

QGEP – the flexible open source tool for Wastewater and GEP



The screenshot displays the QGEP software interface, which is a plugin for QGIS. The main window shows a map of a wastewater network with various pipes and nodes. The network segments are labeled with codes like CS 800, CU 1100, and U 800, along with their respective lengths and gradients. A specific node is highlighted with a red circle, and its coordinates (C, I, O) are displayed: C = 397.880, I = 394.660, O = 394.450. The map also includes a legend and a coordinate display at the bottom.

Layers Panel:

- vw_qgep_wastewater
- vw_qgep_reach
- Wastewater Structures
- Inspection
- Value Lists
- Hydraulic
- Topology
 - vw_network_segments
 - vw_network_node
- Cadastral Data

Identify Results:

Feature: vw_qgep_wastewater_structure

- location_name
- (Derived)
- (Actions)
- obj_id

Mode: Current layer, Auto open form

View: Tree

Advanced Digitizing Panel:

CAD tools are not enabled for the current map tool

vw_qgep_wastewater_structure - Feature Attributes:

Actions	Wastewater Node	Covers	Structure Parts	Maintenance	Wastewater Nodes	Files
Pictures	wastewater_structure	files/ucberlauf.jpg				
Expression	ch13p7mzf100					
class						
identifier						
kind	(no selection)					
object	8488.0010					
path_relative	NULL					
remark	NULL					
last_modification	2018-06-06T09:59:19					

Coordinate: 2750551.90, 1264918.48

Scale: 1:117

Magnifier: 100%

Rotation: 0.0

Render: checked

EPSG:2056 (OTF)

QGEP – die flexible open source Fachschale für Abwasser und GEP



Screenshot of the QGEP software interface showing a wastewater network map and a feature attribute dialog.

The map displays a network of purple lines representing wastewater structures. Key nodes and segments are labeled with codes and elevations:

- CS 800 29.39m 4.8%: A long segment with a slope of 4.8%.
- U 800 2.04m: A node with elevation C = 397.773, I1 = 394.673, O1 = 394.653.
- C = 397.880, 8488.0010, I1 = 394.660, O1 = 394.450: A node connected to the CS 800 segment.
- CU 1100 2.35m 17%: A segment with a slope of 17%.
- U 1000 9.41m 10.5%: A segment with a slope of 10.5%.
- 8488.0205, I1 = 394.760, O1 = 394.760: A node at the end of a vertical segment.

The **Identify Results** panel shows the selected feature: **vw_qgep_wastewater_structure** with location_name (Derived), (Actions), obj_id, etc.

The **Advanced Digitizing Panel** indicates: CAD tools are not enabled for the current map tool.

The **vw_qgep_wastewater_structure - Feature Attributes** dialog box is open, showing the following data for the selected structure:

Actions	Wastewater Node	Covers	Structure Parts	Maintenance	Wastewater Nodes	Files
Pictures						
Expression						
class: wastewater_structure file: /ucberlauf.jpg						
identifier						
kind: (no selection)						
object: 8488.0010						
path_relative: NULL						
remark: NULL						
last_modification: 2018-06-06T09:59:19						

Buttons: OK, Cancel.



Current Members & Organisational

Since 2019 the group consist of 12 members (+3):

- Fischer Ingenieure, Arbon (Konradin Fischer)
- Holinger Thun AG (Urs Kaufmann)
- Service Intercommunal de Gestion (SIGE) (Kevin André)
- Ville de Morge (Roger Maurer)
- Ville de Prilly (Maxime Trolliet)
- Géoconseils SA, Colombier (Max Loriol / Valentine Arrieta)
- Ville de Lausanne, Service de l'eau (Dominique Zürcher)
- Alpnetsystem SA (IG-Group), Sion (Timothée Produit)
- **Gruner Böhringer AG, Basel (Raphael Brügger)**
- **Triform SA, Fribourg (Daniel Hollenweger)**
- **Ville de Pully (Alexandre Bossard / Arnaud Poncet)**
- Stefan Burckhardt (SJiB) as technical advisor and coordinator
- *Ville de Vevey (Daniel Gnerre)*

They are supported by Matthias Kuhn /Denis Rouzaud (OpenGIS)
Cooperation with qwat integrator Oslandia



