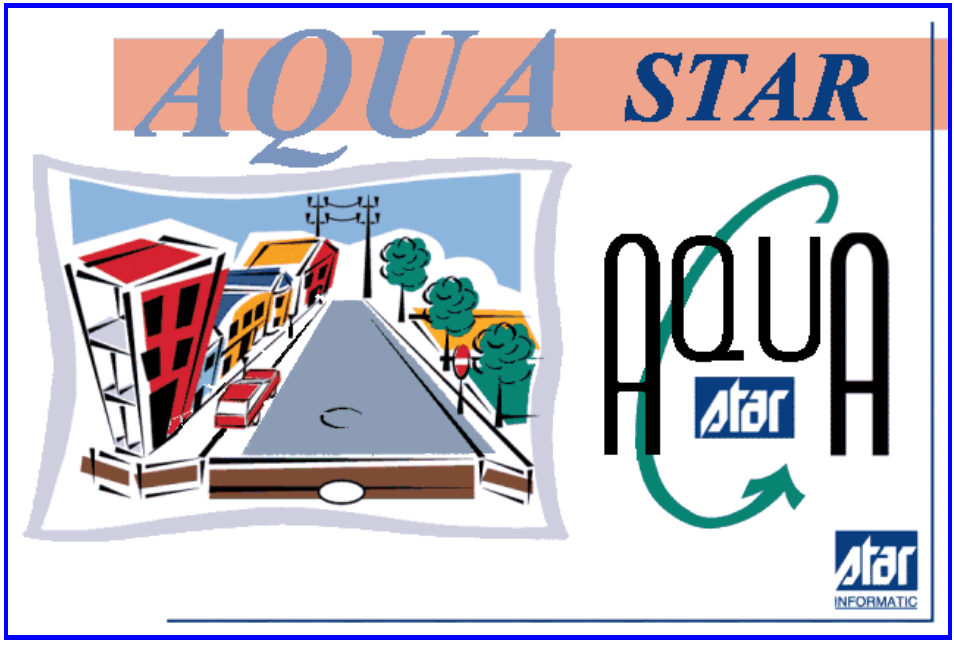

USER'S HANDBOOK

star
INFORMATIC

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Printed in Belgium in April 1999

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CHAPTER 1

BEFORE STARTING

1.1 Welcome

Welcome in AQUA STAR application and thank you for placing your confidence in STAR INFORMATIC products.

AQUA STAR was specifically designed to let the managers and operators of a drinking water network control this network and improve the management of the infrastructures. It is an analysis, management tool, also dedicated to design and communication. It will improve the quality of the services offered to consumers.

AQUA STAR is easy to use. It is its main feature. You will discover it along the various chapters of this handbook and you will appreciate it as soon as you will be working for the first time with its applications.

Enjoy working with AQUA STAR !

1.2 AQUA STAR solution

With AQUA STAR, those in charge of drinking water networks manage their networks and infrastructures with a specific application integrated into a Geographic Information System.

Networks, **equipment**, **segments** and **interventions** are the basic management themes.

AQUA STAR solution integrates input and import functions of cartographic data, links to databases, technical drawing, documents production,...

For easier access to these functions, AQUA STAR is made of 2 applications :

- The application « **AQUA CARTO** » is designed for technicians in engineering offices. It initializes, for instance, databases, it captures networks, sub-networks, equipment and segments to import data. The application also integrates functions to import external data.

- The application « **AQUA GIS** » is designed for managers. It mainly consists of one application that connects management information and geographic location. It locates, for instance, segments and equipment as well as it defines their degradation to analyze, budget and program maintenance works.

1.3 AQUA STAR handbooks

Because AQUA STAR solution relies on two software applications for various kinds of experts (technicians and managers), distinct guides are planned for their respective training.

AQUA STAR is supplied with 5 handbooks :

- **AQUA STAR User's handbook**. That's the one you are reading now.

- **STAR GIS User's handbook** to use more specific functions of the Geographic Information System for queries, specific analysis,... It is written for technicians as well as for managers. It may also concern those who want to analyze in detail the information managed by AQUA STAR.

- **STAR CARTO User's handbook** is a technical guide that describes all the functions to import data, to draw, to produce plans,... It is written for technicians and draftsmen.

- **AQUA STAR Methodology handbook** is written for anyone who is in charge of the implementation of the system, its possible customization or its generalization within the organization. In most cases, this guide is only useful if AQUA STAR is implemented by an expert (STAR consultant, STAR partner, services provider, integrator, ...).

- **AQUA STAR Introduction and Installation handbook** covers the software's various installation operations on one or several networked PC's.

1.4 AQUA STAR User's handbook

This guide concerns AQUA STAR release 3.1.

It is written for beginners who do not know the product or, even, who have never worked on PC's before. It is organized in 3 sections:

Part 1 : INTRODUCTION (Chapter 1)

Part 2 : AQUA GIS (Chapter 2 to Chapter 8)

The **chapter 2** consists in a comprehensive introduction to AQUA GIS. It explains, for instance, its terminology and the data that is processed. We recommend you to go through it before starting using AQUA GIS with the tutorial of **chapter 3**.

The **chapters 4 to 7** are reserved for those who want to understand everything in AQUA GIS applications. Only **chapters 4 and 5** might be useful for a "traditional" user of AQUA GIS applications.

The **chapter 8** is the "bible" of the user. That is where he finds all the information on the commands operating. We do not recommend to study it but rather to consult it when it is necessary.

Part 3 : AQUA CARTO (Chapter 9)

The **chapter 9** provides you with all the information on AQUA CARTO. It explains the various input and setting commands. We recommend you to read first CARTO WinSTAR User's handbook.

1.5 Tutorials

We suggest you to use AQUA STAR tutorials available on the software's CD ROM even before analyzing the **TUTORIAL PART (chapter 3)**.

The tutorial is a saved task that only lasts a few minutes.

Simply follow the instructions in **chapter 3** to discover it.

1.6 Installation

AQUA STAR installation is almost automatic and can be partial or complete because AQUA GIS is made of several applications.

MS-ACCESS 97 © must be also installed on your PC.

For a first contact with AQUA GIS, simply install STAR GIS, the applications and one example. **AQUA STAR Introduction and Installation Handbook** describes in detail the installation procedure on your PC's drive. STAR GIS 4.1 and MS-ACCESS 97 © must be also installed on your PC.

Before using AQUA CARTO, read in **AQUA STAR Introduction and Installation Handbook** its detailed customization procedure. CARTO WinSTAR 8.4 must be also installed on your PC.

1.7 Required hardware

A PC Pentium with a minimum of **64 Mb RAM** is required for AQUA GIS. For AQUA CARTO, we recommend **80 Mb** central memory. A bigger central memory will speed up the process of large databases.

The drive space necessary to install all AQUA STAR applications, examples and the handbook amounts more or less **300 Mb**.

We recommend hardware which displays at least **32,000 colors** on screen. A 256-color display is, however, enough.

The minimal definition of the screen should be **1,024 X 768 points**.

The ideal solution would be to only use WINDOWS NT PC's. Nevertheless, AQUA STAR can also work within a network of PC's equipped with different operating systems according to their power and the profile of their user.

You will find more information on required configurations in **AQUA STAR Introduction and Installation Handbook** as well as in **chapter 6.2** concerning **Network operating**.

PART 2 : AQUA GIS

CHAPTER 2

AQUA GIS APPLICATION

2.1 Introduction

A few concepts need to be defined before explaining AQUA GIS operating. We highly recommend you to read this chapter carefully and, most of all, to get used to terminology. These few minutes spent in reading are essential if you wish to explore the software in an optimal way.

2.2 Presentation

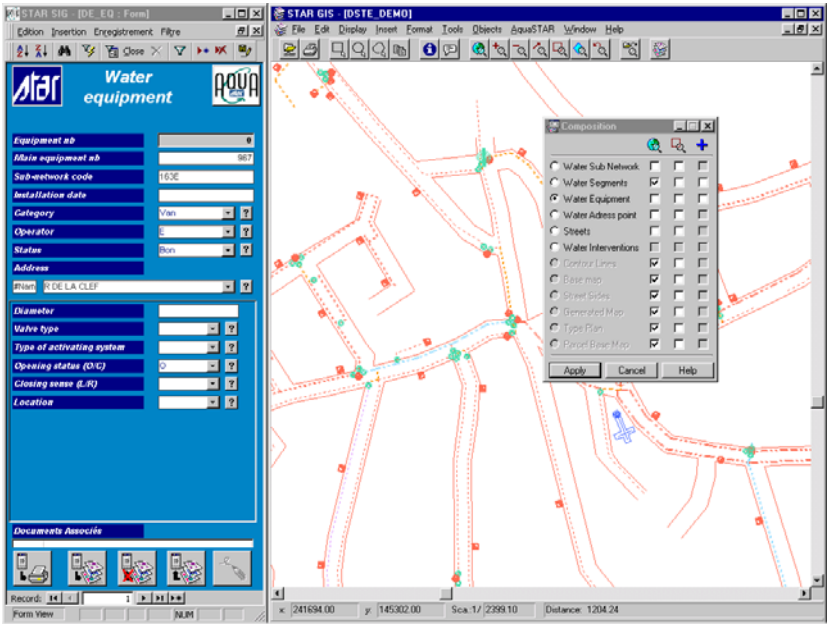
The main task of AQUA GIS is to manage drinking water networks and its equipment via a specific application. It consists, thus, in the quantification and geographic location of:

- ❒ Sub-networks
- ❒ Segments
- ❒ Equipment
- ❒ Address numbers
- ❒ Interventions

Also, to locate this information, you must also create a cartographic base map. That is what AQUA CARTO does.

Other applications use this information to produce, for instance, plans and rendered images but we will not speak about it in this handbook.

We will focus on the **management functions** of geographically located data relying on a type screen with the following illustration:



2.3 AQUA GIS specific terminology

Application

Group of functions that create objects, associate attributes and locate them geographically for various processes such as thematic maps, queries, reports,...

Object

An object is what you manage. It can be a sub-network, a segment of water network, equipment,... It is data geographically located (for instance, equipment) or not (for instance, an intervention).

(Object) attribute

A group of management attributes is linked to each object. These are texts, values, information, remarks, ...saved in an alphanumeric database.

Alphanumeric database

It consists in all tables containing object-related savings. Each saving covers all the object's attributes. ACCESS© is the alphanumeric database selected for AQUA GIS.

ACCESS © (**MS-ACCESS ©**)

Management system of alphanumeric databases but also of on-screen presentation thanks to consultation and input forms. ACCESS also proposes functions for report edition, research, data filter,...

(Graphic) localizer

Some objects processed by AQUA GIS can (and must) be located geographically. This means that one graphic element corresponds to one object. This can be a surface (for parcels), a line (for segments), a punctual symbol (for the equipment of the water network),...

(Object) identifier

The identifier is the name of the object. It is an univocal name within a category of objects. The identifier is usually the first attribute. In some cases, the identifier can be an association of two or three attributes. It is, for instance, the case for a segment identified by its sub-network.

(Object) category

Objects are classified in categories. Each category corresponds to one table in the alphanumeric database. The category « segments » describes for instance the length of a segment, its place within a sub-network, its degradation,...

Form

The form is a presentation which describes on-screen the various attributes of a category (of a file). In some cases, a form can associate the attributes of two categories. It is the case for the equipment with a form providing information on equipment or the equipment category.

Report

The report is a table printed on paper (or on screen). It covers a group of objects of one category. The report may concern all the objects or a selection of objects. For instance, all segments with a « poor » condition.

Filter

Many management operations use criteria to filter objects. A filter can be, for instance, the selection of all turned down permit applications. The filter can carry on one or several attributes. For instance, all works done in 1998.

Theme

AQUA GIS application is made of 12 customizable themes. The user will process one theme at a time. For instance, he is going to process, for the theme "interventions", the interventions on the segments and/or on the equipment. A form is linked to each theme.

Graphic link

It is the link created between an (alphanumeric) saving of the database which concerns one object and a (graphic) geographic localizer. One of AQUA GIS main functionalities is to create such links.

Alphanumeric link

Links can be also built between the alphanumeric savings of two object categories. It is, for instance, the case when a Task (works) is linked to one or several segments.

Graphic selection

Result from a selection on the graphic localizers of objects. A selection usually applies via the definition of a zone or via the punctual definition of each localizer.

Alphanumeric selection

Result of a filter applied to one category of objects and, more precisely, on one or several of its attributes.

Composition

List of the themes with graphic data displayed on screen. Indeed, when you process the theme "equipment", you can also overlay the theme "sub-network".

2.4 AQUA GIS IT terminology

Other more specific terms should be also defined to let you fully understand the different chapters of this User's handbook.

Window

These are Windows windows. AQUA GIS always presents two windows placed side by side.

Management window

Window on the left side of the screen which displays the attributes of a theme. MS-ACCESS program controls this window.

Graphic window

Window on the right side of the screen. It displays the geography of one or several overlayed themes. This window is controlled by STAR GIS.

Main menu

Each of the two windows displays a main menu made of a group of terms placed side by side. We speak here of "Management window menu" and "Graphic window menu".

Icons menu

Each of the two windows presents a series of icons under the main menu. These icons directly select one command. We speak of "Icons menu of the management window" and « Icons menu of the graphic window».

Context menu

Menu linked to some elements displayed on screen. The context menu appears when you select something with the right button of the mouse. This menu triggers specific actions for the picked data. A context menu is linked, for instance, to some attributes and icons of the management window.

Cursor

The cursor is an arrow in the graphic window. In the alphanumeric window, it is an arrow that appears as a vertical track when you select an input zone (click with the left button of the mouse).

(Attribute) input zone

Rectangular area in which you can find the value of the attribute of one category.

List of values

The list of values which can be encoded is limited for some attributes. It appears when you select an arrow located on the right side of the input zone.

Dialog

Box which contains a certain number of icons, selections or input zones. A dialog can define, for instance, the composition of the graphic themes to display.

Windows icon

The management window, the graphic window and dialogs usually present the same standardized system of icons presented in the upper right section:

 Delete window

 Iconify window

 Reduce window size (or the contrary)

Integrity

Principle according to which the links between the attribute arrows and geographic localizers are coherent. That is how one parcel can only have one owner.

Thematic study

Representation of graphic localizers of objects. Specific colors are associated to them according to a criteria defined in the object attributes. For instance, a thematic study can present the segments with a color dependent of their degradation.

Query

That operation consists in looking for one or several pieces of information, based on criteria. A query may rely on alphanumeric criteria (which act on the attributes of the object) and/or on graphic criteria. A query can identify for instance all segments longer than 100 m within a 500-m radius around a specific point.

Dynamic label

Display of a selection of attributes of an object selected with the mouse. This display takes place in a « bubble ».

Graphic (or "static") label

One or several texts for each text embedded in graphic data. These texts are attributes of the object. For instance, all equipment numbers embedded in their center.

Legend

Each graphic localizer is displayed with a specific symbol. This symbol is defined in the legend because the graphic localizer has a type. The legend creates thus a representation for each type of points, lines, surfaces or texts.

Type

Each graphic localizer is featured by a type which is a number. Thanks to this type, if you modify the legend that refers to it, you can change the symbol of all localizers of that same type. For instance, make all parcels transparent.

Update

The modifications brought to alphanumeric attributes and to links definitions are directly updated when you use AQUA GIS. This is due to client/server operating.

Client/server

This expression means that several users are using their computer at the same time to update one sole database located on a server. « Clients » have all access to the same information which they can consult or modify. Automatic procedures forbid simultaneous accesses to the same object.

In AQUA STAR applications, the client/server is often used, for instance, to let one or several technicians work on graphic localizers with AQUA CARTO and to let one or several managers to consult or modify simultaneously the attributes and links with AQUA GIS.

(Graphic) layer

Graphic data is distributed into layers. AQUA GIS model saves one layer for certain themes. Layers are gathered in maps.

The graphic window overlays data from various themes. This can be confusing in some cases. That is why you can:

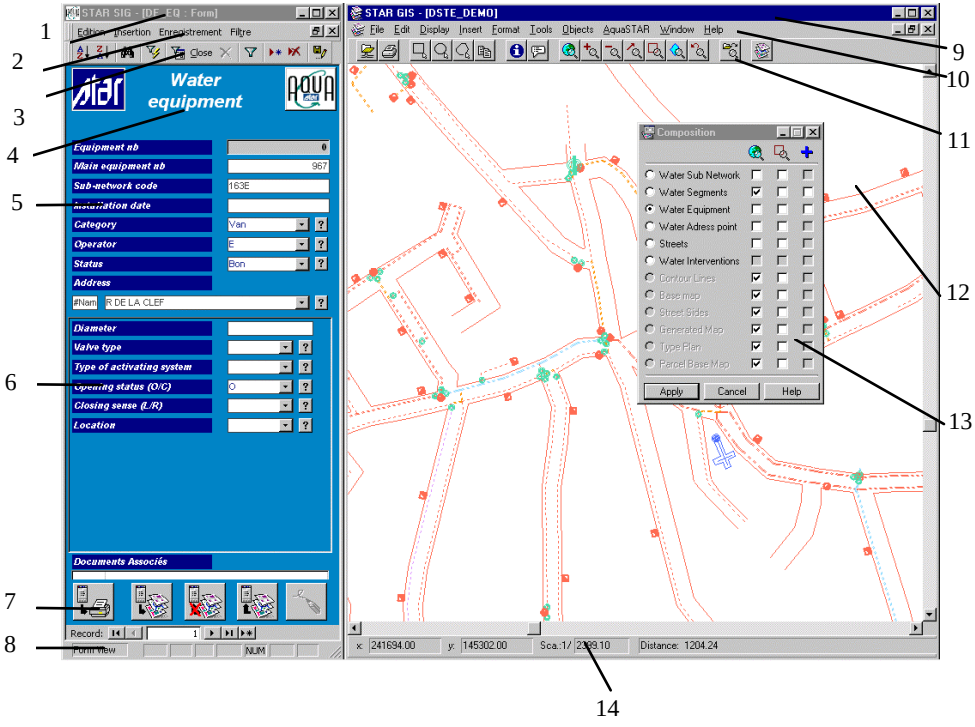
- ❒ reverse the display order of various graphic layers
- ❒ temporarily delete the display of some graphic data categories for some layers (for instance the texts of the layer of addresses)
- ❒ annotate some layers

This list of terms is not exhaustive. You will find in the following chapters some new terminology elements that we will qualify as "secundary". We do not oblige you to know them by heart but we do think that if you understand all of this, it will ease your work and communication with your colleagues.

2.5 Screen example of AQUA GIS applications

To let you discover AQUA GIS operating one step at a time, we are going to comment a few traditional screens you will get used to very quickly.

The first picture presents **AQUA GIS** type screen.



1. Title of the management window title (MS-ACCESS application)
2. Main menu of the management window
3. Toolbar of the management window
4. Name of the processed theme. The asterisk means that a graphic link may exist for this theme
5. Object identifier
6. Object attributes
7. Management icons
8. Savings exploration tool
9. Title of the menu of the graphic window (STAR GIS application)
10. Main menu of the graphic window
11. Toolbar of the graphic window
12. Framing onto a land section
13. Display control toolbar of graphic window
14. Coordinates, scale and status bar

2.6 Your turn to grab the mouse !

It is time for you to pick up the mouse and explore AQUA GIS management application. We recommend you to follow the scenario presented in **chapter 3** to let you correctly « ***discover AQUA GIS*** ».

CHAPTER 3

DISCOVER AQUA GIS

3.1 Introduction

Discovering AQUA GIS only requires half an hour of efforts. And still, we invite you in this chapter to a rather user-friendly exploration.

The purpose of this chapter is to let you get used to the general operating by using the learning database supplied with the software. You are going to search for the information, highlight it, modify it and analyze a little bit with AQUA GIS application.

This tutorial is not enough, of course, to fully train you. For more information, consult afterwards **chapter 8** of the REFERENCE HANDBOOK which will inform you, for instance, on:

- ❒ Specific dialog techniques.
- ❒ Management functions.
- ❒ Production functions.
- ❒ Main graphic tools.

