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Ecological flow estimation in Latvian – Lithuanian Transboundary river basins (ECOFLOW), LLI-249

Second Field Survey Report: Lielupe River Basin District 2018 Latvia and Lithuania

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ABBREVIATION

EU	European Union
E-Flow	Ecological Flow
FFS	First Field Survey
GU	Geomorphic Unit
HPP	Hydropower Plant
JFS	Joint Field Survey
LEGMC	Latvian Environment, Geology and Meteorology Centre
MS	Monitoring station
RB	River Basin
RBD	River Basin District
SFS	Second Field Survey
WFD	Water Framework Directive
WGS	Water Gauging Station

1. INTRODUCTION

The main objective of the Second Field Surveys (SFS) is to cover the data gaps in the assessment of hydropower plant (HPP) pressure and river habitat estimation within trans-boundary Lielupe RBD, in order to evaluate ecological flow (E-flow) based on the principles and approaches of the EU Water Framework Directive 2000/60/EC (WFD), and create the WFD complain Methodology for E-Flow calculation in Latvia and Lithuania.

E-flow will be evaluated using biological communities (fish), hydro-morphological indicators (daily water discharge and morphological parameters) and by means of habitat indices derived from a Meso-scale Habitat simulation model (MESOHABSIM).

Second Field Surveys was organized in the following pilot rivers of Lielupe RBD:

Mūša: Lithuanian part of trans-boundary Lielupė River Basin, left tributary;
Lėvuo: Lithuanian part of trans-boundary Mūšą River Basin, right tributary;
Suosa: Lithuanian part of trans-boundary Lėvuo River Basin, left tributary;
Auce: Latvian part of trans-boundary Svete River Basin, left bank tributary;
Berze: Latvian part of trans-boundary Svete River Basin, left bank tributary;
Islice: Latvian part of trans-boundary Lielupe River Basin, left tributary.

The program of survey includes hydrological measurements (water discharge, water depth, flow velocity) and substrate description in each measurement points within geomorphic unit, river habitat mapping and fish data collecting.

The SFS results have shown that HPP operation considerably affect the hydro-morphological conditions of rivers. The most significant pressures is interruption of the river continuity by dams' construction itself. There is no one fish pass was built in HPPs of the project case studies.

The River Habitat – Water Flow rating curves for all case studies in Lielupe RBD will be built using all available data of field surveys. Collected fish data within spices distribution area will be used for validation of existing Fish Model. E-flow will be evaluated for all case studies in Lielupe RBD on the base of SFS results using MESOHABSIM model.

HPP impact on river habitat and biological parameters (fish) will been analyzed on the base of SFS results and presented in the Project Final Report.

2. OBJECTIVES OF THE FIELD SURVEY

The objectives of the SFS from the Summary of ECOFLOW project are:

- To fill in the data gaps with respect to HPP influence on hydrological regime as well as baseline data required to build the River Habitat – Water Flow rating curve;
- To collect fish data in the case study rivers in order to validate the Fish Model created during First Field Survey (FFS).

As already mentioned, the main objective of the SFSs will be collecting missing data for habitat mapping and building the rating curve of water flow and river habitat. In an ideal scenario the Joint Field Surveys (JFS) should include the following two river reaches of every case study: a) HPP upstream section to demonstrate reference conditions on each regulated river; b) HPP downstream sections to demonstrate the flow regime alterations and changes in the river habitat.

However the significant hydro-morphological pressures along the selected rivers like 1-2 additional HPPs or impoundments upstream the case study area, to identify reference conditions seems to be impossible.

3. CASE STUDIES, SURVEYS AND TIMELINE

3.1. Selection of case studies

3.1.1. Lithuania

Only 5 small hydropower plants (HPP) were constructed on the rivers of Lielupė RBD. Data of water discharge are available only for 2 of those rivers; however, the remaining 3 rivers are not investigated. Currently, water discharge measurements are carried out at 4 water gauging stations (WGS) in the rivers where HPPs are operating (Table 3.1.1.1). The Ustukiai WGS in the Mūša River and Bernatoniai WGS are located downstream the hydropower plants, and have a long data sets of water discharge.

For assessment of HPP impacts on flow regime alteration and on fish communities in Lielupė RBD, three river sites were selected as the case studies, based on the level of their investigation (Fig. 3.1.1.1, Table 3.1.1.1 and Table 3.1.1.2). The first (I) case study is related to the Dvariukai HPP (Table 3.1.1.2) on the Mūša River (Ustukiai WGS, Table 3.1.1.1), the second (II) case study – to the Akmeniai HPP (Table 3.1.1.2) on the Lėvuo River (Bernatoniai WGS, Table 3.1.1.1) and the third (III) case study – to the Stirniškiai HPP (Table 3.1.1.2) on the Suosa River which is not investigated.

Table 3.1.1.1. Currently existing water gauging stations (WGS) on the rivers selected for case studies

No	River	WGS	Distance from the mouth, km	Catchment area, km^2	Period of observations	Multi-year average discharge (Q), m^3/s
1	Mūša	Ustukiai	56.1	2284	1957-2016	10.4
2	Mūša	Žilpamūšis	42.0	5010	2001-2016	22.2
3	Lėvuo	Kupiškis	109.3	303.3	1955-1999, 2007-2016	1.79
4	Lėvuo	Bernatoniai	47.2	1144	1967-2016	3.55

Table 3.1.1.2. Small HPPs on the rivers selected for case studies

No	SHPP	River	Distance from the mouth, km	Catchment area, km²	Small HPP construction year	Installed capacity, kW
1	Dvariukai	Mūša	81.5	1927	2001	494
2	Akmeniai	Lėvuo	85.9	873.3	1999	35
3	Stirniškiai	Suosa	1.8	95.1	2006	60

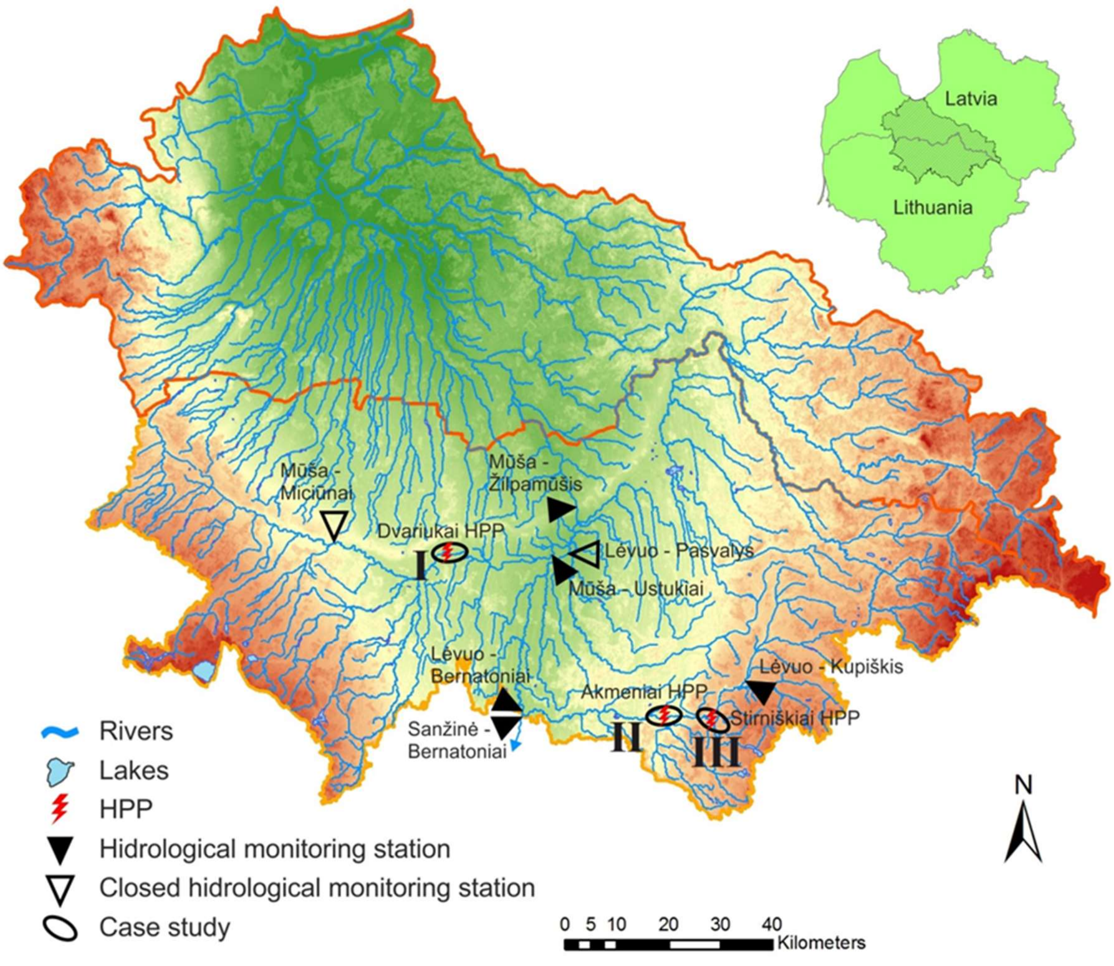

Figure 3.1.1.1. Case study sites in Lielupė RBD

In order to assess the natural river runoff, i.e. without antropogenic (HPP) impact, the data sets of water discharge of 3 WGS for the period of 1961-2016 were used. Module coefficients (k) of water discharge were calculated for individual years. When the estimated values of modular coefficients ranged from 1.3 to 1.5, the year was accepted as a wet, when from 0.9 to 1.1 – normal year, and when from 0.5 to 0.7 – dry year. For each case study, 7 years were selected for every group of years: wet, normal, and dry (Table 3.1.1.3).

Table 3.1.1.3. Module coefficients of water discharge of the natural river regime for wet, normal and dry years

No	**River - WGS**		**Wet years (k=1.3-1.5)**		**Normal years (k=0.9-1.1)**		**Dry years (k=0.5-0.7)**	
			Year	**k**	**Year**	**k**	**Year**	**k**
1	Mūša – Ustukiai	1	1974	1.48	1966	0.91	1961	0.62
		2	1978	1.38	1982	0.91	1969	0.53
		3	1979	1.41	1988	0.98	1971	0.48
		4	1983	1.32	1989	1.01	1972	0.61
		5	1987	1.46	1991	0.95	1977	0.63
		6	1990	1.37	1997	0.99	1984	0.56
		7	1994	1.45	2000	0.87	1996	0.66
2	Lėvuo – Bernatoniai	1	1978	1.35	1970	1.02	1971	0.67
		2	1980	1.46	1979	1.10	1972	0.59
		3	1981	1.25	1982	1.01	1973	0.56
		4	1989	1.27	1985	1.00	1976	0.51
		5	1990	1.26	1988	0.95	1977	0.64
		6	1994	1.29	1991	1.02	1984	0.69
		7	1998	1.53	1997	0.99	1996	0.58
3	Suosa – Stirniškiai	1	1962	1.29	1963	0.91	1961	0.74
		2	1980	1.24	1966	0.93	1964	0.67
		3	1983	1.34	1968	1.04	1969	0.77
		4	1985	1.26	1970	1.05	1972	0.66
		5	1986	1.44	1979	0.99	1973	0.78
		6	1987	1.48	1984	1.02	1976	0.67

According to 7-year averaged daily water discharge data (Annex I, Tables 1-9) typical hydrographs for 3 WGSs were created for the wet, normal and dry years.