QGIS Functions

Python Console¶

External Python Plugins¶

Core Plugins for 19
Basic functions¶

Publishin maps in
the internet¶

Data analyzing¶



Data visualization
Vector / Raster / GRASS / Webservices

Exploring and selecting data

Map layout

**Collect, edit, store, maintain and
export data**

QGEP = QGIS in Action for waste water and GEP



Python Console¶

External Python Plugins¶



**Core Plugins for 19
Basic functions¶**



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Latest Developments 2019

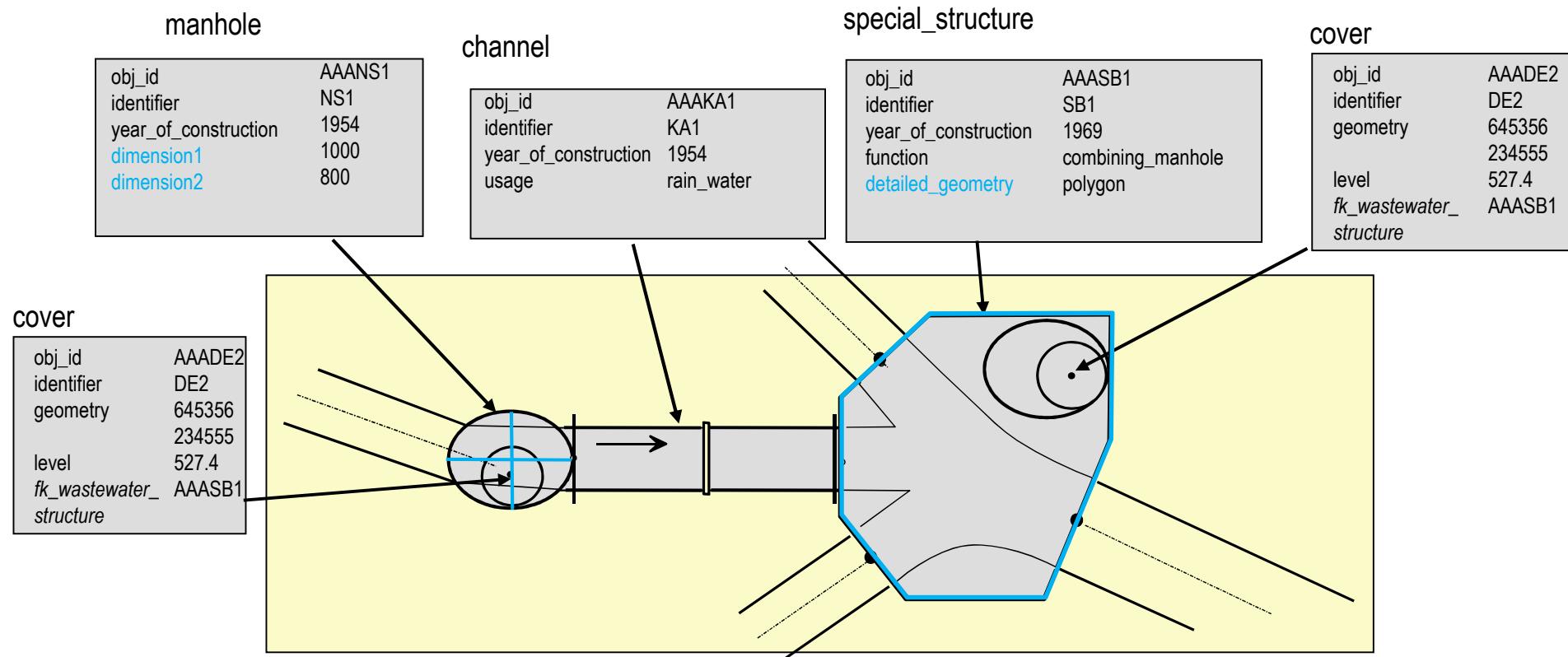
- Collecting data in 3D - use of 3D extension of VSA-DSS data model
- Automatic creation of views with pirogue tool
- Data model customization
- Using QGIS Processing tools: New functions (change reach direction, aggregate values along network (flow time calculation), connecting
- Project translation (now part of QGIS 3) - adaptation for QGEP in German and French
- Documentation updated



