data.</p> <ul style="list-style-type: none"> ■ DWA-M 149-3 — The default standard used for the automated classification of wastewater objects. The successor to the ATV standard. ■ ISYBAU 2006 (XML) — Set for classification based on the ISYBAU XML standard. This standard is newer than the ISYBAU 96 standard. ■ ISYBAU 1996 — Set for classification based on the ISYBAU 1996 standard. ■ ISYBAU 2001 — Set for classification based on the ISYBAU 2001 standard. <p>See also Inspection File Formats (page 108).</p>
Inspection Length Check	<p>Enables or disables section length check, and specifies a tolerance value (%). When importing inspection data, the inspection length is checked against its corresponding section length.</p> <p>When the difference is below the tolerance, the inspection length will be adjusted.</p> <p>When the difference is above the tolerance, a message is displayed.</p>

Wastewater Document Options	Description
Minimum Section Length To Be Considered	Specifies a length below which the inspection length will not be applied.

Wastewater Elevation, Slope, and Height

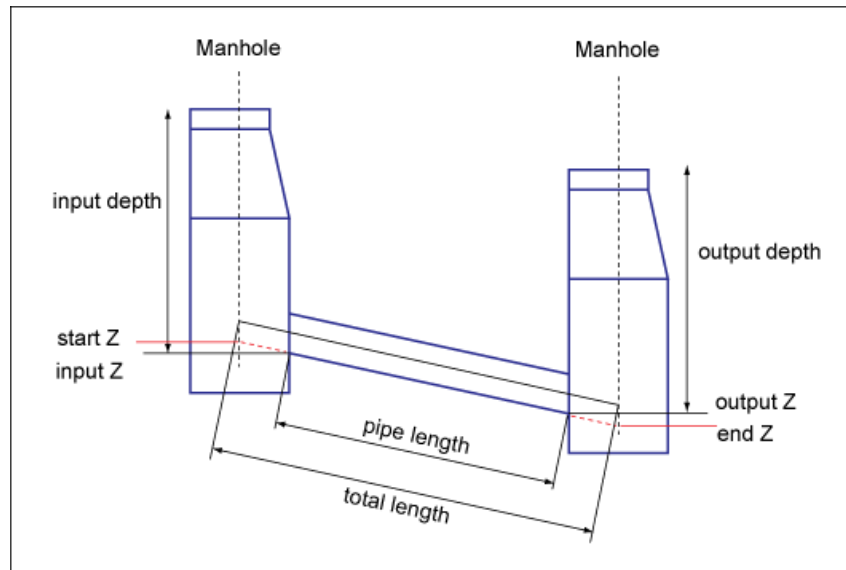
Elevation management ensures consistent values for the heights of related covers, manholes, and sections. The relation between the elevation of the wastewater feature heights and measured depths must be validated. Values that can both be measured or calculated can be compared to validate each other. For example, bottom elevation plus the depth of a manhole should result in the cover height.

Height is a terrain elevation or a height above sea level. Height is usually stored in a *_Z attribute. Depth is a value that is usually measured with a meter rule.

For wastewater networks, the storage of heights and slopes is very important. The data model provides both a simple and a detailed approach. You can either store the network by simply connecting manholes or you can use intermediate points for a more detailed model. You can also refine the network according to your workflow. First, the surveyor measures the covers above ground. Next, the wastewater specialist measures the wastewater network underground with exact coordinates and heights.

If you do not use intermediate points for the entries of the sections into the manhole or manhole structure, the following values are valid for the section:

- `START_Z = INPUT_Z`
- `END_Z = OUTPUT_Z`



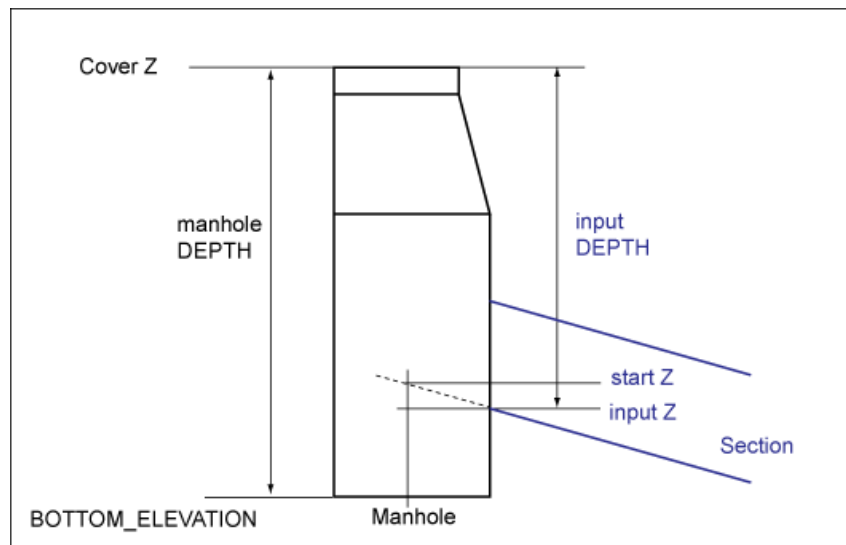
The Topobase Wastewater data model stores section attributes in either a simplified or a detailed structure.

The Compute Section Elevation feature rule calculates consistent elevation values. If you modify a value, you are prompted to adjust related values. By default, this feature rule is activated. However, you must configure the execution of this feature rule in the wastewater document option.

IMPORTANT You must enable the automatic computation of elevation, slope, and height in the wastewater document options. Also, you can define which values shall be calculated. See [Set Wastewater Document Options](#) (page 333).

Elevation	Feature rule
Manhole bottom elevation	$\text{Cover_Start.Z} - \text{Manhole_Start.DEPTH} = \text{Manhole_Start.BOTTOM_ELEVATION}$ $\text{Cover_End.Z} - \text{Manhole_End.DEPTH} = \text{Manhole_End.BOTTOM_ELEVATION}$
Section input and output Z	$\text{Cover_Start.Z} - \text{Section.INPUT_DEPTH} = \text{Section.INPUT_Z}$ $\text{Cover_End.Z} - \text{Section.OUTPUT_DEPTH} = \text{Section.OUTPUT_Z}$

Elevation	Feature rule
Slope (section)	$TOTAL_SLOPE = (START_Z - END_Z)/TOTAL_LENGTH$ $PIPE_SLOPE = (INPUT_Z - OUTPUT_Z)/PIPE_LENGTH$
Fall height and input step	$Section.FALL_HEIGHT = Section.OUTPUT_Z - Manhole_End.BOTTOM_ELEVATION$ $Section.INPUT_STEP = Section.INPUT_Z - Manhole_Start.BOTTOM_ELEVATION$ INPUT_STEP > 0: water pillow INPUT_STEP < 0: step.

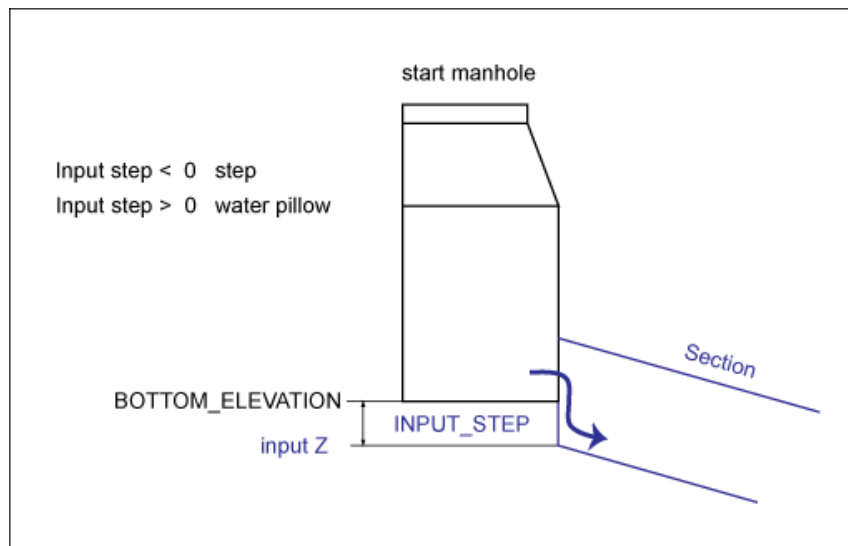


Feature rules check values

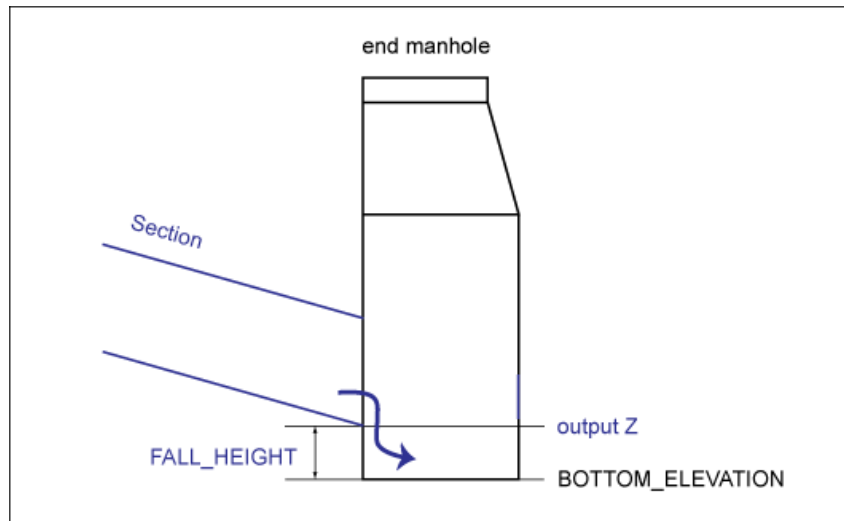
Several feature rules check the elevation consistency, for example to ensure that the flow direction is continuous and that pipe slopes are always greater zero.

- $Manhole_Start.DEPTH \geq Section.INPUT_DEPTH$
- $Manhole_End.DEPTH \geq Section.OUTPUT_DEPTH$
- $Section.INPUT_Z \geq Manhole_Start.BOTTOM_ELEVATION$

- Section.OUTPUT_Z >= Manhole_End.BOTTOM_ELEVATION
- Section.START_Z >= Section.INPUT_Z
- Section.OUTPUT_Z >= Section.END_Z
- Section.INPUT_Z >= Section.OUTPUT_Z
- Section.TOTAL_SLOPE >= 0
- Section.PIPE_SLOPE >= 0



Wastewater data model: Section with input step < 0



Wastewater data model: Section with fall height

See also:

- [Understand and Work with the Wastewater Data Model](#) (page 111)
- [Feature Rules: Manhole](#) (page 328)

Define Labels

The basic Wastewater application contains predefined label definitions for most of the feature classes. The standard attribute for the label text is called Name Number.

NOTE By default labels are not visible in the drawing. Only labels that are defined as auto labels are created during the create feature operation. Insert labels using

Home tab ► Quick Access panel ► Create Label.



Label tables use the suffix `_TBL` and contain feature labels.