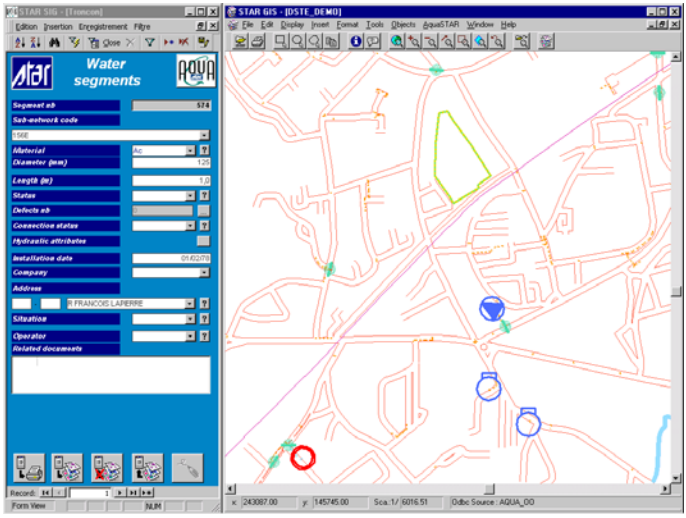
Other manuals are supplied with AQUA GIS to let you discover the technical drawing expert functions with the application STAR CARTO and GIS analysis with STAR GIS. We confirm you, however, that you do not have to study these guides to be able to manage your network with AQUA GIS.

3.2 Start AQUA GIS

At least one of the following options is selected when you install AQUA GIS on your computer. That is why you only have to double click on the software icon or to select the name of the program in a menu to access AQUA GIS.

- ❒ Via file explorer
- ❒ Via the icon **AQUA GIS**, corresponding to a "shortcut" on desktop
- ❒ Via a "shortcut " available in Windows **Start** menu
- ❒ Via the icon **AQUA GIS** available in a group of icons in a window

This selection displays 2 windows.



- *the **management window** presents one of the themes processed by AQUA GIS and, more precisely, the last one consulted in the previous session.*
- *The **graphic window** is empty when starting because you need to load the required graphic layers manually.*

The two windows represented side by side offer specific functions that your are going to discover.

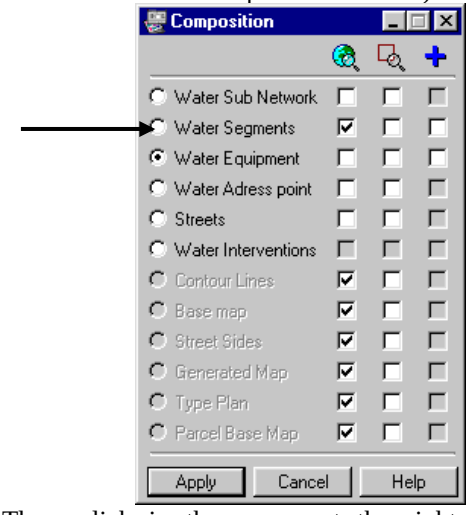
3.3 First cartography exploration

You need to display in the **graphic window** at the right side of the screen the cartography of the site to manage. We are going to choose the easiest method which consists in the display of the «default» local authority or more precisely the one processed in a previous consultation and which is probably the example supplied with AQUA GIS.

▷ **Display the cartography of the theme «segment »**

1 In the main menu above the graphic window, click on **AQUASTAR.** Then, click with the left button of the mouse to choose in the pull-down menu the command **Display Control**.

2. In the resulting dialog, click with the left button of the mouse in the circle that precedes the expression « **segment** ». At that moment, this theme «segment » is selected and the management window presents the features of a segment (the last one consulted in a previous session).



3. Then, click in the square at the right side of the word "segment" and under the icon "globe". This means that you want to see all the segments of the territory.
4. Click on **Apply** in this dialog.

(5.) When loading is done and if nothing appears because of the scale in the **graphic window**, click on the icon **Zoom +** to change the scale and to display segments.

Remarks

- ❒ Various pieces of graphic information are displayed according to display scale. Hatching in parcels, for instance, is only visible as from 1/2,500th. As a matter of fact, you will notice that the scale is always at the bottom of the screen.
- ❒ No information may appear on the general framing and you must automatically enlarge a zone.

▷ **Explore the graphic window**

1. If the dialog **Display Control** annoys you, you can move it or reduce it to an icon. To do so :
   - Whether you click in its title and, while keeping the left button of the mouse pressed, you shift the dialog to one corner of the screen.
   - Or you click on the icon « _» in its upper right corner to reduce it to a small and not cumbersome bar.
   - Or you delete it with the icon "X" and you recall it later.
2. To explore the graphic window, you have at your disposal a group of icons to modify the framing. Here are the main ones:

A B C D E F D H

A Frame onto the whole territory (**general view**)
B Enlarge scale by factor 2 (**zoom +**)
C Reduce scale by factor 2 (**zoom -**)
D Shift one point to another place on screen (**pan view**)
E Frame onto a zone defined by points (**zoom by 2 points**)
F Frame onto selected graphic localizers (**extreme selection**)
G **Previous framings**
H **Dynamic framing**

▷ **Obtain information on segments**

1. In the menu of the graphic window, select the icon **Information bubble**
2. In the list proposed in the dialog, choose the **"Default"** bubble model
3. Shift the cursor onto a segment, then, stop it for a split second
4. Consult the information bubble related to the selected segment
5. Select other segments
6. Select once again the icon « **Information bubble »** to stop the automatic information display

Remarks

- ❒ The information bubble is a way to get information on a segment. We will discover others later on.
- ❒ The content of the information bubble is standard. It presents the list of the main features of a segment. The content of this bubble can be also customized for specific displays which only concern a few attributes.

3.4 Segment-related attributes

Graphically located segments have attributes that you can consult or even modify.

▷ **Display the attributes of a graphically defined segment**

1. Click in the graphic window to define a segment
2. Choose the icon "**Filter current graphic selection**" at the bottom right of the management window
3. Consult the attributes of the segment displayed in the management window

Remarks

- ❒ No attribute may be linked to the graphically selected segment. In that case, the management window will be empty and the message « **No selected graphic object linked** » will warn you of this lack of link.
- ❒ Several segments can be selected at the same time by one of the commands accessible via the selection icons of the graphic window or by pressing on **Shift Lock**. In that case, the management window will display the various attributes of the selected segments.
- ❒ The univocal identifier of the graphically selected segment is made of the various bold written attributes defined at the beginning of the file.

▷ **Modify the attributes of a segment**

1. Display via a graphic selection the attributes of the segment
2. Click in an encoding zone of an attribute
3. Use the keys **Delete** or **Cancel** on keyboard to delete one or several characters
4. Encode the new value of the attribute
5. Click on **Update** to validate the modification

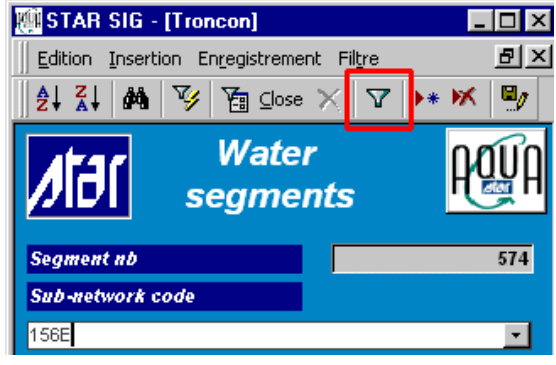
Remark

❒ Different types of attributes are available:

- The 2 first attributes that create the univocal identifier of the segment. Their values are bold written.
- The other attributes which are information related to the segment.
- The attributes with blue values mean that they are submitted to automatic computing.

▷ **Select one or several segments via attributes**

1. Select the icon **Filter per form** at the top of the management window
2. In the encoding zone of the attributes « Sub-network Code » of the segment, encode partly the known elements. For instance: **156***



3. Select the icon **Apply filter** at the top of the management window for research and to propose the selection
4. Consult in the management window the attributes of the first segment selected by the filter
5. With the arrows at the bottom of the management window, consult the attributes of the various selected segments

6. Select the same icon as in point 3 which became **Delete filter** to cancel the selection and offer access to all segments

Remark ❒ The character « * » only transmits a part of the attribute for filter:
*C searches for the segments with a name ending with C
A* searches for the segments with a name beginning with A
AC searches for the segments with a name containing AC

▷ **Locate a selected segment**

1. Choose one of the segments in the selection submitted to the filter
2. Click on the icon **Highlight current object** at the bottom of the management window
3. Consult the graphic window in which the segment is highlighted and centered on screen

Remark ❒ A segment selected in the management window may have no graphic localizer. In that case, a different icon will appear at the bottom of the management window to inform that the link does not exist.

- A link exists between the attributes and a graphic segment. In that case, the icon proposes you to delete that link, if necessary.

- No link exists between the management attributes and a graphic segment. In that case, the icon proposes you to create that link, if necessary.

3.5 Production of a thematic study on segments

We are going to explore the theme "segments" which sections are graphically located. Thanks to their attributes, we are going to produce a thematic map.

Segments are geographically located and each of them has attributes which define, for instance, its degradation. As a consequence, it is possible to create a thematic representation that highlights, via adapted colors, the various quality levels of segments.

▷ **Display the attributes of a group of segments**

1. Enlarge the content of the graphic window to separate segments
2.  Select the icon **Selection in circle**
3. Define the center and a point of its circumference to select a group of segments
4.  Select the icon **Filter current graphic selection** at the bottom of the management window
5. Use the « **arrow** » icons at the bottom of the management window to consult the attributes of the various selected segments
6.  Select the icon **Delete filter** at the top of the management window

Remarks

- A few themes proposed by the dialog **Display Control** have no graphic localizers. In that case, you can not mark the squares situated at the right side of the theme's name. Only management data appears in the left window. It usually consists in information related to the main theme that is also located graphically. It is for instance the case with « **Interventions** ».
- Other non related objects have forms that can only be displayed by the command **Forms/.../...** in **AquaSTAR** menu in the graphic window. It is, for instance, the case with the general features of the local authority.

▷ **Produce a thematic map on the status of segments**

1. Make active the theme « **Segments** » via the dialog **Display Control**
2. Select the command **AquaSTAR/Thematic studies/Segment/ Status** via the main menu of the graphic window
3. Consult the colors linked to each segment in the graphic window

▷ **Display the legend related to a thematic study**

1. Select the command **AquaSTAR/Legend/Segment/Status**.

3.6 New data location

Data location consists in the association of a technical attributes file to a geographic localizer. To do so, we are going to analyze the theme « **Equipment** ».

More precisely, in the following order, we are going to:

- Break the link between a localizer and its attributes file
- Encode a new file
- Link that attributes file to the equipment localizer

▷ **Process another theme**

1. Display the dialog **Display control**
2. Select the theme "**Equipment** "
3. Mark the square under the icon "**Globe**" to display the whole network
4. Click on the squares located at the right side of the dialog to cancel, if necessary, the display of other themes
5. Click on **Apply**

▷ **Display equipment attributes**

1. Modify the framing of the graphic window
2. Select some equipment within the water network. Its color must change to show that it has been selected

3. Click on the icon **Filter current graphic selection** at the bottom of the management window
4. Consult the management attributes of the equipment

Remarks

- ❒ For more accurate picks of lines or graphic points, keep the key **Ctrl** pressed during the pick.
- ❒ The geographically located equipment may not be linked to an attributes file. In that case, the third icon at the bottom of the management window proposes you to create a link.

- ❒ In that case and to continue the exercise, we suggest you to move within the files, to choose some equipment and to locate it graphically with the icon **Highlight current object**.

▷ **Delete the link between the geographic localizer and the attributes file**

1. Select graphically some equipment within the network
2. Select the icon at the bottom of the management file that deletes the link

Remark

- ❒ Deleting the link does not result in deleting the attributes file of the equipment. It is always present in the database and its content will always influence queries and reports. It will no longer influence, however, the production of thematic studies or labels.

▷ **Delete an attributes file**

1. Display the relevant attribute file
2. Select the command **Delete saving** via the menu **Edition** in the management window
3. Validate deletion

Remark

- The attributes file of the equipment is no longer in the database. Even if the graphic symbol that located it, still appears in the graphic window, it has no technical meaning. It's a symbol with no attribute (not linked to a file).

▷ **Create a new attributes file**

1. Select the icon "**Create file**" at the bottom of the management window
2. Encode or select the values of the main attributes of the file

Remarks

- The most important attributes are those that identify the equipment within the water network. In the theme « **Equipment** », it is the equipment number that must be, thus, univocal.
- If the encoded equipment already exists (its identifier), a message informs you that you can not update the attributes file.
- The update takes place as soon as another attributes file is displayed.

▷ **Associate the new attributes file with a graphic localizer**

1. Use the commands to modify the framing in the graphic window to display the concerned equipment.
2. Click on its point to select the equipment.
3. Select the icon **Construct graphic/alphanumeric link** at the bottom of the management window to create a link with the active attributes file.

Remark

- As far as water networks are concerned, we remind you the general principle which consists in the association of one sole file to one sole piece of equipment.

3.7 Exploration of equipment documentation

Equipment is located by symbols and can be associated to several documents (texts, tables, photos, plans,...) which can be independent or overlayed onto the cartography

▷ **Display a document associated to equipment**

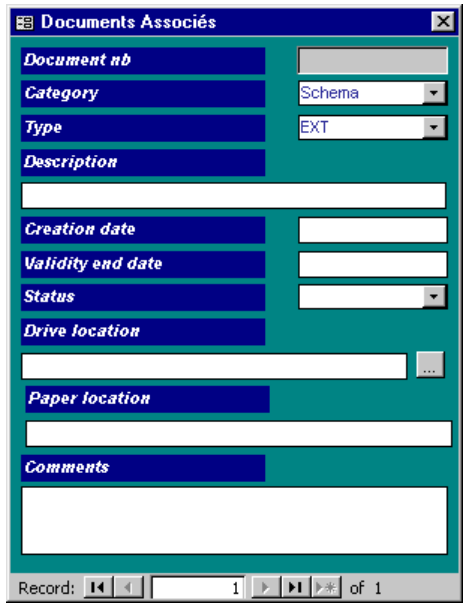
1. Make active the theme **Equipment** and display its layer of graphic localizers
2. Select a symbol representing the equipment
3. Select the icon **Filter on graphic selection**
4. Consult the form
5. Double click on the name of one of the documents presented in the form list and which concerns equipment-related photography
6. In the displayed window QUICKVIEW, modify the framing of the photography
7. Click on "**X**" in its title to close the window.

Remarks

- ❒ According to the type of associated document, it can be:
  - a "STAR" document (DOC)
  - an independent office document (EXT)
  - a document that can be overlayed geographically (GEO)
- ❒ If other "DOC" documents are to be consulted, you do not have to close QUICKVIEW window. You can reduce it to an icon via "_" or empty its content via "**X**" (icon in the window menu).

▷ **Associate new document to equipment**

1. Click with the right button of the mouse in the display list of the documents on the relevant equipment
2. In the following menu, choose the command **Add**



3. Fill in the important attributes of this form and, in particular:
   - **Nature** of the document
   - **Type** of document
   - **Name** given to the document
4. Click on the icon "**...**" to search on the drive or on the network for the file that contains any photo of some equipment.
5. Click on "**X**" to close the form.

(6.) Double click on its name to consult the relevant document

3.8 Production of documents

Three kinds of documents are produced by AQUA GIS:

- ❒ Quantitative and descriptive **reports** automatically created
- ❒ **Extracts** of the graphic window transferred as illustration into an office document
- ❒ **Plan plots**

▷ **Produce a report on the Interventions on segments**

1. Select the theme "**Intervention**"
2. Use the icons to select the graphic window to define a group of segments. Use, for instance, the circle to specify the zone to be concerned by the report printing

3. Select the icon **Filter on graphic selection** at the bottom of the management window
4. Select the icon **Print current selection** at the bottom of the management window with the right button of the mouse.

5. Choose the command **Print objects selection** in the proposed context menu.
6. Use the lifts at the right side and at the bottom of the window to consult the report
7. Use the command **Print** via an icon or via the menu **Files** in the management window to print the report
8. Click on the icon "**Close**" in the report's window (and not the icon "**x**" in the general window which would stop AQUA GIS) to close the display window

Remarks

- ❒ Use classic **Layout** functions accessible via the menu **Files** in the window to customize the presentation of the document.
- ❒ The content of the report is strictly limited to the selected segments.

▷ **Transfer a section of the graphic window into an office document**

1. Select with the dialog **Display control** the themes to be represented in the graphic window
2. Adapt the framing of the graphic window
3. Select the command or the icon **Copy** via the menu **Edition** in the graphic window
4. Select two points to frame the zone to copy
5. Start another office program (word processing, spreadsheet, ...) and use its command **Paste** (**special**) to reproduce the extract of a cartography

(6.) Adapt, if necessary, the size of this illustration

Remark

❒ Other techniques are also possible such as using **ActiveX**. Consult, if necessary, STAR GIS User's Handbook.

▷ **Produce a cartographic plan**

1. Select the themes to display via the dialog **Display Control**

(2) Add, if necessary, a thematic study (with the option "legend integrated into graph")

3. Choose the framing in the graphic window
4. Use the command **Print** via the menu **Files** in the graphic window
5. Select in the proposed dialog the printer to which the plot must be sent
6. Adapt the display settings with the proposed dialog
7. Click on **Print**

3.9 Use of the other functionalities

With these few exercises, you may say that you know what AQUA GIS is. Congratulations !

You still have, of course, some work to do. You must first discover all the unexplained possibilities. That is why we invite you to read the REFERENCE HANDBOOK presented in **chapter 8** or to use on-line help accessible via the command « **?** » in the menu of the graphic window.

We also invite you to explore the various themes proposed by AQUA GIS and, in particular, to study in **chapter 4** all the dialog modes adopted for the graphic window as well as for the management window.

CHAPTER 4

DIALOG TECHNIQUES

4.1 Introduction

You do not need to know much to be able to use AQUA GIS. A few conventions have been already presented in the previous chapters and enable you to be an expert with the mouse in just a few seconds.

In this chapter, we restart from scratch and speak about the various interaction means with the content of the windows displayed on screen. Although we do not consider you as a beginner, we thought that it would be useful to remind you a few operating principles of « Windows » programs.

4.2 AQUA GIS windows

Two windows are presented next to each other. They run together thanks to a link between the two software programs which control them; that is MS-ACCESS for the management window and STAR GIS for the graphic window. For both windows, similar rules apply:

▷ **The title bar controls the position and the dimension of the window**

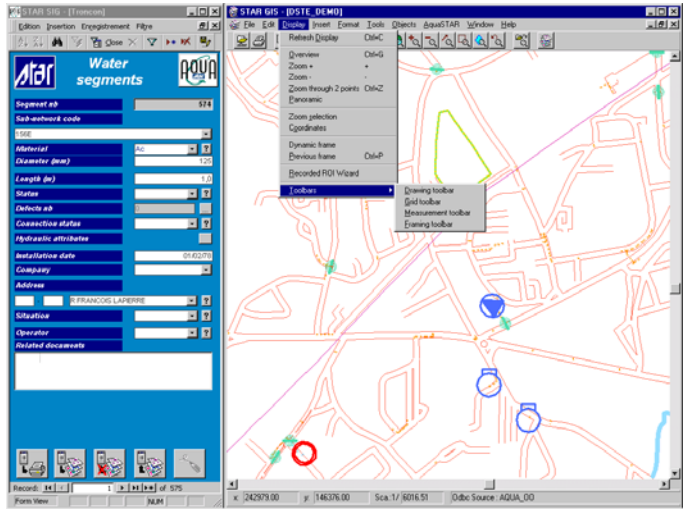
- Click with the left button of the mouse on the icon « **x** » and you immediately close AQUA GIS. Management and graphic windows disappear.
- Click on the icon « ❐ » and you shorten the size of the window to see, if necessary, other icons or windows in background. To come back to the initial size, pick once again on that icon « ❐ ».
- Click on the icon « _ » and you reduce the window to an icon that will be in the bar of Windows NT or Windows 95 **Start** menu. To reopen this window, simply shift the cursor into this bar and click on ACCESS or STAR GIS icons.
- Click in the bar of the title itself and keep the left button pressed to shift the window and to see the background.

Remarks

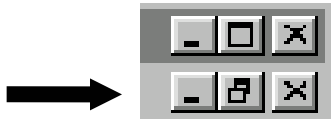
- ❐ Several programs are activated when you start AQUA GIS. Only two of them appear as graphic windows: MS-ACCESS and STAR GIS. The other programs are STAR SERVER and AQUA GIS. They are immediately transformed into icons. Thus, you do not have to pick these icons in the bar of Windows **Start** menu.
- ❐ When you click on « **x** » to close AQUA GIS, no information is lost. If you did it by mistake, no problem, just restart AQUA GIS to come back to the previous situation.

▷ **The windows main menus access these commands**

- A line of terms under the window's title accesses specific commands. To do so, click on one word with the left button of the mouse to display a pull-down menu. Then, click once again on the command required for activation. In some menus, you must also shift laterally to sub-menus.