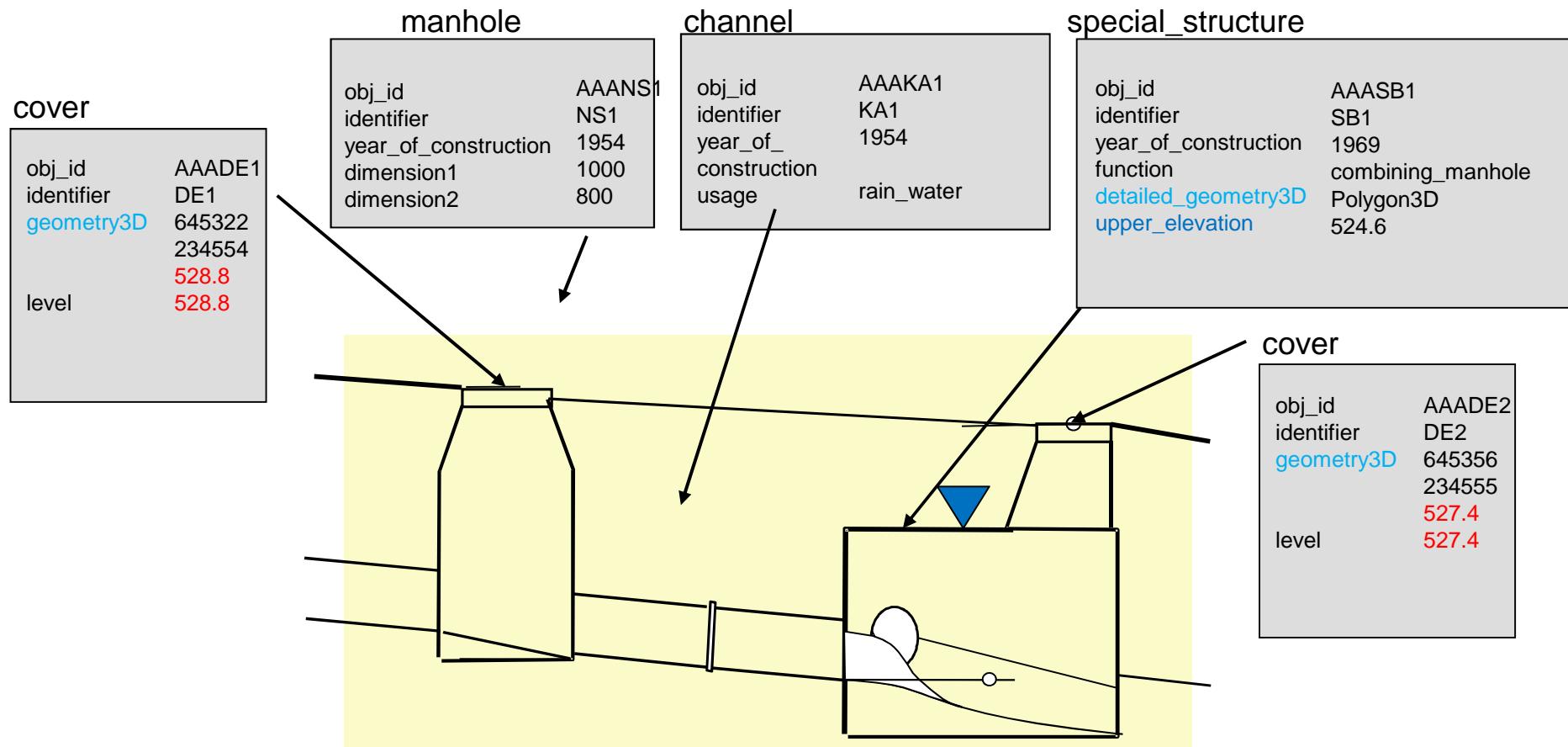
Collecting data in 3D - use of 3D extension of VSA-DSS data model

- Data model VSA-DSS uses coordinates (x,y) for geometry
- Height (z) is stored in additional attributes such as bottom level.
- Introducing 3D coordinates needs mechanism to keep 3D coordinates and z-Attributes in synchronization during
 - Digitizing
 - Editing
 - Deleting