Example Section label — The following label definition is used to write the diameter, length and material. The label text is queried from the tables

WW_SECTION, WW_LINE, WW_SECTION_MODEL, and
WW_MATERIAL_TBD.

```
SELECT nvl2(max(DIMENSION_1),'',')||max(DIMENSION_2)||'  
'||round(sum(line.LENGTH),1)||' '||max(material.VALUE)  
FROM WW_SECTION sec, WW_LINE line, WW_MATERIAL_TBD material  
WHERE sec.FID= $id  
AND sec.FID = line.FID_ATTR(+)  
AND sec.ID_MATERIAL = material.ID(+)
```

For more information about defining labels, see the [Creating a Label Definition](#) in the [Topobase Administrator Guide](#).

Using Gas Workflows

An important feature of Topobase Gas is that designers have the ability to establish a comprehensive set of workflows. Workflows streamline business processes based on the gas utility's current way of doing business. Workflows help guide you through common tasks and govern the way information is entered into the database. Workflows — and related business rules that are working behind the scenes — also prevent designers from leaving out required elements, choosing incorrect materials, or including incorrect material sizes, thereby reducing errors during design and data updates.

Topobase Gas provides four types of predefined workflows:

Workflow Type	Definition
Acquisition Workflow	Create network points, pipes, house connectors, sites, facilities, pressure zones, and so on.
Analysis Workflow	Find connected pipes and trace the network from a designated start and stop point.
Cable Acquisition Workflow	Create control cables and points.
Report Workflow	Generate and print predefined and customized reports and export the report into HTML, ASCII, or PDF files.

You can also create your own workflows.

For more information about defining and managing workflows, refer to Setting Up Topobase in the Topobase Administrators Guide.

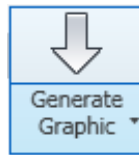
Initiate a Gas Workflow


Before starting a workflow, you must make sure you've set a display model and generate graphics. Report workflows can be used without a drawing.

You can also start workflows from the shortcut menu of the related feature class.

To generate graphics and start a workflow

- 1 On the ribbon, click Home tab ► Display panel ► Display Model and do one of the following:
 - Click the arrow button and select a previously opened display model.
 - Click Open Display Model and select a display model (.tbdm file).
 - Select Open Default Display Model.



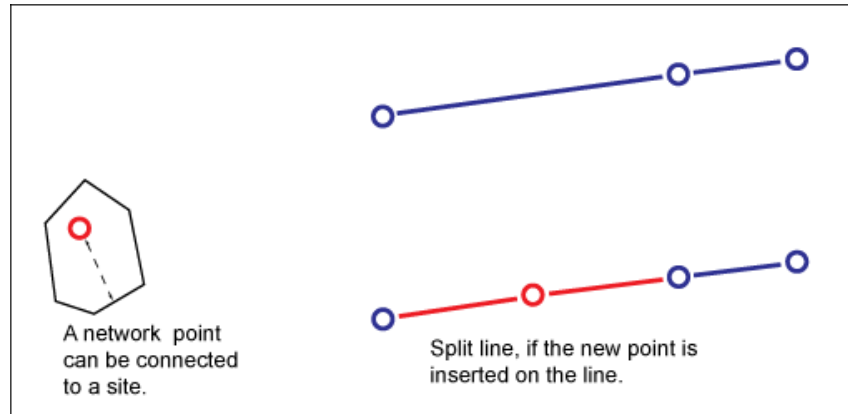
- 2 Click Generate Graphic.
- 3 In the Topobase Task Pane, click the Workflow explorer icon to display the workflows. The icon is a square with a blue border, containing a white background with a blue outline of a person and a blue outline of a document.
- 4 In the Workflows group, select a workflow and click Execute. Optionally, you can right-click a workflow and click Execute or simply double-click a workflow.

Acquisition Workflows

Acquisition workflows and rules help designers create features like valves, network points, pipes, meters, house connections, and so on. Acquisition workflows are also used to remove features like house connections and pipes in a gas network.


Network Point Creation

Use the Network Point Creation workflow to create any of the network point types.



The Network Point Creation workflow splits existing lines to keep the topology correct.

To create a network point

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click the Network Point Creation workflow. Click Execute.
- 3 In the feature class list, select the type of network point feature you want to create.
You can also double-click a point type to start digitizing with the current options.
- 4 Specify a reference record, if any.
- 5 In the Site area, click one of the following options:
 - None – Specifies no site is associated with the point.
 - Digitize – Prompts you to create a site.
If you create a new site, specify the geometry type for the site.
 - Connect To – Prompts you to select an existing site.
- 6 Click OK.

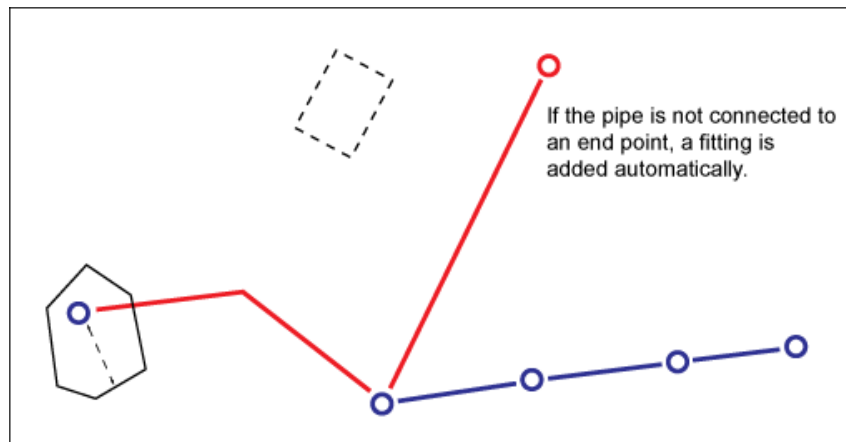
- 7 Follow the prompts to create the new point.
- 8 Press ESC to finish the workflow.
When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

If you place the network point on a line feature such as a pipe, you are prompted to create a soft split or a hard split. For more information, see [Split Lines](#) (page 367).


Network Pipe Creation

Use the Network Pipe Creation workflow to create network pipes with or without casing or anode protection.

Use this workflow to create network pipes with or without fitting points at start and end points.



To create a network pipe

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click the Network Point Creation workflow.
- 3 Click Execute.
- 4 Specify a reference record, if any.

- 5 Under Choose Protections, specify whether to create casing, anode, or both when creating the pipes.
You are prompted to create the protection features. Casings are polygons, and anodes are points.
- 6 Under Create Terrain Points, specify whether to create terrain points.
- 7 Click OK.
- 8 Follow the prompts.
- 9 Press ESC to finish the workflow.
When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

Feature Rules

Feature rules ensure consistency on the Pipe attribute feature class, Pipe and on its related Line geometry feature class.

- If a vertex of the new pipe lies exactly on an existing network point feature, the pipe is soft split, see [Split Lines](#) (page 367).
- If you create a pipe with a start or end that is not connected to a network point, by default a fitting is created, see [Feature Rule: Create Start and End Nodes](#) (page 376)

For more information about utility feature rules see Utility Feature Rules in the Topobase Administrator Guide.

See also:


- [Terrain Point](#) (page 387)
- [Network Pipe with Fitting Point Creation](#) (page 345)

Network Pipe with Fitting Point Creation

Use this workflow to create network pipes. If you create a pipe with a start or end that is not connected to a network point, a fitting is created.

If you do not want to create fitting points, you can use the Network Pipe Creation workflow, see [Network Pipe Creation](#) (page 344).

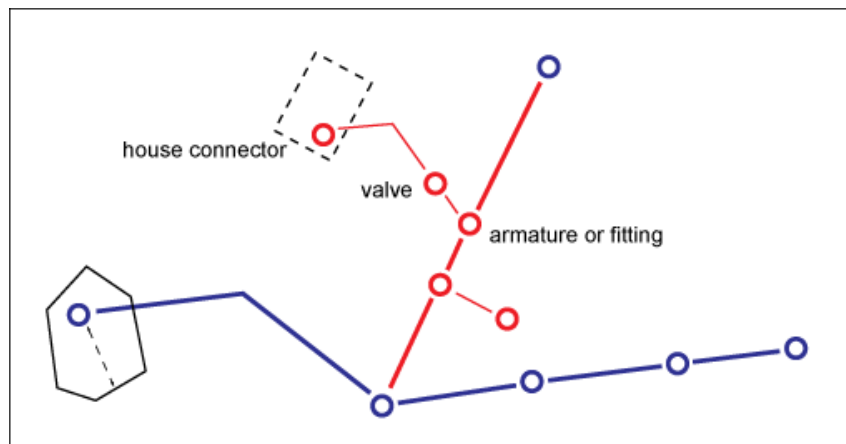
To create a network pipe with a fitting point

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Network Pipe with Fitting Point Creation.
- 3 Click Execute.
- 4 Draw the pipe.
- 5 When done selecting points that make up the pipe, press ENTER.
- 6 Press ESC to finish the workflow.
When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

House Connection Creation


Use the House Connection Creation workflow to connect the house connector to the main pipe with a generated straight pipe or a pipe you create.

You can digitize an armature on the main pipe at the position where the house connection is attached to the main pipe and add a valve and a meter on the pipe.



If you do not create an armature, the system creates a fitting at the location where the house connection is attached to the main pipe. This behavior is controlled by a feature rule, see [Feature Rule: Create Start and End Nodes](#) (page 376).

To create a house connection

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click House Connection Creation.
- 3 Click Execute.
- 4 Specify a reference record, if any.
- 5 Under Pipe from House Connector to Main Pipe, select Straight Pipe or Digitize Pipe.
If you choose Straight Pipe you are prompted to select the main pipe in the drawing. The connection is created as an orthogonal projection on the main pipe.
- 6 Specify whether to add an armature, a valve or a meter on the main pipe.
If you choose Armature and Straight Pipe the armature is created automatically.
- 7 Click OK.
- 8 Follow the prompts.
- 9 Press ESC to finish the workflow.
When you are finished creating geometry, the feature class form is displayed so you can add attribute data.


See also:

- [House Connector](#) (page 395)

Site or Facility Creation

Use the Site or Facility Creation workflow to create a site that can be connected to a network point or to create a facility structure with geometry.

To create a site or facility

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Site or Facility Creation.

- 3 Click Execute.
 - 4 In the Workflows pane, click Site or Facility (With Structure).
 - 5 Specify a reference record, if any.
 - 6 Click a geometry type for the site or facility, either point, line, or polygon.
 - 7 Click OK.
 - 8 Follow the prompts.
 - 9 Press ESC to finish the workflow.
- When you are finished creating geometry, the feature class form is displayed so you can add attribute data.


See also:

- [Site](#) (page 405)
- [Facility](#) (page 384)
- [Facility Creation](#) (page 348)

Facility Creation

Use the Facility Creation workflow to either create and name a new structure or add facilities to an existing structure. Facilities are not related to network points or lines.

To create a facility

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Facility Creation.
- 3 Click Execute.
- 4 Under Structure Of The Facility, select the structure to add facilities to or enter a name for a new structure.
- 5 Select the type of geometry you want to create.
- 6 Click OK and follow the prompts.
- 7 Press ESC to finish the workflow.

When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

The facility includes a new structure (if selected), a new facility attribute feature, and a facility geometry feature of the selected geometry type.