Mūša River

The Lielupė RBD comprises the Mūša River, Nemunėlis River and Lielupė small tributaries sub-basins which are located in the northern part of Lithuania. The main parts of basins of the rivers Mūša and Nemunėlis are situated in Lithuania. These rivers merge in the territory of Latvia, at the Bauskė (Bauska) city. After the confluence, the river is known as the Lielupė (former name - Aa) River.

The first case study is in the Mūša River which is the eleventh longest river in Lithuania (Fig. 3.1.1.1). The length of the Mūša River at the confluence with the Nemunėlis River is 157.3 km. In the territory of Lithuania length of the Mūša River is 133.1 km, the catchment area is 5296.7 km². The Lithuanian part of the Mūša River catchment comprises 97% of its total area.

The Mūša River begins on the western edge of Tyrelis Swamp, 85.0 m above sea level. From the source, the Mūša River flows to the east and after confluence with its largest tributary in the territory of Lithuania - the Lėvuo River, the Mūša River flows to the north and north-west and enters the territory of Latvia. In Lithuania, the Mūša River flows through flat plains: Venta River Middle Reaches Lowland, Mūša-Nemunėlis Lowland, and Žiemgala Lowland. The average bed slope of the Mūša River in Lithuanian territory is 0.49 m/km. The upper reaches of the Mūša River drain the Venta River Middle Reaches Lowland, so the bed slope of these reaches is not high (about 0.38 m/km). Further, the Mūša River flows through the Mūša-Nemunėlis Lowland and here its bed slope is higher (0.57 m/km). The Mūša River leaves the territory of Lithuania and enters Latvia in the Žiemgala Lowland. The lower reaches of the river and its mouth are located in the territory of Latvia. The Mūša River bed slope in the reach from the source to the Dvariukai HPP (case study I) is 0.50 m/km.

Four river types differing in the characteristics of their aquatic communities have been identified within the Mūša River. The reach of the Mūša River from the source to the beginning of Dvariukai HPP reservoir is classified as the water body of types 2 and 5; the reach of Dvariukai HPP reservoir is classified as the water body of type 1; the reach from Dvariukai HPP to the Lithuania-Latvia border is assigned to the types 5 and 4 (Lielupė River Basin District Management Plan, 2010).

The Mūša River basin is dominated by thin layer of soil. Dolomite and gypsum rocks lie close to the surface in the some areas of basin, so the karst relief dominates here. Fertile agricultural land predominates in this basin. 14.1% of the Mūša River basin area is covered by forests, 0.5% by lakes, and 5.1% by swamps and marshes, therefore 87.4% of its surface is wetlands.

1 small hydropower plant is constructed on the Mūša River in the Lithuanian territory. The river reach below Dvariukai HPP is selected as a case study I.

Case study I (Fig. 3.1.1.1)**.** The hydropower plant Dvariukai is located at the end of the upper reaches of the river. It was constructed in 2001, on previously created reservoir which was used for irrigation and fishery. Ustukiai WGS is 25.4 km downstream hydropower plant. There are no large tributaries between HPP and WGS, and catchment area of Ustukiai WGS is 18% larger than area of Dvariukai HPP.

The surrounding area of the Mūša River below Dvariukai HPP is a slightly hilly morainic plain. Eastward oriented upper reaches of the Mūša River (up to Pasvalys) nears to the southern foot of Linkuva moraine ridge, so almost no left tributaries.

The Mūša River valley at Ustukiai WGS is trapezoid-shaped. The slopes of a valley are steep: right slope is up to 15 m, left one is lower – up to 6 m. Both slopes are composed of loams. The left-bank floodplain is well expressed, up to 60 m wide. The meadows prevail in the floodplain.

Sand and sandy loams with mud substrates are found to cover the bottom of the river bed. There are large boulders in the reach of WGS. Riverbed overgrows with very dense aquatic vegetation which remains during the year. The right bank is steep, up to 7 meters high, the left one is flat.

Hydrological regime of the Mūša River at Ustukiai WGS is characterized by very high spring flood, summer low flow and rain floods during autumn and winter seasons. Water discharge data of the Ustukiai WGS were analysed for preparation of runoff hydrographs of the Mūša River (Fig. 3.1.1.2). Typical runoff hydrographs were created for wet, normal and dry years, on the basis of daily discharges (Annex I, Table 1-3).

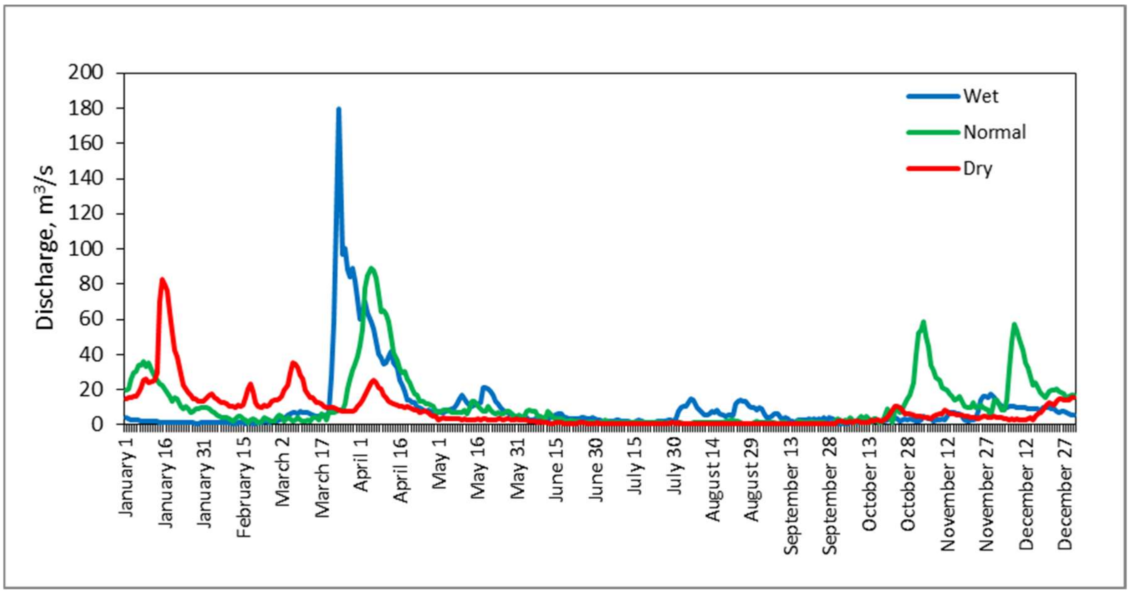

Figure 3.1.1.2. Hydrographs of Wet, Normal and Dry Years, Mūša River - Ustukiai WGS

Hydrographs in Fig. 3.1.1.2 indicate that in the Mūša River at Ustukiai WGS, the biggest differences of runoff among wet, normal and dry years are in spring and autumn, while the differences are not significant during the summer low flow period. During wet years, spring flood is very high and well-expressed, while during normal and dry years spring flood is lower and longer, especially in the normal years. Low flow period lasts very long time, from middle May to the begining of November in the normal and dry years, while during wet years, it is shorter with some rain floods. Water discharge in the autumn and winter periods is very high in wet years, high in normal years and very low in dry years.

Lėvuo River

The Lėvuo River is the largest tributary of the Mūša River in Lithuanian territory. It is a right-bank tributary, entering the Mūša River 50.5 km from the mouth. The river flows only in territory of Lithuania.

The length of the Lėvuo River is 145.0 km; the catchment area is 1628.8 km². The Lėvuo River gets its start at Lėvenaitis Lake which is in Notigala Swamp; 97.5 m above sea level. The Lėvuo River flows through flat plain – Mūša-Nemunėlis Lowland. At the upper reaches, the Lėvuo River runs in a southwesterly direction. Here it flows through the surface, which is considered to be a transition zone between the Western Aukštaičiai Plateau and Mūša-Nemunėlis Lowland. At a Kupiškis reservoir (Kupiškio marios), the river enters into the ancient valley, which deepens and extends southward. A width of valley at Kupiškis town is 0.6 km. Here the land surface is characterised by individual residual morainic ridges or their ranges. Further, the Lėvuo River nears these morainic ridges and at the mouth of the Suosa River it crosses them and its valley becomes deep on both sides. The river leaves the ancient valley at Akmeniai HPP and enters to the wide valley. At the middle reaches, the Lėvuo River flows generally westward and at a Karsakiškiai village it crosses sandy ancient delta where the morainic ridges occasionally protrude above the surrounding land surface. At the lower reaches (from the Sanžilė canal), the river turns north and enters the lowest part of the Mūša-Nemunėlis Lowland where it reaches the Mūša River.

The average bed slope of the Lėvuo River is 0.52 m/km. The Lėvuo River bed slope in the reach from the source to the Akmeniai HPP (case study II, Fig. 3.1.1.2) is 0.62 m/km; while from Akmeniai HPP to the mouth – 0.45 m/km.

Three river types have been identified within the Lėvuo River. The reach of the Mūša River from the source to the beginning of Akmeniai HPP reservoir is classified as the water body of types 1 and 3; the reach from Akmeniai HPP reservoir to the river mouth is classified as the water body of type 5 (Lielupė River Basin District Management Plan, 2010).

The Lėvuo River basin is dominated by loams and sandy soils.

1 small hydropower plant is constructed on the Lėvuo River. The river reach below Akmeniai HPP is selected as a case study II.

Case study II (Fig. 3.1.1.1). The hydropower plant of this study is Akmeniai HPP (constructed in 1999) on the Lėvuo River, which is the largest tributary of Mūša River. Akmeniai HPP is located 38.7 km upstream the Bernatoniai WGS and 23.4 km downstream Kupškis WGS.

The surrounding area is a morainic plain, consisting of sandy loams. The valley of the river is not clearly expressed. The slopes of the valley are low, gradually moving to the surrounding plains, composed of sandy loams. A floodplain at the right bank is 400 m of width. The riverbed is sandy, rocky, overgrown with abundant aquatic vegetation. The banks of the river are flat, sandy loamy, covered with bushes.

Hydrological regime of the Lėvuo River at Bernatoniai WGS is characterised by high spring flood, long-term summer low flow and rain floods during autumn and winter seasons (Fig. 3.1.1.3). Water discharge data of the Bernatoniai WGS were analysed for preparation of runoff hydrographs of Lėvuo River. Typical runoff hydrographs were created for wet, normal and dry years (Fig. 3.1.1.3.), on the basis of daily discharges (Annex I, Table 4-6).