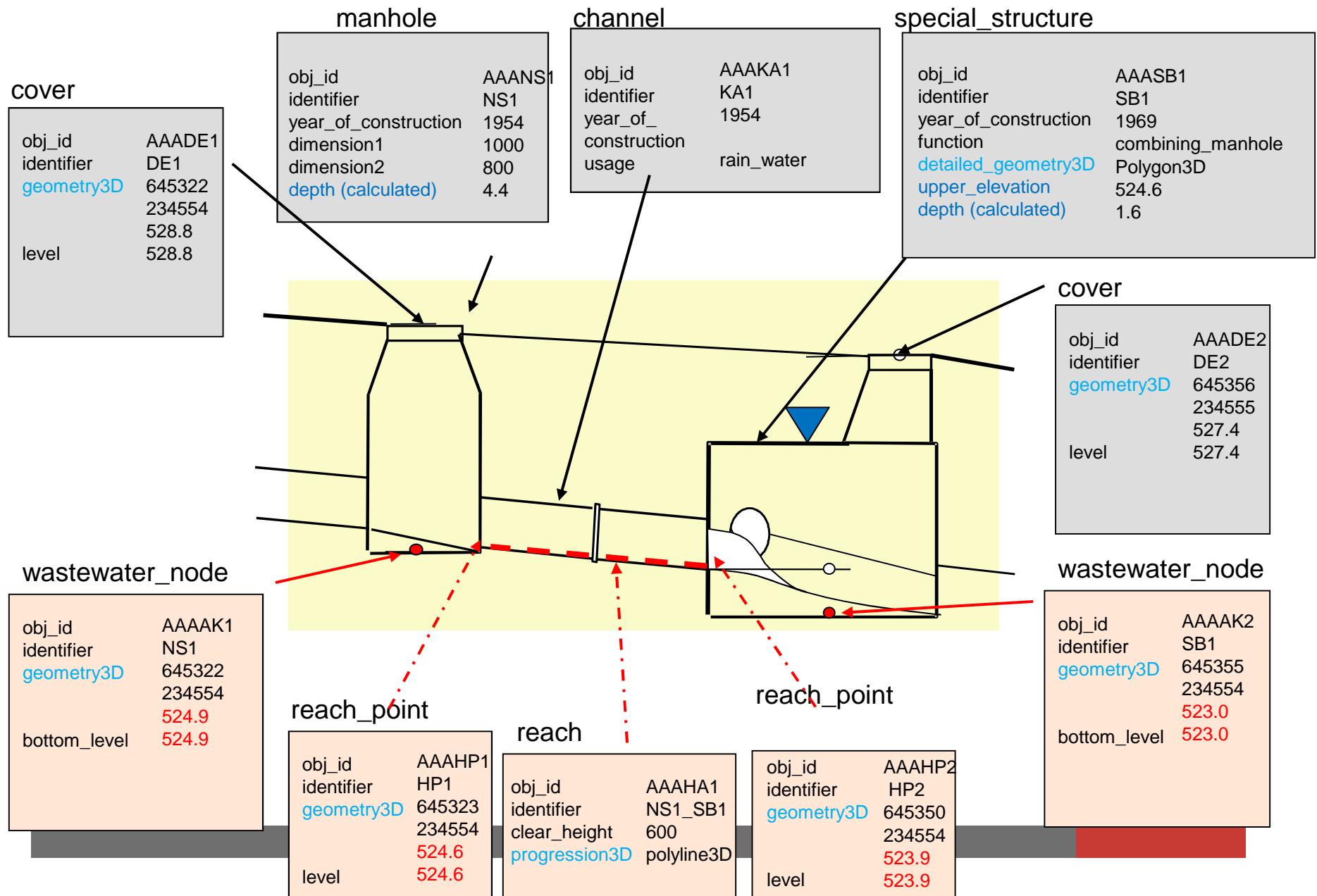
Waste water structure and network topology (plan view)



Waste water structure and network topology (elevation) 3D



Waste water structure and network topology (elevation) 3D





Automatic creation of views

With **pirogue**, a tool to automatically create views and triggers on PostgreSQL databases developed by Denis Rouzaud (Opengis) in cooperation with qwat

<code>pirogue.Merge</code> (definition, pg_service, ...)	Creates a merge view with associated triggers to ed
<code>pirogue.Join</code> (parent_table, child_table, ...)	Creates a simple join view with associated triggers t
<code>pirogue.information_schema</code>	
<code>pirogue.utils</code>	
<code>pirogue.exceptions</code>	

<https://github.com/opengisch/pirogue>



Rules for data model customization

- First check, whether your attribute is not already part of VSA-DSS model
- Discuss with user group about new user attribute
- User attributes start with **usr_***
- If added in base tables, these additional fields will be automatically added to the views, being an editable field. The views can be re-generated any time using the following command:

```
./view/create_views.py --pg_service pg_qgep --srid 2056
```



Postgres Upgrade Manager (PUM)