- 8 In the Facility feature class form, define the facility attributes for the created features.

The facility geometry feature class is not displayed, because it does not store any special attributes.

- 9 Double-click the FID Structure attribute to open the Structure feature class form.

This is the structure associated with the facility.

Add Geometry and Equipment

With the initial Facility Creation workflow you can create a facility with one geometry feature. You can add more geometries and equipment features.

To add geometry and equipment

- 1 In the Facility feature class form, select the facility.
- 2 Click Equipment to show the Equipment feature class form. If no equipment has been created so far, the filter is empty.
- 3 On the form toolbar, click the New Record icon. Note that the FID of the facility has been inserted.
- 4 Adjust the attributes and click OK.
Repeat these steps to add more geometry features to the facility.
- 5 Click Facility Line to open the related feature class form. The filter shows all lines that are related to the current facility.
- 6 On the form toolbar, click Digitize New Feature. Follow the prompts.

See also:


- [Facility](#) (page 384)

Damage Creation

Use the Damage Creation workflow to place a damage point feature on a pipe. Optionally, you can create an armature such as a strap at the damage location. If you create an armature, the pipe is soft split.

Damage points can only be placed on a pipe.

To create a damage point feature

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Damage Creation.
- 3 Click Execute.
- 4 Specify whether to add an armature at the location of the damage.
- 5 Click OK.
- 6 Follow the prompts.
- 7 Press ESC to finish the workflow.

When you are finished creating geometry, the feature class form is displayed so you can add attribute data.


See also:

- [Damage Point](#) (page 390)

Pressure Zone Creation

Use the Pressure Zone Creation workflow to create pressure zones that subdivide the gas network into sections of similar pressure.

To create a pressure zone

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Pressure Zone Creation.
- 3 Click Execute.
- 4 Follow the prompts to create one or more pressure zones.

- 5 Press ESC to finish the workflow.

When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

NOTE With the SetPressureZone feature rule you can control the assignment of pressure zones to network objects, see [Feature Rule: Set Pressure Zone](#) (page 373).


See also:

- [Pressure Zone](#) (page 379)

Protection Creation

Use the Protection Creation workflow to add casings and/or anodes to a pipe.

To create a protection casing or anode

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Protection Creation.
- 3 Click Execute.
- 4 Select a pipe.
- 5 Under Choose Protections, click casings, anodes, or both.
- 6 Click OK to start digitizing one or more casings (closed polylines).
- 7 Press ESC to finish digitizing casings.
- 8 If selected, you are now prompted to create anodes. Create as many anodes as needed.
- 9 Press ESC to finish the workflow.
When you are finished creating geometry, the feature class form is displayed so you can add attribute data.


See also:

- [Protection](#) (page 403)

Administrative Information Creation

Use the Administrative Information Creation workflow to acquire administrative information, such as contacts, locations, supply zones, pressure zones, meter zones or manufacturers.

To create administrative information

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Administrative Information Creation.
- 3 Click Execute.
- 4 Specify which kind of information you want to acquire.
- 5 Click OK to start digitizing or entering the data.

See also:

- [Contact](#) (page 377)
- [Location](#) (page 378)
- [Manufacturer](#) (page 378)
- [Meter Area](#) (page 378)
- [Pressure Zone](#) (page 379)
- [Supply Zone](#) (page 380)

Analysis Workflows


Analysis workflows and rules allow designers to trace a gas network from one or more designated start features to an optional stop feature. Network tracing begins from the start location and stops when all stop features have been reached. You can also set attribute-dependent stop conditions, locate point objects on a pipe, locate point objects that are not connected to the network, or pinpoint error in a network topology.

Find Connected

Trace a gas network from a start feature to one or more optional stop features. The network is traced from the start feature to the stop features, if stop features are specified

TIP Network tracing is much more efficient when start and stop features are selected. Tracing a network without selecting a stop feature can take a very long time.

To find connected pipes

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Find Connected.
- 3 Click Execute.
- 4 In the Workflow pane, under Choose A Start Feature, do the following:
 - Click Choose.
 - Click one or more features at the start of the network trace.
 - Press ENTER to complete the selection.
- 5 If you do not want to trace the whole network, do the following:
 - Under Optionally Choose Stop Features, click Choose.
 - Click one or more stop features.
 - Press Enter to complete selection.
- 6 Under Options, select Include Stop Features to list all connected features including the stop features. If this check box is cleared, stop features are not included.
Start features are always included in the list of connected features.
- 7 To specify the trace direction, click Forward, Backward, or Both.
- 8 Click OK to start network tracing.

When network tracing has finished, all connected features are displayed in the feature explorer in the Workflows pane. Use the tools at the top of the Workflows pane to open the feature class form, highlight selected features, and zoom to selected features.

See also:

- Adapting a Viewport for Feature Highlighting in the Topobase Client User Guide


Find Connected with Stop Conditions

The Find Connected With Stop Condition workflow provides the same functionality as the Find Connected workflow. In addition, you can define stop features based on their attributes.

All advanced stop conditions that have been defined in the data model administrator are also available here.

For more information about stop conditions using SQL statements, see Network Tracer in the Topobase Administrator Guide.

To trace connected pipes using a stop condition

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Find Connected With Stop Conditions.
- 3 Click Execute.
- 4 In the Workflow group, under Choose a Start Feature, do the following:
 - Click Choose.
 - Click one or more features at the start of the network trace.
 - Press ENTER to complete selection.
- 5 If you do not want to trace the whole network, do the following:
 - Under Optionally Choose Stop Features, click Choose.
 - Click one or more stop features.
 - Press ENTER to complete selection.
- 6 Under Options, select Include Stop Features to list all connected features including the stop features. If this check box is cleared, stop features are not included.
Start features are always included in the list of connected features.

- 7 To specify the trace direction, click Forward, Backward, or Both.
- 8 Under Stop Conditions, click Add.
- 9 In the Stop Condition Editor dialog box, do one of the following:
 - Select an existing stop condition.
 - Click New and define a new stop condition.
To learn about creating a new stop condition, see Stop Condition Editor.
- 10 Click OK to close the Stop Condition Editor dialog box.
- 11 Click OK to start network tracing.
When network tracing has finished all connected features are displayed in the feature explorer in the Workflow pane. Use the tools at the top of the Workflow pane to open the feature class form, highlight selected features, and zoom to selected features.

In the Stop Condition Editor dialog box, the list displays only the stop conditions that are not assigned to any tracing template.


See also:

- [Adapting a Viewport for Feature Highlighting in the Topobase Client User Guide](#)

Find Non Split Point on Pipe

Use Find Non Split Point On Pipe to find all points on a pipe that are not split.

Finding non split points on a pipe

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Find Non Split Point On Pipe.
- 3 Click Execute.
- 4 Select the point feature classes to locate.
Select All to search for non split points of any feature class.

- 5 To perform the search on a specific set of features, click Choose and click the point features.
- 6 Click OK.

When the search has finished, all non split points are displayed in the feature explorer in the Workflow pane. Use the tools at the top of the Workflow pane to open the feature class form, highlight selected features, to zoom to selected features, and to soft or hard split the pipes.

See also:

- [Adapting a Viewport for Feature Highlighting in the Topobase Client User Guide](#)


Cable Acquisition Workflows

Use Cable Acquisition workflows to create control cables or control points that contain information about wires, cables, and electronic system controls that are deployed throughout the gas utility network. For more information, see [Control Cable](#) (page 383).

Control Cable Creation

Use the Control Cable Creation workflow to create a cable used to transmit electricity or information to system controls.

To create a control cable

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Control Cable Creation.
- 3 Click Execute.
- 4 Follow the prompts to create one or more control cables.
- 5 When done selecting points that make up the control cables, press ENTER.
- 6 Press ESC to finish the workflow.
When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

If you create a control cable with a start or end that is not connected to a network point, a cable point is created. This is controlled by a feature rule; see [Feature Rule: Create Start and End Nodes](#) (page 376).

Control Point Creation

Use the Control Point Creation workflow to create control cable points. Optionally, you can choose to connect the control cable points to a site, or you can digitize control cabinets.



- 1 In the Topobase Task Pane, click the Workflow explorer icon.
- 2 Right-click Control Point Creation.
- 3 Click Execute.
- 4 Specify a reference record, if any.
- 5 Specify whether to connect the points to a site.
- 6 Specify whether to create control cabinets.
- 7 Click OK.
- 8 Follow the prompts to create one or more control points.
- 9 Press ESC to finish the workflow.

When you are finished creating geometry, the feature class form is displayed so you can add attribute data.

See also:

- [Site](#) (page 405)

Report Workflows

Report workflows are used to generate predefined or user-defined reports. Designers can quickly and easily generate reports from a list of predefined report templates. These reports include:

Predefined Report	Description
Data Model Description	Shows a complete list of all feature classes and features in the gas database. It also


Predefined Report	Description
	shows the number of features for each feature class and how they are linked to other tables (according to the meta-table TB_RELATIONS).
Gas Network Statistics	Displays statistical information about point and pipe information, lists other features, and provides a count.
COGO reports	Only if the COGO extension is available.

The report templates have been created with the Topobase Report Designer. For more information, refer to Report Designer Introduction in the Topobase Administrator Guide.

Report Generation

Use the Report Generation workflow to print reports. The report templates are created by your Topobase Administrator using the Topobase Report Designer.

To generate reports

- 1 In the Topobase Task Pane, click the Workflow explorer icon. 
- 2 Right-click Report Generation.
- 3 Click Execute.
- 4 In the Workflows group, select a report name and click OK.

The report is displayed in a secondary window. You can print the report or change its format to HTML, ASCII, or PDF.

Managing Gas Network Topologies

Autodesk Topobase uses topologies to model objects and phenomena of the real world. Typically, a GIS user needs information about relationships between objects with topological characteristics. Models of land and other flat surfaces

is a perfect application for area topology. Logical topology is appropriate wherever real world objects are connected to each other in networks.








Topobase Gas is based on the utility model and network topology which is used for network tracing.

For more information about defining and managing topologies, refer to Topology Introduction in the Topobase Administrator Guide.

Check Topologies

Use the Topology Checker to locate errors in a network topology.

To check a topology for errors

- 1 Click the Document explorer icon. 
- 2 Expand the Topologies listing and right-click the topology. Click Topology Checker.
Topology errors are displayed in the Logical Topology Checker Desktop dialog box.
- 3 Navigate the tree view to select specific features.
- 4 Use the Topology Checker tools to perform the following operations on selected features:
 -  Refresh the topology check after you have addressed problems.
 -  Open the feature class form.
 -   Highlight a feature or clear all highlighted features.
 -  Zoom to a selected feature in the map.
 -  Delete a selected feature.

See also:

- [Gas Topologies](#) (page 409)

Explore Stop Conditions

Network topologies contain predefined stop conditions. You can view them with the Topobase Administrator.

To explore stop conditions

- 1 Start Topobase Administrator and open the Gas workspace.
- 2 Click Document menu ► Data Model to select the document.
- 3 In the data model explorer, expand Topologies.
- 4 Expand a topology and expand the Conditions folder.
- 5 Right-click the stop condition you want to view and click Properties. The Tracing Condition dialog box is displayed.
- 6 View or edit the setting for the stop condition or click Cancel to exit.

