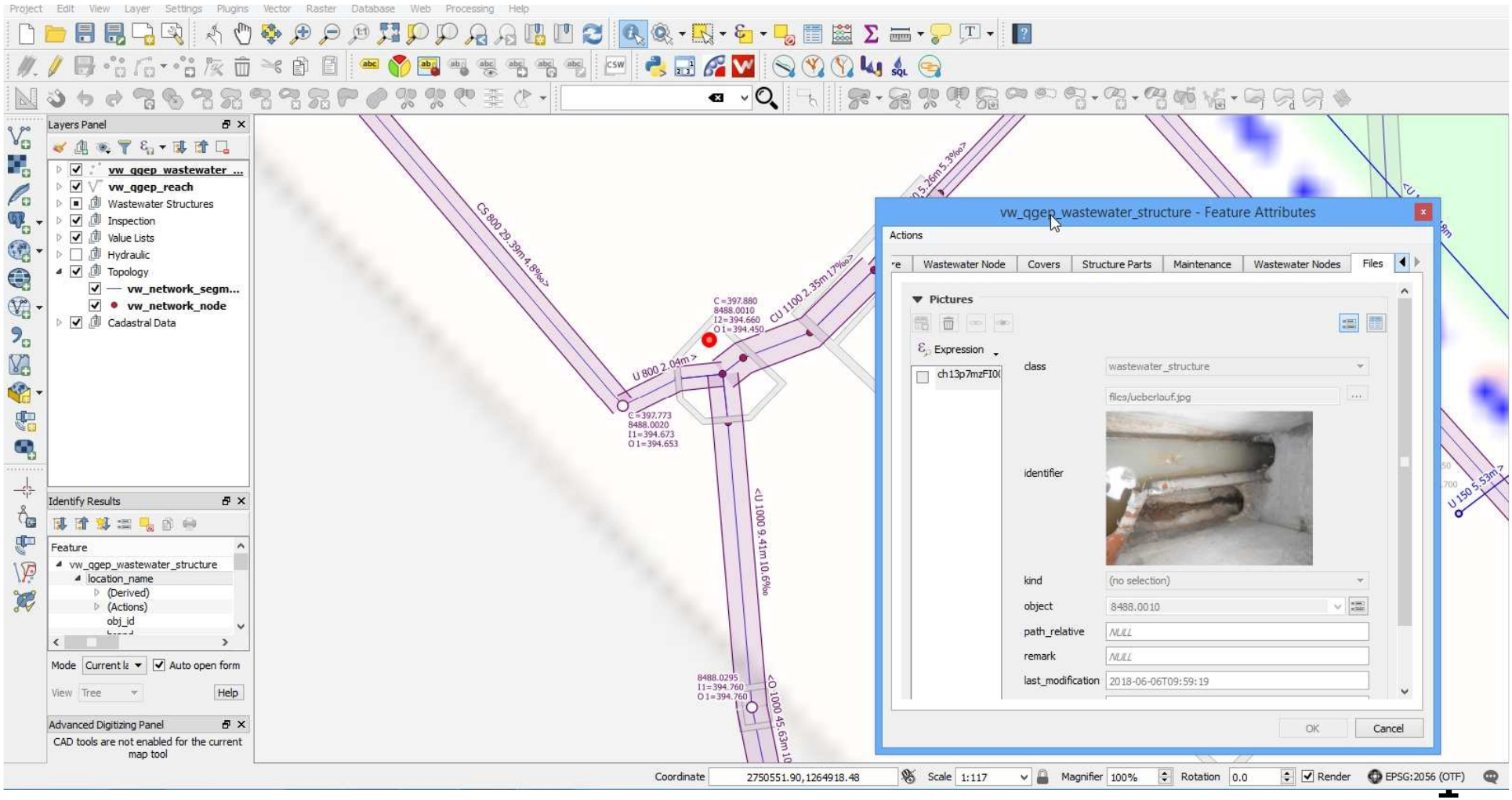
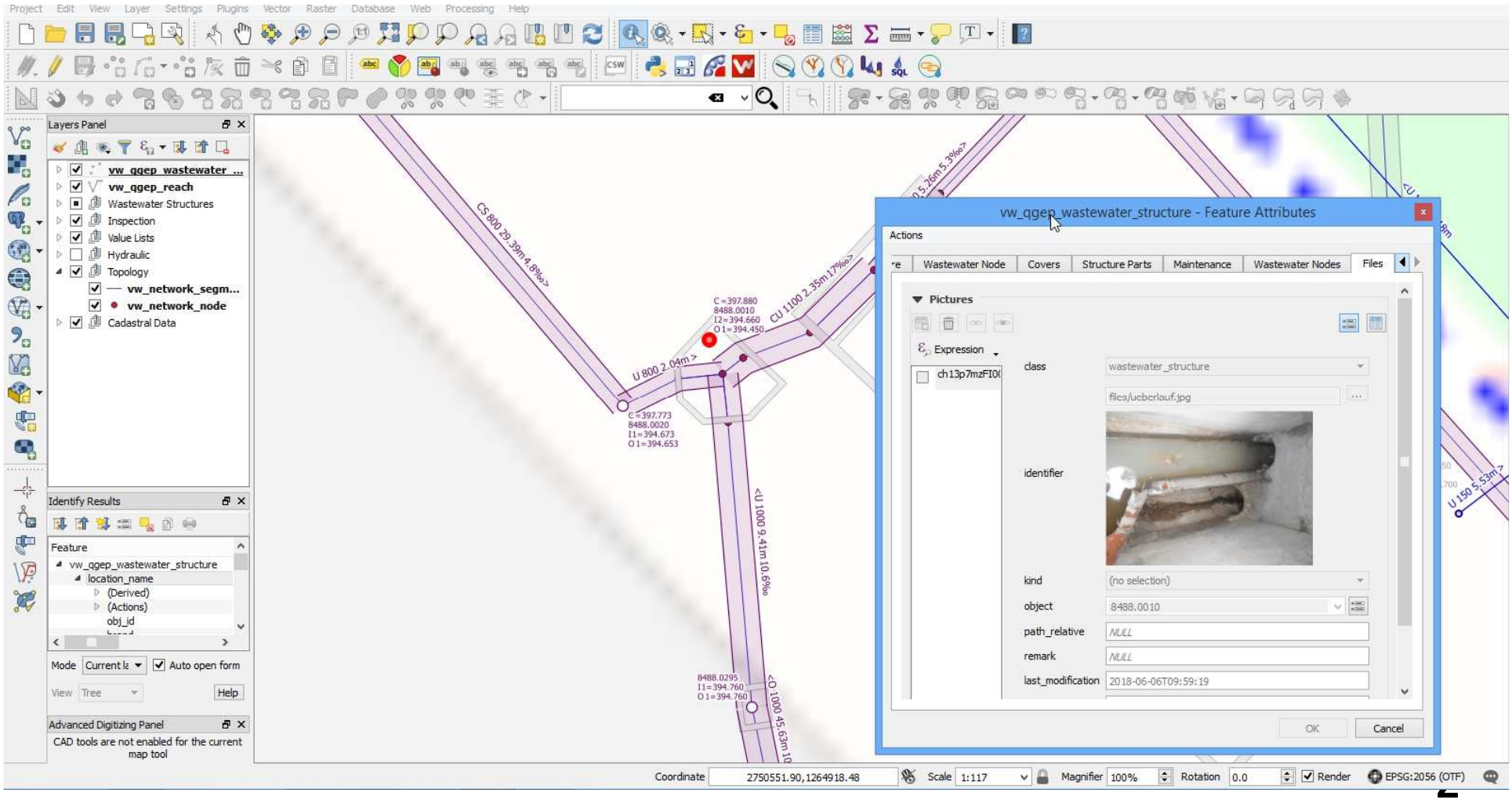
QGEP – the flexible open source tool for Wastewater and GEP