- There is, at the same level as the main menu of a window, a new group of three icons similar to the ones of the title bar.



These icons close the alphanumeric or graphic databases without closing the programs. At first glance, you do not need to use them while using AQUA GIS.

Remark : ❒ If you click on the icon « **x** » located at the right side of the main menu, you no longer have access to data in the window without « reloading » it. Therefore, you must :

- go through **Display control** dialog to choose a new theme if the operation concerned the management window.
- restart AQUA GIS if the operation concerned the graphic window.

▷ **Windows toolbars directly access frequent commands**

- The icons of the management window sort, filter information,...
- The icons of the graphic window change framings, select elements,...
- To run one of these commands, simply click on the icon with the left button of the mouse. The instructions concerning the rest of the operations are described in the Reference handbook of **chapter 8**.

▷ **One sole window can be active at a time**

- The active window is the one with the blue title bar.
- To make one of the two windows active, simply click in it with the left button of the mouse.

▷ **The lifts on the window' sides modify the framing**

- Click with the left button of the mouse in the arrows located at the endpoints of the lifts;
- Click directly in the lift where the cursor moves to modify the framing more significantly.

4.3 Keyboard use

You can use, of course, the keyboard to encode attributes into the forms of the management window. Other more specific functions are also accessible via the keys on keyboard or keys combinations.

▷ **Various specific keys are useful for encoding**

- The key **Delete** replaces with a blank character the character on which the cursor is.
- The key **Cancel** (arrow on left side) deletes the character on which the cursor is by packing the remaining characters. So, if you click on the last character of a line and if you press as many times as necessary, this key deletes the whole line.
- The key **Escape** cancels the last encoding in the management window.
- Double press on **Escape** and the last update of an attribute file is canceled.
- The keys **Next Page** and **Previous Page** scroll down the object files in the form.

▷ **According to the active window arrows have different actions**

- The 4 arrows at the right side of the keyboard modify the framing in the graphic window.
- In the management window, the "upwards" and "downwards" arrows go from one attribute to another.
- In the management window, the "left" and "right" arrows also go from one attribute to another.

▷ **Other keys modify the framing of the graphic window**

- The keys of the numeric keyboard instantly change the framing:
  - The keys **1, 2, 3, 4 , 6, 7, 8** and **9** select the neighbor framing.
  - The key **5** enlarges the content of the window
  - The key **0** does the contrary
- The keys **« + »** and **« - »** respectively enlarge and reduce the content of the graphic window.

▷ **A few other keys do specific processes**

- The **space bar** interrupts a replot considered as too slow in the graphic window
- "**Shift Lock**", when permanently pressed, cumulates graphic selections
- Press on "**Ctrl**" at the same time as graphic picks when you need to be more accurate to select a line, a punctual symbol,...

▷ **Combinations of keys perform specific operations**

- In the graphic window:
  - **Ctrl + C** for screen refresh
  - **Ctrl + G** to display a general view
  - **Ctrl + Z** for a zoom by 2 picked points
- In the input zones of a form
  - **Ctrl + C** to copy a string of characters
  - **Ctrl + X** to shift the string of characters
  - **Ctrl + V** to paste the string of characters

4.4 Mouse use

The mouse is essential in the graphic window as well as in the management window.

▷ **The two buttons of the mouse are active**

- The **left button**:
  - selects a localizer in the graphic window
  - selects the commands and icons of menus
  - selects a field in which you want to encode or modify a value.
- The **right button** displays a « context » menu. For instance :
  - the 4 icons at the bottom of the management window have a related « context » menu which appears when you click with the right button. At that moment, select one of the possibilities offered by a menu; then, release the right button.
  - some blue form attributes also have a related context menu for automatic computing.
  - the definition zone of the documents related to the real-estate elements is positioned that way.

▷ **The mouse is also used for picks in the graphic window**

- Use the **left button** of the mouse to pick selection icons ans some framing icons in the graphic window.
- To close a selection in a polygonal contour, click on the last point with the **right button** of the mouse.
- Also, to close the creation of a line with the drawing palette, pick an additional point with the **right button**.
- Click with the **right button** in the graphic window to interrupt a replot considered as too slow.

▷ **Surfaces attributes and lengths are computed upon request**

- **Double click** in the input zone to recompute some attributes (for instance: length of a segment) or click with the **right button** to display a context menu.
  Relevant attributes are displayed in blue.

CHAPTER 5

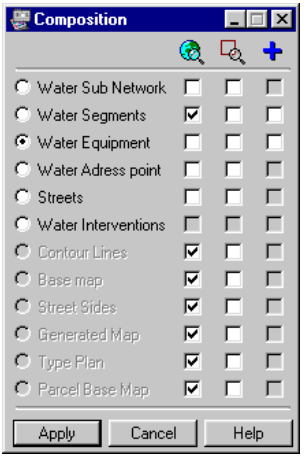
MANAGEMENT OPERATIONS

5.1 Localizers management

A graphic data layer contains, for each theme, the elements that locate objects.

When the dialog **Display control** selects a theme, the graphic data layer as well as the relevant data category turn out active automatically. As a result, a picked graphic selection only highlights the data of the relevant theme.

The selection of the themes to display is done via the dialog **Display control**:



- Simply click with the **left button** of the mouse in one of the circles of the first column and another theme turns active. The following operations are automatically done:
  - The form of the management window is adapted to the selected theme.
  - The graphic layer of the theme turns active.
  - The other graphic layers are no longer selectable.
  - The required data category (points, lines or surfaces) turns active.
- The column of squares under the icon « **Globe** » defines the themes to be graphically activated for the whole territory. One or several marked boxes only act if you select afterwards the key **Apply**.
- The squares located under the icon « **Lens** » trigger exclusively the content of the framing of the graphic window to reduce memory usage or download times.

Remark : ❒ Some themes have no graphic localizers. They concern alphanumeric data which has no localizer but which is linked to other themes (for instance: Interventions related to segments).

Besides using the dialog **Display control** to fix the content of the graphic window, the main menu and the icons menu propose other possibilities. For instance:

- Raster or vector graphic layers added onto the cartography via the documentation in all themes.

- Other selected layers added through the network or on the PC's drive.

- Modification of the appearance order with the command **Layers and Elements** accessible by the menu **Format**.

- Additional **graphic annotations** as texts, lines, surfaces or symbols with the drawing commands and their saving in an additional layer.

- Call for various AQUA GIS **specific functions** to :
  - Display labels
  - Do queries
  - Produce thematic studies
  - Print reports
  - Display legends

- Besides AQUA GIS preprogrammed standard functions, the **Construction** commands in the menu **Tools** accessible in the graphic window create labels, queries, thematic studies and legends.

- Access is, of course, granted to the various **framing** commands via the icons or the commands of the main menu in the graphic window.

Finally, the various icons of the graphic window **select graphic localizers** to:

- And link each of them to the attributes file presented in the management window.

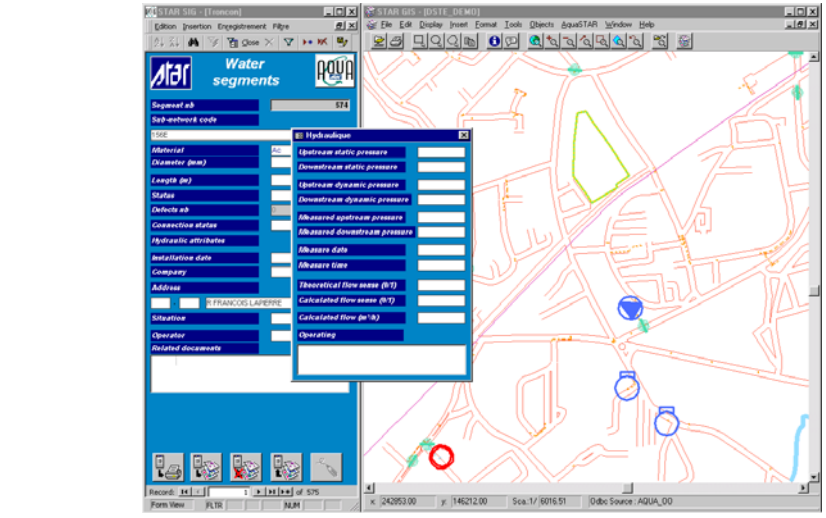
- Filter the attributes files that match them and go through them easily in the management window.

These various operations are described in the Reference handbook of **chapter 8** and, with more details, in STAR GIS Reference handbook.

5.2 Management of attributes tables

Three groups of attributes tables are accessible:

- ❒ The tables corresponding to the themes with the forms displayed in the dialog **Display control**.
- ❒ The tables related to the previous ones and accessed by the icon "**Other form**" at the right side of the concerned attribute (Works, Project managers,...) or by a context menu (Documents).
- ❒ The independent tables accessed by the command of AquaSTAR menu in the graphic window (local authorities, general settings).



5.3 Attributes management

The management window automatically offers the same presentation, regardless of the theme. Its operating principle is the following:

- When no graphic selection is done, all the objects are accessible in the management window by :

  - The command to search for an object accessible by the main menu, by the icon **Search** or via the right button of the mouse (context menu).

  - The command or the icon **Filter** to select a group of objects on the basis of patterns related to one or several attributes.
  - The scrolling of the various objects with the **arrows** at the bottom of the management window.

- An attributes file can always be modified by the simple partial or complete reencoding of one of its attributes.

- To add a file, simply select the command **Add** via the icon at the bottom of the management window or via the command **Save** in the menu **Insert** as well as via the context menu (right button of the mouse).

- To update a file, select the update icon or go to another file.

- The print icon at the bottom of the management window whether prints a report on the displayed object or on all the selection's objects. For this second function, select the icon with the right button of the mouse and choose the command **Print schedule for object selection**.

The menus and icons of the management window perform other functions. These are fully described in the Reference handbook in **chapter 8**.

5.4 Links management

Two situations may appear while processing a theme:

❒ Alphanumeric data **can be located** geographically. In that case, 5 accessible icons are present at the bottom of the management window:

- Print report.

- Highlight in graph.

- Create or Cancel Alphanumeric/Graphic link.

- Display in management window data selected in graphic window

- Create localizer in the graphic window and link to the object defined in the management window

- In some cases, the objects of a theme **can not be located** graphically. They can be, however, linked to other alphanumeric themes. For instance, segments works are linked to the segments and planning applications are linked to parcels. In that case, the icon to create a graphic - alphanumeric link is replaced by the icon to create an alphanumeric - alphanumeric link.

These various operations build the main part of the implementation process of the links which are the real power of the information system and which create, for instance, complex queries or thematic studies.

The various operations that lead to the creation of links are fully described in the Reference handbook of **chapter 8** and, more specifically, in the sections related to **ATTRIBUTES** and **LINKS**.

CHAPTER 6

TECHNICAL OPERATING OF THE APPLICATION

6.1 Operating on stand-alone PC

When AQUA GIS runs on a stand-alone PC, that implies that it contains all processed graphic and alphanumeric databases.

In that case, AQUA GIS should run with **Windows NT** operating system to let the PC in multitasking mode. It can also run with **Windows 95**.

At that moment, several programs are operational at the same time on the PC when management applications are used:

- STAR SERVER to access graphic databases
- MS-ACCESS 97 © and its management applications
- STAR GIS to display the graphic window

6.2 Network operating

Network operating usually relies on a data server equipment which must be operational with **Windows NT** or **UNIX**. This server can be also a PC used for AQUA GIS application, for AQUA CARTO as well as for other processes that have nothing to do with AQUA GIS.

This server is connected to one or several other PC's on which the various AQUA STAR applications are operational. In that case, the hardware to be installed needs a specific customized network configuration.

STAR SERVER runs on the server of the network and "feeds" graphically the other workplaces of the network by using AQUA GIS application and/or other applications.

STAR graphic data and alphanumeric data can be located on the network's server. This data can be also located on any other computer within the network. In that case, a specific customization is required during AQUA GIS setup.

Operations on graphic and alphanumeric data are submitted to the following restrictions:

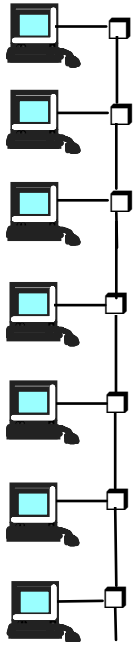
- Two workplaces within the network can not modify at the same time the same graphic area of a layer centralized on the server. A complete booking system of layers or of one layer zone is at the disposal of users. However, if one of them modifies a graphic layer, the other ones still can consult it at that moment in its previous condition. All users will benefit from the latest data release when modifications are validated.

- When modifications are brought to a graphic layer through AQUA GIS graphic window, the entire layer is kept aside during the operation and the other users can not modify it.

- Several users may access at the same time alphanumeric data. However, when a saving is on screen, the other users of the network can not modify it. Meanwhile, MS-ACCESS operating mode may reserve several savings and, thus, lock their access even if they are not used. Usually, this situation does not last and the other users of the network may rapidly access it.

6.3 Evolution of your AQUA STAR solution

Within network operating, graphic data may be accessed by various users from their own PC. Each of them may use then various programs such as for instance:



STAR SERVER to manage graphic layers and databases

AQUA GIS to manage links (MS-ACCESS and STAR GIS)

AQUA CARTO to input and update graphic layers

Specific applications based on **STAR GIS** used as **ActiveX** component in a Windows application

Other **MS-ACCESS** © applications or compatible programs for alphanumeric database input

STAR NEXT *Surf* to consult data via Internet.

Other management or computing applications compatible with AQUA GIS databases or connected to a system of DDE/OLE/ActiveX link to AQUA GIS graphic window.

The optional system of AQUA GIS « floating licenses » lets several users within the network use these various applications at the same time.

CHAPTER 7

ORGANIZATION OF AQUA GIS SOLUTION

7.1 Introduction

The purpose of this chapter is to detail the data processed by AQUA GIS applications. More precisely, this section focuses on:

- ❒ The list of themes and objects processed by the various applications.
- ❒ The description of the functionalities of each theme.
- ❒ The organization of links between the attributes tables linked to objects and themes.
- ❒ The list of operating procedures for each theme as queries, thematic studies, reports and labels.

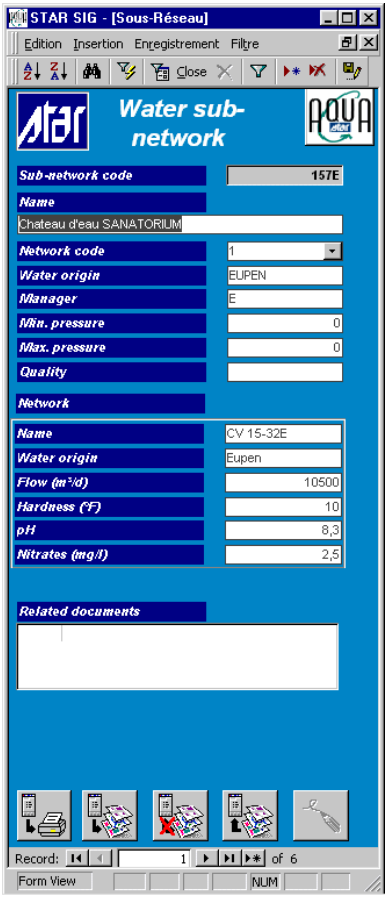
You do not have to study this chapter to use AQUA GIS application. It enables you, however, to better understand management rules as well as to input data further developed in AQUA GIS TUTORIAL.

AQUA GIS database presents the following features:

- ❒ **The 6 main themes**: Equipment, Segments, Sub-network, Intervention, Address numbers and Streets.
- ❒ A few additional **documentary themes**.

7.2 The theme « Sub-networks »

The theme « sub-network » manages sub-networks. The sub-network is a sub-division of a network as manageable unit. Each sub-network is, for instance, supplied by a pumping station.

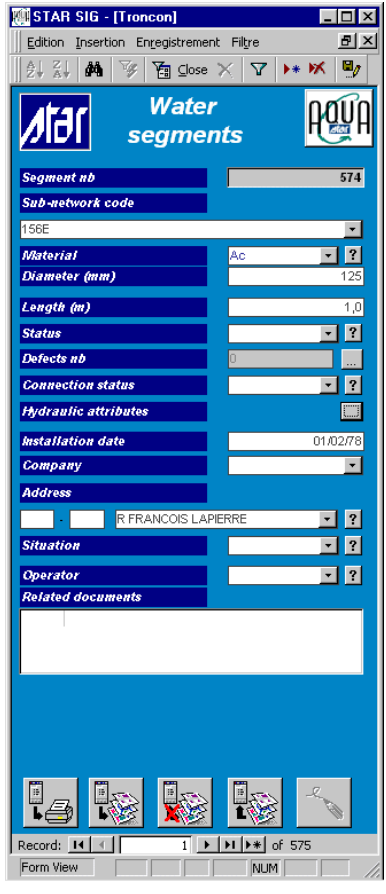


A sub-network has an univocal name, a code and information on water origin, network manager, maximum and minimum pressures, water quality as well as general information.

Finally, documentation elements can be associated to the sub-menu. This information concerns plans, scanned documents, office documents or any other kind of document.

7.3 The theme «Segments »

The theme «segments » manages the segments of a water network. It rapidly locates a group of segments that meet some research criteria.



A segment has an univocal name and always belongs to a sub-network. The segment is located in a street, with start and end policy numbers.

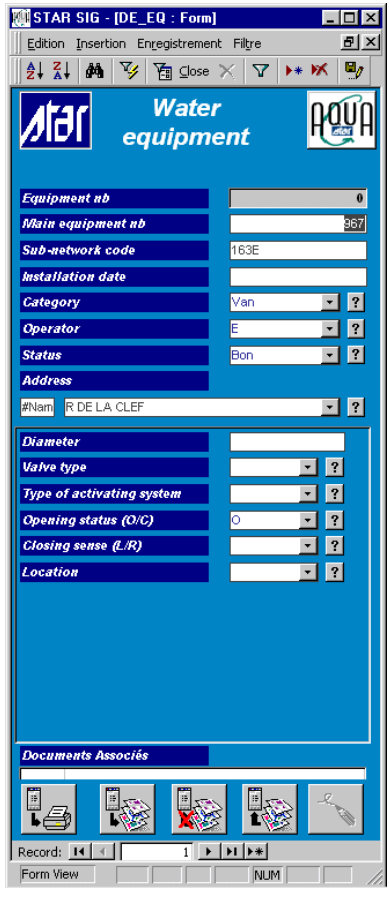
A segment may have the following information:

- Its **material**. Click once on the question mark and you get the list of all available materials.
- Its **diameter**.
- Its **length**. This value can be retrieved from the graphic map. You click once with the left button in the blank window and you retrieve this value. You can also recompute with the right button of the mouse the graphic values for a selection of segments.
- Its degradation **condition**. Click once on the question mark and you get the list of all available conditions.
- The number of **defects** already mentioned on that segment. Click on  to add a defect.
- The **connections status**. Click on the question mark and you get the list of all available statuses.
- The **hydraulic attributes**. Click on  and you get more information on the attributes.
- **Installation date** of the segment.
- **Installation company**.
- The **address**. The two first fields relate to the start and end policy numbers. The last field provides the name of the street.
- The **location** of the segment (in the street, sidewalk, …)
- The **operator**

Finally, documentation elements may be linked to segments. This information concerns plans, scanned documents, office documents or any other type of document.

7.4 The theme «Equipment»

The theme «equipment» manages the various pieces of equipment within a water network. It guarantees the rapid location of the equipment that meets some research criteria.



A piece of equipment has an univocal name, always belongs to a sub-network and information is attached to it (installation date, network operator and degradation condition).

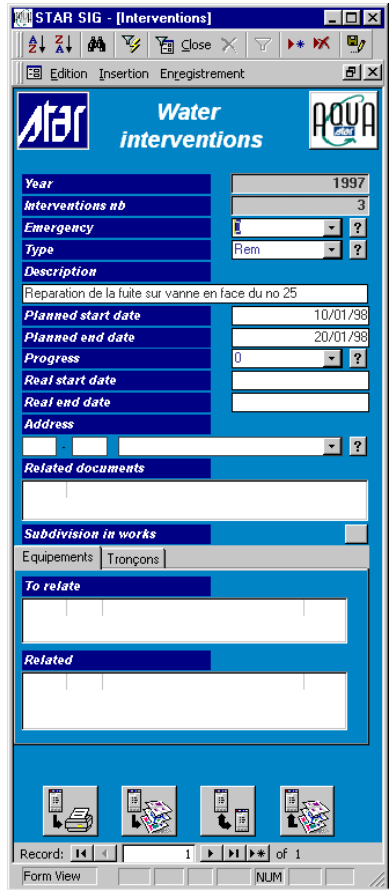
According to the equipment category, you may have different pieces of additional information. Equipment must belong to one of the 9 following categories:

- ❒ Manhole.
- ❒ Air sucker.
- ❒ Hydrant.
- ❒ Pumping station.
- ❒ Catchment point.
- ❒ Fire plug.
- ❒ Pressure reducing valve.
- ❒ Valve.
- ❒ Reservoir.