See also:


- Stop Condition Editor

For more information about defining conditions, see Network Tracer in the Topobase Administrator Guide.

Use Gas Feature Functions

Each point and line feature class form provides functions for further processing of the selected records. These functions are available in the Function menu and the Network Tracer menu of the feature classes to which they apply.

To view available functions

- 1 Click the Document explorer icon. 
- 2 Under Topics, expand a feature. For example, Point.

- 3 Right-click a feature class. For example, Armature.
- 4 Click Show Form.
- 5 On the Armature feature class form, do one of the following:
 - Click Function menu ► *function_name*.
Where *function_name* is the name of any function available to the selected feature.
 - Click Network Tracer menu ► *menufunction_name*.

If you start a function from the feature class form, consider the current filter. You can apply the function to all features in the filter or to the current feature.

See also:

- [Point Feature Class Form](#) (page 392)
- [Pipe Feature Class Form](#) (page 387)

Maintenance Record Creation

You can create maintenance records for several feature classes. Use this function to add maintenance information to a feature. Maintenance information is stored in the Maintenance feature class (GA_MAINTENANCE).

To create a maintenance record

- 1 Select a feature in your map. For example, an Armature.
- 2 Right-click the Armature feature and select Attributes.
The Armature feature class form is displayed.
- 3 On the Armature feature class form, do one of the following:
- 4 Click Function ► Create Maintenance.
The Maintenance feature class form is displayed with a new record.
- 5 Click the Details tab and enter a maintenance date and maintenance period.
The Next Maintenance Date is automatically calculated based on the entries you make for the maintenance date and maintenance period.

- 6 Do one of the following:
 - Click Update to accept the entries you made and keep the maintenance form open for further changes. If no further changes are necessary, close the window.
 - Click Update & Close to accept the entries you made and close the maintenance form.

See also:

- [Maintenance](#) (page 386)

Marker Creation

You can create markers that are assigned to the current feature.

To create a marker

- 1 Select a feature in your map. For example, a Pipe.
- 2 Right-click the Pipe feature and select Attributes.
The Pipe feature class form is displayed.
- 3 Select the features to which you want assign a marker.
- 4 Click Function menu ► Create Marker.
- 5 Follow the prompts to create the marker.
The Marker feature class form is displayed with a new record.

See also:

- [Marker](#) (page 386)

Show Input and Output Pipes

For network points, such as armatures or fittings, you can show connected input and output pipes.

To show input or output pipes

- 1 Select a feature in your map. For example, an Armature.

- 2 Right-click the Armature feature and select Attributes.
The Armature feature class form is displayed.
- 3 In the Armature feature class form, do one of the following:
 - Click Function menu ► Show Input Pipes.
 - Click Function menu ► Show Output Pipes.

The related feature class forms are displayed and the input and output pipes are highlighted in the drawing.

See also:

- [Pipe](#) (page 388)

Show Connected Pipes

For network points, such as armatures or fittings, you can show connected input pipes.

To show connected pipes

- 1 Select a feature in your map. For example, an Armature.
- 2 Right-click the Armature feature and select Attributes.
The Armature feature class form is displayed.
- 3 Click Function menu ► Show Connected Pipes.
The related feature class forms are opened and the pipes are highlighted in the drawing.

See also:

- [Pipe](#) (page 388)

Connect a Point to a Site

Use this function if you have created sites separately from the gas network and want to associate them.

To connect a point to a site

- 1 Select a Site feature in your map.
- 2 Right-click the Site feature and select Attributes.
The Site feature class form is displayed.
- 3 Click Function menu ► Connect Point to Site.
All points that lie inside the site detail polygon are connected.

See also:

- [Site](#) (page 405)

Remove Connections from a Site

You can remove all connections that are related to a site.

To remove connections from a site

- 1 Select a Site feature in your map.
- 2 Right-click the Site feature and select Attributes.
The Site feature class form is displayed.
- 3 Click Function menu ► Remove Site.
Confirm the removal of the site and the record is removed.

See also:

- [Site](#) (page 405)

Network Tracer

Use the Network Tracer functions to specify start and stop features for network analysis.

To specify start and end features for network tracing

- 1 Select a feature in your map. For example, a Pipe.
- 2 Right-click the Pipe feature and select Attributes.

The Pipe feature class form is displayed.

- 3 Open the Network Tracer menu do one of the following:
 - Click Set as Start Feature.
 - Click Set as End Feature.

The Network Tracer dialog box is displayed.

- 4 In the Network Tracer dialog box, open the Tracing Template list and select a template.
- 5 Follow the on-screen instructions in the Features section. Depending on the tracing template, there are various workflows. When you are finished, click Trace.

The resulting features are highlighted in the map and listed in the Tracing Result dialog box.

The Tracing Result dialog box displays the features in an explorer tree, from which you can process the features. Expand the items, select a feature and use the buttons on the toolbar.

To learn more about attributive network topologies, see [Creating Topologies](#) in the Topobase Administrator Guide.


See also:

- [Analysis Workflows](#) (page 352)

Connect Features to a Zone

Use this function to connect features that lie within a pressure zone or a supply zone. You can use a feature rule to connect the features to the pressure zone or supply zone.

To connect features to a zone

- 1 Click the Document explorer icon. 
- 2 Expand the Administration topic and do one of the following:
 - Right-click Pressure Zone.
 - Right-click Supply Zone.

- 3 Click Show Form.
- 4 Click Function menu ► Associate Related Features to the Zone.
Features are connected to the zone.

See also:

- [Feature Rule: Set Pressure Zone](#) (page 373)
- [Feature Rule: Set Supply Zone](#) (page 375)


Use a Reference Record

Reference records are used to create data more quickly. Define one or more reference records for each feature class. These can be used in a workflow. You can:

- Use no reference record.
- Use the last used reference record.
- Select an available reference record.

NOTE To explore available reference records, open the related feature class form in Edit mode.

To create a reference record

- 1 Click the Document explorer icon. 
- 2 Expand the Point topic.
- 3 Right-click the feature class for the reference record you want to create. For example, House Connector.
- 4 Right-click and click Show Form.
- 5 In the form, right-click in the background and click Reference Record ► Add.
The New Reference Record dialog box is displayed.
- 6 In the Name field, enter a name, such as Digitized House Connector, and click OK.


- 7 In Reference Record mode, enter the reference values to be used, such as Accuracy = Digitized.
- 8 Click Save.

For more information about reference records, see Using Reference Records in the Topobase Client User Guide.

Split Lines

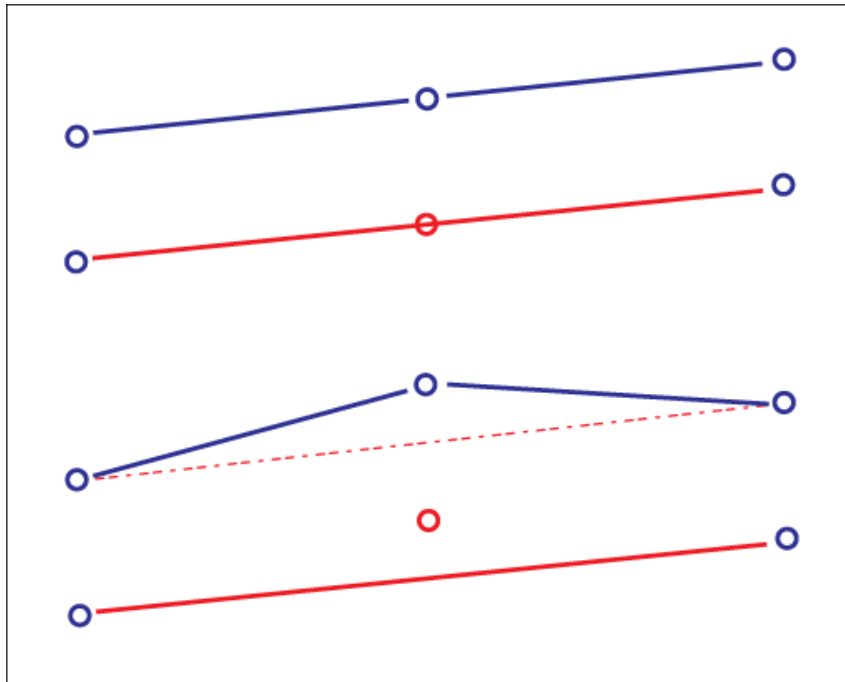
If you place a point feature on a line or polyline feature, the line or polyline is split to preserve a correct network topology.

To digitize a point and split a line

- 1 Click the Document explorer icon. 
- 2 Expand the topic for the line you want to split. For example, Pipe.
- 3 Right-click the Pipe feature class and do one of the following:
 - Click Soft Split (Only Geometry)
 - Click Hard Split (Also Attributes)
- 4 In the drawing, select the line representing the pipe.
- 5 In the Select dialog box, select the point feature class you want to digitize. For example, select Meter.
- 6 Digitize the point.

The new point does not need to lie exactly on the selected line. If the point lies next to the line, the line is split and the new lines move to the point. However, if the point lies on a line that is not the selected one, no splitting is performed.

NOTE Use Object Snap and Object Snap Tracking to ensure that the point is placed on the line. For more information, refer to AutoCAD Help.

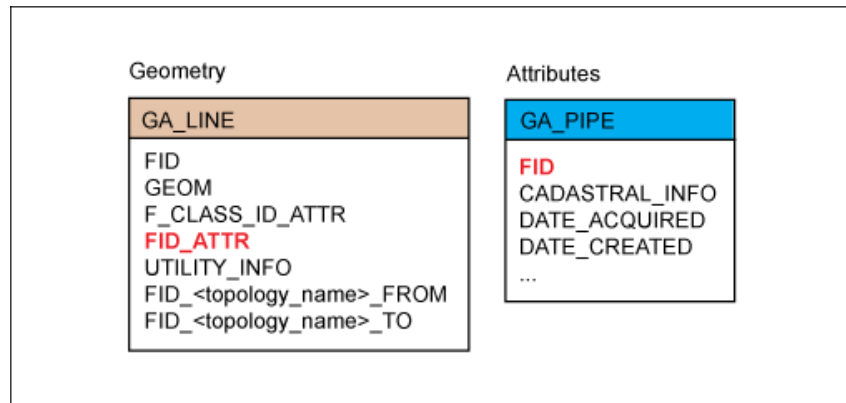


Splitting lines: When you digitize a point on a utility line or next to a utility line, the new lines move to the point.

When a pipe is digitized, normally only the start and the endpoint coordinates are known, and connected using a straight line. Then, when a new point is measured, such as a house connector, this point normally does not lie exactly on the pipe, and the pipe must be adjusted to this new point.