QGEP – die flexible open source Fachschale für Abwasser und GEP



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¶

Data visualization
Vector / Raster / GRASS / Webservices

Core Plugins for 19
Basic functions¶

Exploring and selecting data

Map layout

Publishin maps in
the internet¶

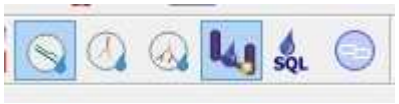
Collect, edit, store, maintain and
export data

Data analyzing¶

QGEP = QGIS in Action for waste water and GEP

Python Console¶

External Python Plugins¶



Core Plugins for 19
Basic functions¶

Data visualization
Vector / Raster / GRASS / Webservices

Exploring and selecting data

Map layout

Publishin maps in
the internet¶

Collect, edit, store, maintain and
export data

Data analyzing¶

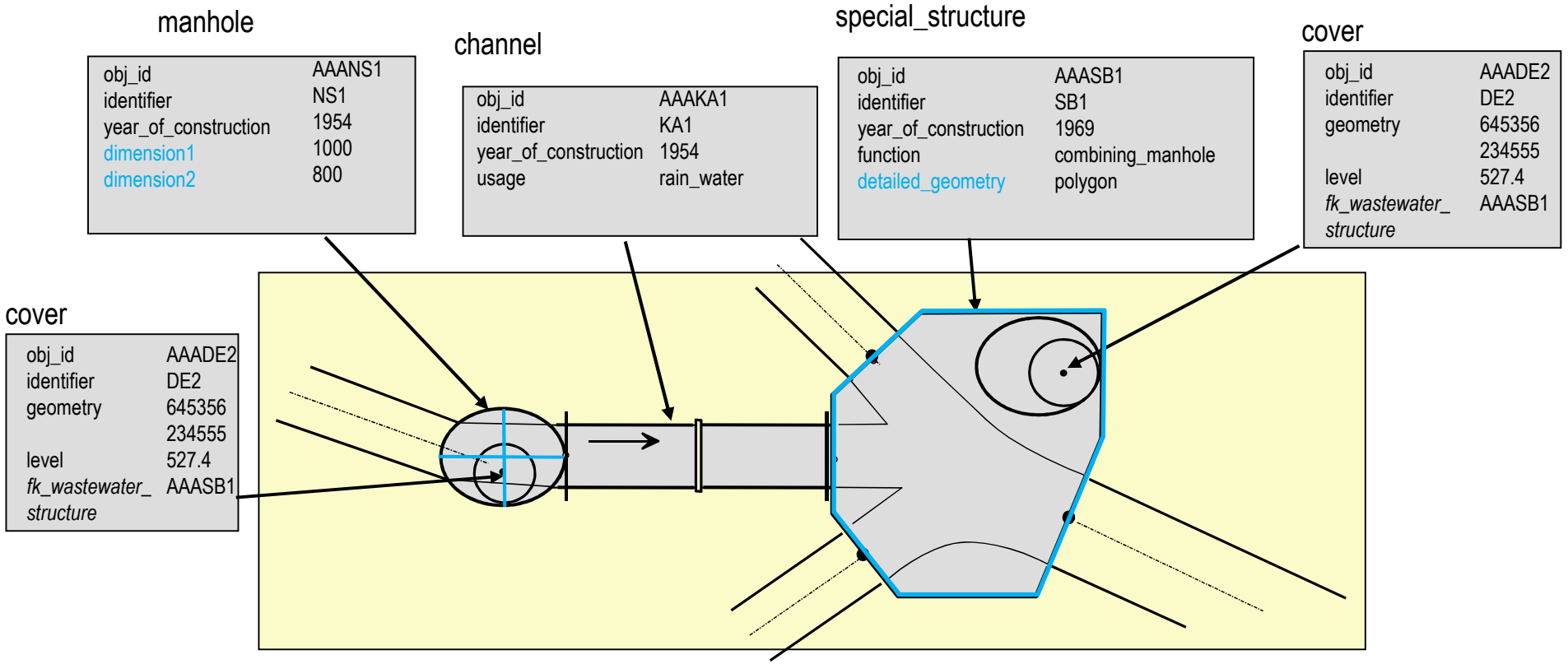
Latest Developments 2019

- 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

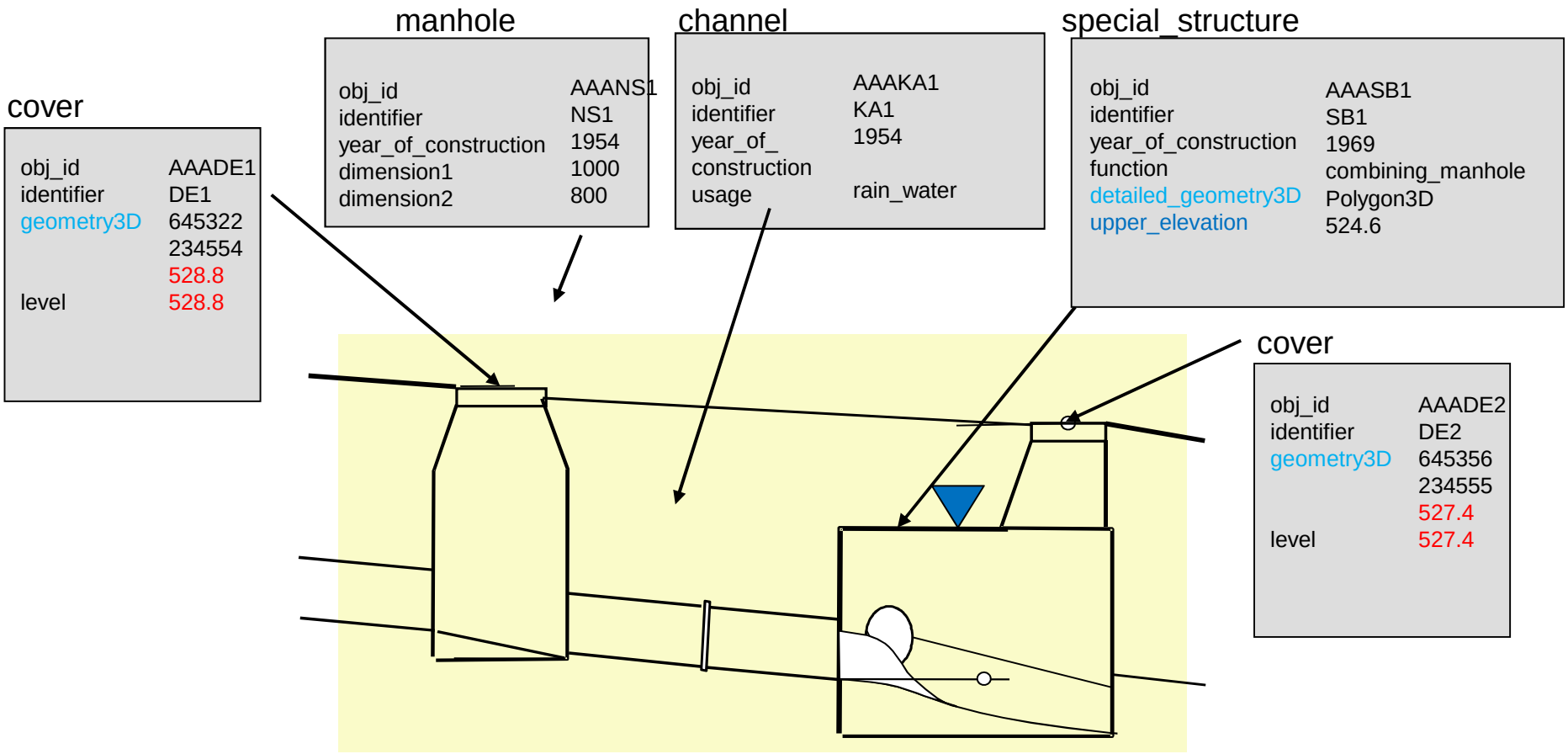
Collecting data in 3D - use of 3D extension of VSA-DSS data model