Finally, you can associate documentation to equipment. It concerns plans, scanned images, office documents or any other type of document.

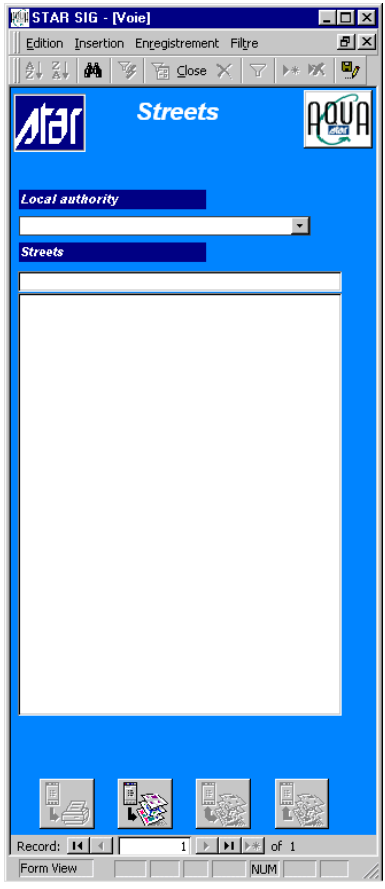
7.5 The theme « Interventions »

The theme « Interventions » manages the various interventions on segments and on the equipment within the network.



7.6 The theme «Streets »

The theme «Streets » rapidly locates one or several streets. You choose the name of a local authority; then, the name of one or several streets in the list.



You may also use research criteria as for instance '***SH***' for all the streets with SH in their name.

7.7 Organization of graphic databases

5 graphic layers are used by default to locate the 6 themes defined in the previous chapter:

- The layer **S_NETWORK** with surfaces and texts describing sub-networks.
- The layer **NETWORK** contains all the equipment points and segments lines.
- The layer **DIAM** contains the texts of segments diameters.
- The layer **STREET** with the lines describing the streets.
- The layer **NUM_POLICY** contains the texts of address points.

The names of these layers are standard. They can be, however, modified by the customization of Organized Objects (cf. ADMINISTRATOR HANDBOOK).

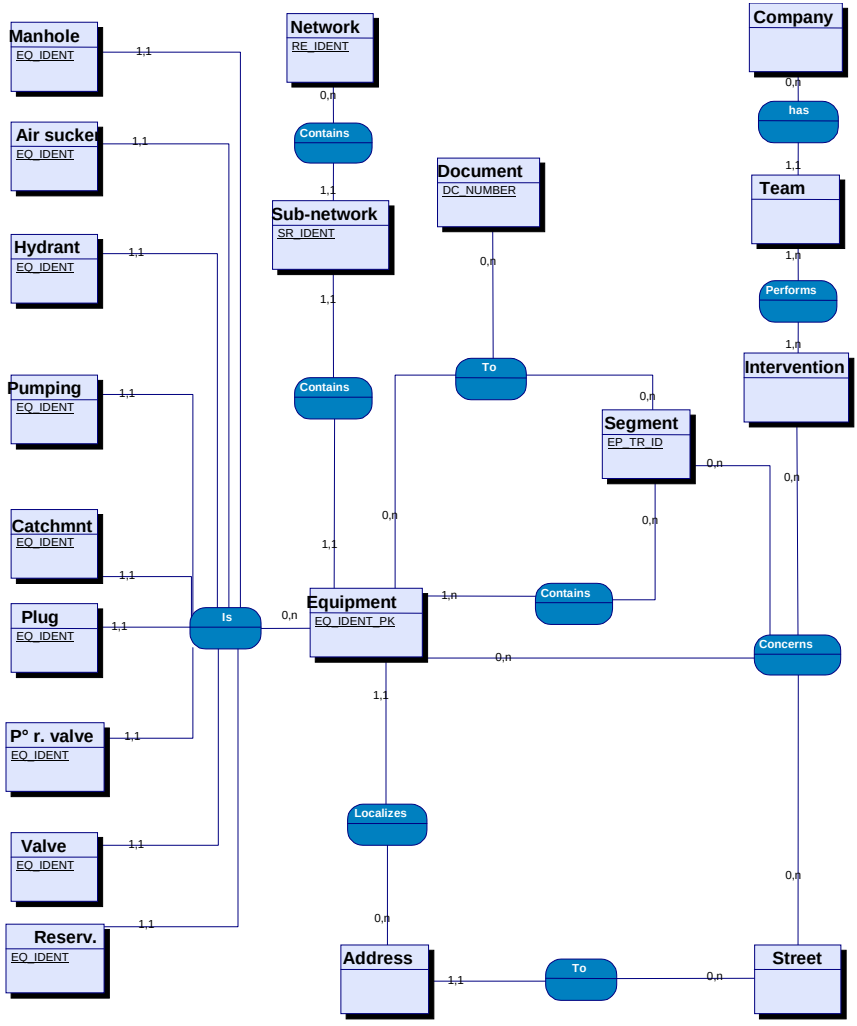
These various layers belong to a map with a name defined in the configuration of Organized Objects. By default, this map is DSTE.

These 5 layers may contain other graphic data categories (points, lines, surfaces or texts) as long as they do not throw confusion with object localizers. This means, for instance, that the layer "segments" may not contain street lines to avoid any ambiguity during the selection in the graphic window. The user is responsible for removing such ambiguities.

The general rule adopted for objects is: one object linked to one sole geographic localizer.

The Organized Objects also customize the display of other data layers.

7.8 Concept Model of the attributes database



The attributes of AQUA GIS management themes and reference objects are distributed in tables. Here is the general relational scheme of the various tables.

CHAPTER 8

A - Z FUNCTIONS

8.1 Introduction

ANNOTATIONS
ATTRIBUTES (Display ...)
ATTRIBUTES (Input ...)
CUT/PASTE
DISPLAY CONTROL (Modify ...)
DISPLAYED ELEMENTS
DOCUMENTATION (Associate ...)
FILES (Consult ...)
FILES (Filter ..)
FRAMING (Screen)
LABELS
LABELS (Example of new ...)
LABELS (Standard)
LEGENDS
LINKS (Between files)
LINKS (Between file and localizer)
LOCATION (Of an object)
REPORT (Print ...)
QUERIES
QUERIES (Example of new ...)
QUERIES (Standard)
THEMATIC STUDIES
THEMATIC STUDIES (Example of new ...)
THEMATIC STUDIES (Standard)

Italic sections are to be consulted in STAR GIS handbook.

ATTRIBUTES (Display ...)

TOPIC **Select graphic data which is the localizer of an object and you can obtain the attributes file of that object.**

ACCESS

1. Pick a graphic localizer, then, pick the icon **"Filter graphic selection"**.
2. Use one of the selection icons of a group of objects in the graphic window. Then, pick the icon **"Filter graphic selection"**.
3. Use the corresponding commands of the Edition menu of the graphic window. Then, pick the icon **"Filter graphic selection"**.

PRINCIPLE The default command in the graphic window is the selection of one element. Simply click within a surface, on a line or on a point according to the concerned theme.

To obtain a selection on a group, use one of the commands accessible via the icons menu or via the menu **Edition** in the graphic window.

This selection results in applying a filter on the alphanumeric files.

FUNCTIONS ▷ **Display attributes of a graphic localizer**

(1) Click, if necessary, on **Ctrl** to search for the nearest graphic localizer in step 2.
2. Select one point to select the graphic localizer (if necessary, keep Ctrl pressed).
3. Select the icon **Filter graphic selection** at the bottom of the management window.
4. Consult the attributes of the displayed file.

... Select another graphic localizer to obtain another selection.

5. Click on **Delete filter** in the menu of the management window to access once again all the files.

▷ **Select group of files**

1. Whether click on **Selection by two points** in the graphic window and select two points that frame the localizers to select.

1.' Or click on **Selection in circle** in the graphic window; then, select the center and a point of the circumference of the research circle.

1.'' Or click on **Selection in polygon**; then, click on the points of the contour line that frame the research zone and close with the **right button** of the mouse.

2. Click on **Filter graphic selection** at the bottom of the management window.

3. Consult the consecutive files selected by the operation.

Remarks

- ❒ When a graphic localizer is not linked to an attributes file, a blank form appears.
- ❒ After having done a selection from graphic picks, click on **Delete filter** to access once again all the files.
- ❒ Press on **Shift Lock** and you can cumulate graphic selections by the various commands.
- ❒ This technique (temporary restriction) permits the simultaneous selection of maximum around 120 objects.
- ❒ Press on **Ctrl** for easier research (snap on...) of a line or a picked point.

.

SEE ALSO **ATTRIBUTES (Input ...)**
FILES (Consult ...)
FILES (Filter ...)

ATTRIBUTES (Input ...)

TOPIC **The attributes of the various themes processed by AQUA GIS are managed in the management window located on the left side of the screen. Input, modification and deletion mechanisms are managed according to MS-ACCESS principles.**

ACCESS

1. Choose one theme in the dialog **Display control** displayed by **AquaSTAR** menu in the graphic window.
2. Use the **arrow** icons to go through the various files located at the bottom of the dialog window.
3. Use the icons of the **toolbar** in the management window to run selection filters, to sort attributes and to cancel encoding.
4. Use the **menu commands** in the management window for specific processes.

PRINCIPLE AQUA GIS processes attributes in two cases:

- whether they all exist and are all transferred into the database. You just need to complete, modify or link them to graphic localizers.
- or no attribute has been created. In that case, encode them and link each file to a graphic localizer.

FUNCTIONS ▷ **Modify file attributes**

1. Click with the cursor in the input frame that contains the attribute value.

2.' Whether use the keyboard's keys to:

- Move with the **arrows** within the characters of the attribute
- Delete with the key **Delete** the character on which the cursor is placed

- Delete the consecutive characters with the key " ⟵ " (delete) on keyboard

2.'' Or encode a new value of the attribute or insert figures or characters according to the cursor's position

2.''' Or select a pre-encoded value with the arrow possibly located at the right side of the attribute

3. Click on **Update** in the toolbar of the management window for validation.

Remarks

- ❒ As long as the attribute file is on screen, you can cancel one or several implemented modifications. Simply click once or twice on **Escape**.
- ❒ Each attribute has a maximal length. It is highlighted as « _____ » when you click in the input frame.
- ❒ Other restrictions may concern the type of character to input (digital, text,...).
- ❒ Make sure with dates that the cursor is placed at the left beginning of the input zone _/_/_ to encode the first of the 8 characters.
- ❒ Some attributes must absolutely be chosen in a list with an arrow located at the right side of the input zone.

- ❒ If the attributes proposed by the list do not work, click on "**Other form**" to encode in another form (cf. next function).

- ❒ Other attributes also selected by this arrow still can be encoded on keyboard. If the encoded value does not exist, it will be added to the list. That is, for instance, the case with the degradation condition of segments.
- ❒ Double click in the input form of a "computed surface" or of a "computed length" (displayed in blue in the field) and they are recomputed from the graph.
- ❒ Double click with the right button in such an input zone and a context menu enables you to choose between:
  - Recomputing the value from the surface of the relevant graphic localizer.
  - Recomputing the value from the surface for all selected (filtered) objects.

- ❒ Some attributes at the beginning of the list of a file are bold written. These are keys that identify univocally the processed object. A key is sometimes made of several consecutive attributes.
- ❒ Use "Cut/Paste" functions (CTRL + C, CTRL + V) to copy field values from one file to another.

▷ **Complete list of selectable attributes**

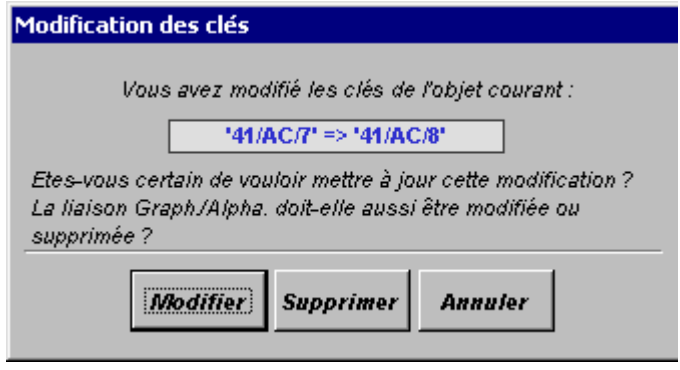
1. Click on the icon "**Other form**" at the right side of the arrow.
2. In the new proposed form, encode the identifier and attributes.
3. Click on the icon "**Update**".
4. Close this form with the exit icon on top right (choose the icon right below ACCESS exit icon).

5. Select the attribute encoded with the arrow.

▷ **Modify object name (file identifier)**

In the attribute file, one or several of them are bold written. They (it) build(s) the key or the identifier of the object. This identifier can be modified with certain consequences.

1. In the selected attribute file, click in the input zone of one of the identifier's attributes.
2. Modify the value of this identifier and click on **Return**.
3. When validating the file (icon **Update** when going to another file), choose between the 3 possibilities
   - Click on **Modify** to keep the link between the new object (new identifier) and the former localizer.
   - Click on **Delete** to delete the link with the former graphic localizer.
   - Click on **Cancel** to give up modifying the identifier.



Remark

❒ When this operation is done and when a link exists with a localizer, you can :

- Whether keep the link with the graphic localizer
- Or delete the link with the graphic localizer

▷ **Create new attribute file**

1.' Whether click on **New file** at the bottom of the management window.

1.'' Or move to the last file with the icon **File end** at the bottom of the management window. Then, use **Go to next file** to present a blank file.

2. You must absolutely encode the identifier in the blank file.
3. If necessary, encode in the other fields the required attributes values.

4. Click on the saving icon or go to the next file.

Remarks

❒ The attribute file is also updated when another attribute file is selected.
❒ Update may be impossible if one of the forgotten attributes must absolutely be defined during input process.

▷ **Delete attribute file**

1. Select the command **Delete saving** in the menu **Edition** in the management window.
2. Confirm the deletion of the attributes file.

Remark

❒ When you delete an attribute file, you also delete the link to the graphic localizer, not the graphic localizer.

SEE ALSO

ATTRIBUTES (Display ...)
FILES (Consult ...)
FILES (Filter ...)

DISPLAY CONTROL (Modify ...)

TOPIC **One sole dialog permanently used lets you change applications and choose the theme to process**

ACCESS Via the command **Display control** in **AquaSTAR** menu in the graphic window.

PRINCIPLE AQUA GIS processes several themes linked to forms in the management window.

The selection of a theme in the dialog Display control automatically displays the appropriate form in the graphic window.

The selection of a theme makes the relevant graphic layer active. It permits localizer selections.

The dialog selects manually the graphic layers to display.

According to the selected theme, the corresponding layer will be represented on top of the others for easier selections.

Graphic layers can be loaded to cover the whole territory or a limited framing.

FONCTIONS ▷ **Change theme**

1. Choose the command **Display control** in **AquaSTAR** menu in the graphic window.
2. Click in the circle in front of the name of the selected theme.

Remark ❒ When a theme is selected for the first time, the ACCESS form must be loaded. This requires a few seconds's waiting.

▷ Display other cartographic layers

1. Display the dialog **Display control**.
2.' To select one or several layers corresponding to the themes, click on the square located under the icon "**globe**" to do a loading on the whole territory.
2.'' To select one or several layers corresponding to the themes, click on the square located under the icon "**lens**" to do a loading limited to the screen.
3. Click on **Apply** to load layers.

Remarks

- ❒ Partial loading makes you save time. It requires from STAR server only to transmit the information located within the framing of the screen fixed at that moment.
- ❒ The "partial" loading system only works when AQUA GIS is operational in "client/server" mode (connected to STAR SERVER).
- ❒ Before loading partially one or several layers, the screen framing must be set to cover the concerned zone. To do so, a simple method consists in loading completely a not so dense layer as the streets network, to zoom onto the relevant zone; then, to use the dialog **Display control**.

INFO

- ❒ You can reduce the size of the dialog **Display control.** Simply click on the icon "_" in its title bar.
- ❒ The dialog or its shortened title bar can be moved also to a zone of the screen where they do not bother.
- ❒ After having clicked on "**X**" to close the dialog, you must redisplay it via the command **AquaSTAR/Display control**.

SEE ALSO **LAYERS AND ELEMENTS (STAR GIS handbook)**

DOCUMENTATION (Associate ...)

TOPIC **Documentation elements can be associated to objects. This documentation concerns plans, scanned documents, office documents or any other type of document.**

ACCESS

1. Thanks to the context menu linked to lists within the forms and accessible with the right button of the mouse.
2. Double click on the name of a related document.

PRINCIPLE A network is made of equipment and segments. The latter can be located by graphic elements. A list of documents can be associated to each piece of equipment or segment.

Documents are gathered in three categories :

- **Associated documents** (DOC) in a format accepted by STAR graphic software: DXF, DGN, DWG, SHAPEFILE, GRP (STAR format), raster files (STAR, TIF, BMP,...) and to be viewed in a secondary window.
- **External documents** (EXT) displayed by another available program (Word, Excel,...).
- Georeferenced **raster or vector documents** (GEO) which can be displayed by STAR program (DXF, DGN, DWG, SHAPE FILE, GRP, images such as STAR, TIF, BILL,...) in the main graphic window.

Thus, these various documents can be displayed:

- Directly in AQUA GIS graphic window because the documents are georeferenced (they are in the same coordinates as cartographic layers).
- In another window automatically displayed for that purpose with STAR QuickViewer program.
- In a window displayed by another program available on PC (Word, Excel, Access, Autocad Light,...).

Documentation is associated to equipment via the selection of the relevant file in the directories hierarchy of the local computer or the network's information server.

▷ **Associate one document to one piece of equipment**

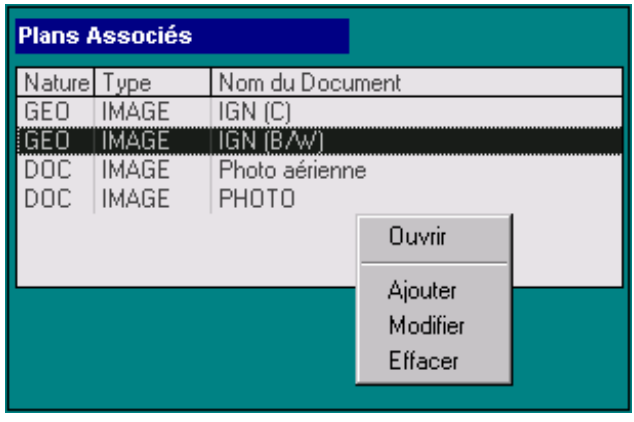
1. In the equipment's file, click on **Add** in the context menu displayed with the right button of the mouse in the list of documents.
2. Encode the features of the document in the proposed file and choose in particular:
   - **DOC** for raster or vector documents accepted by STAR software but not georeferenced.
   - **EXT** for any kind of documents accepted by another office or graphic software.
   - **GEO** for any raster or vector document accepted by STAR software and georeferenced (in geographic coordinates).

   The type of document (DGN, DWG,...) and the name of the document must be encoded to appear in the list of associated documents.
3. Click on **Access path** then go through the hierarchy of files in the network or the PC to select the one that contains the documentation. Close the operation by selecting the file's icon and the key **Open** in the proposed dialog.

4. Click on "X" to close the encoding form of the document. The latter is added to the list.

Remark

❒ If you select one of the documents in the list; then, you display the context menu with the right button of the mouse, you can:
- Open the document.
- Add a new document.
- Modify the selected document.
- Delete the selected document from the list.



▷ **Consult document linked to element**

1. Select the file corresponding to the element.
2. Double click on the name of the selected document in the list of plans or choose the command **Open** via the context menu that you obtain when you click on the right button of the mouse.

SEE ALSO **ATTRIBUTES (Input ...)**

LABELS (Example of new ...)

TOPIC **The process presented in this section is purely exemplary. It shows the operating mode to produce a label for a specific management theme. Except for a few differences between two themes, the example that we present here is highly significant of the operating mode.**

FUNCTIONS ▷ **Define new original label**

1. Select the theme « Sewerage network ».
2. Select the option **Labels/Construction** in **AquaSTAR** menu.
3. Choose **Create new label configuration**.
4. Send the name of the label (of the configuration).
5. Choose the table DE_TRO and the option **No field**.
6. Select the attributes (columns) and use the button **Add**.
7. Accept the 3 pages of the following propositions from the assistant and click on **End**.
8. Click on **No** to refuse to generate (static) labels.