Soft Split and Hard Split

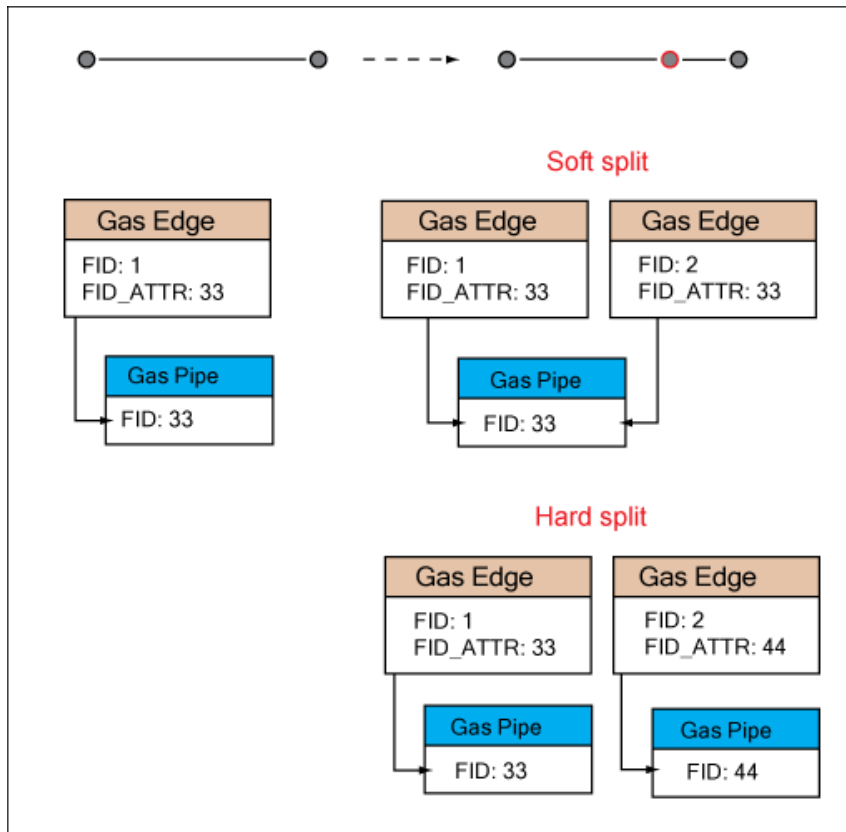
Because geometry and attributes are stored separately, one geometry feature class such as a point, can represent various attribute feature classes such as armature and fitting. For line features, there are two different line splitting methods: soft split and hard split.



Gas data model: Relation between pipe and line feature class

In a workflow you can specify whether the line is soft split or hard split. This determine how the system handles the attribute data of the two resulting features.

Split Type	Description
Soft Split	<p>With soft split, the line is split into two separate features. Each has its own geometry (GA_LINE), but they both use the same attribute data (GA_PIPE).</p> <p>Use soft split for point features of minor importance and when the attributes of the pipe do not change, such as armatures.</p>
Hard Split	<p>With hard split, the line is split into two separate features. Each has its own geometry (GA_LINE) and each has its own attribute data (GA_PIPE).</p> <p>Use hard split for point features of major importance, such as a pump or a valve.</p> <p>Use hard split if the attributes of the pipe change, such as diameter, material, or model.</p>



Gas data model: Soft and hard split

See also:

- [Gas Topologies](#) (page 409)

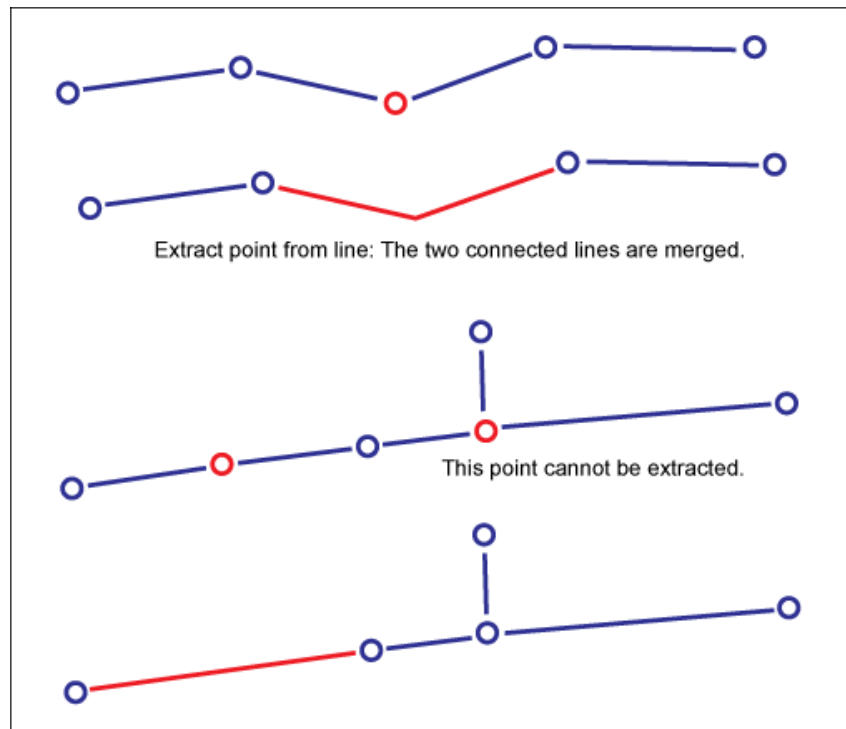
Extract Points from Lines

If you delete a point, you must update the network topology to keep the network consistent. For example, if you delete a network point, you must merge the two connected lines. If more than two lines are connected at the point, you are not allowed to delete the point.

To extract a point



- 1 Click the Document explorer icon.
- 2 Right-click the point feature class and click Extract From Line.
- 3 When prompted, click the point you want to delete.
The point is deleted from the database and the connected lines are merged.



Network topology: Extracting points from a network line

See also:

- [Gas Topologies](#) (page 409)

Organization of Gas Functions and Features

When you run Data Acquisition workflows in the Gas application, the following feature rules improve the efficiency of adding features and keep data consistent.

- **Soft split** — If a network line has a network point on a vertex, the line is split.
- **Point orientation** — If you place a point on a pipe, the symbol is oriented according to the direction of the pipe.
- **Move** — If a pipe is moved, the connected pipe and points also move.
- **Identical points** — Ensure that no gas network points or cable control points are created in the same location. See the Topobase Feature Rule reference, section [GA_RejectDuplicatePoints_BIU](#).
- **Pressure zone** — Enable or disable the pressure zone rule for a feature if it is located within a zone. See [Feature Rule: Set Pressure Zone](#) (page 373).
- **Supply zone** — Enable or disable the supply zone rule for a feature if it is located within a zone. See [Feature Rule: Set Supply Zone](#) (page 375).
- **Compute maintenance** — Compute maintenance dates based on current maintenance dates and maintenance periods. See the Topobase Feature Rule reference, section [GA_ComputeNextMaintDate_BIU](#).

For more information about feature rules, see [About Feature Rules](#) in the Topobase Administrator Guide.

See also:

- [Split Lines](#) (page 367)
- [Pressure Zone](#) (page 379)
- [Supply Zone](#) (page 380)

Explore Gas Feature Rules

Many feature classes in the gas data model are comprised of feature rules. Use the data model administrator to view, enable, or disable feature rules.

To explore gas feature rules

- 1 Start Topobase Administrator and open the Gas workspace.
- 2 Click Document menu ► Data Model.
- 3 Expand a topic in the data model explorer.
- 4 Right-click a feature class and click Edit Feature Rules.
The Feature Rules Properties dialog box is displayed.
- 5 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.
- 6 In the Applied Rule Bases list, enable or disable the rules you want adjusted.
- 7 Click Save & Close.

See also:

- [Organization of Gas Functions and Features](#) (page 372)

For more information about feature rules, see About Feature Rules in the Topobase Administrator Guide.

Feature Rule: Set Pressure Zone

When you digitize gas network features, a feature rule sets the pressure zone for a feature if it is located within a zone. If the feature is located in overlapping zones, you are prompted to select a zone. If you select Yes, you can select a zone. If you select No, the pressure zone value is cleared.

NOTE If you digitize a pressure zone while the gas network features already exist, the pipes are not updated and do not belong to the pressure zone.

You can use a feature function to update the relations. See also [Connect Features to a Zone](#) (page 365)

To activate the Set Pressure Zone feature rule (Line feature class)

- 1 Start Topobase Administrator and open the Gas workspace.
- 2 Click Document menu ► Data Model.
- 3 Expand the Utility topic and select the Line feature class (GA_LINE).

- 4 Right-click and click Edit Feature Rules.
The Feature Rules Properties dialog box is displayed.
- 5 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.
- 6 In the Applied Rule Bases list, enable the GA_SetPressureZone_BIU and the GA_SetPressureZone_AIU rules.
- 7 Click Save & Close.

To apply the Set Pressure Zone feature rule (Point feature class)

- 1 Start Topobase Administrator and open the Gas workspace.
- 2 Click Document menu ► Data Model.
- 3 Expand the Point topic and select the feature class. For example, Fitting (GA_FITTING).
- 4 Right-click and click Edit Feature Rules.
The Feature Rules Properties dialog box is displayed.
- 5 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.
- 6 In the Applied Rule Bases list select the GA_SetPressureZone_BI rule.
- 7 Click Save & Close.

To activate the Set Pressure Zone feature rule (Pipe feature class)

- 1 Start Topobase Administrator and open the Gas workspace.
- 2 Click Document menu ► Data Model.
- 3 Expand the Pipe topic and select the Pipe feature class (GA_PIPE).
- 4 Right-click and click Edit Feature Rules.
The Feature Rules Properties dialog box is displayed.
- 5 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.
- 6 In the Applied Rule Bases list, select the GA_SetPressureZone_BI rule.
- 7 Click Save & Close.

See also:

- [Pressure Zone](#) (page 379)
- GA_SetPressureZone_BI
- GA_SetPressureZone_BIU rule group

Feature Rule: Set Supply Zone

When you digitize gas network features, a feature rule sets the supply zone for a line feature if it is located within a zone. If the feature is located in overlapping zones, you are prompted to select a zone. If you select Yes, you can select a zone. If you choose No, the pressure zone value is cleared.

NOTE If you digitize a supply zone while the gas network features already exist, the pipes are not updated and do not belong to the supply zone.

You can use a feature function to update the relations. See also [Connect Features to a Zone](#) (page 365)

To activate the Set Supply Zone feature rule (Line feature class)

- 1 Start Topobase Administrator and open the Gas workspace.
- 2 Click Document menu ► Data Model.
- 3 Expand the Utility topic and select the Line feature class (GA_LINE).
- 4 Right-click and click Edit Feature Rules.
The Feature Rules Properties dialog box is displayed.
- 5 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.
- 6 In the Applied Rule Bases list, enable the GA_SetSupplyZone_BIU and the GA_SetSupplyZone_AIU rules.
- 7 Click Save & Close.

To activate the Set Supply Zone feature rule (Pipe feature class)

- 1 Start Topobase Administrator and open the Gas workspace.
- 2 Click Document menu ► Data Model.

- 3 Expand the Pipe topic and select the Pipe feature class (GA_PIPE).
- 4 Right-click and click Edit Feature Rules.
The Feature Rules Properties dialog box is displayed.
- 5 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.
- 6 In the Applied Rule Bases list, select the GA_SetSupplyZone_BI rule.
- 7 Click Save & Close.

See also:

- [Supply Zone](#) (page 380)

Feature Rule: Create Start and End Nodes

The CreateStartEndNode feature rule controls the automatic creation of network points.