- 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

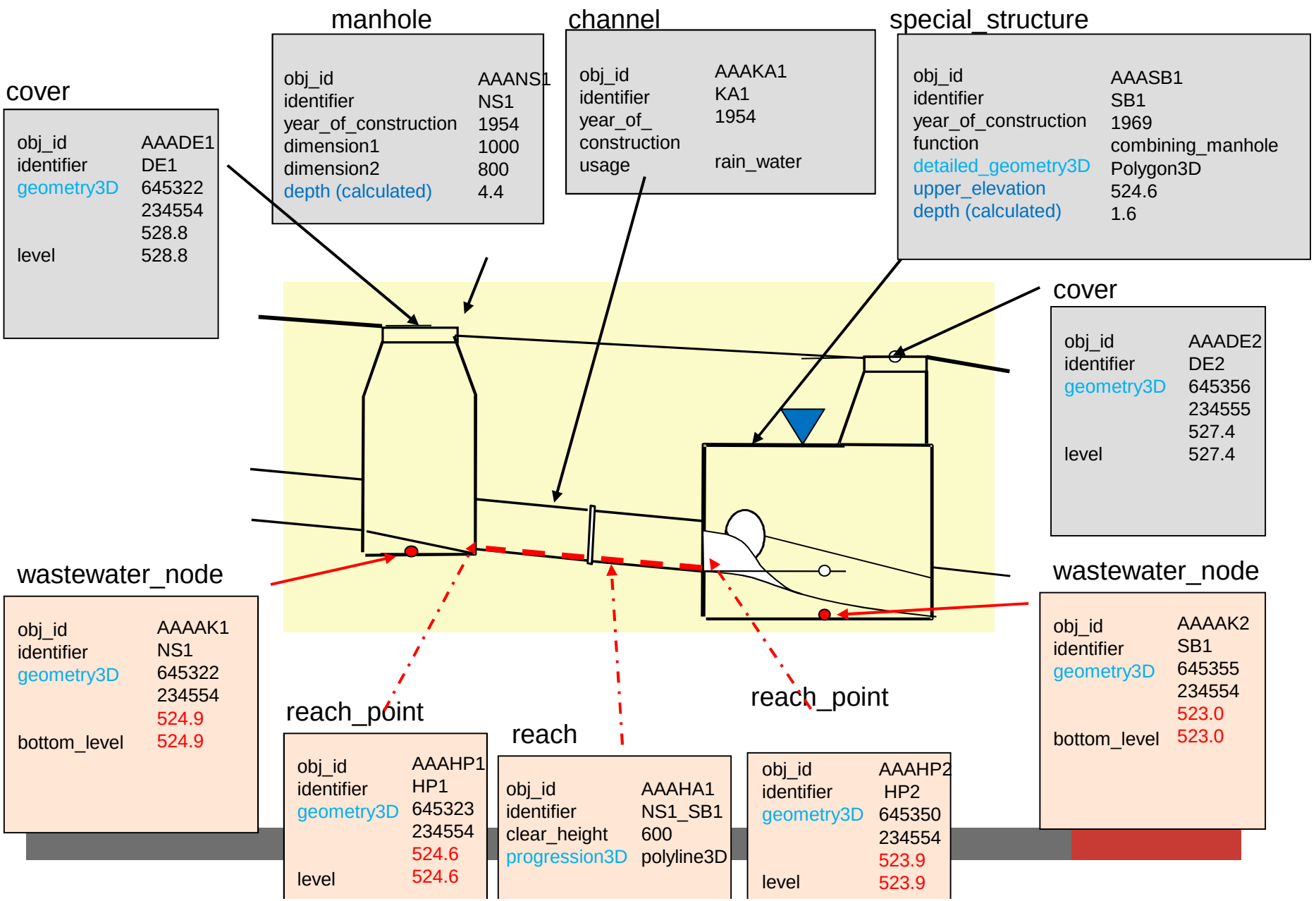
Waste water structure and network topology (plan view)