▷ **Use label**

1. Update the menu via the command **AquaSTAR/Update menu**.
2. Select the option **AquaSTAR/Label/Option/Dynamic label**.
3. Select the label via the command **AquaSTAR/Label/...**

SEE ALSO **LABELS (STAR GIS handbook)**
LABELS (standard)

LABELS (Standard)

TOPIC **Labels are information which appears in the graphic window and which are related to the attributes of managed objects.**
A group of standard labels adapted to AQUA GIS themes is directly usable.

ACCESS

1. Via the command **Labels/...** in **AquaSTAR** menu in the graphic window to select a standard label in one of AQUA GIS applications.
2. Via the icon **Labels** in the menu of the graphic window to use a dynamic label.

PRINCIPLE Two kinds of labels are available:

- ❒ The **dynamic label** is an information bubble which appears when the cursor is placed on the localizer of an object. The content of the dynamic label is an extract of the attributes or the result of a query.
- ❒ **Statistic labels** are the inscription via a graphic text of one or several attributes placed in the center of the localizer of objects of a specific theme.

FUNCTIONS ▷ **Trigger dynamic label**

1.' Select the icon **Information bubble** in the icons menu of the graphic window; then, choose one of the labels in the proposed list before you click on **OK**.

1.'' Select the command **Label/Option/Dynamic label** via **AquaSTAR** menu in the graphic window; then, select the command **Label/.../...** via the same menu to choose one of them.

2. Move the cursor in the graphic window. An information bubble will appear as soon as the cursor stops on the localizer of an object.

3. Click once again on the icon **Information bubble** in the menu of the graphic window to stop the display of dynamic labels.

▷ **Create static labels**

1. Select the command **Label/option/Static label** via **AQUA GIS** menu.
2. Select the command **Label/...** to choose one of the standard labels.
3. Define a zone or a localizer via the selection icons of the graphic window.

Remarks

- ❒ Graphic labels will be generated only if the layer related to the current theme has been loaded. It does not need, however, to be represented.
- ❒ These graphic labels will be generated in a new layer with a name defined during the construction of the label.
- ❒ The created layer is not saved. It must be regenerated when necessary.
- ❒ Labels are strictly created for localizers that appear in the framing of the graphic window.
- ❒ The number of graphic texts which can be created after this command can rapidly result in memory saturation if it covers a too large territory or if it gathers too many attributes.

INFO

- ❒ The command **Label/Construction of AquaSTAR menu** in the graphic window defines other label formats which will be used for graphic labels as well as for dynamic labels (bubbles).

SEE ALSO **LABELS (Examples of new ...)**
LABELS (STAR GIS handbook)

FILES (Consult ...)

TOPIC **Attributes files are consulted in the management window.**

ACCESS Via the arrows located at the bottom of the management window.

PRINCIPLE Two numbers are displayed at the bottom of the management window:

- The order number of the presented file
- The total number of files

When a filter selects attributes files, the total number concerns the result of the filter.

FONCTIONS ▷ **Move within attributes files**

1. Select the icon **List start** to position on the first file (nr 1).
2. Select the icon **List end** to position on the last file.

3. Select the icon **Previous** to go to the previous file.
4. Select the icon **Next** to go to the next file.
5. Select the icon **File creation** to add a new one.

SEE ALSO **ATTRIBUTES (Display ...)**
ATTRIBUTES (Input ...)
FILES (Filter ...)

FILES (Filter ...)

TOPIC **The files of the themes proposed by AQUA GIS can be submitted to selections based on their attributes.**

ACCESS

1. Via the icon **Filter per form** or via the command **Filter** in the menu of the management window.
2. Via the icon **Search** in the menu of the management window.

PRINCIPLE To select an extract of the files of a theme, define a filter as one or several attributes partly or completely defined. Then, apply this filter to all files.

To find one or several specific files, use the search command: encode a string of characters which can be in one of the selected attributes.

FUNCTIONS ▷ **Filter group of objects**

1. Select the theme to process via the dialog **Display control**.
2.  Click on the icon **Filter per form** on top of the management window.
3. In some attributes (identifiers and/or the others) encode the values that define the filter.
4.  Click on the icon **Apply filter** on top of the management window to do the search and to propose the selection.
5. Consult the number of selected files at the bottom of the management window.
6. Use the arrows at the bottom of the management window to consult the selected files successively.
7.  Click on **Delete filter** (the same as **Apply filter**) to cancel selection and to offer access once again to all the theme's files.

Remarks

- ❒ Use the character « * » to filter a part of the attribute:
  AB searches for all attributes that contain **AB** characters
  ***AB** searches for all attributes that end with **AB**
  AB* searches for all attributes that begin with **AB**
  The filter method with the character "*" only works for alphanumeric attributes (names).
- ❒ When an arrow next to the attribute selects in a list the one that will act as filter, double click in the encoding zone before the selection in the list. This action modifies the presentation order of the elements and thus ease filter.
  ex. : *owner code - owner name becomes owner name - owner code*
  At that moment, it is easier to filter with the character * to find the owner.

- ❒ The icon **Cancel** empties all encoded values in the attributes during the operation **Filter per form**.
- ❒ During the filter operation which can last a few seconds, you can cancel the search. To do so, click on **Escape** or click on **Cancel** in the menu of the management window.

- ❒ When the filter is inconsistent, a blank file is always proposed.
- ❒ After having selected a group of files, the icon **Apply filter** is replaced by the icon **Delete filter**. Select that one to access once again all the files of the theme.
- ❒ The filter may apply to an undefined number of attributes.
- ❒ The filter may apply to the identifier and/or other attributes. We remind you that the identifier may be made of one or several attributes.

▷ **Search one or several objects via attribute value**

1. Select the theme to process via the dialog **Display control**
2. Click in the field on which the search must apply
3.  Click on the icon **Search** in the menu of the management window
4. Encode in the proposed dialog the string of characters concerned by the search and, if necessary, use « * » to frame a partial string of characters.
5. Use the key **Search** to display the first selected file
6. Use the key **Next** in the dialog to display the attributes and the files successively selected.
7. Select the key **Close** in the dialog to stop the research.

▷ **Apply specific filters to certain themes**

INFO

- The icons **Increasing sort** sorts the selection resulting from the filter. The sort applies to the selected field.

- The icon **Filter by selection** applies a filter based on the content of the selected field. Use the same method to apply, then, a new filter to the obtained result.

SEE ALSO **ATTRIBUTES (Display ...)**
FILES (Consult ...)
FILES (Input ...)

LINKS (Between file and localizer)

TOPIC **If you wish to do complex management operations on objects, you must create a link between each alphanumeric file and its corresponding graphic localizer.**

ACCESS Via the icon **Construction alphanumeric/graphic link**

PRINCIPLE To create a link between one alphanumeric file and a localizer, present first that file in the management window.

The link operation simply consists in the selection of the graphic localizer and one icon in the management window.

FUNCTIONS ▷ **Link localizer to alphanumeric file**

1. Select the concerned theme in the dialog **Display control**.
2. Display the graphic layer concerned by the theme.
3. Click on **Apply** in this dialog.

4.' Apply a filter to isolate the alphanumeric file to process.

4.'' Use the icon **Search** to isolate the alphanumeric file to process.

4.''' Go through the files with the arrows at the bottom of the management window to isolate the concerned file.

5. Select in the graphic window the localizer that corresponds to the file.
6. Click on the icon **Construction alphanumeric/graphic link** at the bottom of the management window.

Remark ❒ If the alphanumeric file already has a localizer, the message « *the selected graphic localizer is already linked to the object...* » will appear in the management window.

▷ **Delete link between localizer and alphanumeric file**

1. Isolate in the management window the file of the concerned object.

2. Click on the icon **Delete alphanumeric/graphic link**

▷ **Filter objects with no graphic localizer**

1. Select the relevant theme via the dialog **Display control**.

2. Select the command **Filter/Elements not linked** via the menu of the management window.

Remarks

- ❒ This command filters all the files that are not linked to a graphic localizer. That's the moment when you can link these objects to their localizers.
- ❒ The command **Filter/Linked elements** accessible by the menu of the management window does the contrary.

▷ **Highlight graphic elements that are not linked**

1. Display the layer concerned by the theme.
2. Select the command **AquaSTAR/Thematic study/ « Themes »/ « Linked objets»** in the menu of the graphic window.
3. Identify the graphic localizers with unchanged color.

Remarks

- ❒ You must, of course, display the graphic layer if you wish to locate an object.
- ❒ **Non linked** graphic data (localizers) are viewed by a thematic study created to highlight **linked** elements with one sole color.

SEE ALSO

ATTRIBUTES (display ...)
FILES (consult ...)
FILES (filter ...)
LINKS (between files)
THEMATIC STUDIES (standard)

LOCATE (an object)

TOPIC **One or several objects can be located in the graphic window from their selection in the management window.**

ACCESS

1. Via the icon **Highlight** at the bottom of the management window.
2. Via the command **Highlight selection** via the context menu linked to the icon **Highlight** at the bottom of the management window (the context menu is accessible via the right button of the mouse).

PRINCIPLE Two situations are possible:

- ❒ If **one sole object** must be highlighted, you must display its attributes file in the management window. To do so, use a filter or the search function. Then, select the icon.
- ❒ To highlight a **group of objects** in the graphic window, create an automatic filter in the management window that will limit the number of objects to display.

FUNCTIONS ▷ **Locate object in the graphic window**

1. Choose the theme via the dialog **Display control**.
2. In the same dialog, select the graphic data corresponding to that theme with complete or partial loading.
3. Click on **Apply** in the dialog.

(4.') Use the command **Search** via the icon of the management window to select the object.

(4.'') Use the command **Filter per form** via the icon of the management window to limit the search to a selection of objects.

(4''') Use the other filter commands.

5. Use the « arrow » icons at the bottom of the management window to go through the selection and to isolate the concerned object.

6. Select the icon **Highlight** to see its location in the graphic window.

Remarks

- ❒ If the object has no graphic localizer (no link), the message « *no graphic localizer* » appears in the management window.
- ❒ After having used a filter, do not forget to select once again the icon **Filter** in the menu of the management window to access all objects.
- ❒ Highlight will occur via a scale change and display in a specific color in the center of the graphic window.

▷ **Locate selection of objects**

1. Use the filter command to select a group of objects based on criteria.
2. Click on the icon **Highlight** with the right button of the mouse.
3. In the context related to the icon, choose the command **Highlight selection**.

Remarks

- ❒ Highlight in the graphic window consists in a "graphic selection". The latter will be kept aside as long as there will be no other operation of that type or as long as there will be no another pick in the graphic window.
- ❒ Use graphic functions (icons of the graphic window) or the key **Shift Lock** in picks to add manually other selections to that selection.
- ❒ Modify the framing to explore highlighted information.

SEE ALSO **ATTRIBUTES (Display ...)**
FILES (Consult ...)
FILES (Filter ...)

REPORT (Print ...)

TOPIC **A standard report and specific reports are proposed for each theme to keep a print of the objects lists.**

ACCESS Via the icon **Print current selection** at the bottom of the graphic window.

PRINCIPLE The standard report linked to each theme may concern:

- ❒ The object displayed in the management window.
- ❒ All objects selected by a filter.

FUNCTIONS ▷ **Print standard report on selection of objects**

1.' Select graphically the objects concerned by the use of selection icons; then, click on **Filter on graphic selection** at the bottom of the management window.

1.'' With an icon of the "Filter" functions in the menu of the management window, apply a filter to the alphanumeric files.

2. With the right button of the mouse, click on the icon **Print current selection** in the management window and choose in the related context menu the command **Print objects selection**.

3. Consult the various pages of the form presented on screen.

4.' Whether click on **Print** in the menu of the proposed window.

4.'' Or select the command **Print** in the menu **File** in the proposed window; then, after having selected the printer and the various printing settings, click on **OK**.

5. Close the print preview window. To do so, whether click on **Close** or on « **x** » on the same level as the window's menu.

Remarks

The preview window offers several possibilities. Here are the main ones:

- Do enlargements via the selection of one point in the form.
- Specify a percentage to modify entirely the form's display scale.
- Print one or two pages on screen.
- Select the arrow at the right side of the icon « W »; then, choose **Analyze with MS-EXCEL or MS-WORD** to transfer the report into an office application.

▷ **Print one sole object in report**

1. Select the object graphically via search or filter.

2'. Click on the icon **Print current selection** with the left button of the mouse.

2". Choose the command **Print object** in the context menu of the icon **Print**.

3. Continue the procedure the same way as in the previous function.

Remark

❒ Additional specific reports are made possible:

- Thanks to MS-ACCESS basic functions
- With the data model used by AQUA GIS
- With MS-ACCESS tools to describe a report to be printed.

QUERIES (Standard)

TOPIC **Queries are operations specifically programmed to quantify, print or locate selected information on one of the themes processed by AQUA GIS.**

ACCESS

1. Select one of them via the command **Queries/.../...** in **AquaSTAR** menu of the graphic window.
2. Use the command **Queries/Options/...** of that same menu to specify the presentation of the query result.

PRINCIPLE This handbook's section only describes the use of standard queries pre-programmed for AQUA GIS.

Before you select a query, define the display option of the result:

- Table
- Files filter
- Counting
- Graphic highlight

Once you have chosen the display option of the query result, simply choose one of the pre-programmed queries.

FUNCTIONS ▷ **Choose query display mode**

1. Select the command **Queries/Options/...** in **AquaSTAR** menu of the graphic window.
2. Choose one of the following options:
   0 **Table** to gather the attributes of the various objects selected by the query in a table that highlights then one or several of them.

- 0 **File** so that the query results in a filter that will restrict consultation to the selected objects in the management window.
- 0 **Meter** to obtain a certain number of objects meeting the criteria.
- 0 **Graph** to highlight directly the objects meeting the query.

3. Select one of the queries proposed in the menu **Queries/.../...** in **AquaSTAR** menu.
4. Encode the value(s) of attributes in the proposed dialog.
5. According to the selected option, consult the proposed table, the graphic window,...

Remark

❒ When you encode the value of an attribute in the dialog, you can use the character « * » at the end and/or at the beginning of the strings of characters to generalize the filter.

INFO

❒ Use the command **Queries/Construction** accessible via **AquaSTAR** menu to create new original queries.

SEE ALSO **QUERIES (Example of ...)**
QUERIES (STAR GIS handbook)

THEMATIC STUDIES (Example of new ...)

TOPIC **The procedure presented in that section is just an example. It shows precisely how to create a thematic study for a specific management theme. Except for some differences between themes, this example is highly significant of the operating mode.**

FUNCTIONS ▷ **Define new original thematic study**

1. Select the theme "Parcel plan".
2. Use the command **AquaSTAR/Thematic study/ Construction** to select the assistant Thematic study.
3. Choose or create a **New thematic study** on a Table.
4. Specify the name of the thematic study and choose the table DE_TRO.
5. Select the field TR_LENGTH and the Digital mode.
6. Select the 3 attributes.
(7.) Modify, if necessary, the number of classes.
(8.) Edit, if necessary, the colors that are used.
9. Accept the other propositions.

▷ **Redisplay later on same thematic study**

1. Update the menu via the command **AquaSTAR/Update menu**.
2. Select the thematic study via the menu **AquaSTAR/Thematic study/...**

SEE ALSO **THEMATIC STUDY (STAR GIS handbook)**
THEMATIC STUDY (standard)

THEMATIC STUDY (Standard)

TOPIC **AQUA GIS offers several standard thematic representations. Through graphic display, they highlight the attributes of managed objects.**

ACCESS Via the command **Thematic study/... /...** in **AquaSTAR** menu in the graphic window.

PRINCIPLE A thematic study uses some object attributes to shade their display color. Naturally, to do so, objects must be localized.

Standard thematic studies are automatically produced, with no intervention of the user. You can also construct specific thematic studies if you know the data model (of the meaning of attributes) and how to use the command to create thematic studies. This command is accessible via the menu of the graphic window.

FUNCTIONS ▷ **Compute thematic study**

1. Load the graphic layer of the selected theme with the dialog **Display control**.
2. Select the command **Thematic study/.../...** via **AquaSTAR** menu in the graphic window.

Remarks

- ❒ When several thematic studies are successively produced, they overlay on each other at each display.
- ❒ The created thematic study is saved in a layer systematically drawn last to overlay the other layers.

▷ **Display legend of created thematic study**

1. Select the command **Legend/...** via **AquaSTAR** menu of the graphic window.
2. Choose the legend that corresponds to the displayed thematic study.

(3.) Define, if necessary, with one or two points the position of the graphic window where the legend of the thematic study must be integrated according to the view mode specified in the option **AquaSTAR/Legends/Options.**

Remarks

- ❒ Some AQUA GIS thematic studies are directly displayed with their legend.
- ❒ You do not need to display the legend. This option is selected when the thematic study is created for the first time.
- ❒ Several legends can be selected at the same time. Consult, thus, the legends constantly displayed in a window to go through the various proposed thematic studies. The square in front of the name of the thematic study "unfolds" or "folds" it in the window.

▷ **Delete display of created thematic study**

"Automatic" method

1. Select the command **AquaSTAR/Delete thematic study** in the menu of the graphic window

"Manual" method

1. Select the command **Layers and elements** in the menu **Format** of the graphic window.
2. Select the tab **General** in the proposed dialog.
3. Select the layer with the name of the thematic study.
4. Click on **Delete** in the dialog.
5. Click on **Close** to close the dialog.

INFO

- The command **Thematic study/Construction** accessible via **AquaSTAR** menu in the graphic window defines other thematic studies that use the themes managed by AQUA GIS. Besides the selection of the concerned attribute, this dialog also specifies the symbolic to apply to the classes defined by the thematic study.
- The command **Legend/Construction** in **AquaSTAR** menu also creates a legend specific for the displayed themes and for each newly created thematic study.
- The dialog **Layers and Elements** also modifies the display order of layers.

SEE ALSO **DISPLAYED ELEMENTS**
THEMATIC STUDIES (STAR GIS handbook)
THEMATIC STUDIES (Example of ...)

PART 3 : AQUA CARTO

CHAPTER 9

AQUA CARTO APPLICATION

9.1 Introduction

The application AQUA CARTO manages detailed plans of water distribution networks including segments and equipment of various types: valves, pressure regulating valves, fire plugs, reservoirs, catchment points, ...

Segments and equipment are managed on a topologic and intelligent vector database that makes complex queries as, for instance, the search for segments (and consumers) concerned by a valve closed, …

Segments and equipment can be gathered in sub-networks. A sub-network usually relates to an hydraulic concept, that is a section of the network served by one or several sources that supply a zone in which a certain level of pressure may be observed.

This application manages these concepts at the graphic as well as at the attribute levels (technical, administrative information). It can also manage synoptic plans and other documentary information.

The application and the standard tools of the graphic editor also manage a schematic plan of the network; that is a scheme of the sub-networks and their supply.

9.2 Operating principles of the application's commands

All commands used to process an object (for instance, segments) are gathered in one toolbar. Each icon of the toolbar grants access to a command to process the object.

For each object managed by the application, several basic operations can be done, such as create, delete or question attributes.

Creation, deletion, information, labeling commands started from one icon of the application remain active until you use a new command run from a toolbar in the application. Most frequently, selection toolbars of the graphic editor select the object(s) to which a command of the application applies. This selection can also be done per file. That means that once the toolbars of the graphic editor are displayed, the command remains active and may apply to another object or another group of objects.

The application AQUA CARTO manages transactions, both at graphic and alphanumeric levels; that means that all graphic and alphanumeric modifications must be validated before being included into the database. The modifications not validated yet may be also canceled. In that case, the status of the graphic and alphanumeric databases is the one of the last validation.

In the application's standard configuration (automatic transaction management), if graphic and/or alphanumeric modifications have been implemented in the database and if you run a command of the application, it begins with the validation of the previous graphic and alphanumeric modifications. In the configuration "manual management of transactions", all modifications are validated upon request by the command to validate/cancel transactions.

If graphic and/or alphanumeric modifications have been brought in the database and if you run a command of the application, the latter starts with the validation of the previous graphic and alphanumeric modifications.

If you misuse the application, you must WAIT FOR THE END of the process; then, cancel it.

All messages of the application appear in a specific bar.

9.3 Start AQUA CARTO

9.3.1 UNIX release

The application AQUA CARTO is accessible from STAR general menu. Click on the icon Applications in STAR general menu and a vertical toolbar of icons appears. It presents one icon for the application AQUA CARTO. After having picked this icon, the general toolbar of AQUA CARTO application appears.