If you create a pipe with a start or end that is not connected to a network point, a fitting is created. Sometimes the gas network does not continue beyond a certain point. If you need to create non-ending pipes, you can disable this feature rule. Also, you can configure the feature rule, so that a network point of any type is created.

If you create a control cable with a start or end that is not connected to a network point, a cable point is created.

To enable or disable the CreateStartEndNode feature rule for pipes

- 1 Start Topobase Administrator and open the Gas workspace.
- 2 Click Document menu ► Data Model.
- 3 Expand the Utility topic and select the Line feature class (GA_LINE).
- 4 Right-click and click Edit Feature Rules.
The Feature Rules Properties dialog box is displayed.
- 5 In the Feature Rules Properties dialog box, click the Client Side (.NET) tab.
- 6 In the Applied Rule Bases list, select or deselect the CreatetStartEndNode rule and click Edit.

The Edit Rule Base dialog box is displayed.

- 7 In the Edit Rule Base dialog box, do the following:
 - Select or clear the Active option.
Optionally, you can also enable or disable the feature rule in the Feature Rules Properties dialog box.
 - In the Parameters field, specify which point feature class to create.
For example, GA_FITTING.
 - Click OK.
- 8 Click Save & Close.

See also:

- [Network Pipe Creation](#) (page 344)
- [Control Cable Creation](#) (page 356)
- CreateStartEndNode

Administration

These attribute feature classes manage contacts, customers, locations, manufacturers, and item models.

In addition, the Administration topic includes feature classes for meter areas, pressure zones, protection zones, and supply zones.

Contact

This feature class manages contact information, such as company address, contact name, and email.

Contact	Description
Topic	Administration
Table name	GA_CONTACT

You can access the contact form from most of the feature class forms using a relation.

In the contact form, you can access several gas network features using the link buttons in the Related Tables tab.

Location

This feature class groups gas utility features by geographical relation.

Location	Description
Topic	Administration
Table name	GA_LOCATION

Manufacturer

Use the Manufacturer feature class to manage the manufacturers of the gas network items.

Manufacturer	Description
Topic	Administration
Table name	GA_MANUFACTURER

Meter Area

Meter areas are used for visual grouping only.

Meter Area	Description
Topic	Administration
Table name	GA_METERAREA
Shortcut Menu	Workflow: Administrative Information Creation. For more information, see Administrative Information Creation (page 352).

Pressure Zone

Pressure zones are used to group gas utility items.

Pressure Zone	Description
Topic	Administration
Table name	GA_PRESSUREZONE
Shortcut Menu	Workflow: Administrative Information Creation. For more information, see Administrative Information Creation (page 352).

Feature Rule

Optionally, when digitizing a network feature within an existing area, the feature is related to the pressure zone. If you digitize a network feature that lies within several pressure zones, you are prompted to select the zone to which you want to connect.

This option is controlled by the feature rule SetPressureZone. You can enable or disable this feature rule in the data model administrator. See also [Feature Rule: Set Pressure Zone](#) (page 373)


To view related pipes

- 1 Select the pressure zone in the drawing.



- 2 Click Home tab ► Quick Access panel ► Attributes.

- 3 In the Pressure Zone form, click the Related Tables tab.

- 4 Click the Pipes (GA_PIPE)  reference button.

The Pipes form is displayed showing all related pipes in the filter.

See also:

- [Pressure Zone Creation](#) (page 350)

Supply Zone

Supply zones are used to group gas utility items.

Supply Zone	Description
Topic	Administration
Table name	GA_SUPPLYZONE
Shortcut Menu	Workflows: Administrative Information Creation. For more information, see Administrative Information Creation (page 352).

Feature Rule

Optionally, when digitizing a pipe within an existing zone, the pipe is related to the supply zone. This is controlled by the feature rule SetSupplyZone. You can enable or disable this feature rule in the data model administrator. See also [Feature Rule: Set Supply Zone](#) (page 375).

Gas Model Feature Classes

For a large number of feature types, Topobase Gas provides model driven attributes. You use model tables (*_MODEL) to fill the model driven attributes. Model tables describe several types (models) of a particular network item. They can be grouped by manufacturer. Create models for gas network items to simplify data acquisition.

For example, in a gas utility network with five kinds of valves, you would fill the model driven attributes using a predefined record from the GA_VALVE_MODEL table. In the Valve feature class form, you use the Model Selector control to fill in the model field easily.

NOTE In the Model input field, the value Choose Model indicates that you can apply a model. It does not store the model that has been applied, because at any time you can modify the model driven attributes. The attributes are stored in the main feature class, and you use the model feature class to insert a set of attributes. You can use the model table to store reference values.

BEST PRACTICE In the feature class form, use the Model table, to search for an appropriate model. Use the model list, if you are sure which model to use. In the Form Designer, modify the model table form to hide or show model attributes, or to modify the order in the grid. Modify the main feature class form to move the Model selector to another location.

Usually the model information is created either at the beginning of the project or during data acquisition.

See also Data Model: Model Tables.

The following table is an example of a pipe model table.

Table name	GA_PIPE_MODEL
CERTIFICATE	Description of DIN/ISO/DVGW/TUEV value.
DATE_CREATION	Date when the item was created.
DIAMETER_INSIDE	Inside diameter of the pipe.
DIAMETER_NOMINAL	The manufacturer's designated size, or nominal diameter for the subject item, such as 1" gas hydrant, 2" meter, 6" pipe.
DIAMETER_OUTSIDE	Outside diameter of the pipe.
FID_MANUFACTURER	GA_MANUFACTURER Manufacturer of this item.
ID_COATING_INSIDE	GA_COATING_TBD
ID_COATING_OUTSIDE	GA_COATING_TBD
ID_MATERIAL	GA_MATERIAL_TBD
NARRATIVE	A description or other unique information concerning the item.
PRESSURE_MAX	The manufacturer's or industry standard's maximum pressure rating.
THICKNESS	Thickness of the pipe wall.

USER_FLAG	An operator-defined work area. This attribute can be used by the operator for user-defined system processes. It does not affect the subject item's data integrity and should not be used to store the subject item's data.
MODEL_NAME	Name of the model.
VALUE	Short description of the model. This value is used for the domain table representation of the model.

The following table is an example of a valve model table.

Table name	GA_VALVE_MODEL
DATE_CREATION	Date when the item were created.
DIMENSION1	Dimension 1 of the item.
DIMENSION2	Dimension2 of the item.
FID_MANUFACTURER	GA_MANUFACTURER
ID_MATERIAL	GA_MATERIAL_TBD
ID_TYPE	GA_VALVE_TYPE_TBD Particular kind, class, or group of valve, such as gate or check.
NAME_NUMBER	Model name or number.
NARRATIVE	A description or other unique information.
USER_FLAG	An operator-defined work area. This attribute can be used by the operator for user-defined system processes. It does not affect the subject item's data integrity and should not be used to store the subject item's data.

VALUE	Short description of the model. This value is used for the domain table representation of the model.
MODEL_NAME	Name of the model.

Control Cable

The control cable feature contains information about wires, cables, and electronic system controls that are deployed throughout the gas utility network. The control cable feature is where information such as sensory control and data acquisition (SCADA) on the cable point, control cabinet, and control cable is stored. It includes the following feature classes:

- Control cabinet — a cabinet for the cable where electrical nodes are located.
- Control cable — a cable used to transmit electricity or information to system controls.
- Control cable point — a cable point that represents an electrical node.

The data model for control cables is based on the utility model.

See also:

- [Gas Topologies](#) (page 409)
- [Cable Acquisition Workflows](#) (page 19)

Control Cabinet

A cabinet for the cable where electrical nodes are located.

Control Cabinet	Description
Topic	Control Cable
Table name	GA_C_Control_Cabinet

Control Cable

A cable used to transmit electricity or information to system controls.

Control Cable	Description
Topic	Control Cable
Table name	GA_C_Cable
Shortcut menu	Reverse Direction Soft Split (Only Geometry) Hard Split (Also Attributes) For more information, see Split Lines (page 367). Workflows: Control Cable Creation. For more information, see Control Cable Creation (page 356).

Control Cable Point

A cable point that represents an electrical node.

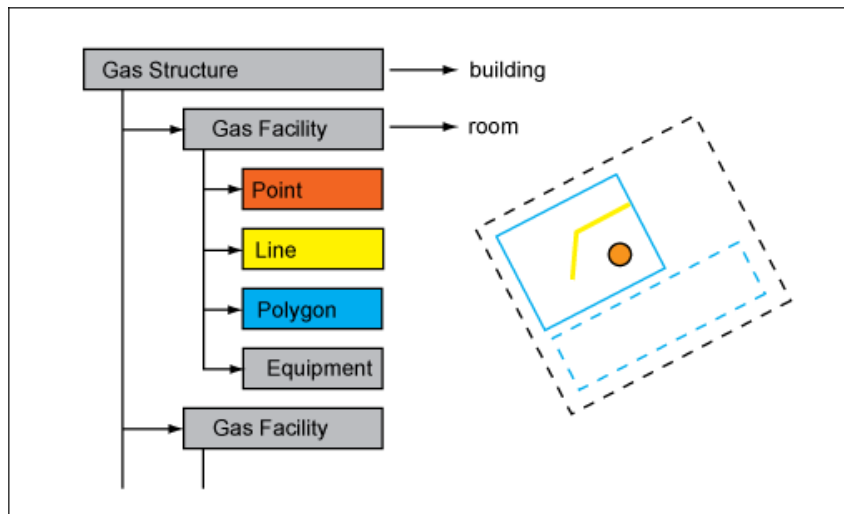
Control Cable Point	Description
Topic	Control Cable
Table name	GA_C_Cable_Point
Shortcut menu	Workflows: Control Point Creation. For more information, see Control Point Creation (page 357). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Facility

Topobase Gas contains a simple data structure for facility management. You can use these feature classes to maintain equipment, such as chairs and tables. Facility features are not part of the network topology. They are used for orientation or illustration purposes. The predefined feature classes come with

a number of attributes. The means by which attributes are stored in the facility topic are dependant upon the project and purpose.

Facility	Description
Topic	Facility
Table name	GA_FACILITY_*
Geometry	The geometry feature classes store the geometry for the graphical representation. They do not store attributes of the facility features, except attributes to control the representation, such as linetype or symbol.
Shortcut Menu	Workflows: Facility Creation. For more information, see Facility Creation (page 348).



A Gas structure can be a building with rooms (facilities) containing equipment such as desks and chairs. The facility has geometry. Structure and equipment are attribute feature classes.

Miscellaneous

Maintenance

This feature class stores information about maintenance work. The feature class uses the maintenance type domain table. In the basic gas application, this domain table contains only general maintenance types. It can be modified to meet the requirements of a customized gas application.

Maintenance	Description
Topic	Miscellaneous
Table name	GA_MAINTENANCE

Use the Create Maintenance feature function to create maintenances.

See also:

- [Use Gas Feature Functions](#) (page 360)
- [Maintenance Record Creation](#) (page 361)

Marker

A marker, such as a sign or a concrete monument, is installed either directly above or immediately adjacent to underground lines, bends, or fittings to indicate the presence of gas. Markers are not part of the network topology and therefore recorded in a common point feature class.