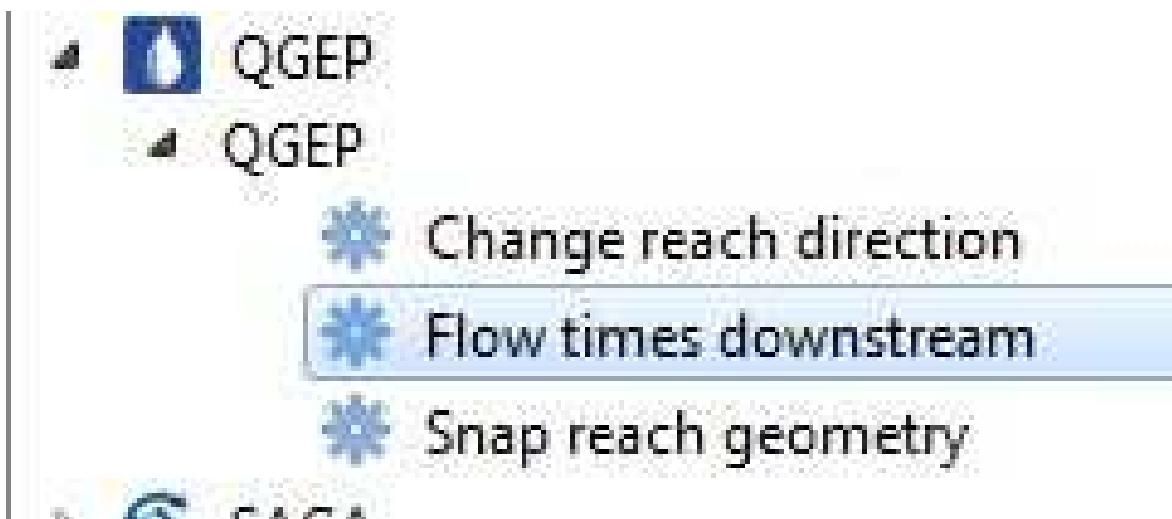
- Tool to administrate different versions of your database
- Automatic control whether changes made fit a specific version of the datamodel
- Delta scripts for each model version – QGEP currently on 1.3.0 ([latest](#))
- Developed together with qwat
- [Detailed presentation](#) can be found online QGIS Schweiz Anwendertag 2018
- PUM currently runs well on Linux, but there is **no user interface for Windows**
- Please contact us if you are interested in **helping to sponsor the development of this (5 – 10 k)**





New processing functions for QGEP

- New functions
 - [change reach direction](#)
 - aggregate values along network ([flow time calculation](#))
 - [Snap reach geometry](#)





New Project Translation Function

- Support of development of [Project Translation Function](#) in QGIS 3.4
- Needed to maintain QGEP in German, French, English, Italien, ...

The screenshot shows the 'Project Properties' dialog in QGIS. The left sidebar lists categories: General, Metadata, CRS, Default Styles, Data Sources, Relations, Variables, Macros, and QGIS Server. The 'General' tab is selected. The main area displays the 'Coordinate Display' section, which includes a dropdown for 'Display coordinates using' set to 'Map units (meters)', a 'Precision' section with 'Automatic' selected and '2' decimal places, and a collapsed 'Project Predefined Scales' section. At the bottom, there is a 'Generate Project Translation File' section with a 'Source language' dropdown set to 'American English' and a 'Generate TS File' button.



Updated documentation in English, Deutsch, Français

The screenshot shows the QGIS application interface. On the left, a vertical navigation bar displays a hierarchical menu of documentation sections. The current section, "2.3.1. Editing of existing data", is highlighted. The main workspace shows a map with a network of blue and red lines, likely representing a wastewater system. A floating window titled "Wastewater Nodes" is open, showing a table with several rows of data. Below the table, there is a form for editing a specific node, with fields like "id", "backflow_level", "bottom_level", "criterion", "remark", "deficiency", "provider", and "last_modification". The status bar at the bottom right indicates the date and time: "20.06.2017 14:13".

<https://github.com/QGEP/docs>



Planned Developments 2019 / 2020

- Update existing **SWMM** (hydraulic simulation software) plugin and develop import / export interface for QGEP
- Improve **network following algorithm** to be able to:
 - select (all) connected elements (such as catchments)
 - select subsets (e.g. one or several branches)
 - combine the two for export selection of data (to INTERLIS or SWMM)
- Extend data model for **log cards** (Stammkarten) and create necessary views to display those (many cantons are currently starting to requiring this)
- Implement workflow for importing **VSA-KEK data** from WinCan X and develop workflow for export / import of network data to / from channel TV inspection companies (new network data, updated network data)

SWMM Plugin



QGIS 2.18.13

Vector Raster Database Web Processing Help

Simulate flow in storm water conveyance systems

Parameters Log Run as batch process...