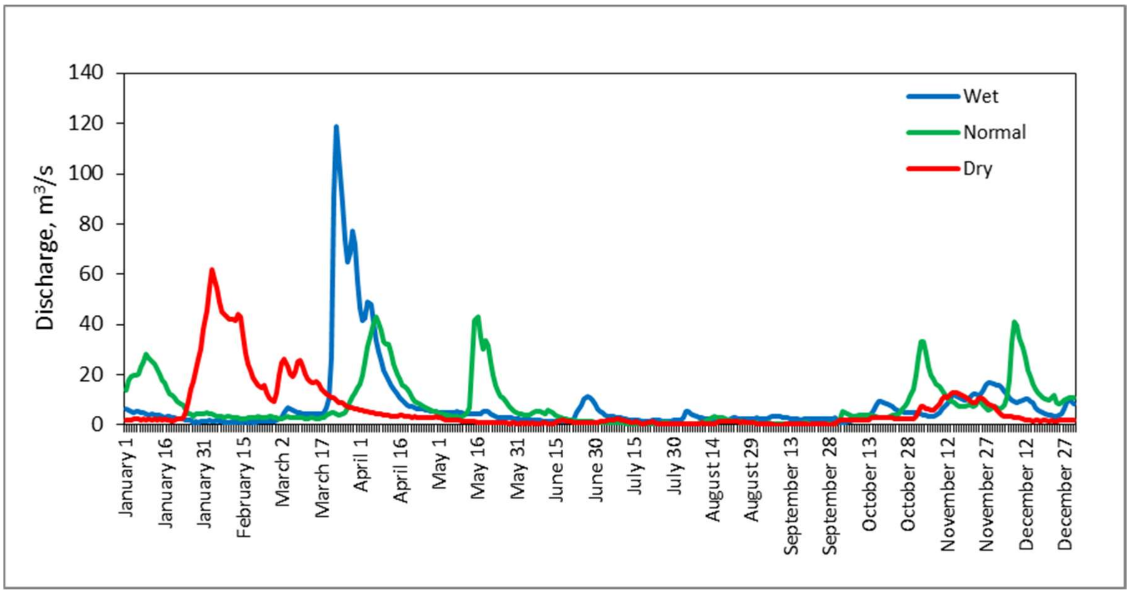

Figure 3.1.1.3. Hydrographs of Wet, Normal and Dry Years, Lėvuo River-Bernatoniai WGS

Hydrographs of the Lėvuo River - Bernatoniai WGS (Fig. 3.1.1.3) illustrate large runoff differences between wet and dry year not only in spring and autumn, but in summer low flow period as well. The exceptional feature of Lėvuo River hydrographs is that the spring flood in wet year is much lower than in normal years. Low flow period lasts very long time, from May to November in the normal and dry years, while during wet years, it is very shorter (from middle May to the end of first decade of Jule). In wet years, the runoff increases significantly in the second half of summer due to frequent rain. In autumn and winter periods, the water discharges of the river are higher than in summer, especially in wet years.

Suosa River

The Suosa River is the left tributary of Lėvuo River. The source of the river is Lake Suosa (the catchment area – 28.1 km²), situated at the altitude of 101.1 m above sea level. The total length of the Suosa River is 13.9 km, the catchment area – 96.8 km². The average bed slope of the river is 2.74 m/km. The surrounding area is an open plain of the Mūša-Nemunėlis Lowland, covered with loams. A Lake Suosa (Jurgiškis), the source of the Suosa River, is situated in the Viešintai ridge. At the middle reaches the river flows in the plain and at the lower reaches it crosses the end of ridge and enters into the deep valley of the Lėvuo River. Stirniškiai hydropower plant on the Suosa River was selected as case study III.

Case study III (Fig. 3.1.1.1). The hydropower plant of this case study is Stirniškiai HPP. It was constructed in 2006, on previously (in 1974) created reservoir. Stirniškiai HPP is located 1.8 km from the Suosa River mouth.

The hydrological measurements in the Suosa River have not ever been carried out. Therefore, the analogue method of estimating water discharge was used for the Suosa River. Daily discharges of the Virinta River at Viliaudiškis WGS were used for the creation of typical hydrographs of the Suosa River.

Hydrological regime of the Suosa River is characterized by high spring flood, low summer flow and low rain floods during autumn and winter seasons. Typical runoff hydrographs of the Susa River were created for wet, normal and dry years (Fig. 3.1.1.4) on the basis of daily discharges (Annex I, Tables 7-9).

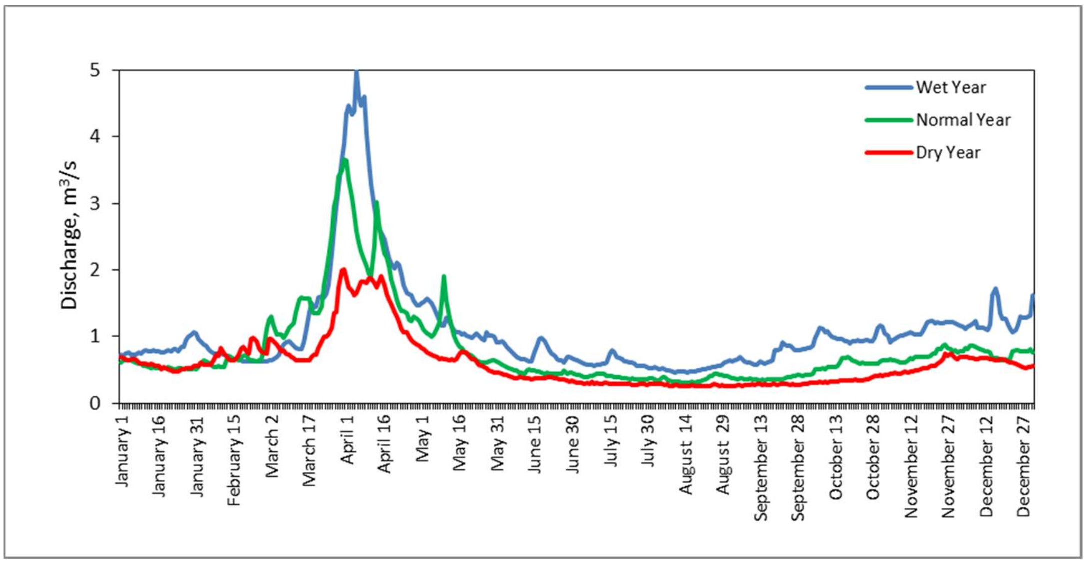

Figure 3.1.1.4. Hydrographs of Wet, Normal and Dry Years, Suosa River

Hydrographs of the Suosa River (Fig. 3.1.1.4), created according to the discharges of analogue (the Virinta River at Viliaudiškis) indicate that in the Suosa River at Stirniškiai HPP, the highest runoff is during spring flood, especially during wet years. The spring flood of normal years lasts longer than in wet or dry years and has 3 peaks. Low flow period lasts from June to October. The runoff of wet years during entire low flow period is higher due to frequent rains.

Prepared river hydrographs are going to be used for an assessment of e-flow patterns in Venta RBD.

3.1.2. Latvia

The case study of regulated rivers have been selected taking into account severity of hydrological regime' alterations or number of HPPs on the river, fish species existence and water body type.

In Lielupe RBD 3 type specific case studies were selected for assessment of HPP impact on river ecosystem and E-flow evaluation: Berze, Auce and Islice rivers (Fig. 3.1.2.1).

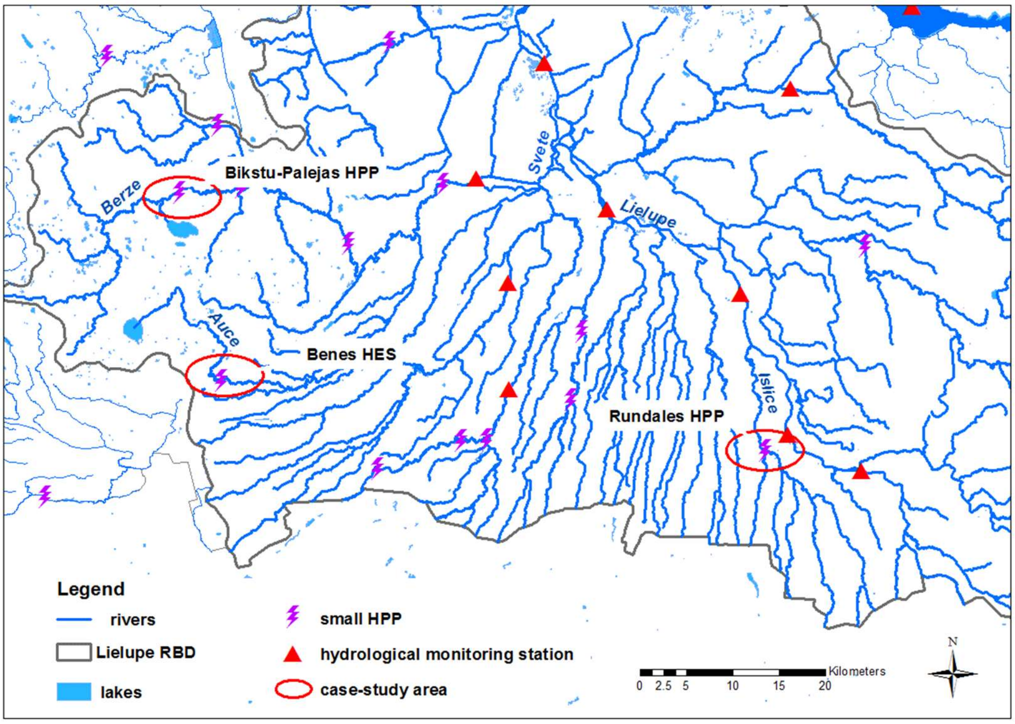

Figure 3.1.2.1. Case study territories in Lielupe RBD, Latvia

<u>1. Berze River</u>

Berze River outflows from a bog nearby Lielauce Lake and inflows to Svete River. River basins is 1180 km^2. It is 85 km long, river bed gradient is 1.6 m/km in upper stretch and 0.7 m/km in down stretch. Elevation is 3 – 107 m LAS.

Berze River has two water bodies that are classified as water body of 3-d and 4-th types.

River has predominance U shape valley, 150 – 250 m width.

Floodplain is 40-50 m width, has clay-loam and sandy-loam soil, covered by brush and meadow vegetation, inundated. River bed substrates are varies from boulders, cobbles and gravel in upper/middle stretches to gravel, sand and mud in lower stretches.

Channel is sinuous, 2-10 m width in average, depth increases from 0.1 to 2.7 m in a river mouth stretch. There are small sand-gravel islands in a stream that are under water only during flood.

River bed substrate: boulders, cobbles and gravel. In upper stretches river bed is covered by merged vegetation during summer season.

4 hydropower plants are located in stream:

- HPP Berze that was constructed in 1996.
- Dobele HPP is operated from 2002,
- Annenieki HPP is operated from 2002, and
- Bikstu-Palejas HPP is operated from 1999.

All of 4 HPPs have reservoirs, and all of them are working in inflow regime.