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

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

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
```

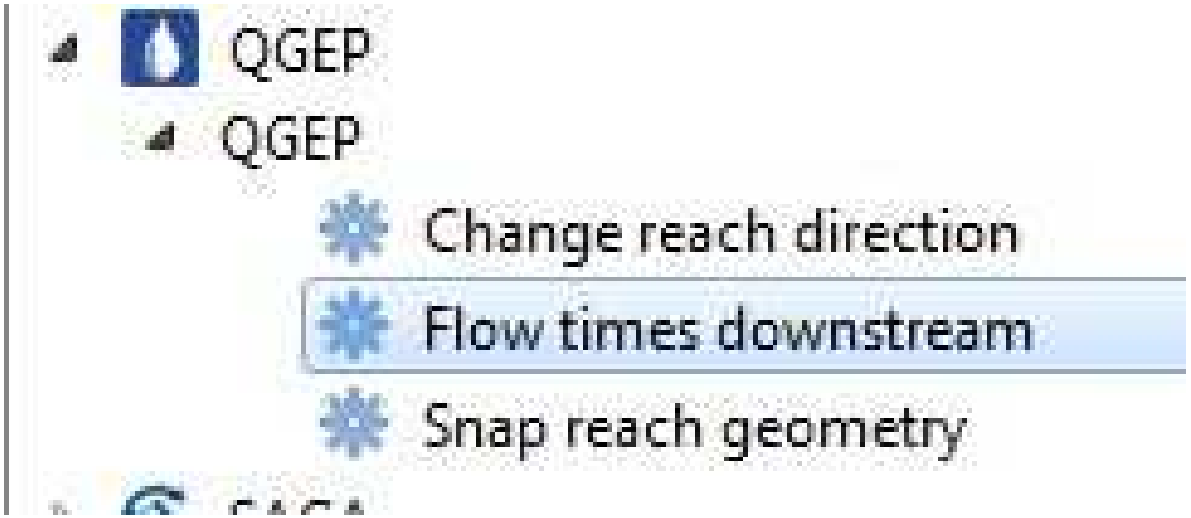
Postgres Upgrade Manager (PUM)

- 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)**

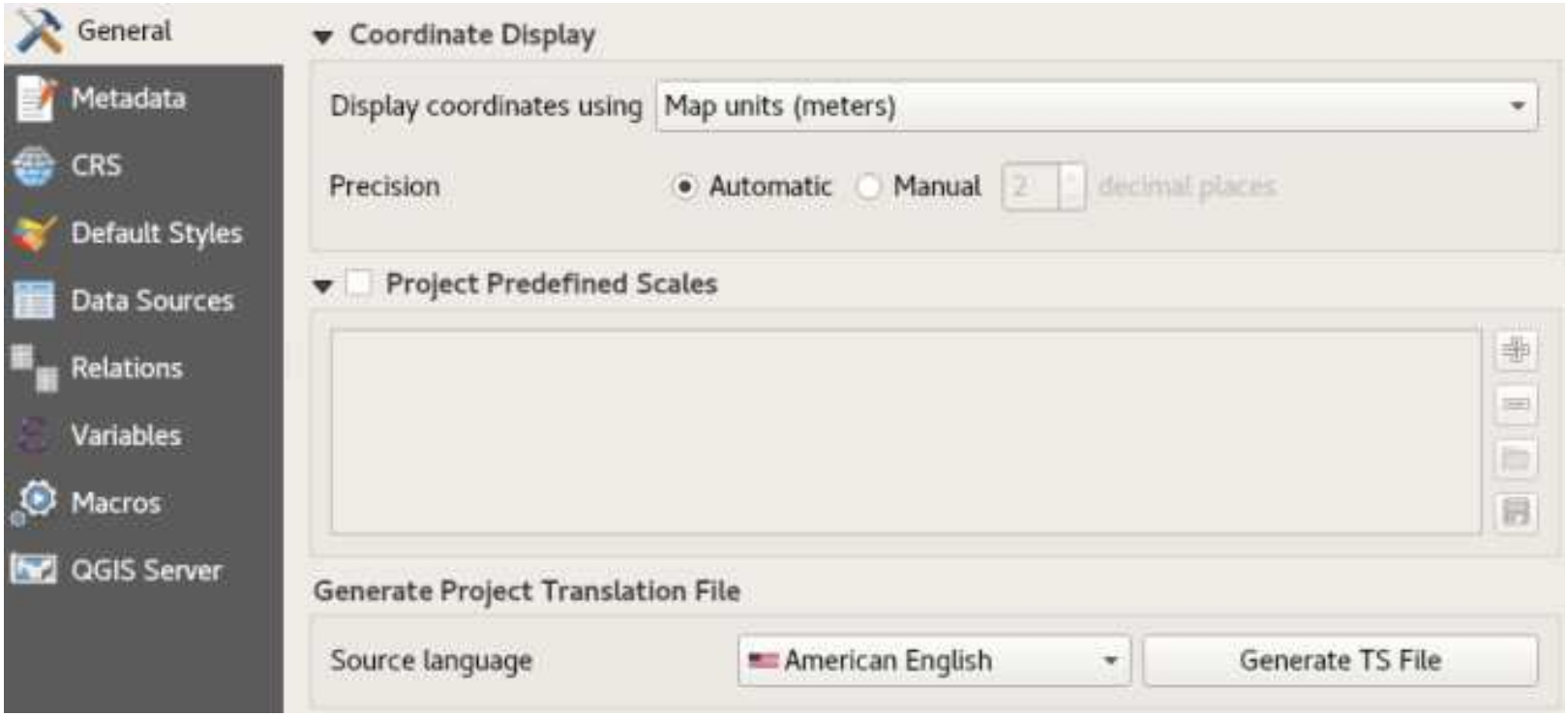
New processing functions for QGEP

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

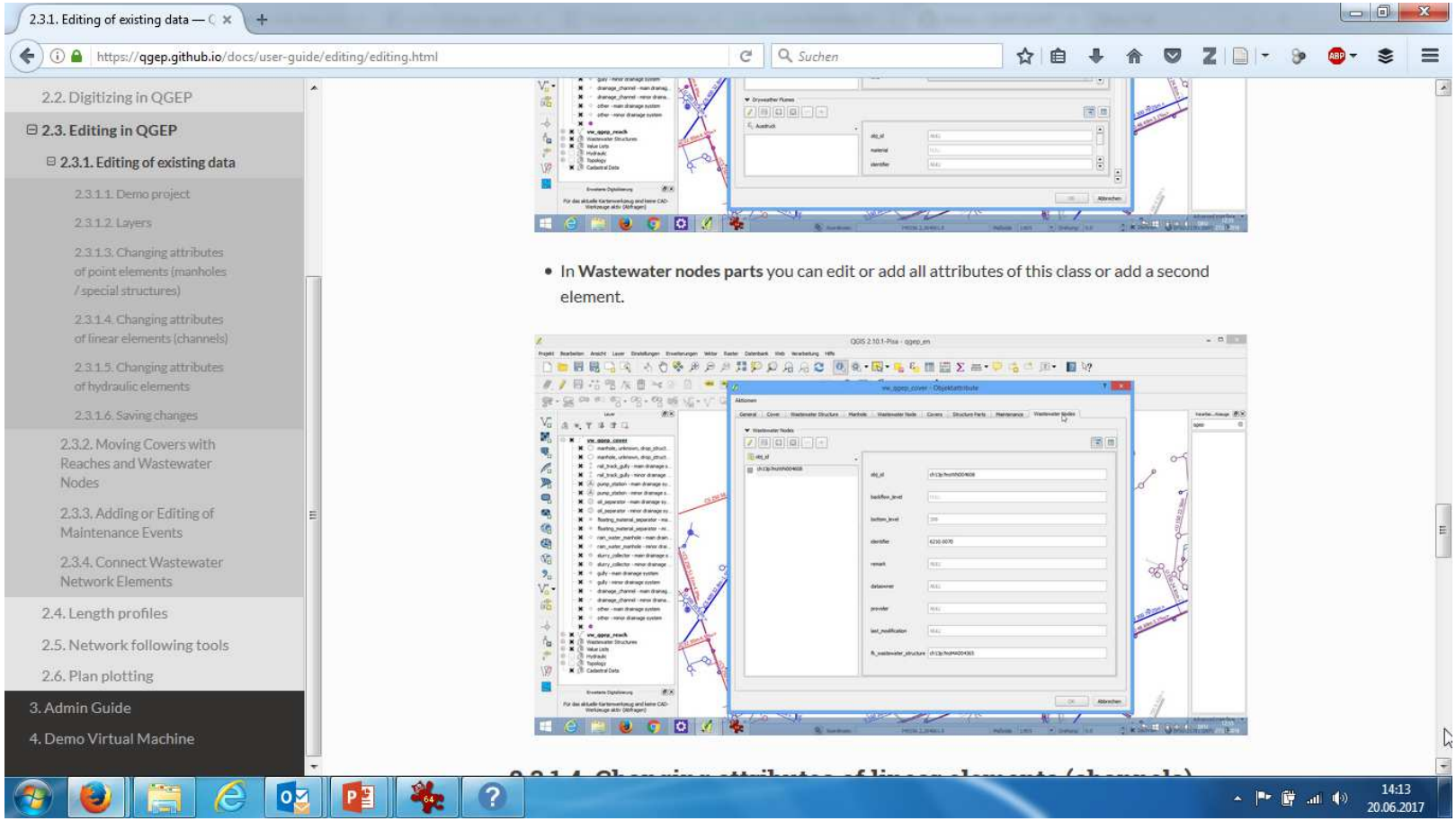


New Project Translation Function

- Support of development of Project Translation Function in QGIS 3.4