Baseline dry weather sanitary inflow at nodes [optional]
[Not selected]

Periodic variation in dry weather inflow [optional]
[Not selected]

Rainfall-dependent I/I information at nodes [optional]
[Not selected]

Initial pollutant loads on subcatchments [optional]
[Not selected]

x-y tabular data referenced in other sections [optional]
curves

Time series data referenced in other sections [optional]
[Not selected]

evaporation
inflows
junctions
options
outfalls
pumps
report
storage
timeseries
xsections

Processing Toolbox

Search...

- Recently used algorithms
 - Polygon centroids
 - VSA_DSS_2015
 - GDAL/OGR [48 gealgorithms]
 - GRASS GIS 7 commands [315 gealgorithms]
 - Models [1 gealgorithms]
 - QGEP Wastewater Network Tools [1 gealgorithms]
 - QGIS gealgorithms [117 gealgorithms]
 - SAGA (2.3.2) [324 gealgorithms]
 - Scripts [0 gealgorithms]
 - Swmm (Storm Water Management Model) [1 gealgorithms]
 - Simulation
 - Simulate flow in storm water conveyance systems

SWMM Export / Import & Plugin



- Update existing SWMM plugin and develop import / export interface for QGEP
- Total cost 15 k
- Already covered by QGEP group Phase 1: 7 k
- Additional funds needed for Phase 2: 8 k
- **Contact us if you would like to join in and sponsor this development**