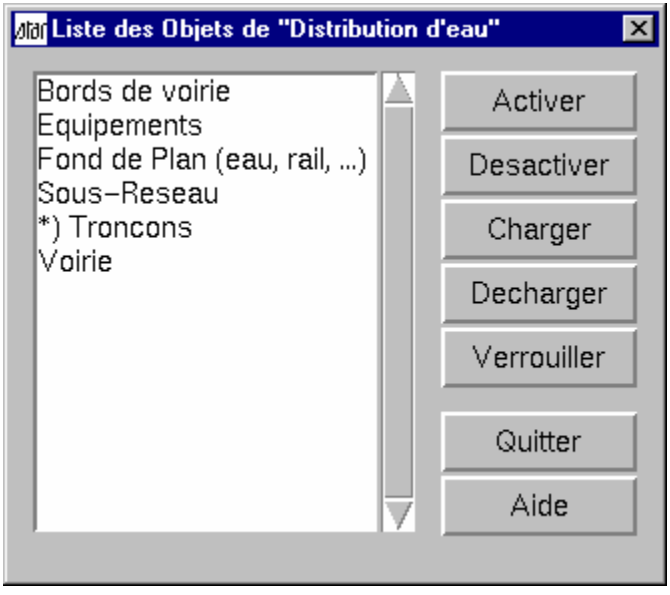
9.3.2 NT release

The application can start from its shortcut on back screen.

If you have installed the demo database, a second shortcut starts the application in the context of the demo database.

9.4 AQUA CARTO functionalities

9.4.1 List of objects in AQUA CARTO application



The active object is marked with an asterisk in the list and its toolbar of icons is displayed.

The following actions are possible from this panel:

- Trigger an object selected in the list: its toolbar of actions appears. The current command is deactivated.
- Deactivate : the general menu of the cartographic editor appears.
- Load an object selected in the list: its layer is loaded.
- Disload an object selected in the list: its layer is shaded.
- Lock an object selected in the list.
- Close this panel (click on the first icon of the toolbar to redisplay it).
- Get help.

9.4.2 Message bar

The window of the graphic editor presents a zone with messages:

- Messages to guide you within operations (Example : « Select objects … »)
- Messages on how operations run (Example : « Files being created … »)
- Error messages or important messages on how operations run, are displayed on red background.

9.4.3 Toolbar of the active object

Basic operations such as create, delete, consult attributes are possible for each object processed in the application. All the commands to process an object (for instance, equipment) are gathered in a toolbar and each icon of this toolbar gives access to one of these commands.

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

The equipment's management toolbar presents the command icons defined by default for any object of an Organized Object application:

1. Initialize file
2. Create
3. Delete
4. Information
5. Modify
6. Alphanumeric modification
7. Move
8. Localize
9. Label
10. File management
11. Toolbar
12. Close

The application's general commands (objet management, transaction management,...) are gathered in the toolbar. The latter appears when you click on the penultimate icon of an object toolbar.

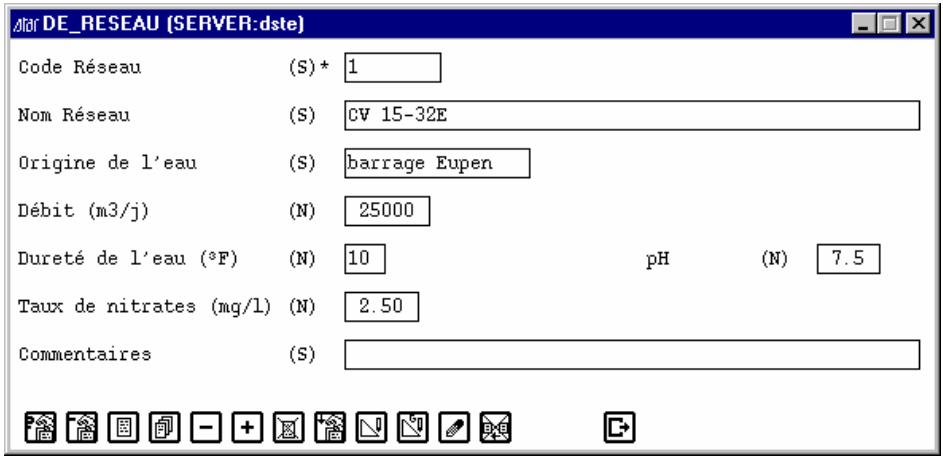
1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

1. List of the application's objects
2. Object management
3. Create alphanumeric queries
4. Alphanumeric queries
5. Location queries
6. Configure Organized Objects
7. Validate transactions
8. Help
9. Framing toolbar
10. Grids toolbar
11. Picks toolbar
12. Plots toolbar

9.5 Networks management

All segments and equipment that build the network are saved in a topologically built cartographic layer.

The network has a file DE_RESEAU that gathers its attribute information.



1. Icon Pattern Edit: define patterns for files selection
2. Icon Pattern On/Off: activate/deactivate files selection by patterns
3. Icon List
4. Icon Sub-File
5. Icon Less
6. Icon Plus
7. Icon Delete
8. Icon Save
9. Icon View
10. Icon Global Vew
11. Icon Cancel
12. Icon Default values
13. Icon Exit

9.6 Sub-networks management

9.6.1 Modeling

A sub-network is a group of segments and equipment topologically connected, limited by closed valves or pressure modification equipment and supplied by one or several conveyances.

The concept of sub-network can be also administrative; that means a group of segments supplying a specific area.

The user selects the type of subdivision.

All segments of a same sub-network can be drawn with the same color (thematic display of the sub-network).

A sub-network is modeled by a surface in the network's schematic layer linked to a file of the category DE_SOUSRES.

The network's schematic layer may contain points representing the supply and equipment that define sub-networks. These points can be topologically linked by lines that symbolize the relations between sub-networks.

From this scheme, you can then deduce information such as:

- the sub-network A is ahead of sub-networks B and C
- the sub-network A is supplied by reservoirs R and S
- …

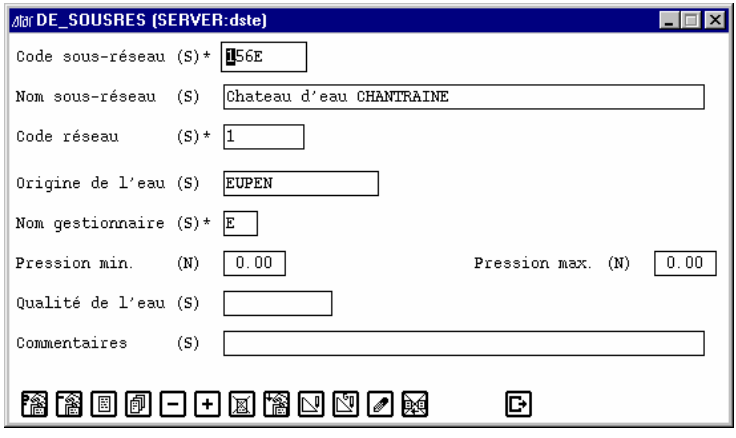
A sub-network has a file DE_SOUSRES with its technical (pressure level, water quality, …) and administrative information (manager service, …)

9.6.2 Functionalities

List of the functionalities available in Sub-Networks management:

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13.

1. Initialize
2. Create
3. Delete
4. Information
5. Modify
6. Alphanumeric modification
7. Move
8. Localize
9. Label
10. Files management
11. Topologic path
12. Toolbar
13. Close application



Icon 1 : **Initialize**

Click on the icon 1 and the toolbars to select surfaces are displayed. An empty file DE_SOUSRES appears to encode each selected surface of « sub-network » type, if this surface is not linked to a file yet.

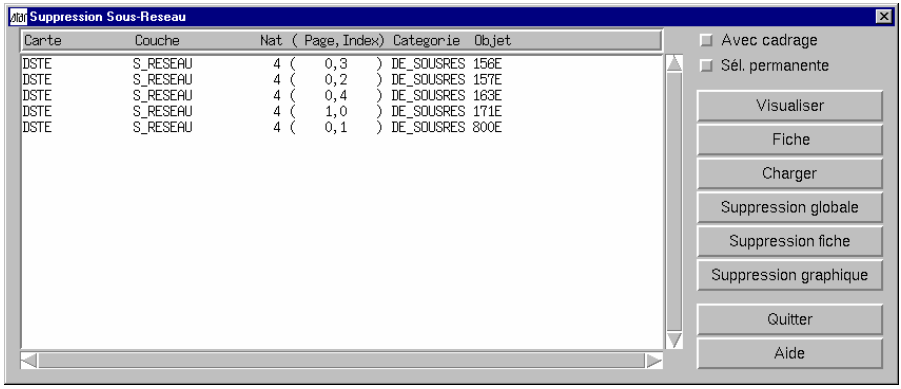
Icon 2: **Graphic creation + sub-network file in the schematic layer**

Click on the icon 2 in the toolbar to manage sub-networks and the toolbar to create surfaces appears. After having created each surface, an empty file DE_SOUSRES is displayed for encoding. When the file is saved, it is linked to the last created surface.

Icon 3: **Delete sub-networks in the schematic layer**

Click on the icon 3 in the toolbar to manage sub-networks and toolbars to select surfaces appear.

A dialog box called "Delete DE_SOUSRES objects" appears.



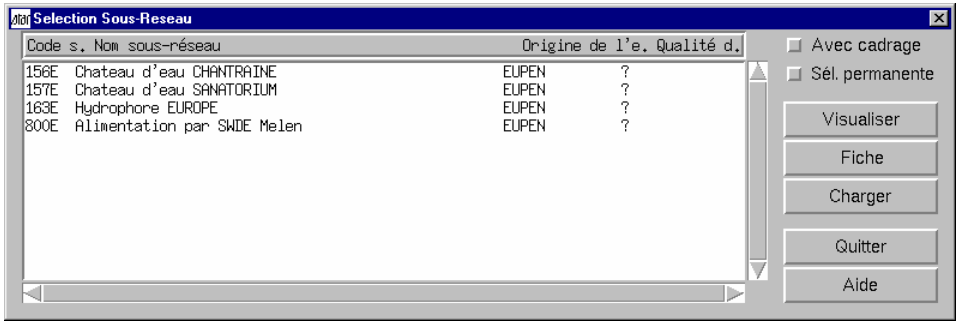
Select the sub-network(s) to delete in the list; then, click on the key of the selected deletion command:

- "Global delete" to delete surfaces and related DE_SOUSRES files,
- "Delete files" to delete DE_SOUSRES files,
- "Graphic delete" to delete surfaces localizing sub-networks.

Notice that you delete labels with the command that manages labels.

Icon 4: **Information on sub-networks (graphic information + DE_SOUSRES files)**

Click on the icon 4 in the toolbar to manage sub-networks and toolbars to select surfaces appear. After having selected one or several sub-networks, a dialog box called "DE_SOUSRES selection" displays the names of the sub-networks as well as various attributes.



The commands available from this dialog box are:

- view = highlight in the schematic layer of sub-network surfaces selected in the list.
- consult files = presentation of sub-network files selected in the list.
- load selection = display, in the list, the information related to sub-networks in the selection.

Icon 5: **Graphic modification**

Click on the icon 5 in the toolbar to manage sub-networks and toolbars to select surfaces to be modified, appear.

Icon 6: **Alphanumeric modification**

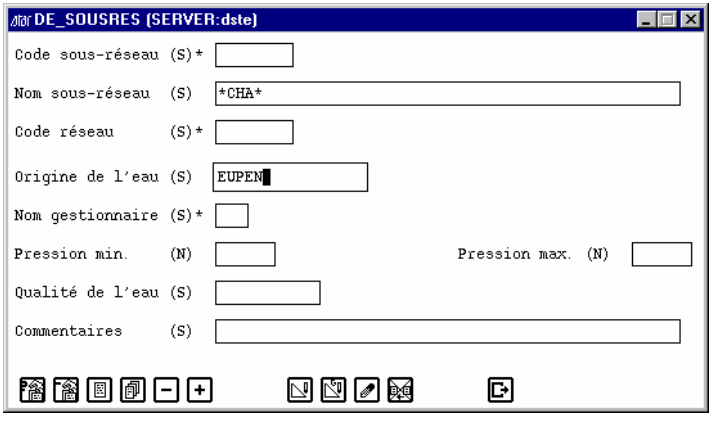
Click on the icon 6 in the toolbar to manage sub-networks and toolbars to select surfaces to be modified, appear. Save the attribute modifications with the icon « Save » (the icons « Plus » and « Less » scan the files to modify). Then, close the file « DE_SOUSRES » with the icon «Exit».

Icon 7: **Move**

Click on the icon 7 in the toolbar to manage sub-networks and the toolbars to select surfaces to move, appear.

Icon 8: **Locate sub-network**

Click on the icon 8 in the toolbar to manage sub-networks and an empty DE_SOUSRES file appears.



Encode the various research criteria:

- whether the exact field values,
- or strings of characters including the characters * (corresponding to any chain, including the empty string) and ? (corresponding to any character).

After having encoded the criteria, pick the icon "Pattern On/Off", the location procedure displays the information dialog box (cf Icon 4) presenting all found elements. Then, frame onto the elements and consult their files. If one object meets the pattern encoded in the file, it is directly highlighted with framing.

Location examples performed by the location command

a. Location query "Sub-network per name":

ex: 1. Encode « ***EUROPE * »** ***(or selection per list)*** in the field "Sub-network name" in the category **DE_SOUSRES.**

2. Pick the icon "Pattern On/Off". The location procedure searches for the sub-network surface (in the network's schematic layer) and highlights it.

3. Close the file **DE_SOUSRES**

b. Location query per criteria:

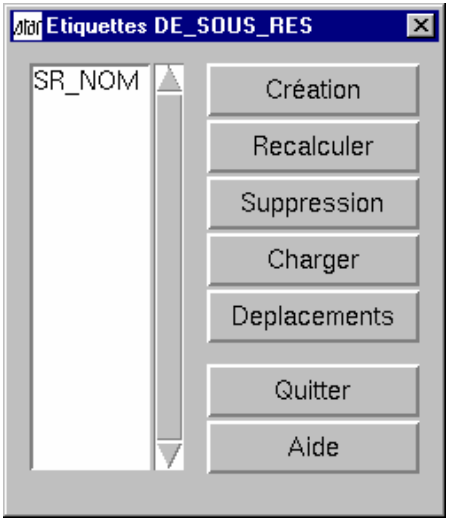
ex: 1. Encode « ****EUPEN **** » in the field "Water origin" in the category **DE_SOUSRES**. The dialog box of information on sub-networks displays the attributes of sub-networks corresponding to research criteria. Select a sub-network in the list and click on the button « View » (after having selected, if necessary, the view option « With framing »). When you close the information box, an empty file DE_SOUSRES appears to continue the location operation. Close the file DE_SOUSRES to end the location operation.

Icon 9: **Label**

It labels surfaces localizing sub-networks with the name of the sub-network,…

Click on the icon 9 in the toolbar of "Sub-networks management" and a dialog box appears and presents the list of available labels.

Select a label, then, click on the key corresponding to the action of your



choice:

- « Create » displays the toolbars to select sub-network surface(s) to label.
- « Recompute » displays the toolbars to select the label texts to recompute (according to the values of alphanumeric attributes of relevant sub-networks).
- « Delete» displays the toolbars to select label texts to delete.
- « Load» draws the labels layer.
- « Move » displays the toolbars to move texts

Icon 10: **File management**

Consults the files of sub-networks via STAR Object Management.

Icon 11: **Topologic path**

Click on the icon 11 in the toolbar of "Sub-networks management" and the toolbars to select lines appear for the selection of **one** segment that begins the path. The message « Network topologic path… » appears in the toolbar and the cursor is transformed into a watch during the search for segments accessible from the starting segment.

Accessible segments are highlighted.

Icon 12: **Load toolbar**

Icon 13 : **Close application**

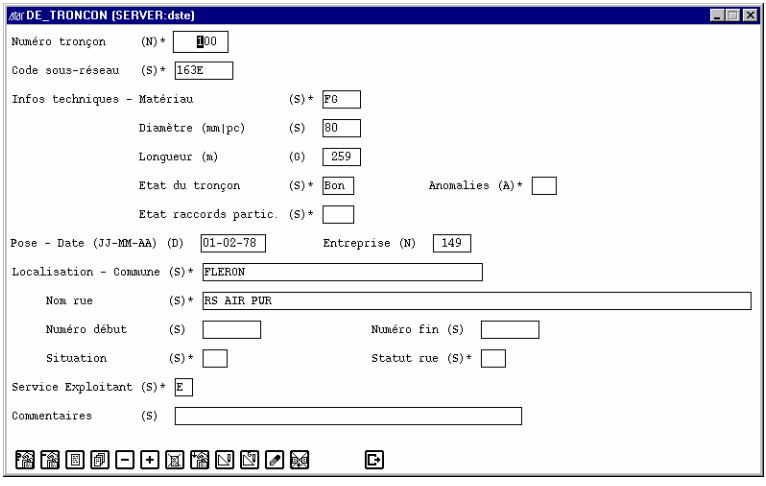
9.7 Segments management

9.7.1 Modeling

A segment is a pipe with homogeneous material, diameter and installation date. In the plan, it appears as a line with a type representing the combination of attributes "Material-Diameter".

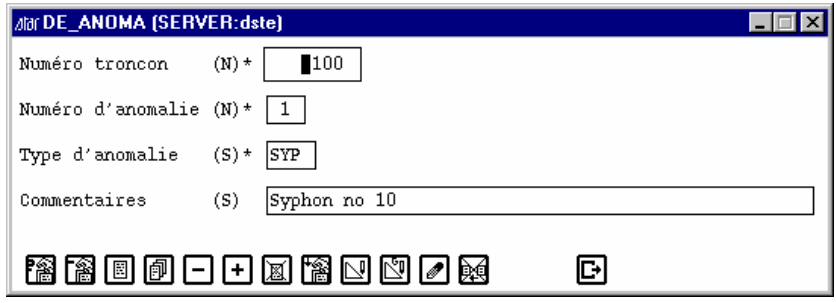
You can save in the graphic attribute "width" of the line a legend type (number < 320) representing the sub-network to which the segment belongs.

A "segment" line is linked to a file DE_TRO. This file contains the technical attributes.

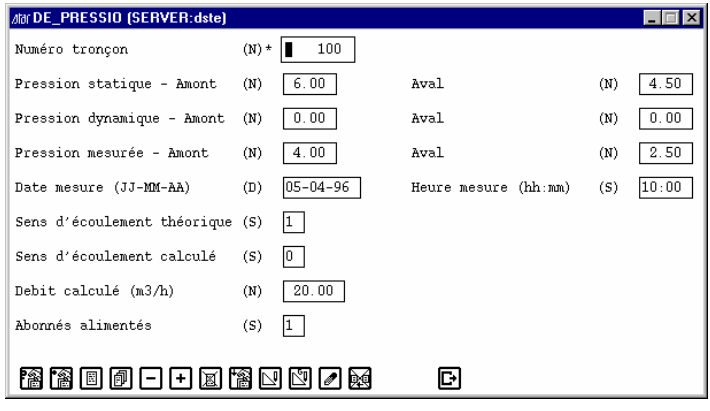


The sub-file DE_PRESSIO of the file DE_TRO gathers the information on the segment's pressure. This file is accessible from the file DE_TRO (or DE_TRONCON). Click on the icon Sub-file when the cursor is in the field "Segment number".

The sub-file DE_ANOMA of the file DE_TRO gathers the information on the defects of the segment (siphons, ...). To access this file, click on the icon Sub-File when the cursor is in the field "Defects" of the file DE_TRO (or DE_TRONCON).



The type of the legend of segments is variable. That means that it depends on the combination of “diameter” and “material” attributes.



9.7.2 Functionalities

List of the functionalities available in Segments management:

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14.

1. Initialize
2. Graphic creation
3. Graphic creation + file
4. Delete
5. Information
6. Modify
7. Alphanumeric modification
8. Move
9. Localize
10. Label
11. File management
12. Display « Sub-network » thematic type
13. Toolbar
14. Close application

Icon 1: **Initialize segment files from a selection of lines (automatic key)**

This command generates the files of the segments graphically selected.

After having clicked on the icon 1 in the toolbar to manage segments, an empty file DE_TRO appears to encode setting values of the segments attributes.

Some fields do not have to be defined in the setting file:

- The editors « Material » and « Diameter » must remain empty because the values of those fields are defined according to the carto type of each segment line to initialize.
- The editor « Segment number » must remain empty because the application automatically numbers segments.
- The editor « Length » must remain empty because it is a value automatically initialized from the length of the segment line.