Marker	Description
Topic	Miscellaneous
Table name	GA_MARKER

Use the Create Marker feature function to create markers.

See also:

- [Use Gas Feature Functions](#) (page 360)
- [Marker Creation](#) (page 362)

Terrain Point

This feature class stores height points to describe the terrain surface. Terrain points can be created during the Network Pipe Creation workflow. For example, they are used to represent the terrain surface in profile drawings.

Terrain Point	Description
Topic	Miscellaneous
Table name	GA_TERRAIN_POINT
Z	terrain height

See also:

- [Network Pipe Creation](#) (page 344)

Pipe

The basic gas application contains one gas line feature, pipe. Geometry is stored in the GA_LINE line string feature class. Attribute information is stored in the GA_PIPE attribute feature class.

The pipe feature class has a set of model driven attributes. Values for the model driven attributes are stored in the model table (suffix_MODEL). For more information, see Data Model: Model Tables.

Pipe Feature Class Form

Use the basic feature class form of the gas pipe to view and edit feature attributes and to view related data.

The pipe feature class form contains the following elements:

- **General tab** — Displays general feature information.
- **Details tab** — Displays detailed feature attributes and link buttons that provide links to all point features the pipe is connected to.

- **Related Tables tab** — Allows direct access to the following related tables:

Related Table	Table Name and Description
Line	GA_LINE – Contains line geometry.
Label	GA_PIPE_TBL – Contains labels for pipe features.
Marker	GA_MARKER – Contains marker information. The marker is placed above ground to indicate the position of a pipe feature.
Anode	GA_ANODE – Contains anode for protection of the pipe.
Casing	GA_CASING – Contains casing for protection of the pipe.
Maintenance	GA_MAINTENANCE – Contains information about pipe maintenance.
Damage	GA_DAMAGE – Contains recorded damage.

- **Table** — Displays the attributes in table form.

Some feature class forms provide functions for further processing of the selected records. These functions can be accessed via menus or control buttons. See also [Use Gas Feature Functions](#) (page 360).

Pipe

Pipes are the only standard line feature of a gas utility model.

Pipe	Description
Topic	Pipe
Table name	GA_PIPE
CADASTRAL_INFO	Contains the description of cadastral information.
GROUND_ELEVATION	Elevation relative to the ground.

Pipe	Description
ISOLATION	Description of the isolation type.
LOCATION	Brief description where the item is located (1m of the wall).
NAME_NUMBER	Name or number of the item.
NARRATIVE	A description or other unique information concerning the subject item.
PIPE_LENGTH	Length of the pipe.
PRESSURE_OPERATING	Operating pressure of the item.
SERIAL_NUMBER	Unique serial number of the manufacturer.
SLOP_MEASURED	Slop of the pipe measured by hand. This value is not calculated.
USER_FLAG	An operator defined work area. This attribute can be used by the operator for user-defined system processes. It does not effect the subject item's data integrity and should not be used to store the subject item's data.
Label definition	Displays the diameter, length, and material. See Define Labels (page 410).
Model driven attributes	Model driven attributes can either be filled with the information that is stored in the GA_PIPE_MODEL table, or you can enter values manually. You use the Model Selector control to select a set of attribute values. See also Gas Model Feature Classes (page 380).
Shortcut Menu	Reverse Direction Soft Split (Only Geometry) Hard Split (Also Attributes)

Pipe	Description
	<p>For more information, see Split Lines (page 367).</p> <p>Workflows: Network Pipe Creation. For more information see, Network Pipe Creation (page 344).</p> <p>Network Pipe With Fitting Point Creation. For more information, see Network Pipe with Fitting Point Creation (page 345).</p> <p>Damage Point Creation. For more information, see Damage Creation (page 350).</p> <p>Protection Creation. For more information, see Protection Creation (page 351).</p>

See also:

- [Network Pipe Creation](#) (page 344)
- [Network Pipe with Fitting Point Creation](#) (page 345)

Damage Point

Damage points indicate locations where damage has occurred. They can be related to a pipe. They are not part of the network topology.

Damage Point	Description
Topic	Pipe
Table name	GA_DAMAGE
Shortcut Menu	Workflows: Damage Creation. For more information, see Damage Creation (page 350).

Point

The utility points of the gas data model are stored in separate attribute feature classes, one for each point type. They are grouped in the Point topic.

Geometry is stored separately from attribute data. The network point geometry is stored in the Point feature class in the Utility topic. The utility points are:

- Armature
- Blow Off Valve
- Fill
- Filter
- Fitting
- House Connector
- Light
- Meter
- Odor Equipment
- Pig Launch
- Pump
- Regulator
- Reservoir
- Sample
- Shut Off Valve
- Siphon
- Source
- Tank
- Valve

Each point feature class has a corresponding label feature class (*_TBL) with one default label definition.

Most point feature classes have an associated model table (*_MODEL). Reservoir, House Connector and Source do not have model tables. Model tables can be found in the Administration topic of the data model, under Manufacturer.

See also:

- [Gas Topologies](#) (page 409)

Point Feature Class Form

Use the basic feature class forms of the Gas point features to view and edit feature attributes and to view related data.

All point feature class forms contain the following elements:

- **General tab** — Displays general feature information.
- **Details tab** — Displays detailed feature attributes and link buttons that provide links to all line features (usually pipes) the points are connected to.
- **Related Tables tab** — Allows direct access to the following related tables:

Related Table	Table Name and Description
Maintenance	Contains information about network maintenance.
Marker	Contains marker information. The marker is placed above ground to indicate the position of a network part.
Label	Contains label text.
Point	Contains point geometry.

- **Table tab** — Displays all attributes in table form.



Each point feature class form provides functions for further processing of the selected records. These functions can be accessed via menu or control buttons. See also [Use Gas Feature Functions](#) (page 360).

Connect Point Features to Sites

Each network point can be connected to a site. The easiest way to connect a network point to a site is to use the Network Point Creation workflow. For more information, see [Network Point Creation](#) (page 343).

If you have existing points without a site connection, you can assign them to a site.

To connect a point to a site

- 1 Click the Document explorer icon. 
- 2 Right-click the feature class, such as Armature, and click Show Form.
- 3 Select the armature to connect to the site.
- 4 Click the Related Tables tab.
- 5 Click the Point (GA_POINT)  reference button to show the related geometry feature.
- 6 In the Point feature class form, click the Details tab.
- 7 Under Site, select the FID of the related site.
- 8 Click Update (F5).

For more information about sites, see [Site](#) (page 405).

Armature

An armature is an assembly that connects pipes.

Armature	Description
Topic	Point
Table name	GA_ARMATURE
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).
Label definition	Default label definitions to display the name, the date of creation, and the type. See also Define Labels (page 410).

Blow Off Valve

A pressure release system using a vacuum-actuated valve designed to release excess pressurized gas into the atmosphere.

Blow Off Valve	Description
Topic	Point
Table name	GA_BLOW_OFF_VALVE
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Fill

A fill is a location where gas is discharged to users.

Fill	Description
Topic	Point
Table name	GA_FILL
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Filter

A filter captures contaminants that might be present in a gas line.

Filter	Description
Topic	Point

Filter	Description
Table name	GA_FILTER
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Fitting

A fitting is used to connect, cap, or plug a pipe carrying gas.

Fitting	Description
Topic	Point
Table name	GA_FITTING
Label definition	Displays the name and number.
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

House Connector

A house connector is a service connection point on or inside a building. It is the last point of a gas network and represents the connection between the network and the consumer/customer.

Use the House Connector Creation workflow to create house connectors with connecting lines.

House Connector	Description
Topic	Point

House Connector	Description
Table name	GA_HOUSE_CONNECTOR
Shortcut Menu	<p>Workflows: Network Point Creation. For more information, see Network Point Creation (page 343).</p> <p>House Connection Creation. For more information, see House Connection Creation (page 346)</p> <p>Extract Points From Lines. For more information, see Extract Points from Lines (page 370).</p>

Manage Customer Information

The GA_HOUSE_CONNECTOR table has a Customer Number attribute. However, there is no table for managing customer information because customers often use external software (for example SAP) for this.

To manage customer information within Topobase, use the data model administrator to create the appropriate feature classes.

To manage customer information

- 1 Create a new Customer feature class in the Administration topic.
- 2 Add attributes as needed, such as Name, Address, Telephone, and E-mail.
- 3 Customize the feature class form using the Form Designer.
- 4 In the House Connector form, add a Basic ComboBox control for Customer Number and create the relation to the newly created table containing the customers.

For more information, see the Setting Up Topobase in the Topobase Administrator Guide.

Generate Customer Notifications

Topobase Gas helps you generate notification letters regarding planned work or interruptions in the gas network. For example, if a pipe has a defect and the gas must be stopped, you might do a network tracing to find all house connectors so you can notify customers.

There are several ways to generate customer notification letters.

- Use the Topobase Report Designer.
For more information about the Topobase report designer, see the Report Designer Introduction in the Topobase Administrator Guide.
- Use Topobase Client to export to Microsoft® Word.
- Export the data to any format and use external software to generate letters.
For example, export a customer list to Microsoft® Excel®.

Light

Use this feature class for the graphical representation of the location of a gas light fixture. A gas light fixture utilizes gas as its energy source and contains a flame used for illumination of an area.

Topic	Point
Table name	GA_LIGHT
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Meter

A meter is a device installed in a line for measuring the quantity and rate of gas flowing to a facility or through a section of line.

Meter	Description
Topic	Point
Table name	GA_METER
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343).

Meter	Description
	Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

You can use the related feature class GA_MAINTENANCE to create events such as meter readings, installation, mounting, or calibration. For more information, see [Maintenance](#) (page 386).

Odor Equipment

This is equipment located the a control station that allows the addition of an odorant to a gas. An odorant provides a characteristic “warning” smell.

Odor Equipment	Description
Topic	Point
Table name	GA_ODOUR_EQUIPMENT
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Pig Launch

A pig launch is a point where a pigging device is inserted to clean up a pipe fitting.

Pig Launch	Description
Topic	Point
Table name	GA_PIG_LAUNCH
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343).

Pig Launch	Description
	Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Pump

A pump is a mechanical device for a gas system that draws material into itself through an entrance port and forces the material out through an exhaust port.

Pump	Description
Topic	Point
Table name	GA_PUMP
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Regulator

A pressure regulator automatically reduces the pressure on the downstream side of a valve to a preset magnitude.

Regulator	Description
Topic	Point
Table name	GA_REGULATOR
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Reservoir

A reservoir is a body of gas that supplies gas to a gas distribution system.

Reservoir	Description
Topic	Point
Table name	GA_RESERVOIR
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Sample

This feature class stores point locations where one or more gas samples are collected from a gas utility or system.

Sample	Description
Topic	Point
Table name	GA_SAMPLE
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Shut Off Valve

An inline valve that cuts or allows the flow of a gas or liquid through the pipes where it is installed.

Shut Off Valve	Description
Topic	Point
Table name	GA_SHUT_OFF_VALVE
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Siphon

A siphon is a continuous tube that allows liquid to flow from a source reservoir to a storage reservoir. By means of a difference in hydrostatic pressure, liquid flows from the end of the tube in the source reservoir through an intermediate point that is higher than the source reservoir toward the opposite end of the tube. The opposite end of the tube must be lower than the liquid surface in the source reservoir.