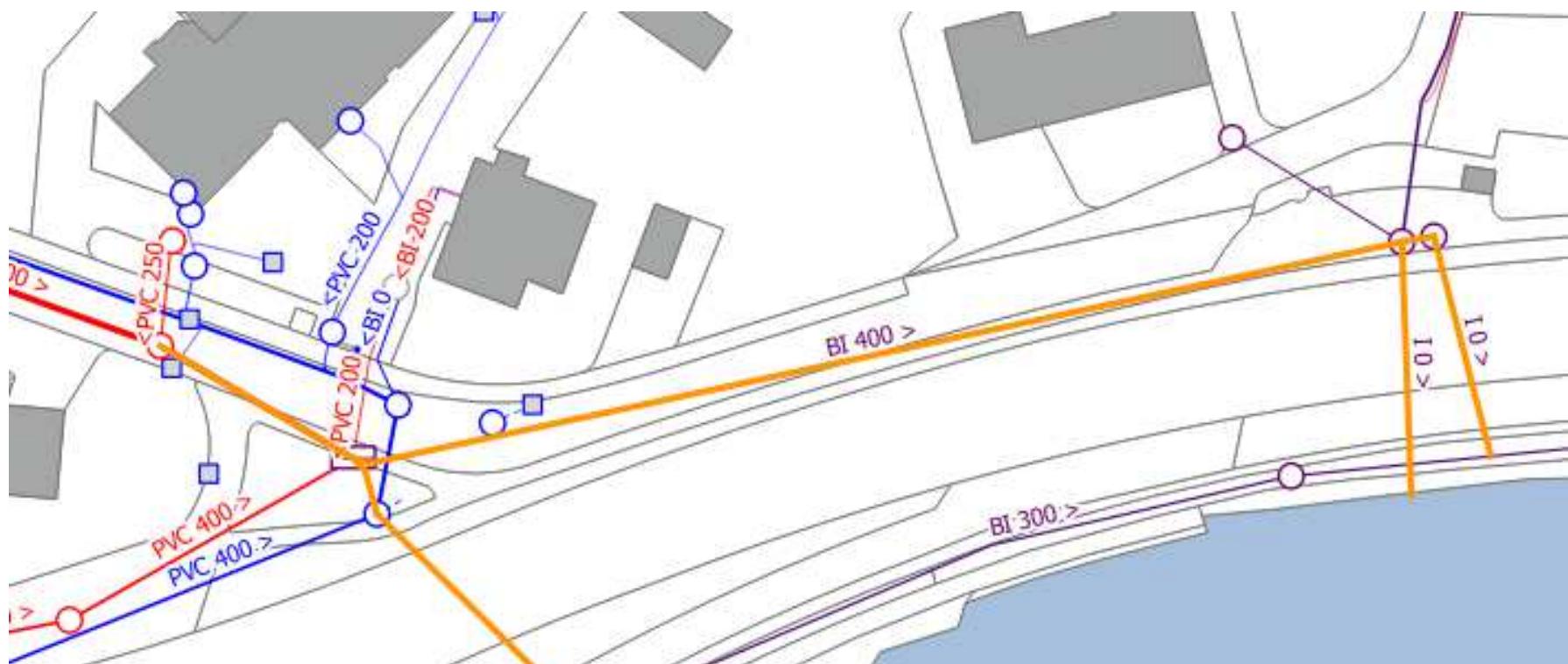


Steps		June	July	August	September	October	November	December
Dev Phase 1	Creation development environment (GIT structure, etc) QGEP2SWMM views and copy data into dedicated tables Creation SWMM input file Basic import of results in QGEP-SWMM schema Validation (S. Burckhardt, M. Kuhn) / Correction (IG Group)							
Dev. Phase 2	Import SWMM output in QGEP datamodel Creation of QGIS project (symbology according to the indicators) Integration of the commands in QGIS processing tool Validation (S. Burckhardt, M. Kuhn) / Correction (IG Group)							



Improve network following algorithm

- Improve network following algorithm to be able to:
 - select (all) **connected elements** (such as catchments)
 - select **subsets** (e.g. one or several branches)
 - combine the two for export selection of data (to INTERLIS or SWMM or TV inspection)



VSA Log cards (Stammkarten)



Wegleitung GEP-Daten
Beilage 2
Sonderbauwerks-Stammkarten mit Erläuterungen

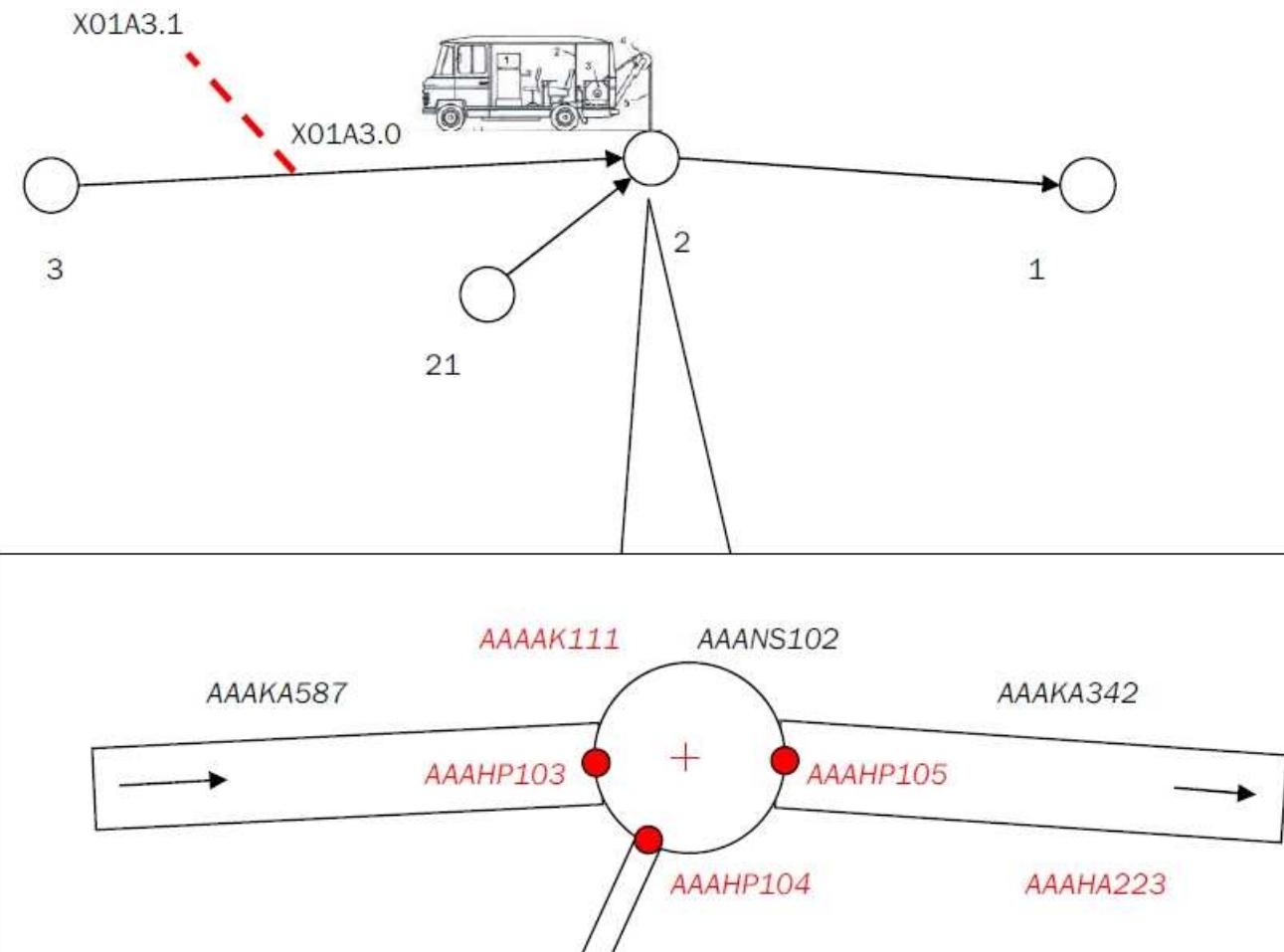
Block	Stammkarte									
	Regenüberlauf	Autonome Messstelle	Regenrückhaltebecken / Regenrückhaltekanal	Regenüberlaufbecken	Trennbauwerk	Pumpwerk	Dükeroberhaupt	Einleitstelle in Gewässer	Übrige Sonderbauwerke	
Bezeichnung	X	X	X	X	X	X	X	X	X	
Hauptbauwerk	X	X			X	X	X			
Allg. Angaben	X	X	X	X	X	X	X	X	X	
Beschrieb / Typ	X		X	X		X		X	X	
Einzugsgebiet	X			X						
Einleitstelle	X			X						
Hydraulik	X		X	X	X					
Biologisch-ökologische Gesamtbeurteilung								X		
Bauwerkskomponenten: ¹	X	X	X	X	X	X	X	X	X	
Drosselorgan	X		X	X	X					
Rückstausicherung	X			X	X				X	
Überlauf	X			X	X			X		
Messgerät	X	X	X	X	X	X	X	X		
Feststoffrückhalt	X			X						
Förderaggregat						X				
Beckenreinigung				X	X					
Beckenentleerung ²				X	X					
Notentlastung						X				
Quellen	X	X	X	X	X	X	X	X	X	