Hydrological regime is characterised by spring flood, summer low flow and rain flood during winter and autumn seasons. Water runoff data of Berze-Balozi monitoring stations (MS) for period of 1961-2015 were analysed taking into consideration the Berze River hydrological regime regulations by hydropower plants. Tervete – Bramberge MS with data series for period 1985-2017 and reference conditions was used as analogue for calculation of Berze' streamflow series upstream Bikstu-Paleja HPP (river basin area is 257 km^2). The Hydrograph of Berze River water flow upstream Bikstu-Paleja HPP is shown in Figure 3.1.2.2.

For the Hydrograph of Wet Year daily discharge data of 7 years with runoff module coefficient 1.3 – 1.6 were averaged. For calculation of Normal Year' Hydrograph data of 12 years with water runoff module coefficient 0.9-1.1 were taken into account, but for Dry Year' Hydrograph – data of 12 years with water runoff module coefficients 0.4-0.7. Data tables in Annex I include daily discharge of Wet (Table 10), Normal (Table 11) and Dry (Table 12) Years.

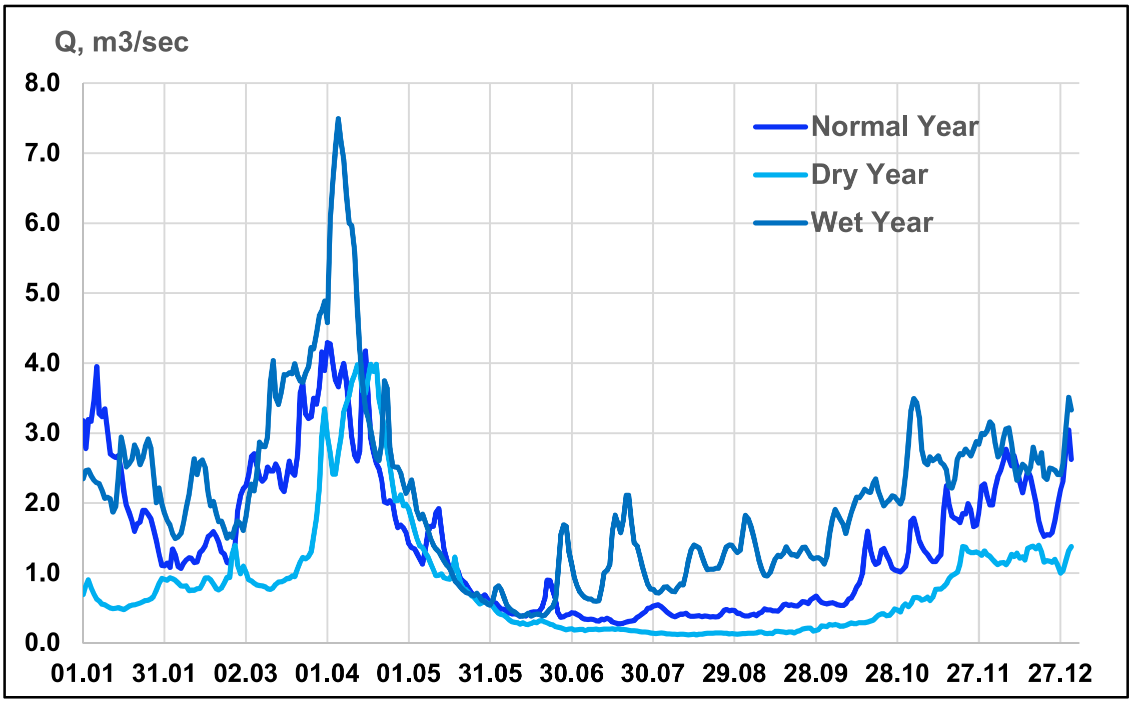

Figure 3.1.2.2. Wet, Normal and Dry Years Hydrographs of Berze River

2. Auce River

Auce River upper stretch is classified as water body of 3-d type bet river middle and down stretches delineated as water body of 4-th type.

River has small U- and V- shaped (in upper reach) valley.

Slopes are sandy, moderate, overgrown with conifer forest.

Floodplain is also sandy, covered by meadow vegetation.

Channel is sinuous bet highly regulated in the upper stretch, and in the down stretch river bed is modified to the channel (before modification Auce River flowed to Berze River).

River bed substrate: cobbles, gravel and sand.

2 hydropower plants are located in stream:

- HPP Bene that was reconstructed in 2011,
- Kronauce HPP is operated from 2002.

All of HPPs have reservoirs, and all of them are working in inflow regime.

Hydrological regime is characterised by spring flood, summer low flow and rain flood during winter and autumn seasons. Water runoff data series upstream Bene HPP was calculated using Auce – Brakski MS data for period 1975-1987 and Tervete – Bramberge MS data for period 1988-2017 as well as Berze-Balozi MS data series for period 1961-1974 were used as analogue for calculation of Auce River' streamflow series upstream Bene HPP (river basin area is 44,0 km^2). The Hydrograph of Auce River water flow upstream Bene HPP is shown in Figure 3.1.2.3.

For Hydrograph of Wet Year daily discharge data of 12 years with runoff module coefficient 1.27 – 1.99 were averaged. For calculation of Normal Year' Hydrograph data of 15 years with water runoff module coefficient 0.93-1.11 was taken into account, but for Dry Year' Hydrograph – data of 12 years with water runoff module coefficients 0.40-0.68. Data tables in Annex I include daily discharge of Wet (Table 13), Normal (Table 14) and Dry (Table 15) Years.

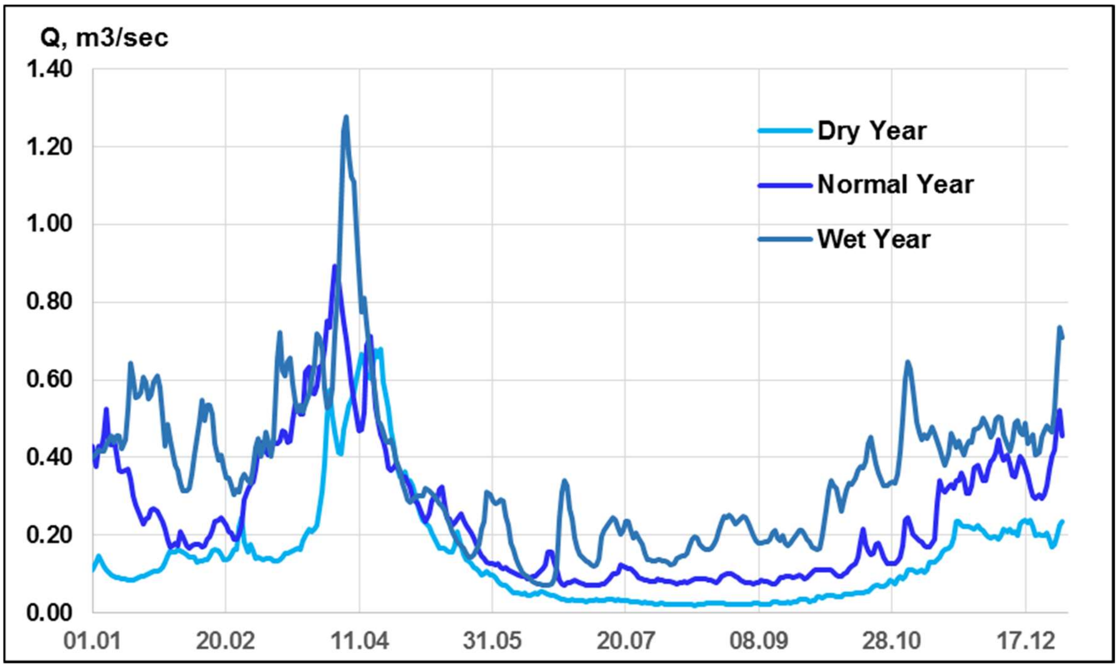

Figure 3.1.2.3. Wet, Normal and Dry Years Hydrographs of Auce River

<u>3. Islice River</u>

The Islice River originates on eastern slopes of the Eastern Kurzeme Upland and flows into the Lielupe River.

Catchment area of the Islice River is 623 km^2 and 210 km^2 of this area is located in Latvia. River length is 70 km (49 km in Latvia); stream gradient varies from 0.6 m/km in lower and middle reaches to 1.6 m/km in upper reach. Elevation is 3.4 – 50.0 m above sea level (LAS).

Water body *Islice* V153 is classified as a river of the 4-th type (medium potomal-type river).

Channel is mainly sinuous, only in upper course it is straight. Average width of the Islice River is 5-8 m and average depth 0.4-0.8 m.

River slopes of riverbanks are moderate steep to steep, covered by meadow vegetation.

Riverbed substrate: cobbles, gravel and sand.

There is one hydropower plant located in a stream: Rundale HPP. The HPP is operated from 1999, it was constructed on already created reservoir. Rundale HPP has a hydropeaking regime.

Hydrological regime of the Islice River is characterized by spring flood, summer low flow and rainfall flood during autumn and winter seasons. Water runoff data of hydrological monitoring station 'Islice River, nearby Tiltsargi' (catchment area 330 km^2) for the period 1961-1987 and Musa-Bauska MS data series for the period 1988-2015 were used and analysed in creating of hydrographs of the Islice River upstream Rundale HPP (Fig. 3.1.2.4).

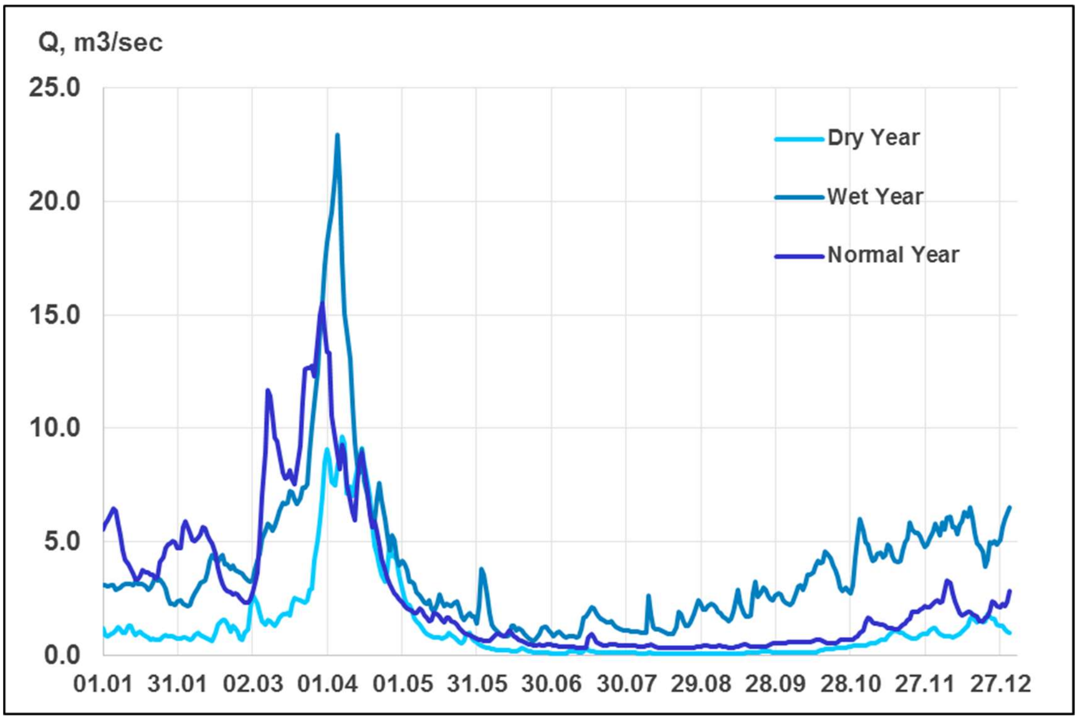

Figure 3.1.2.4. Hydrographs of Wet, Normal and Dry Years, Islice River

Hydrograph of Wet Year for Islice River was prepared on the base of daily discharge data for 18 years with water runoff module coefficient 1.21-2.09. There are high spring floods from the beginning of March till early-May and rainfall floods during summer, autumn and winter.