- Needed to maintain QGEP in German, French, English, Italien, …



Updated documentation in English, Deutsch, Français

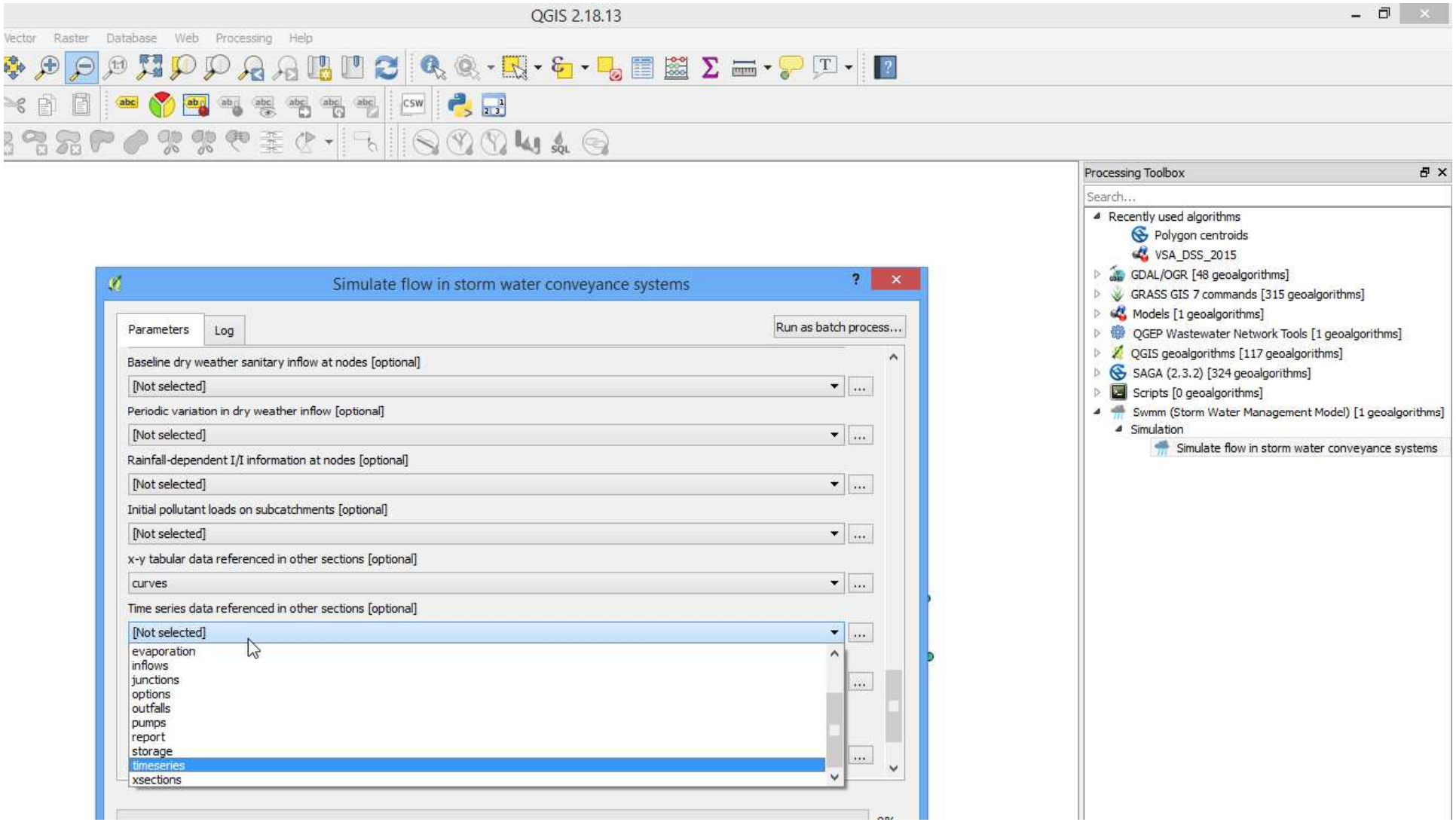


https://github.com/QGEP/docs

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 geoalgorithms]
GRASS GIS 7 commands [315 geoalgorithms]
Models [1 geoalgorithms]
QGEP Wastewater Network Tools [1 geoalgorithms]
QGIS geoalgorithms [117 geoalgorithms]
SAGA (2.3.2) [324 geoalgorithms]
Scripts [0 geoalgorithms]
Swmm (Storm Water Management Model) [1 geoalgorithms]
Simulation
Simulate flow in storm water conveyance systems

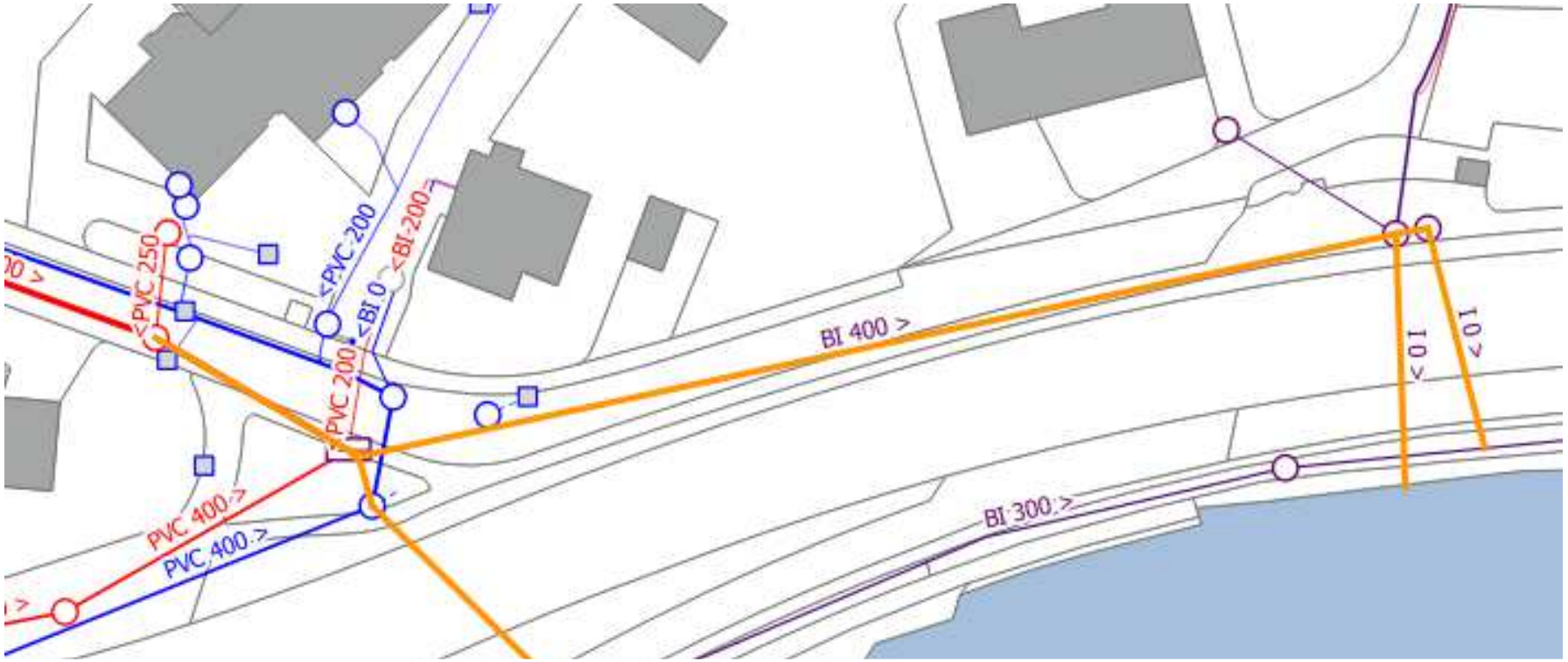