After having closed this setting file, toolbars to select lines appear. After having selected one or several segments, the generation of segments files starts:

- the key "Segment number" is initialized on the basis of an automatic meter,
- the attributes "Material" and "Diameter" are initialized from the type in the legend of each line.
- the other attributes are initialized according to the values given in the setting file.

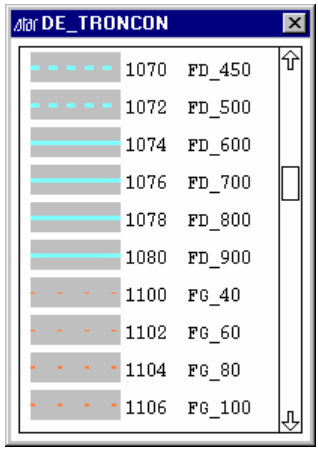
Icon 2: **Graphic creation**

Click on the icon 2 in the toolbar of Segments Management and the toolbar to create lines and a box presenting the types of the legend used for segments appear.

Select a type of line; then, create one or several segments lines.

You can then insert the equipment into the pipes (cf. Equipment Management) and use the initialization command to create the files of the serial segments.

The interest to create only the graphic component of segments is that the installation of some equipment categories automatically divides the line from the segment.



Icon 3: **Graphic creation + file**

The operating of this command is identical to the one of the graphic creation command.

When starting the command, a setting file DE_TRO is proposed to input the values of the common attributes of the segments to be created.

After having set a segment line, the pre-encoded file of the installed segment appears. It contains:

- The number of the segment generated by the station
- The attributes « Material » and « Diameter » corresponding to the carto type of the line installed
- The attributes from the setting file.

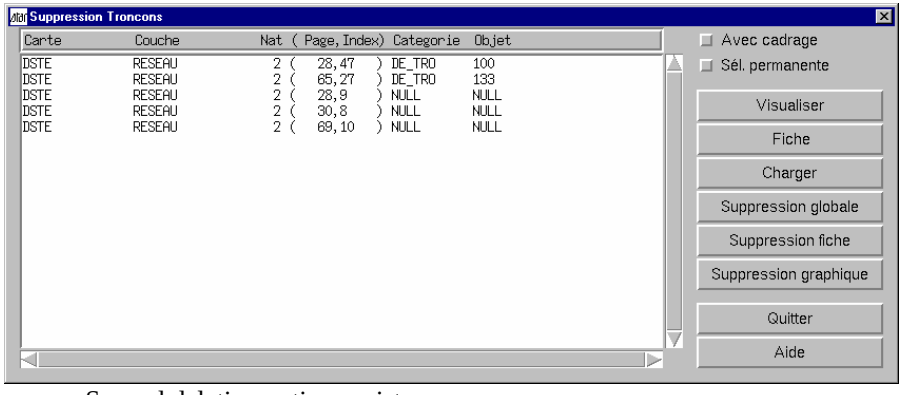
Save that file.

You can, then, go on with the installation of segments lines.

Icon 4: **Delete segments (graphic and file)**

Click on the icon 4 in the toolbar "Segments management" and the toolbars to select lines appear.

After having selected one or several segments lines, a dialog box presenting the names of the objects available in the selection appears.
Select in the list the segments to delete.



Several deletion options exist:

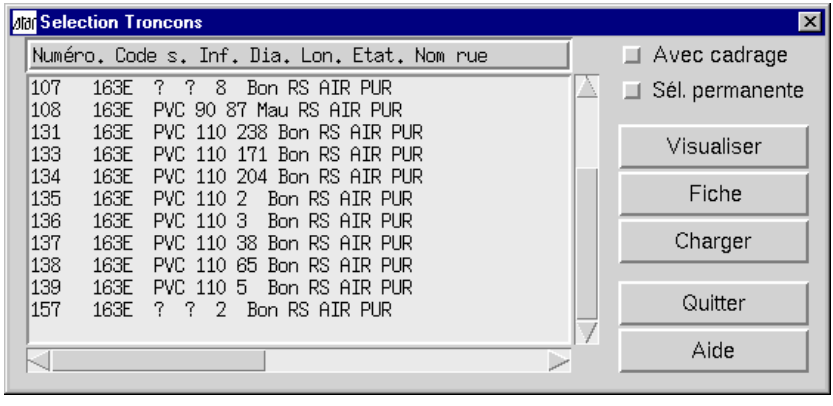
- Global deletion = deletion of linked lines and DE_TRO files,
- Files deletion = deletion of DE_TRO files alone,
- Graphic deletion = deletion of lines alone.

Icon 5: **Information**

Clicked on the icon 5 in the toolbar "Segments management" and the toolbars to select lines appear.

After having selected segments lines, a dialog box presenting the names of objects available in the graphic selection appears.

If segments have no file, they are deleted from the information box.



The segments selected in the "List of Objects" can be viewed with or without framing (key option "With framing"), temporarily or permanently (key option "Permanent sel."). You can also consult their files. The files of the consulted objects are displayed consecutively.

Icon 6: **Graphic modification**

Click on the icon 6 in the toolbar to manage segments and the toolbars to select lines to be modified, appear.
This command can be used, for instance, to modify the « Sub-network » thematic display of segments by defining the width of the segment with one of the types used purposedly.

Icon 7: **Alphanumeric modification**

This command is used to modify the attributes of segments. If, for instance, the « Diameter » and « Material » attributes of the segment are modified, so is the legend type of the segment line .

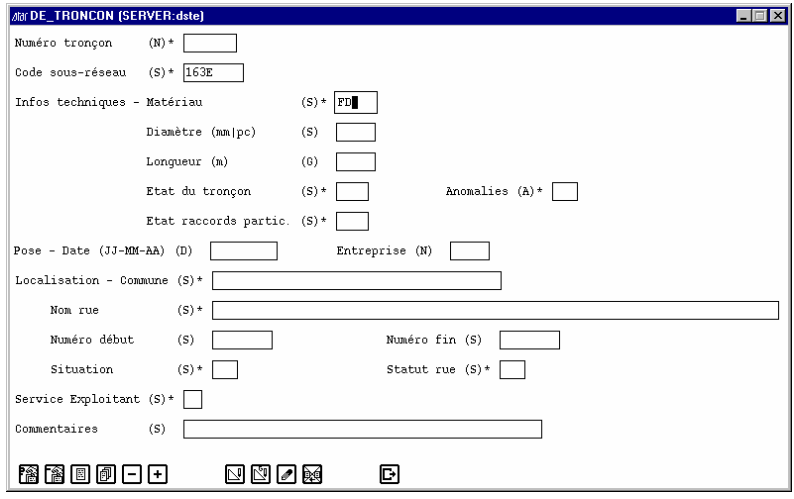
Click on the icon 7 in the toolbar to manage segments and toolbars to select lines to be modified, appear. The files of the selected segments are displayed. Click on "Save" to save the modifications of the attributes (the icons « Plus » and « Less » scan the files to modify). Then, close the file « DE_TRO » with the icon « Exit ».

Icon 8: **Move**

Click on the icon 8 in the toolbar to manage segments and toolbars to select lines to be moved, appear.

Icon 9: **Location by patterns**

An empty file in the category DE_TRO appears to encode the selection criteria of segments.



A criteria can be

- the exact value of a field
- a pattern including "*" and/or "?" characters respectively corresponding to any string of characters (including the empty string) and any character.

To validate your criteria selection, simply press on the icon "Pattern ON/OFF".

- If one sole object corresponding to the criteria is identified, it is directly highlighted.
- If several objects are found, they will be presented in the information dialog box.

a. Location query per sub-network

ex:

1. Selection per list of «163 E» sub-network and of « FD » material

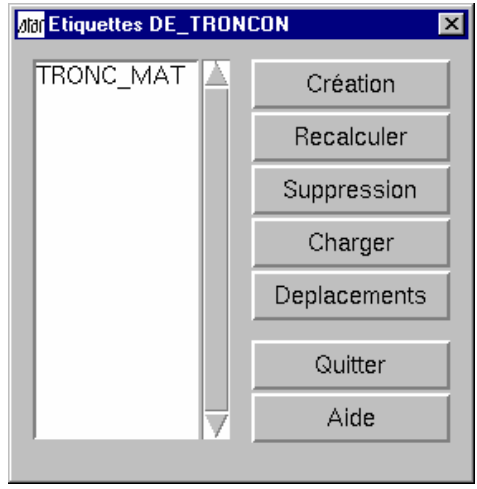
2. Click on the icon "Pattern ON"
   The LocateSTD procedure displays in the information panel the segments corresponding to criteria.

3. Close the file DE_TRONCON

Icon 10: **Labeling**

A label of segments is pre-configured in AQUA CARTO application.

Click on the icon 7 in the toolbar of "Segments management" and a dialog box presenting the available label appears. Select it and, then, press on the key corresponding to the action of your choice.



Select a label, then, click on the key corresponding to the action of your choice:

- « Create » displays the toolbars to select line(s) of segments to label.
- « Recompute » displays the toolbars to select label texts to recompute (according to the values of the alphanumeric attributes of corresponding segments).
- «Delete» displays the toolbars to select label the texts to delete.
- « Load » draws the layer of labels.
- « Move » displays the toolbars to move texts.

Icon 11: **Object management**

Icon 12 : **Display sub-networks**

Icon 13 : **Tools**

Icon 14 : **Close application**

9.8 Equipment management

9.8.1 Modeling

Equipment is divided into several groups:

- valves
- pressure regulating equipment (pressure reducing valve, pressure stabilizing valves , ...)
- storage at network start (reservoir, ...)
- connections
- ...

Each equipment is symbolized by a point with a graphic point depending on the equipment class. For valves, the type also depends on its open or closed status.

In the demo database, the type of equipment depends on its class and on its use in adduction or in operating. As far as valves are concerned, it depends on the value of this combination of attributes and the open or closed status of the valve.

Equipment points are intermediary or end points of a segment.

The general equipment features are available in the general file DE_EQ:

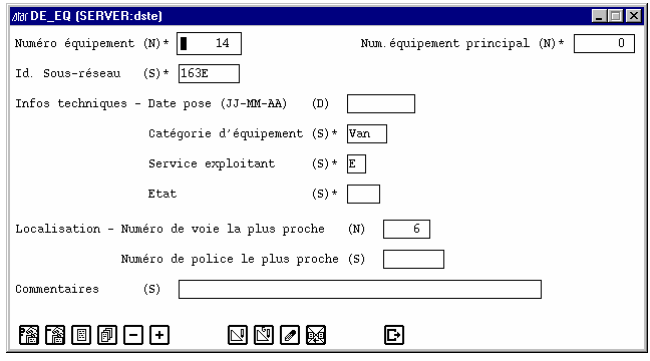
- equipment number
- main equipment number (the file of one piece of equipment located in a storage may refer to the file of the storage).
- the sub-network to which the equipment belongs
- the technical information on the equipment
- its location
- …

The features specific to one equipment category are gathered in one sub-file peculiar to the equipment category:

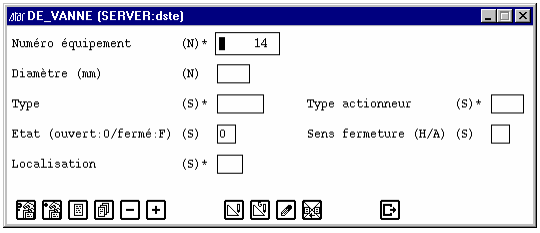
DE_BOUCHE	Fire hydrants
DE_BORNE	Fire plugs
DE_BRANCH	Connections
DE_CAPTAGE	Catchment
DE_CHAMBRE	Manholes
DE_COMPT	Network start meters
DE_POMPAGE	Pumping stations
DE_REGUL	Pressure control equipment (pressure reducing valve, pressure regulating valve)
DE_RESERV	Reservoirs, water towers, pressure reducing reservoirs
DE_VANNE	Valves
DE_VENTOUS	Air suckers

All this information can be completed in storages, for instance, with schemes or detailed implementation plans, located in other layers.

An "equipment" point is linked to a DE_EQ file. This file contains the technical attributes general to all equipment categories.



The features specific to an equipment class are gathered in a sub-file peculiar to this equipment class (Valve, Pressure reducing valve, ...). The specific sub-file is accessible from the general file by clicking on the icon Sub-File when the cursor is in the field "Equipment number". For instance, for a valve, you access to a sub-file DE_VANNE.



The carto type of the equipment is variable. Each equipment class is represented by a distinct symbol.

9.8.2 Functionalities

List of functionalities available in Equipment management:

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

1. Initialize
2. Create
3. Delete
4. Information
5. Modify
6. Alphanumeric modification
7. Move
8. Locate
9. Labeling
10. Files management

11. Toolbar
12. Application exit

Icon 1: **Initialize equipment**

The operating of this command is identical to the one described to initialize the command of segments for elements with a point nature.

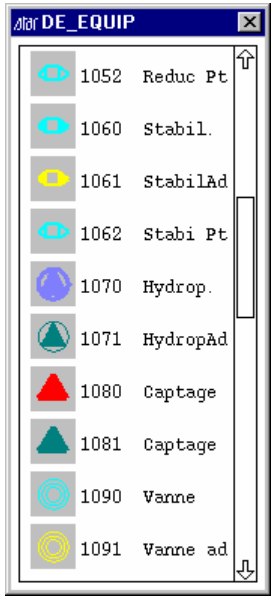
- the key "Equipment number" is set, based on an automatic meter,
- the attribute "Equipment category" is set from the type in the legend of each point.
- the other attributes are set according to their value given in the setting file.

Icon 2: **Create equipment**

This command is identical to the command to create segments, here, with the creation of objects with a point nature.

The command starts with the definition of the equipment's setting values. An empty file DE_EQ appears. Encode the values of common attributes for the next creations.

A dialog box presenting the available types appears. Choose the equipment category to create.



After having placed a point, the creation procedure of the equipment file starts. The identifier is set, based on an automatic meter.

- the attribute "Equipment category" is set from the carto type of each point according to the correspondence "type" - "equipment class".
- the other attributes are set according to their value given in the setting file.

Then, the sub-file appears for encoding. It is peculiar to the category of the equipment installed.

The equipment is classified in two groups: equipment cutting (valves, pressure reducing valves,... are at the endpoints of segments) and equipment not cutting segments (normally, fire hydrants, plugs, air suckers,... are simply inserted into conducts). On the one hand, if non cutting equipment is installed, it is simply inserted into the conduct line. If, on the other, cutting equipment is installed, the subjacent segment is divided in two. If the starting segment was not graphically linked, the creation command is done. If the starting segment was linked to a file, a file for the newly created segment is displayed for encoding. The automatic key is set and the other attributes are pre-defined by the values of the former segment. The file of the former segment appears for modification.

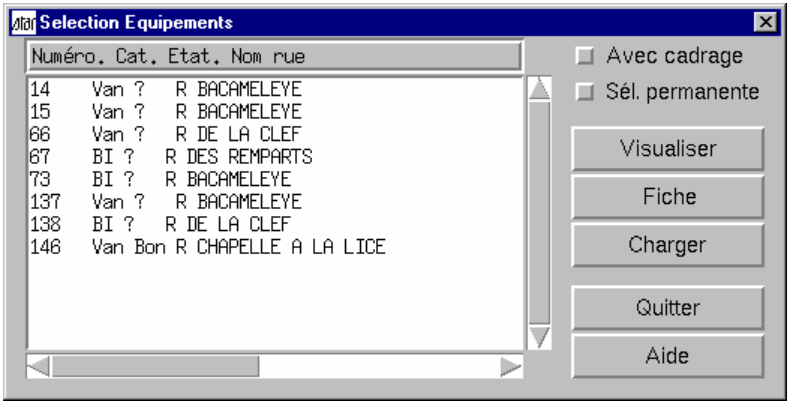
Icon 3: **Delete equipment**

The operating of this command is identical to the one to delete segments, described here above.

Icon 4: **Equipment information**

The operating of this command is identical to the one used to ask for information on segments, described here above.

The information dialog box presents for each type of equipment:
- its identifier
- its class
- its status



The equipment selected in the "List of Objects" can be viewed with or without framing (option key "With framing") temporarily or permanently (option key "Permanent selection"). It is also possible to consult their files. The object files are displayed consecutively.

Icon 5: **Graphic modification of equipment**

Icon 6: **Alphanumeric modification of equipment (valves open/closed)**

Click on the icon 6 in the equipment management toolbar and toolbars to select points appear.

Select the valve to close/to open. Its file DE_EQ appears. Go down to its sub-file (cursor in the field «Equipment Number », icon « Sub-file »). Modify the field « Status » of the file « DE_VANNE », save the modification, close the sub-file, then, the file.

Saving the file implies the modification of the valve's carto type, so that you can represent a closed or open valve according to the modification.

Icon 7: **Move equipment**

Click on the icon 7 in the toolbar to manage equipment and the toolbars to select points appear. Select the equipment to move.

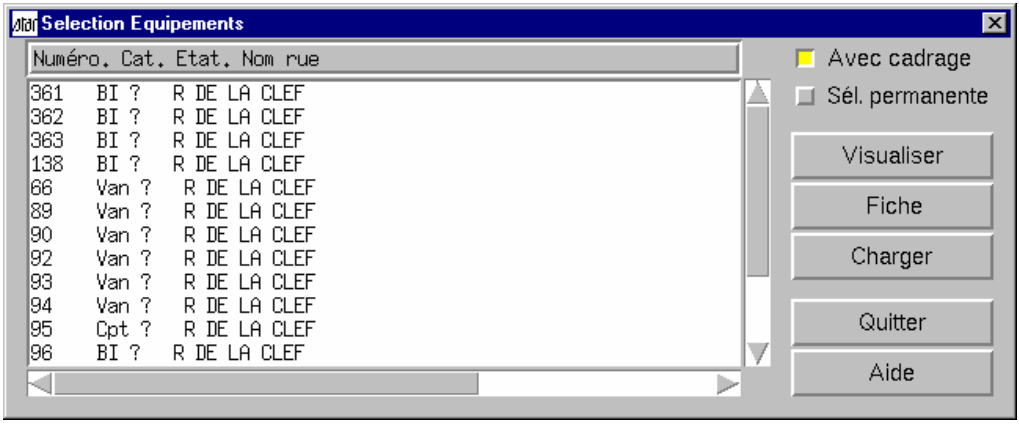
Icon 8: **Equipment location by patterns**

The operating of this command is identical to the one to locate segments, described here above.

As example, encode in the location file the following patterns:

- City: FLERON
- Street name: * CLEF*

After having clicked on the icon "Pattern ON", the equipment of all categories of CLEF Street of the city of FLERON appear in the information dialog box. Consult the files and highlight in plan from this box.



Icon 9: **Equipment labeling**

No label is standard configured.

Icon 10: **Object management**

Icon 11: **Tools**

Icon 12: **Close application**

9.9 Methodology to create equipment and segments

A piece of equipment is modeled by a point, whether at the end or within a segment.
This difference is based on efficiency matters.

- Network's itinirary procedures can only apply to the points which are nodes of the network (lines endpoints) and not to intermediary points,
- The lines representing the segments can not be cut on all the points of the database symbolizing equipment.

The difference between these two equipment conditions is customized in the table DE_CORRESP in AQUA CARTO application.

So, 2 methodologies create the network:

- Create first the equipment, then, the segments with snapping onto points (method 1)
- Create the segments lines, the equipment by insertion, then, segments setting (method 2)

With the first method, the equipment (graphic creation alone or graphic + alphanumeric creation) is placed on the base map. Segments are then placed by snapping onto the points representing the equipment. If you carefully end the segments lines to the points corresponding to cutting equipment, you can create the segments, whether graphically only or you can also define their alphanumeric attributes.

With the second method, segments are placed on the base map. It is more practical to use the graphic creation command alone because the installation of cutting equipment divides the segment into two. The insertion of cutting equipment on a segment already set, initializes the newly created segment and updates the file of the existing segment. If the divided segment was not linked at start, the files of the lines of created segments are not set. It is therefore easier to create the segments lines only and to create (graphic + file) the equipment (cutting equipment divides the line). The segments files need to be set to end the operations.