Hydrograph of Normal Year was created using daily discharge data for 13 years with runoff module coefficient 0.90-1.14. Spring flood in normal years lasts about 2 months (as in wet years) but rain floods are not so frequent - from mid-October till December.

Hydrograph of Dry Year is based on daily discharge data of 14 years with runoff module coefficient 0.11-0.62. The Dry Year is characterized by spring flood from

the end of March till May, followed by low flow period, which in turn continues until late autumn almost without rains.
Data tables in Annex include daily discharge of Wet (Table 16), Normal (Table 17) and Dry (Table 18) Years for Islice River.

3.2. Survey timeline

Second Field Survey was carried out during spring – autumn seasons of 2018 and winter season of 2019. Four field measurements during two phases of hydrological regime (low flow and rain flood periods) have to be carried out for each case-study. These four field measurements were conducted in the different hydrological conditions corresponding to the following water discharge:

- minimum of low flow period;
- average of low flow period;
- maximum of low flow period;
- annual water discharge.

Tables 3.2.1. and 3.2.2. show the dates of measurements and corresponding water flow range in Latvia and Lithuania.

Table 3.2.1.

Field measurements in Latvia, 2018

Flow range	Latvian case studies		
	Berze River	Auce River	Islice River
	downstream Bikstu-Paleja HPP	downstream Bene HPP	downstream Rundale HPP
low flow min	11.07.2018	13.07.2018	17.07.2018
low flow average	22.06.2018	07.06.2018	06.07.2018
low flow max	11.05.2018	10.05.2018	29.05.2018
annual mean	23.04.2018	24.04.2018	27.04.2018

Table 3.2.2.

Field measurements in Lithuania, 2017

Lithuanian case studies			
Flow range	Mūša River	Lėvuo River	Suosa River
	3.091 km downstream Dvariukai HPP	0.119 km downstream Akmeniai HPP	0.127 km downstream Stirniškiai HPP
low flow min	22.08.2018	21.08.2018	17.07.2018
low flow average	13.06.2018	12.06.2018	12.06.2018
low flow max	05.07.2018	04.07.2018	–
annual mean	15.01.2019	15.01.2019	–

Fish data collections for the Fish Model validation were carried out by BIOR in Auce, Berze and Islice rivers.

In Lithuania, fish data collection for the Fish Model validation was carried out by Nature Research Centre (NRC) on 16–17 July 2018 in the Mūša, Lėvuo and Suosa Rivers.

4. SURVEY RESULTS

This item includes information about SFS results as well as short information about methods and equipment used for the field measurements in Latvia and Lithuania.

4.1. Lithuania

4.1.1. Habitat mapping and hydrological measurements

During the second field survey (SFS), the geomorphic units were mapped 10 times in three selected case studies of Lielupe RBD: 4 in the Mūša River at Dvariukai HPP, 4 in the Lėvuo River at Akmeniai HPP and 2 in the Suosa River at Stirniškiai HPP. According to the requirements of MESOHABSIM model, the selected reach length should consists of >10 river widths, therefore the surveyed reaches length varied from 238 m in Lėvuo River to 335 m in Mūša River (at Dvariukai HPP). During all field surveys, the length of the section was the same. The total mapped area depended on measured discharge and geometry of the river bed. In average, the total mapped area varied from 4309m^2 to 6325m^2 in Mūša at Dvariukai HPP, from 3106m^2 to 4465m^2 in Lėvuo at Akmeniai HPP and from 1734m^2 to 1826m^2 in Suosa at Stirniškiai HPP (Table 4.1.1.1.).

Table 4.1.1.1.

Spatial characteristics of selected case studies in Mūša RBD

River site	Length of surveyed reach, m	Mapped area, m^2	Distance to HPP, km
Mūša – Dvariukai 1	335	4558	3.091
Mūša – Dvariukai 2	335	5027	3.091
Mūša – Dvariukai 3	335	4309	3.091
Mūša – Dvariukai 4	335	6325	3.091
Lėvuo - Akmeniai 1	238	3588	0.119
Lėvuo - Akmeniai 2	238	3885	0.119
Lėvuo - Akmeniai 3	238	3106	0.119
Lėvuo - Akmeniai 4	238	4465	0.119
Suosa – Stirniškiai 1	305	1826	0.127
Suosa – Stirniškiai 1	305	1734	0.127

Distributions of geomorphic units (GU) surveyed within Lielupe RBD are illustrated in Fig. 4.1.1.1. At least 6 GUs (aquatic vegetation, cascade, glide, pool, rapid and riffle) were mapped in case studies of the rivers of Muša and Lėvuo. The most frequent hydromorphic unit was glide in Lėvuo River at Akmeniai HPP. There glide GU occupied from 53.8% to 68.8% of the total mapped area. Meanwhile in Mūša River downstream Dvariukai HPP, at low minimum and low average situations the glide dominated together with pool GU, 40 and 35% respectively. The distribution of percentage of different GUs changed at higher water level situations (low maximum and annual mean) in Mūša River downstream Dvariukai HPP. Accordingly the percentage of rapid GU rapidly increased and occupied even 41.6% (at low maximum) and 43.9% (at annual mean) of total mapped reach. In Suosa River below Stirniškiai HPP at low flow situations the most dominant GU was pool (65%). The maps of GUs can be found in Annex III.

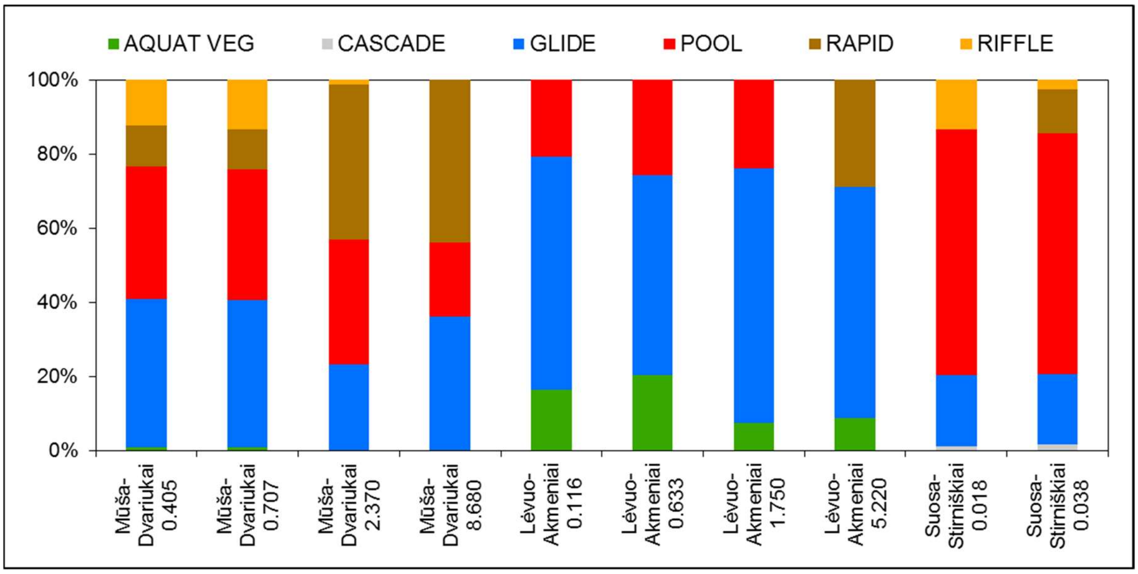

Figure 4.1.1.1. Distribution of geomorphic units in surveyed within Lielupe RBD (number after case study corresponds to discharge)

According to the number of geomorphic units, the most even was Lėvuo River at Akmeniai HPP, where 3 different units per site were found regarding to different discharges. Meanwhile in Mūša River at Dvariukai HPP, 3-5 GUs were indicated (in average 4). In selected reach of Suosa River 4 and 5 GUs were obtained (Fig. 4.1.1.2.).

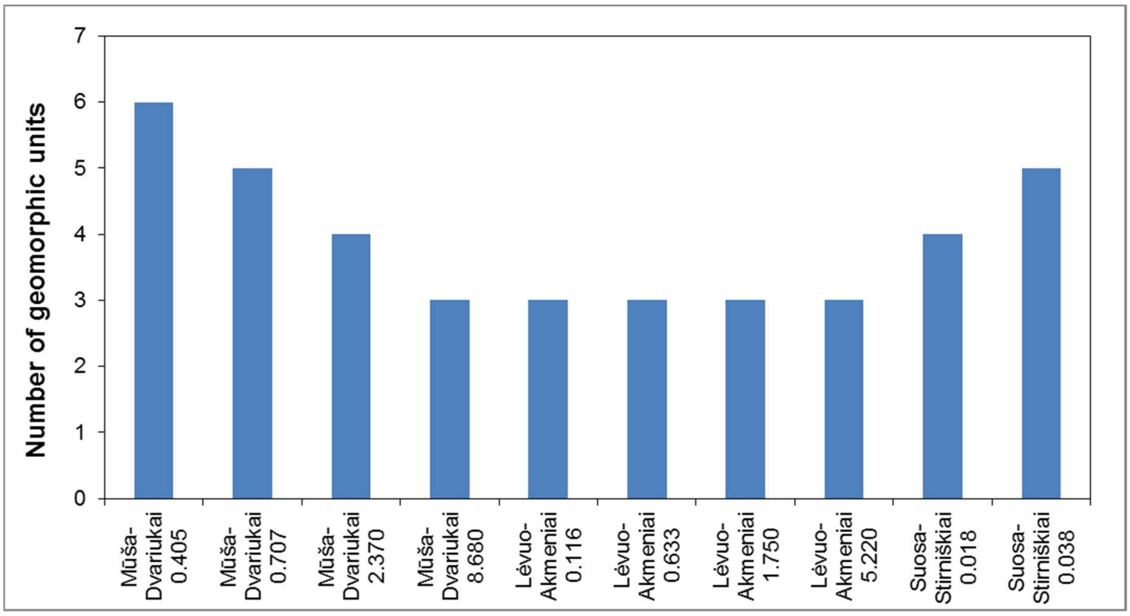

Figure 4.1.1.2. Number of geomorphic units per surveyed in selected case studies

Five different area of GUs was identified during the SFS (Figure 4.1.1.3, Table 1, Annex II). According to the average area, GUs of glide (1699m^2), rapid (1225 m^2) and pool (1215m^2) were the largest. The average area of remaining two GUs (including riffle and aquatic vegetation) was less than 350m^2 and cascade (20-28 m^2) were identified only in Suosa River. Different geomorphic elements within surveyed sites downstream HPPs are shown in Table 1, Annex II.