SWMM Export / Import & Plugin

- 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 environnment (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)

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	
Bauwerks-komponenten: [1]	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		
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

ALLGEMEINE ANGABEN

Standortname:			Deckelkote:	m.ü.M
ARA:			Sohlenkote	m.ü.M
Eigentümer:			Baujahr:	
Koordinate Nordwert:		m	Betreiber:	
Koordinate Ostwert:		m	Wiederbeschaffungswert:	Fr.
Akten			Basisjahr Wiederbeschaffungswert:	
Datenherr:			Bemerkungen:	

Status:

- ☐ aufgehoben nicht verfüllt
- ☐ aufgehoben unbekannt
- ☐ unbekannt
- ☐ wird aufgehoben
- ☐ Berechnungsvariante
- ☐ provisorisch
- ☐ ausser Betrieb
- ☐ geplant
- ☐ in Betrieb
- ☐ verfüllt
- ☐ Projekt

BESCHRIEB / TYP

Beckentyp

- ☐ Regenrückhaltebecken
- ☐ Regenrückhaltekanal
- ☐ andere

Anordnung

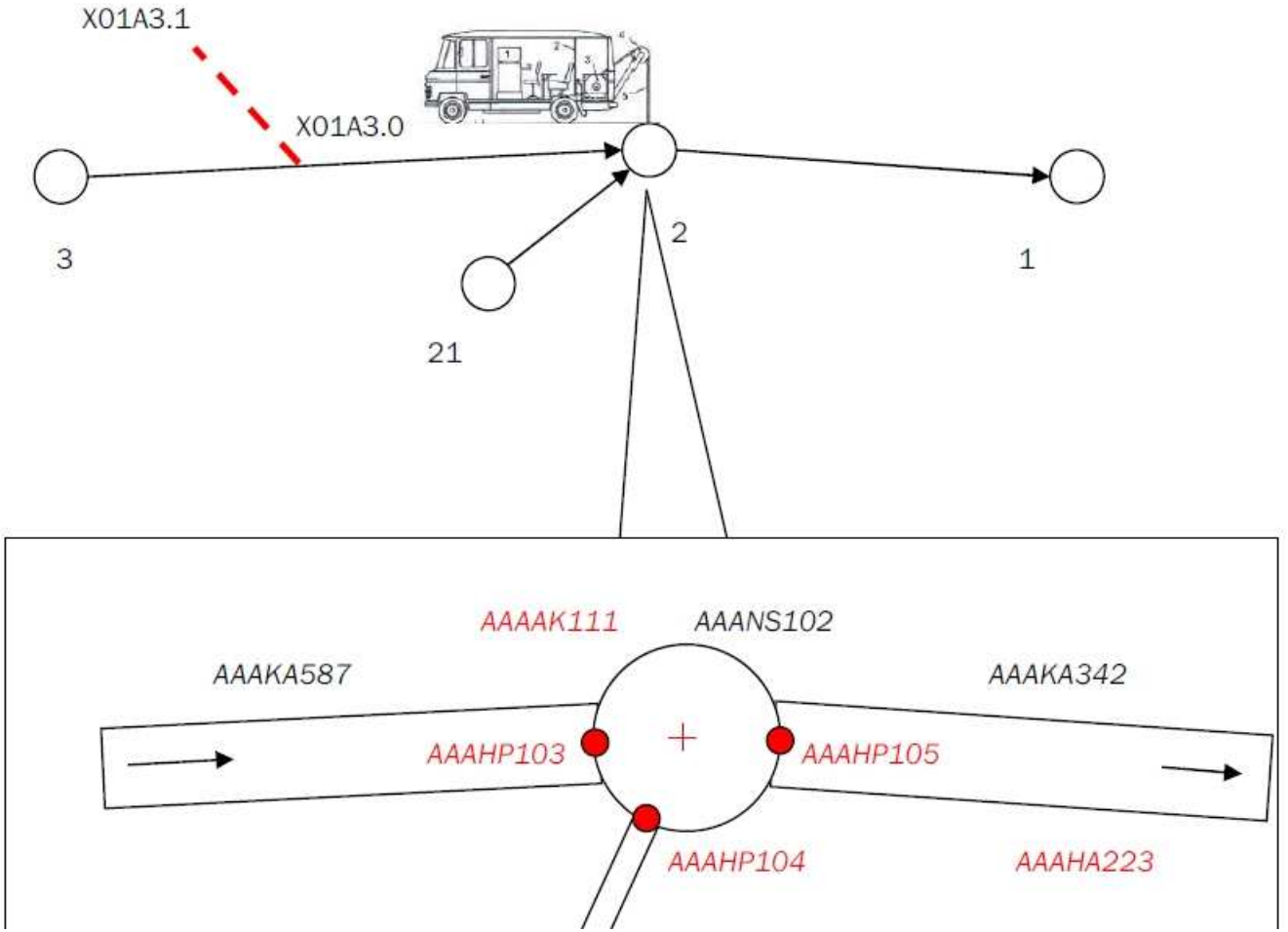
- ☐ Hauptschluss
- ☐ andere
- ☐ Nebenschluss
- ☐ unbekannt

Inhalt: ____ m^3

Notüberlauf:

- ☐ keiner
- ☐ unbekannt
- ☐ in Mischabwassernetz
- ☐ andere
- ☐ in Regenabwassernetz

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
044 857 13 23