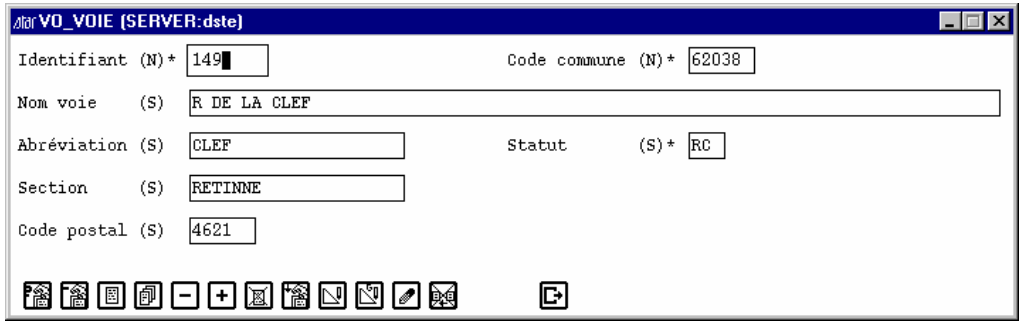
With the first method, check the lines snapping on points before starting the creation procedure and be careful about ending the segments lines to cutting points.

Commands that locate automatically segments and equipment from a graph of the streets and address points will be available in a subsequent release of the application.

9.10 Roads management

9.10.1 Modeling

A road is represented by its axis, usually a line. It usually corresponds to a file VO_VOIE that contains its alphanumeric attributes (name of the street, type of road,...).



9.10.2 Functionalities

List of the functionalities available in Roads application:

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

1. Initialize
2. Create
3. Delete
4. Information
5. Modify
6. Alphanumeric modification
7. Move
8. Locate
9. Label
10. Files management
11. Toolbar
12. Close application

Icon 1: **Initialize roads**

This command generates the files of the roads graphically selected.

After having closed this setting file, the toolbars to select lines appear. When one or several roads axes have been selected, the procedure to create segments lines begins.

Encode the values of the road's attributes; then, save the file.
(You can also choose an existing file (per list or per patterns). The created or selected file is linked to the selected axis.

Icon 2: **Create**

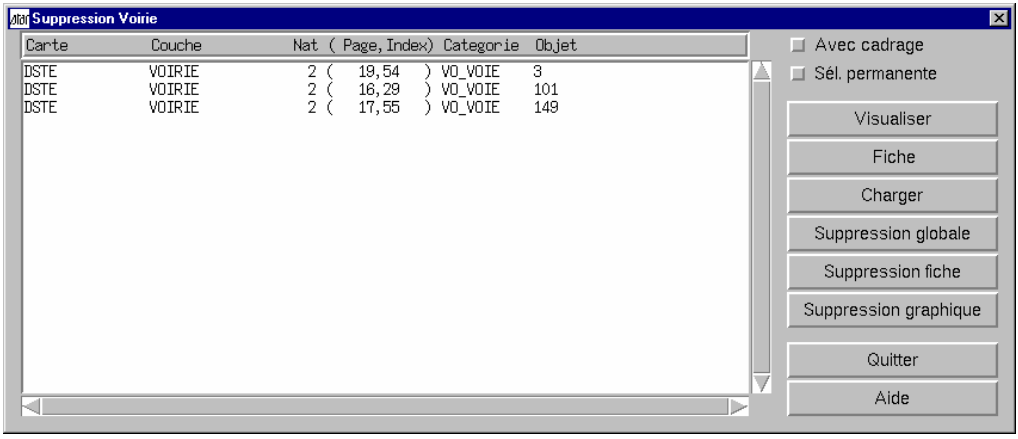
Click on the icon 2 in the toolbar of Roads Management and the toolbar to create lines appears.

After having clicked on the icon of line end, an empty file VO_VOIE appears for encoding.

Icon 3: **Delete roads (graphic and file)**

Click on the icon 3 in the toolbar "Roads Management" and the toolbars to select lines appear.

After having selected one or several road axes, a dialog box presenting the names of the objects available in the selection appears.



Select in the list the roads to delete.

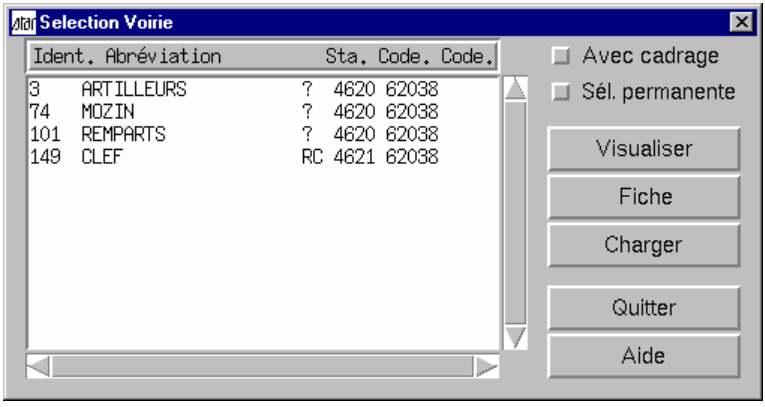
Several delete options exist:

- Global delete = delete lines and VO_VOIE linked files,
- Delete files = delete VO_VOIE files alone,
- Graphic delete = delete lines alone.

Icon 4: **Information**

Click on the icon 4 in the toolbar "Roads Management" and the toolbars to select lines appear.

After having selected the road axes, a dialog box presenting the name of the objects available in the graphic selection appears.



If roads have no file, they are deleted from the information box.

The axes selected in the "List of Objects" can be viewed with or without framing (option key "With framing") temporarily or permanently (option key "Permanent Selection"). You can also consult their files. The files of the consulted objects are displayed consecutively.

Icon 5: **Graphic modification**

Click on the icon 5 in the roads management toolbar and the toolbars to select the lines to be modified, appear.

Icon 6: **Alphanumeric modification**

Click on the icon 6 in the roads management toolbar and the toolbars to select lines to be modified, appear. The files of the selected roads appear. Save the modifications of the attributes with the icon « Save » (the icons « Plus » and « Less» scan the files to modify); then close the file « VO_VOIE » with the icon « Exit ».

Icon 7: **Move**

Click on the icon 7 in the roads management toolbar and the toolbars to select the lines to move, appear.

Icon 8: **Location by patterns**

An empty file with a VO_VOIE category is presented to encode the selection patterns.

A pattern can be

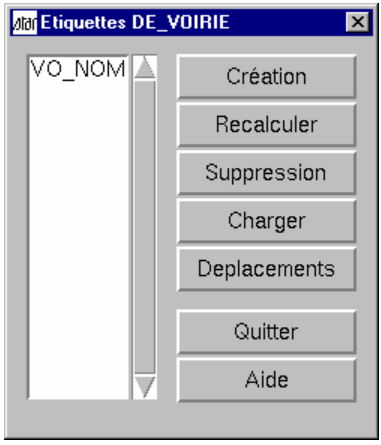
- the exact value of a field
- a pattern including "*" and/or "?" characters corresponding respectively to any string of characters (including the empty string) and any character.

To validate the selection of patterns, simply click on the icon "Pattern ON/OFF".

- If one sole object meeting the patterns is identified, it is correctly highlighted.
- If several objects are found, they are presented in the information dialog box.

Icon 9: **Label**

The label « Street name » is pre-configured in AQUA CARTO application.



Select the label, then, click on the button corresponding to the action of your choice:

- « Create » displays the toolbars to let you select street axe(is) to label.
- « Recompute » displays the toolbars to select label texts to recompute (according to the values of alphanumeric attributes of streets).
- « Delete » displays the toolbars to select the label texts to delete.
- « Load » draws the labels layer.
- « Move » displays the toolbars to move texts.

Icon 10: **Object management**

Icon 11 : **Tools**

Icon 12 : **Close application**

9.11 Road sides management

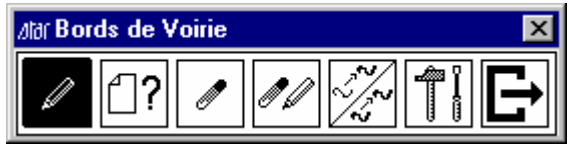
9.11.1 Modeling

A road is represented by its axis. Drawing road sides may turn out very useful for the accurate location of segments and equipment.

Road sides have no file.

9.11.2 Functionalities

List of functionalities available in Road sides management:



1. 2. 3. 4. 5. 6. 7.

1. Create
2. Information
3. Delete
4. Modify
5. Move
6. Toolbar
7. Close application

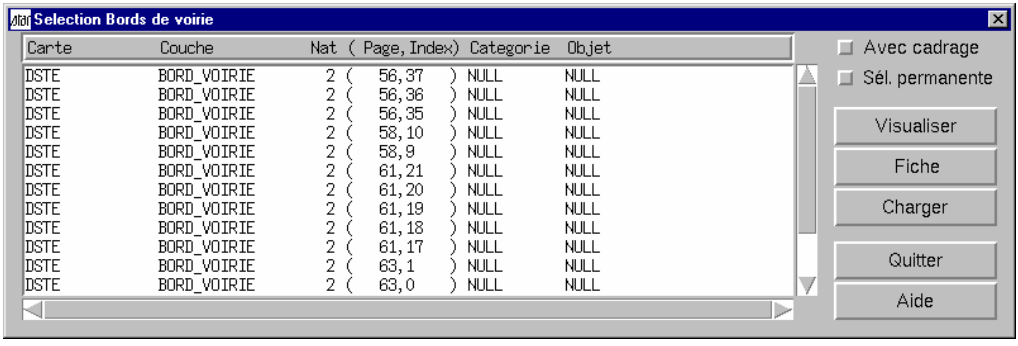
Icon 1: **Create road sides**

Click on the icon 1 in the toolbar Road Sides Management and the toolbar to create lines appears.

Icon 2: **Information**

Click on the icon 2 in the toolbar "Road Sides Management" and the lines to select toolbars appear.

After having selected road sides, a dialog box presenting the names of the objects available in the graphic selection appears.

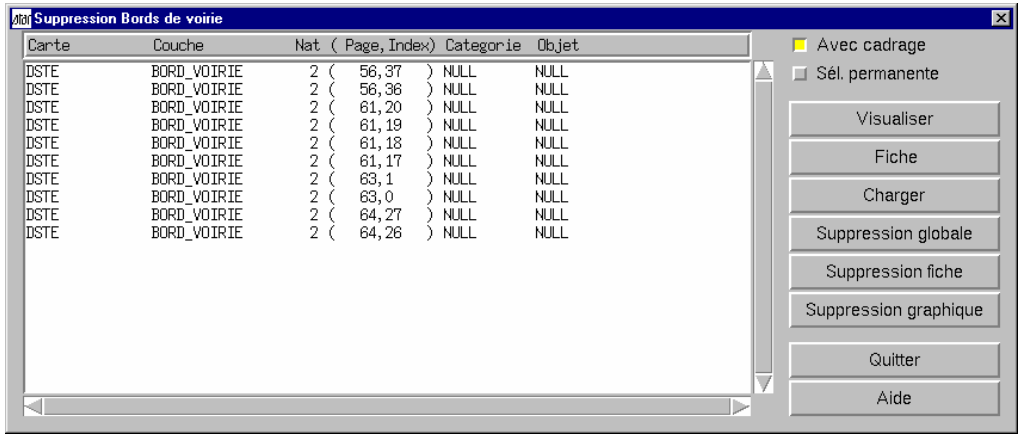


The axes selected in the "List of Objects" can be viewed with or without framing (option key "With framing") temporarily or permanently (option key "Permanent selection"). Notice that the key "File" has no object because road sides are only graphic objects.

Icon 3: **Delete road sides**

Click on the icon 3 in the "Road sides" toolbar and the toolbars to select lines appear.

After having selected one or several road sides, a dialog box presenting the names of the objects available in the selection appears.



Select in the list the sides to delete.

Notice that the deletion option "Delete file" has no object.

Icon 4: **Graphic modification**

Click on the icon 4 in the toolbar to manage road sides and the toolbars to select the lines to be modified appear.

Icon 5: **Move**

Click on the icon 5 in the toolbar to manage road sides and the toolbars to select the lines to move appear.

Icon 6: **Tools**

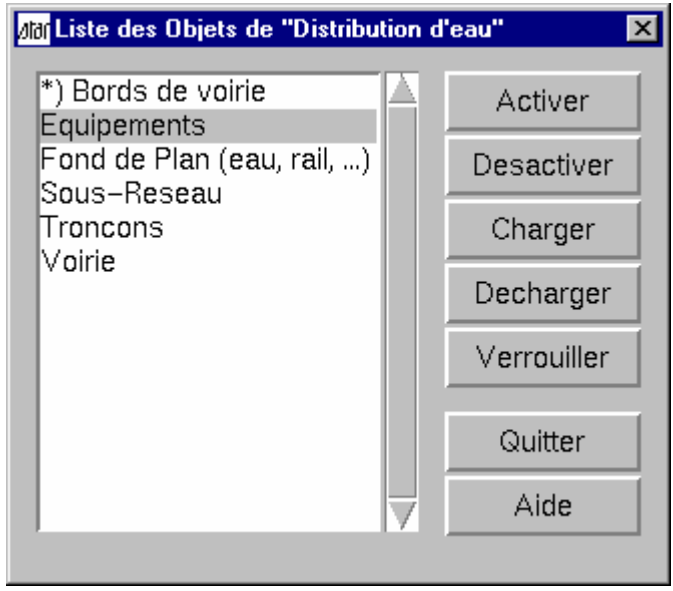
Icon 7 : **Close application**

9.12 AQUA CARTO tools

1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12.

1. List of objects
2. Object management
3. Query generator
4. Saved queries
5. Location queries
6. Organized Objects configuration
7. Transactions management
8. Help
9. Framing toolbar
10. Grids toolbar
11. Picks toolbar
12. Plotting toolbar

Icon 1: **Display the dialog box presenting the list of objects**



Icon 2 : **STAR Object management**

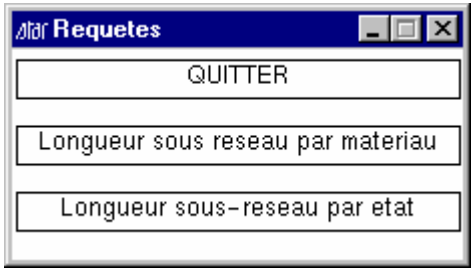
Icon 3: **SQL Query generator**

The query generator saves research queries in one or several tables. Queries generate:

- lists of elements
- selections of elements which can be viewed in the graphic editor

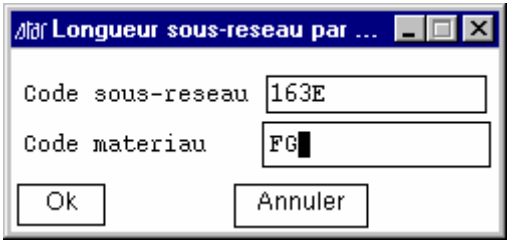
Go to this tool's on-line help for more information.

Icon 4: **Queries**



Two saved queries are available in this release of AQUA CARTO application.

- Query "Sub-network length per material"
  After having selected this query in the list, a dialog box requiring the settings of the latter appears.

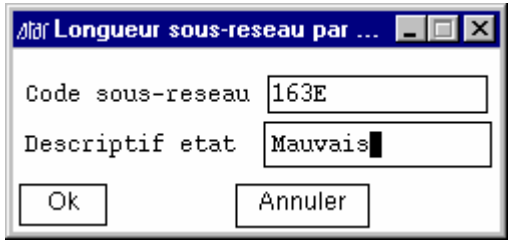


  Insert in this box the sub-network (field Code sub-network of the file DE_SOUSRES) and the material of segments (field Material of the file DE_TRO).

A window presents the result of the selection.

- Query "Sub-network length per status"
  After having selected this query in the list, a dialog box called "Sub-network length per status" asks for the values of the two settings of the latter.

  Insert in this box the sub-network (field Code sub-network of the file DE_SOUSRES) and the status of segments (description corresponding to the status field in the file DE_TRO).



A window presents the result of the selection.

Icon 5 : **Location query**

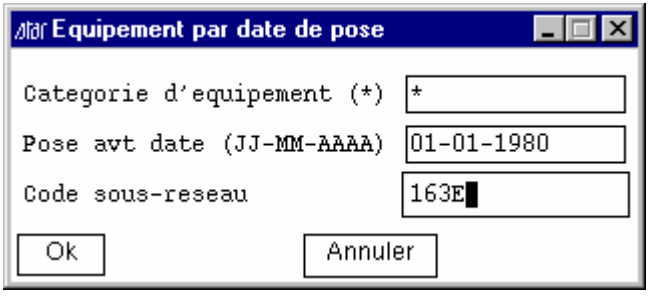
Four saved queries are available in this release of AQUA CARTO application.

- Query "Eq. / sub_network"

  It highlights the whole equipment of a sub-network.

- Query "Equipment per installation date"

  This query visualizes the whole equipment of one category with an installation date prior to a given date.



After having selected this query in the list, a dialog box called "Equipment per installation date" requiring the settings of the latter appears.

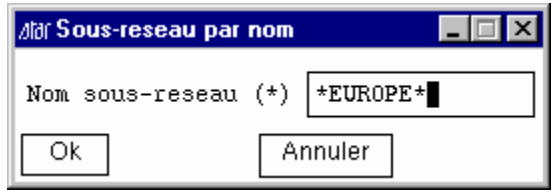
Insert in this dialog the type of equipment (field Category of equipment of the file DE_EQ or a pattern) and the installation date.

The whole equipment of the category with an installation date prior to the date given as setting to the query is highlighted on plan.

- Query "Sub-network per name"

  This query visualizes all the segments that belong to a sub-network.

After having selected this query in the list, a dialog box called "Sub-network per name" requiring the name of the sub-network appears.



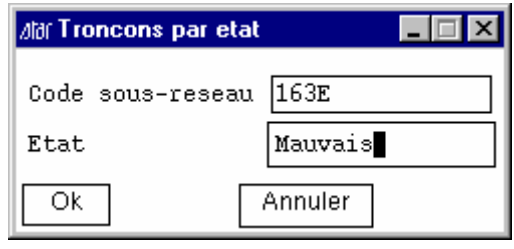
Insert in this box the name of the sub-network (field "Name sub-network" of the file DE_SOUSRES) or a pattern.

All the segments of the sub-network are highlighted on plan.

- Query "Segments per status"

  This query visualizes all the segments of a sub-network with a status of a specific value.

  After having selected this query in the list, a dialog box called "Segments per status" requiring the settings of the query appears.



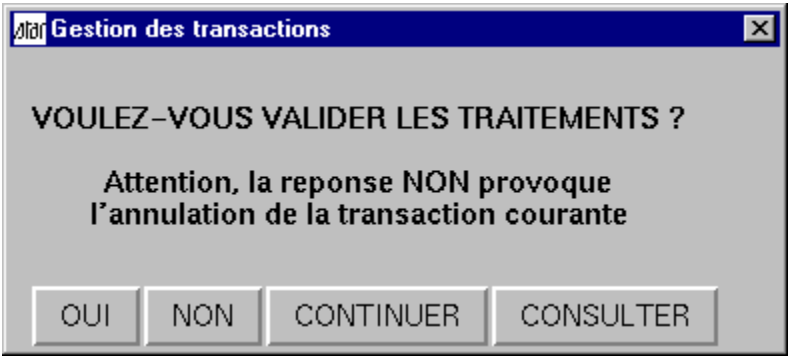
Insert in this box the code of the sub-network (field "Code sub-network" of the file DE_SOUSRES) and the status of segments (description corresponding to the status field in the file DE_TRO).

All the segments of the sub-network and the selected status are highlighted on plan.

Icon 6: **Configuration of organized objects**

The operating procedure of this tool is presented in the handbook of the Administrator of AQUA CARTO application.

Icon 7: **Update or cancel the modifications**



A dialog box called "Transactions management" appears. Four answers are possible to the question "DO YOU WANT TO VALIDATE PROCESSES ?

YES : validates the graphic modifications as well as the attribute modifications done since the last validation.

NO : cancels all the graphic and attribute modifications done since the last validation.

GO ON : postpones validation or cancellation.

CONSULT : displays the list of the operations done since the last validation.

Notice that the attribute modifications are

- modifications in the application's database (for all the commands that manage the applications objects)
  OR
- modifications in the Organized Objects database (for modifications done via the application's generator).

In the standard configuration of the application, change actions in the toolbars of the application (or restart the same command), force the application to question the status of the transaction. If graphic/alphanumeric modifications are detected, the dialog box here above appears and requires their validation or cancellation.

Icon 8: **Help**

A dialog box called "Help" proposes three fields:
Standard - to access the help of STAR standard commands, OOBJETN - to access the help of standard commands of Organized Objects.

If you select the field « OOBJETN » and the topic « CreateSTD », you can obtain a description on how the command to create Organized Objects runs (Help key). The key « Options » displays a summary of the options available for the creation command.