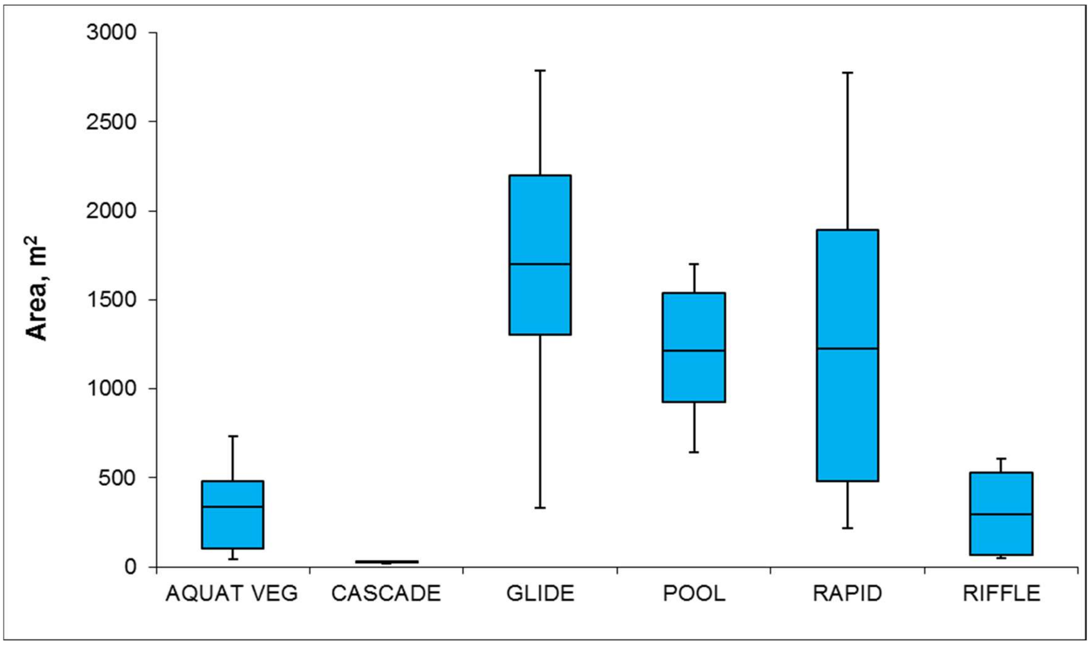

Figure 4.1.1.3. Area variation of geomorphic units within all studied rivers

In addition to the habitat mapping, the hydrometric measurements have been carried out in selected case study rivers during SFS. The hydrometric part of surveys consisted of measurements of water depth, flow velocity and discharge as well as determination of substrate type of river bed (granulometry). Measurements of water depth, flow speed and substrate was carried out in at least 10 representative points of each GU. In selected cross-sections, the measurements of water discharge were carried out once in each site per survey. Table 4.1.1.2. shows the water discharge situation when the SFS was carried out.

Table 4.1.1.2.

Water flow below HPP during SFS vs non-regulated value

	Q m^3/s	low min	low average	low max	annual mean
Mūša River	Calculated	0.361	1.19	3.57	8.68
	3.091 km downstream Dvariukai HPP	0.405	0.707	2.37	8.68
Lėvuo River	Calculated	0.266	0.716	2.06	5.22
	0.119 km downstream Akmeniai HPP	0.116	0.633	1.75	5.22
Suosa River	Calculated	0.005	0.051	0.180	0.550
	0.127 km downstream Stirniškiai HPP	0.018	0.038	–	–

Habitat mapping have been carried out by using the rangefinder *TruPulse 360R* and field tablet *xTablet Flex 10A*. Flow velocity measurements have been done with propeller flow meters and water depth measurements have been done with a hydrological ruler. The measured water depths, flow velocities and substrate of river bed in representative points of each geomorphic unit can be found in Table 1 of Annex IV.

The observations of water levels and discharges of the Suosa River have been never monitored. Therefore for this reason, the water leveloggers and barologgers were applied in Case of Suosa River (Figure 4.1.1.4). The water leveloggers are collecting the changes in water pressure including the influence of atmospheric pressure fluctuations. Meanwhile barologger is recording the changes in atmospheric pressure and provide an opportunity to compensate atmospheric pressure fluctuations in the records of water level. And it let us to have more precise data of water level in surveyed river.

Figure 4.1.1.4. The water levelogger and barologger (source www.solinst.com)

All loggers were protected by the shell which was created from the 40mm diameter plastic pipe with many holes for accurate pressure measurements (Figure 4.1.1.5). Mentioned devices were fixed near the boulders, that zero point will be not changed during the whole period of recording.

Figure 4.1.1.5. Protection of applied loggers

The installation of loggers is ilustrated in Figure 4.1.1.6, where one of the leveloggers were installed at the inlet of the reservoir (1), the second levelogger in the reservoir (2), third levelogger at the outlet of the reservoir (185 m downstream Stirniškiai HPP) (3) and barologger was installed in the surveyed area (4), which covers atmospheric pressure fluctuations over all three leveloggers. The installation as follows, allow to collect the information about the volumes of inflow into reservoir, the changes of volume in reservoir and outflow from the reservoir.

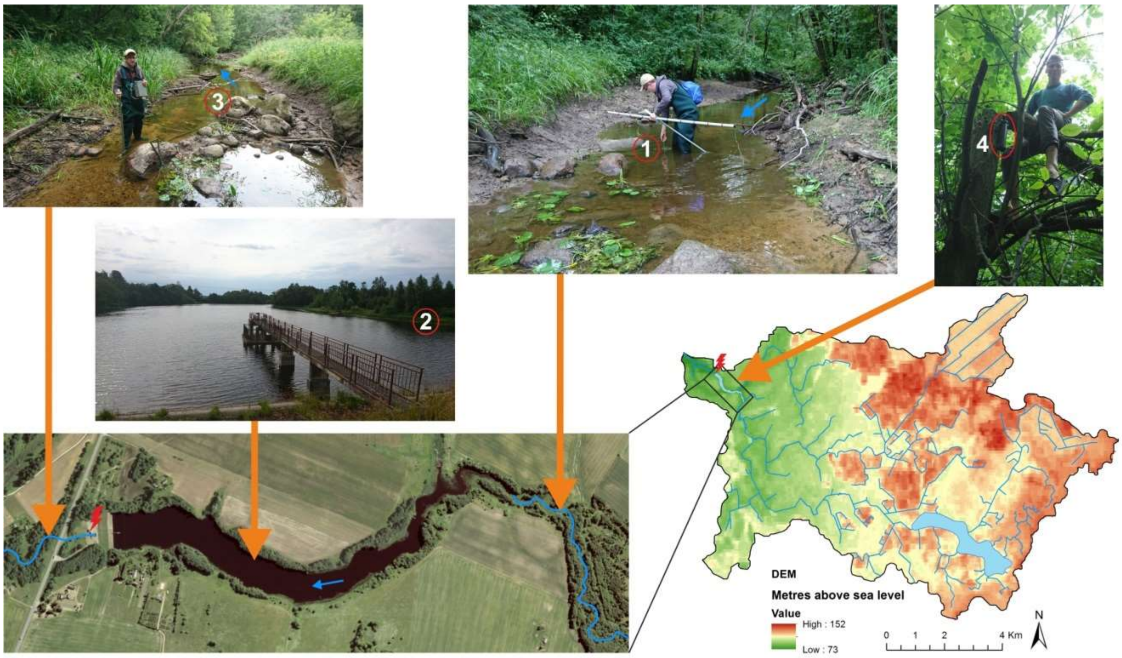

Figure 4.1.1.6. Scheme of installation of water levelogger and barologger in case study of Suosa River

The loggers have been set to record water level and atmospheric pressure parameters every 15 minutes. According to collected measurements of discharge at various water levels (according to the date and time), the discharge-water level rating curves were created and it can be used to estimate unknown discharges given at a necessary stage of measurement. Especially it is useful to have additional data for recovering historical data series according to the method of river-analogue.

The data of recalculated discharges of inflow and outflow of reservoir as well as data of water level fluctuations in the reservoir of Stirniškiai HPP (case study of Suosa River) are shown in Figure 4.1.1.7. The inflow discharges fluctuated in a wide range comparing with the outflow. Due to distinctive climatic conditions of 2018 (very drought summer) and certain management of reservoir resources, the inflow was lower than outflow and in some cases the values get closer to 1 l/s. Meanwhile outflow discharge was even during the whole observing period (18-21 l/s), only several times HPP was in operating mode.

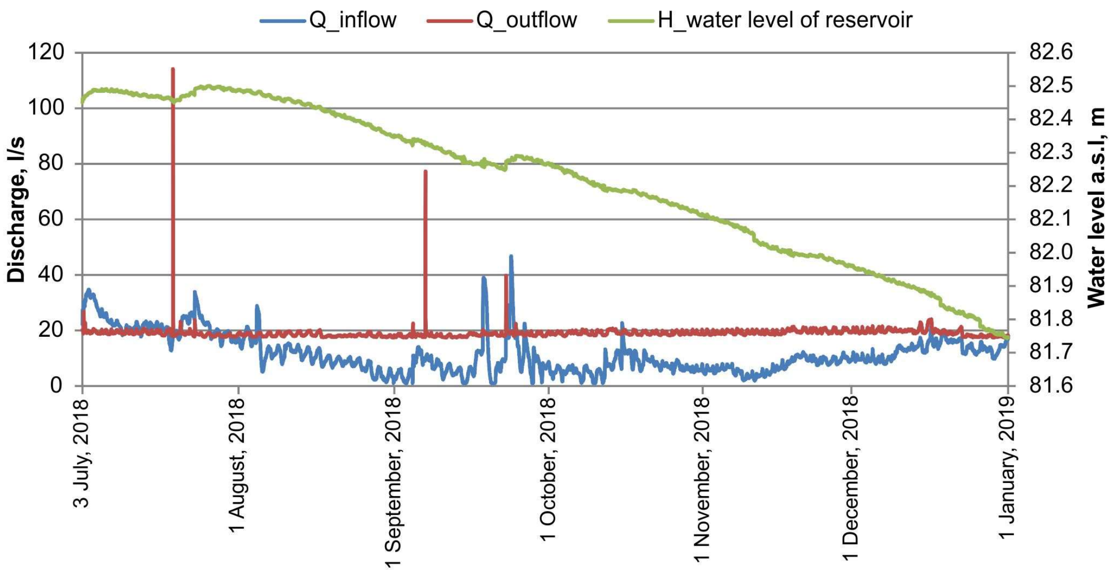

Figure 4.1.1.7. Discharges of inflow to reservoir and outflow from reservoir, and water level fluctuation in reservoir of Stirniškiai HPP

As a consequence of previous analysed differences in discharges of inflow and outflow the dramatic decrease of water level (~76cm) in the reservoir of Stirniškiai HPP with evident impact on the wealth of ecosystem of analysed reservoir was caused (Figure 4.1.1.8). Due to absence of discharges of low maximum and annual mean values below HPP the project experts were not be able to finish hydromorphological and hydrological surveys as well as habitat modelling in the case study of Suosa River.