Tabelle 1: Informationsblöcke in den verschiedenen Stammkarten



Regenrückhaltebecken / Regenrückhaltekanal		RRB / RRK
Bezeichnung <input type="text"/>		
ALLGEMEINE ANGABEN		
Standortname:	<input type="text"/>	Deckenkote: Sohlenkote <input type="text"/> m.ü.M
ARA:	<input type="text"/>	Baujahr: <input type="text"/>
Eigentümer:	<input type="text"/>	Betreiber: <input type="text"/>
Koordinate Nordwert:	<input type="text"/> m	Wiederbeschaffungswert: <input type="text"/> Fr.
Koordinate Ostwert:	<input type="text"/> m	Basisjahr Wiederbeschaffungswert: <input type="text"/>
Akten:	<input type="text"/>	Bemerkungen: <input type="text"/>
Datenherr:	<input type="text"/>	
Status:	<input type="checkbox"/> ausser Betrieb <input type="checkbox"/> aufgehoben nicht verfüllt <input type="checkbox"/> aufgehoben unbekannt <input type="checkbox"/> unbekannt <input type="checkbox"/> wird aufgehoben <input type="checkbox"/> Berechnungsvariante <input type="checkbox"/> provisorisch	
	<input type="checkbox"/> geplant <input type="checkbox"/> in Betrieb <input type="checkbox"/> verfüllt <input type="checkbox"/> Projekt	
BESCHRIEB / TYP		
Beckentyp	<input type="checkbox"/> Regenrückhaltekanal <input type="checkbox"/> andere	
Anordnung	<input type="checkbox"/> Hauptschluss <input type="checkbox"/> Nebenschluss <input type="checkbox"/> andere <input type="checkbox"/> unbekannt	
Inhalt:	<input type="text"/>	m ³
Notüberlauf:	<input type="checkbox"/> keiner <input type="checkbox"/> in Mischabwassernetz <input type="checkbox"/> in Regenabwassernetz <input type="checkbox"/> unbekannt <input type="checkbox"/> andere	

QGEP – WinCan X





Become a member of QGEP Subgroup

Falls Sie interessiert sind auch Mitglied zu werden [kontaktieren Sie uns!](#)
E-Mail: qgep@qgis.ch

Stefan Burckhardt, SJiB
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