Siphon	Description
Topic	Point
Table name	GA_SIPHON
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Source

A source is the point from which gas is supplied for processing and distribution.

Source	Description
Topic	Point
Table name	GA_SOURCE
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Tank

A tank is an above or below grade receptacle or chamber used for holding gas on a temporary basis prior to transfer or use.

Tank	Description
Topic	Point
Table name	GA_TANK
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Valve

A valve is a fitting or device used for shutting or throttling flow through a gas line.

Valve	Description
Topic	Point
Table name	GA_VALVE
Shortcut Menu	Workflows: Network Point Creation. For more information, see Network Point Creation (page 343). Extract Points From Lines. For more information, see Extract Points from Lines (page 370).

Profile

This topic stores the profile feature classes.

Feature Class	Description
TB_PROFILE	Profile system table to store the profile origin.
TB_PROFILE_AXIS	Profile system table to store the profile axis.
GA_XXX_PRO	Profile feature classes to store the profile drawing.

To create profiles, see Working with Profiles in the Topobase Client User Guide.

Protection

Use the anode, anode station (point), and casing (polygon) feature classes to display and manage gas network protection.

Anodes and casings are usually related to a pipe. The best way to create these feature classes is to use the predefined Protection Creation workflow.

See also:

- [Protection Creation](#) (page 351)

Anode

An anode is made of a sacrificial material that is more reactive than the material used to make a cathode (for example, a pipe). The anode is electrically connected to the cathode. When an electrical current is passed between the anode and the cathode, the current starts a chemical reaction where the anode, being the more reactive of the two materials, corrodes. This leaves the cathode undamaged.

Anode	Description
Topic	Protection
Table name	GA_ANODE
Shortcut Menu	Workflows: Anode Creation. For more information, see Protection Creation (page 351). Network Pipe Creation. For more information see, Network Pipe Creation (page 344).

Anode Station

A central location where anodes are tested for performance in natural gas systems.

Anode Station	Description
Topic	Protection
Table name	GA_ANODE_STATION

Casing

A casing is a tube which protects cables and/or pipes.

Casing	Description
Topic	Protection
Table name	GA_CASING
Shortcut Menu	Workflows: Casing Creation. For more information, see Protection Creation (page 351). Network Pipe Creation. For more information see, Network Pipe Creation (page 344).

Site

A site consists of one master attribute feature class with related line, point, and polygon geometry feature classes. Each network point can be connected to a site. Sites are not part of the network topology. They are a useful means to group various features of the gas utility network to make them reachable. For example, a site stores house number and location.

Site	Description
Topic	Site
Table name	GA_SITE_*
GA_SITE	Site master feature class that stores the attributes.
GA_SITE_LINE GA_SITE_*	Site geometry feature classes. These store the geometry for graphic presentation and normally do not contain any attributes except graphical attributes like line_type.
Shortcut Menu	Workflow: Site Creation

The easiest way to connect a network point to a site is to use the Network Point Creation workflow. For more information, see [Network Point Creation](#) (page 343).

With the Site or Facility Creation workflow, you can create sites that are related to one geometry feature. Add more geometries and equipment features using the feature class form. For more information, see [Site or Facility Creation](#) (page 347) and [Facility Creation](#) (page 348).

See also:

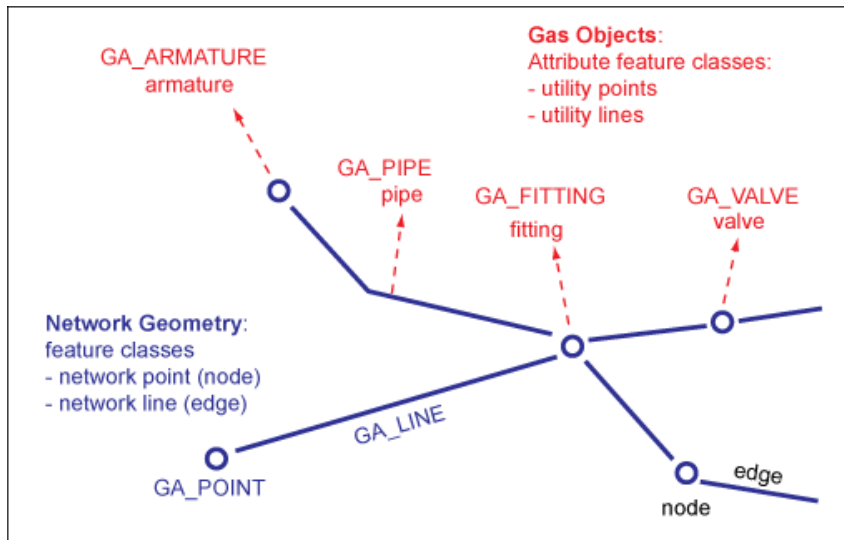
- [Connect Point Features to Sites](#) (page 392)
- [Connect a Point to a Site](#) (page 363)
- [Remove Connections from a Site](#) (page 364)

Understand and Work with the Gas Data Model

The Topobase gas data model consists of the following components:

Gas Data Model Component	Feature classes
Network geometry	<p>Network geometry is stored in the GA_POINT (for nodes) and GA_LINE (for edges) feature classes. These feature classes store geometry only, not attributes. They are related to the gas features for attribute information.</p> <p>The rows of these tables are managed by the Utility API. Do not enhance geometry feature classes with customer columns.</p> <p>The geometry feature classes build the network topology.</p>
Network topology	<p>Network topology is stored in the _NNOD (topology nodes) and _NLNK (topology links) features classes.</p> <p>Only the point feature classes of the Point topic and the pipe feature class of the Pipe topic are part of the gas network topology.</p> <p>Other feature classes such as the Protection, Site, and Facility topics, the Damage feature class of the Pipe topic, are not part of the network topology.</p>
Gas objects	<p>Gas objects are stored in the GA_POINT.FID_ATTR (utility points) and GA_LINE.FID_ATTR (utility lines) attribute feature</p>

Gas Data Model Component	Feature classes
	classes. These have a relation to the associated point or line geometry feature class.
Control cables	The geometry for control cables is stored in the GA_C_LINE and GA_C_POINT feature classes. Attributes are stored in the GA_C_CABLE and GA_C_CABLE_POINT feature classes. The geometry feature classes build the network topology.
Model tables	Model tables store several types of a particular network item. They are located in the Administration topic under Manufacturer and have the suffix _MODEL. See also Data Model: Model Tables.
Dimensioning	Dimensioning is stored in feature classes with the suffixes, _L (lines), _P (points), and _HL (help lines).
Domains	Domain tables have the suffix _TBD and contain lists of available attribute values for combo boxes in forms.
Labels	Label tables have the suffix _TBL and contain feature labels.
Feature Rules	Client-side feature rules customize Topobase behavior. For more information, see Organization of Gas Functions and Features (page 372).



Gas data model

For more information about the data model administrator, see the Overview of Data Model Administrator in the Topobase Administrator Guide.

Explore the Gas Data Model

With the Data Model Administrator you can explore the data model with its topics, feature classes, topologies, and utility models.

To explore the Gas data model

- 1 Start Topobase Administrator and open the Gas workspace.
- 2 Select the document and click Document menu ► Data Model.
- 3 Use the data model explorer to view feature classes, attributes, label definitions and topologies.

To view the gas document structure version

- 1 In the data model explorer, right-click the document root node and click Document Info.
- 2 Click the Gas Data Model row.

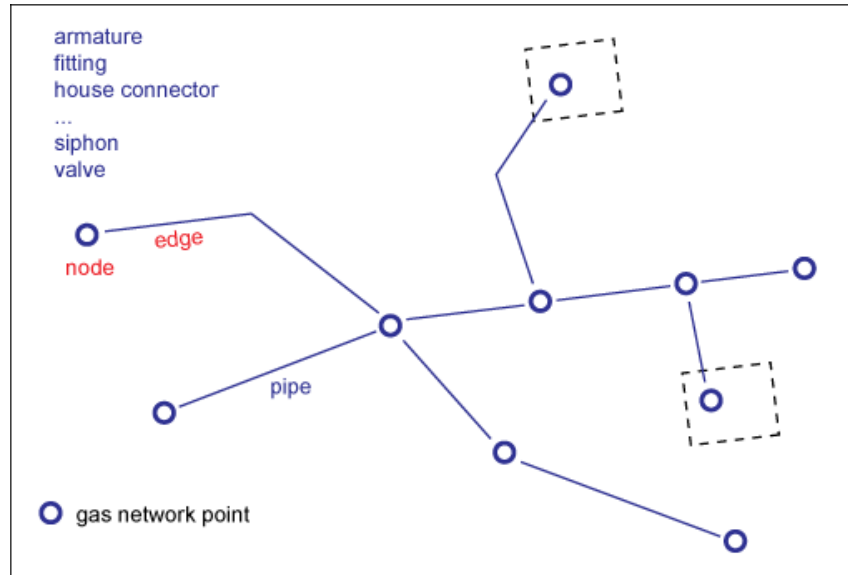
The document structure is shown in the lower information pane.

Gas Topologies

The Topobase Gas data model contains the following two topologies:

- **Gas network topology** — Built from the node feature class GA_POINT and the edge feature class GA_LINE. A gas point can be related to a site (FID_SITE).
- **Control cable topology** — Built from the node feature class GA_C_POINT and the edge feature class GA_C_LINE. A cable point can be related to a site and to a control cabinet (FID_SITE, FID_CONTROL_CABINET).

The node and edge geometry feature classes are stored in the Topology topic.



Topobase Gas network topology. Network points are connected with lines. Network points must not lie on a network line.

Achieving a Valid Network Topology

The topology requires that network points always lie at the start or end of a network line. A network point must never lie on a line. If you insert a network

point on a network line, the line must be split at the insertion point. The consistency of the topology is maintained by feature rules.

If a network point is removed, the connecting lines must be merged.


For more information, see [Split Lines](#) (page 367) and [Extract Points from Lines](#) (page 370).

For more information about the feature rules, see [Organization of Gas Functions and Features](#) (page 372).

Define Labels

The basic Gas application contains predefined label definitions for most feature classes. The standard attribute for the label text is called Name Number.

NOTE By default labels are not visible in the drawing. Only labels that are defined as auto labels are created during the create feature operation. Insert labels using

Home tab ► Quick Access panel ► Create Label. 

Example Pipe label — The following label definition is used to display a label containing the diameter, material, and installation date. The label text is queried from the tables GA_PIPE and GA_MATERIAL_TBD.

```
select c.value||' '||a.DIAMETER_NOMINAL||' '||to_char(a.date_in
stallation,'YYYY')
from ga_pipe a, ga_material_tbd c
where a.ID_MATERIAL = c.id
and a.FID = $id
```

Example Armature label — The following label definition is used to display the armature type. The label text is queried from the tables GA_ARMATURE, and GA_ARMATURE_TYPE_TBD.

```
select b.value from ga_armature a, ga_armature_type_tbd b where
a.ID_TYPE = b.ID and a.FID = $id
```

For more information about defining labels, see the [Creating a Label Definition](#) in the Topobase Administrator Guide.

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