Figure 4.1.1.8. Consequences of extremely drought summer on reservoir condition

4.1.2. Fish data collecting

Fish sampling was carried out in accordance with EU standard EN 14011 (CEN, 2003), using pulse current electric fishing gear IG200/2B supplied by 12V battery. Electric fishing has been performed by wading. Fish samples were collected separately in each of geomorphic units (GU), identified in a river stretch on a mesohabitat scale. Samples were collected at average low flow conditions.

In total 18 fish species were caught (10-13 species per river stretch). Numbers of specimens caught in GUs of the same type in each of the sampled river stretches were summed up and after re-calculated to densities per area (100 m^2).

Distribution of rheophilic fish and eurytopic or lentic fish among different GUs in general followed the common pattern: densities of typical rheophilic fish were the highest in the GUs which are characterized by higher water flow velocities (glide, riffle, rapid), while eurytopic and lentic fish species were most abundant (or were recorded) in GUs (Table 4.1.2.1). However, there are some differences in the distribution of the same fish species in different rivers.

The structure of the river bed is the most diverse in the ***Mūša River below Dvariukai HPP***. Pools, glides and riffles or rapids cover similar proportion of the stretch. Only the area covered by aquatic vegetation is very small and makes up only 1% of the total area of the sampled stretch. However, despite the relatively small area, this GU supported the largest number of eurytopic fish: the juvenile pike (*Esox lucius*), three-spined stickleback (*Gasterosteus aculeatus*) and, in particular, the juvenile perch (*Perca fluviatilis*) and roach (*Rutilus rutilus*). The abundance of small-sized rheophilic fish was greatest in typical habitats, the riffles and rapids. However, larger rheophils, chub (*Squalius cephalus*) and dace

(*Leuciscus leuciscus*) were more abundant in the glides that are deeper. This can be an impact of the HPP induced flow variation, which forces larger rheophilic fish to move to deeper areas.

The same phenomenon is particularly evident in the ***Suosa River below Stirniškis HPP***. The annual runoff of this river is the smallest among the studied river sites. At low flow the height of the water column becomes insufficient for dwelling of certain fish species and the latter are forced to move to deeper areas. The abundance of the majority of typical rheophils was significantly higher in deeper glides compared to shallow riffles, with the exception of stone loach (*Barbatula barbatula*) which is less susceptible to small water depth. Eurytopic perch and roach, in turn, tend to move to even deeper pool sections. Thus, at the very low flow, the depth seems to be the main survival factor and the major driver of the distribution of fish per different GUs in the Suosa River below Stirniškai HPP.

The studied stretch of the ***Lėvuo River below Akmeniai HPP*** is the most homogeneous. More than half of the total area is covered by glide, while the remaining area in almost equal parts is covered by pool and aquatic vegetation. Sections with swift flow and coarse bottom substrate (riffles, rapids) are absent. Consequently, typical rheophilic bottom dwellers (stone loach *Barbatula barbatula* and bullhead *Cottus gobio*) are also absent, and abundance of fish and species diversity are the smallest among the studied rivers in Lithuanian part of the Lielupe River catchment. The abundance of majority of fish species reaches its maximum in the predominating glide, only pike and belica (*Leucaspius delineatus*) being more abundant among aquatic vegetation (Table 4.1.2.1).

Table 4.1.2.1. Density of individuals (ind./100m^2) of different fish species in different geomorphic units in the stretches of Venta and Bartuva rivers below HPP dams (the highest densities are indicated in bold; atypically high densities in certain GUs are indicated in red).

Sampled stretch and geomorphic unit (GU)	Area, %	Av. depth, cm	Av. flow velocity, m/s	*Alburnus alburnus*	*Barbatulus barbatulus*	*Carassius gibelio*	*Cobitis taenia*	*Cottus gobio*	*Esox lucius*	*Gasterosteus aculeatus*	*Gobio gobio*	*Squalius cernuus*	*Leucaspius delineatus*	*Leuciscus idus*	*Leuciscus leuciscus*	*Lota lota*	*Perca fluviatilis*	*Phoxinus phoxinus*	*Pungitius pungitius*	*Rutilus rutilus*	*Salmo trutta*
Mūša, Dvariukai HPP																					
AQUAT_VEG	1	17	0.18						0.6	4.3							13.7			51.9	
POOL	35	72	0.11	0.1	0.2				0.04	0.04		0.1					0.0		0.04	0.5	
GLIDE	40	31	0.25	0.8	4.8		0.4		0.4	0.1	0.6	1.1			0.3		1.6			6.2	
RIFFLE	13	25	0.46	0.4	5.2					1.4	1.1						2.5			0.4	
RAPID	11	22	0.52		12.3					0.0	0.6						1.4			1.0	
Lėvuo, Akmeniai HPP																					
AQUAT_VEG	20	35	0.06						0.3				0.2				0.1			1.5	
POOL	26	87	0.06	1.8								0.1								2.8	
GLIDE	54	57	0.17	2.6					0.2			0.1	0.1	0.2	0.3		0.1	1.0		5.6	
Suosa, Stirniškiai HPP																					
POOL	66	44	0.03	47.2	3.0	0.2	0.2	0.4			0.8	0.9			5.9	0.7	0.2	5.5		7.4	
GLIDE	19	21	0.07		5.5	0.4	1.9	0.3			2.3	4.9			28.7	1.0	1.4	7.8		4.1	
RIFFLE	13	13	0.19		21.0			0.4			1.5	0.3			17.0	0.7		1.9		2.1	
CASCADE	1	15	0.20																		0.1

In general, the sampling results confirmed that fish species composition largely depends on the diversity of habitats, and typical rheophils prefer river stretches with a higher flow velocity. But depth, which in turn is a function of flow, becomes increasingly important at low flow conditions. The presence of artificial barriers to migratory fish in the lower reaches of studied rivers (or catchment), as well as diffused pollution from agricultural areas are additional pressures responsible for the absence of certain fish species, such as vimba (*Vimba vimba*) or spirlin (*Alburnoides bipunctatus*).

4.2. Latvia

4.2.1. Habitat mapping and hydrological measurements

Geomorphic units were mapped totally in 5 sites - 2 in Auce and Berze and 1 in River Islice. The reach' length varied from 192 m in Berze River (site 2) to 457 m in Islice. Rivers were surveyed in accordance with MesoHABSIM model requirements (reach' length > 10 river width). Mapping was done using range finder, current velocity meter and home-made prisma (Fig. 4.2.1.1.).

Figure 4.2.1.1. Habitat mapping in project rivers

For all of sites the mapped river reach has constant length, and changes in mapped area are related only to changes in water level. Total mapped area was dependent from length of the reach and river width. On average mapped area varied from 1582 m^2 to 2208 m^2 in Berze River, from 1580 m^2 to 2520 m^2 in Auce River and from 5042 m^2 to 5423 m^2 in Islice River (Table 4.2.1.1.).

Table 4.2.1.1.

Case studies, geographical characteristics

River site	Length of surveyed reach, m	Mapped area (max), m^2	Distance to HPP, km
Berze 1	258	2208	4.21
Berze 2	192	1684	4.4
Auce 1	223	1981	0.74
Auce 2	383	2520	1.1
Islice	457	5423	0.62

The most abundant hydromorphic units are glides and aquatic vegetation (Fig. 4.2.1.2.). There were no large differences between field surveys, probably because both times water level was very low. Glides occupy from 25% to 38% of a total mapped area in Islice River, 60% - 72% in Berze River and 66%-84% in Auce River (only in site 3). Area of aquatic vegetation varies from 9% in Auce River (site 2) to 56% in Islice river. Typically, rivers in Lielupe RBD can be characterized with low slopes and sandy/silty substrate and occurrence of riffles or rapids are very low. It also means that rivers have relatively high water temperature, especially during summer, and reaches are not very suitable for salmonid fishes.

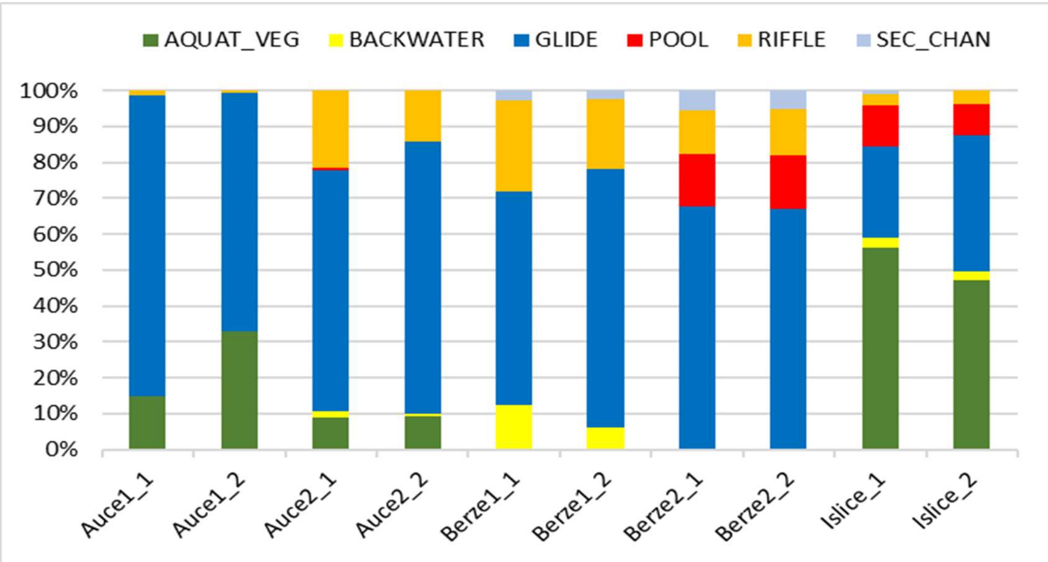

Figure 4.2.1.2. Distribution of geomorphic units in surveyed sites within Lielupe RBD (first number after river name corresponds to site number and second number-to survey)

Geomorphic unit "Aquatic vegetation" mostly were formed by dense *Nuphar lutea* and *Sparganium sp.* stands. Vegetation stopped water flow and, together with high water temperature, caused oxygen deficit for fish. In Islice River we also observed large biomass of green algae and cyanobacteria.

According to the type of hydromorphic units, the most homogeneous was Berze River, where only 4 different units per site were founded, 3-5 GUs were observed in Auce River and 7 GUs in Islice River (Fig. 4.2.1.3.).

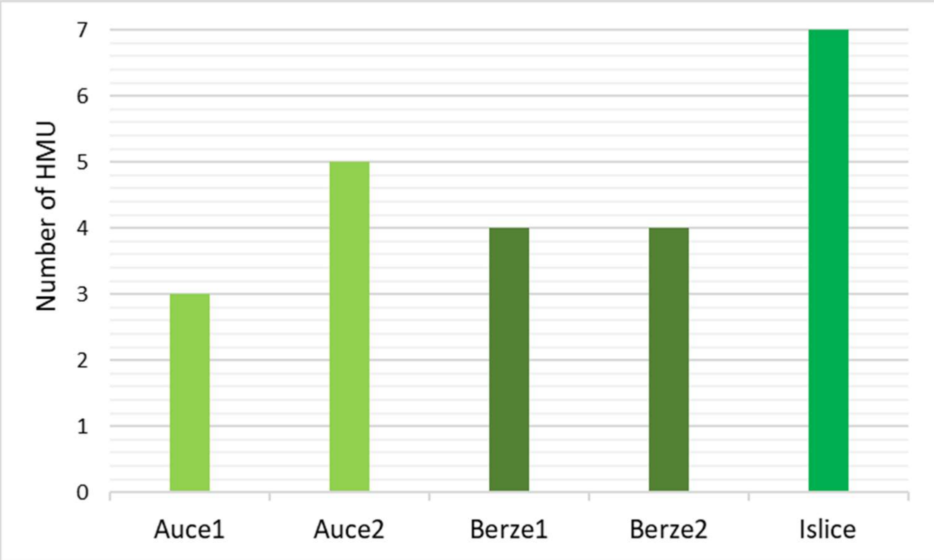

Figure 4.2.1.3. Number of geomorphic units per surveyed site in selected case studies

Aquatic vegetation was a largest GU with average mapped area 391 m^2, also glide (271 m^2) and pool (156 m^2) were relatively large (Fig. 4.2.1.4.). Smallest GUs were section channels (67 m2) and rapids (39 m2). In spite of recommendations for mapping only GU with size > 5 m^2, some smaller GU-s have been designed (small pools and backwater). Presence and absence of different geomorphic elements within surveyed sites directly below HPP are shown in Table 1, Annex II.

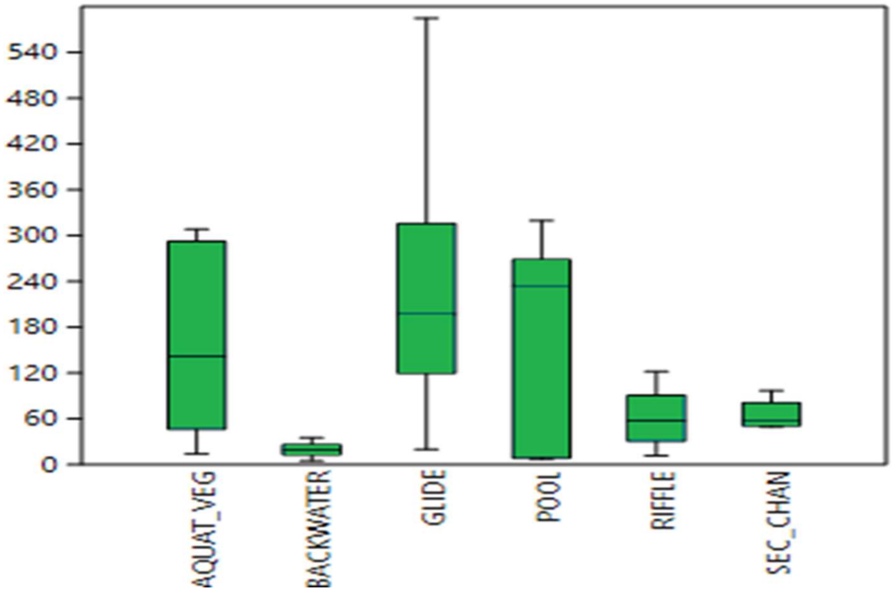

Figure 4.2.1.4. Size variation of hydromorphic units within all studied rivers

Additionally to the habitat mapping the point measurements have been carried out in 3 case study rivers during SFS. These part of surveys included water depth and flow velocity measurements as well as substrate size determination within each GU. Water discharge measurements have been carried out in the beginning and in the end of each survey and in every site. Number of measured points depends on the length of GU, however, it was not less than 7. Table 4.2.1.2. shows the water flow conditions in which the SFS was carried out.

Table 4.2.1.2.

Water flow below HPP during SFS vs non-regulated value

Q m^3/s		low min	low average	low max	annual mean
Berze River	Computed	0.030	0.20	0.53	1.34
	3.60 km downstream Bikstu-Paleja HPP	0.031	0.053	0.20	1.44
Auce River	Computed	0.010	0.088	0.32	0.74
	0.43 km downstream Bene HPP	0.027	0.054	0.31	0.75
Islice River	Computed	0.010	0.037	0.29	2.64
	0.42 km downstream Rundale HPP	0.025	0.057	0.33	2.47

4.2.2. Fish data collecting

Fish sampling was carried out in accordance with standard LVS EN 14011:2003 (Water quality – Fish sampling with electrricity), which derived from the EU standard (EN 14011; CEN, 2003).

Electrofishing has been performed by wading. The direct current electrofishing gear SAE300 with 2KW generator was used for fish sampling.

Dissolved oxygen, water temperature, pH and conductivity were measured by WTW Multi 340i analyzer probe. FP 201 Global Flow Probe meter was applyed for the water flow measurements during the sampling.

The field work Protocol was used for measured parameters recording (Annex II).

Fish was analysed by nomenclature proposed in Handbook of European freshwater fishes (Kottelat, Freyhof, 2007).
One part of the caught fish (largest individuals) was measured in the field and released, but other was fixed in formalin solution and analysed later in laboratory. Adults with body length L>50 mm were measured individually with accuracy of 1 mm, young of the year fish (juveniles) oxbow with body length L<50 mm were sorted by species, counted and weighted as pooled sample.

In accordance with the project WPT2, fish sampling was carried out in the 3 project rivers: Auce, Berze and Islice (Fig. 4.2.2.1.). Fish samples have been collected in 7 different river reaches. Sampling sites were located approximately 0.6 km (in Īslīce and Auce rivers) and 4.0 km (in Bērze River) below the HPS dam. Locations of sampling sites were coordinated with the Latvian Environmental, Geology and Meteorology Centre. Sampling sites included 50 (in Auce and Bērze rivers) or 100 m (in Īslīce River) long river stretch in all its width. Area sampled was 500 m^2 in Auce and Bērze rivers and 770 m^2 in Īslīce River. Sampling effort usually depends on several factors but mainly on the fished area and amount of fish.

Figure 4.2.2.1. Fish sampling in Islice River (summer 2018)

In total 2377 specimens representing 17 fish species were caught in studied rivers. In Islice also five specimens of invasive spinecheek crayfish *Orconectes limosus* were caught and in Berze River presence of European brook lamprey *Lampetra planeri* was registered (Table 4.2.2.1).

Table 4.2.2.1.

Fish species in Auce, Berze and Islice rivers

Scinetific name	**Common name**	**Latvian**
Alburnus alburnus	Bleak	Vīķe
Barbatula barbatula	Stone loach	Bārdainais akmeņgrauzis
Carassius carassius	Crucian carp	Karūsa
Carassius gibelio	Prussian carp	Sudrabkarūsa
Cobitis taenia	Spined loach	Akmeņgrauzis
Cottus gobio	Bullhead	Platgalve
Gasterosteus aculeatus	Three-spined stickleback	Trīsadatu stagars
Gobio gobio	Gudgeon	Grundulis
Lampetra planeri	European brook lamprey	Strauta nēģis
Leucaspius delineatus	Belica	Ausleja
Leuciscus idus	Ide	Ālants
Leuciscus leuciscus	Common dace	Baltais sapals
Orconectes limosus	Spinecheek crayfish	Dzeloņvaigu vēzis
Perca fluviatilis	European perch	Asaris
Phoxinus phoxinus	Eurasian minnow	Mailīte
Pungitius pungitius	Nine-spine stickleback	Deviņadatu stagars
Rhodeus amarus	European bitterling	Spidiļķis
Rutilus rutilus	Roach	Rauda
Squalius cephalus	Chub	Sapals

Species richest site was in Islice River where in total 17 species i.e. almost all previously mentioned species except bullhead and European brook lamprey were registered. In Berze River 11 and in Auce River eight fish and lamprey species were registered. Most widespread species were Eurasian minnow, European perch, gudgeon, roach, spined loach and stone loach which were caught in all three rivers sampled. Most abundant species were stone loach, chub and gudgeon (share 29.4%, 22.3% and 14.3% respectively).

Species composition of all three rivers is typical for medium sized warm-water streams.

Auce River. Total density of fish caught in Auce River was 71.6 individuals per 100 m^2 and eight fish species were represented (Table 3). Dominant species (by number) were Eurasian minnow and gudgeon. Density of both species exceeded 30 ind/100 m^2 and share – 40% from total number of fish caught. Overall share of small specimens was rather low – only 5.8%. Fish fauna of sampling spot is formed not only by roach and other ecologically tolerant eurytopic fish species but also by European bitterling, minnow and other species which are more vulnerable or prefer running and well oxygenated water biotopes.

Berze River. Total density of fish caught in Berze River was 43.0 individuals per 100 m^2 and 11 fish and lamprey species were represented (Table 3). Dominant species by number were stone loach and roach. Joint share of these species slightly exceeded 50%. In relatively great number also perch, chub and eurasian minnow were caught (14.4%, 12.6% and 9.3 of the total number of fish respectively). Total proportion of small fish individuals (TL<50 mm) was 9.3%. Noteworthy that greatest proportion of small fish was registered for common dace and chub which are relatively long living species that can reach great body size. That indicates importance of surveyed stretch in reproduction of these two species. Fish fauna of sampling spot consists of species with different biology and habitat preferences. Only one specimen of ecologically intolerant bullhead was registered and most of dominant (by number) species are relatively tolerant to eutrophication and other anthropogenic impacts. However it cannot be directly linked solely to exploitation of HPS in this river.

Islice River. Total density of fish caught in Islice River was much greater than in Auce and Berze Rivers and reached 235.1 individuals per 100 m^2. Also number of species recorded (16 fish and one crayfish species) was greater than in the other two rivers (Table 3). Dominant species were stone loach and chub (34.1% and 27.8% of the total number of fish respectively). In a relatively great number also such species as spined loach (10.1%), gudgeon (9.4%) and nine-spine stickleback (6.3%) were caught. Very high proportion of specimens smaller than 50 mm (73.3%) was registered. High number of small specimens indicates that stretch of river below the HPS dam is important for reproduction of several species. Fish fauna of sampling spot is formed not only by roach, sticklebacks, carps and other ecologically tolerant eurytopic fish species. European bitterling, minnow and other species which are more vulnerable or prefer running and well oxygenated water biotopes are also present. Results of fish survey allow the assumption that fish fauna of Islice River below the HPS dam is greatly affected by both downstream and upstream migration. However most abundant species are typical for similar rivers of this type.

5. CONCLUSIONS AND RECOMENDATIONS

During SFS in Lielupe RB the river habitat mapping, river depth, water flow and substrate size measurements have been carried out in order to compute the relationship between river habitat and water discharge and to build the River Habitat – Water Flow rating curve for the flow rate from min low to annual. In total, surveys have been provided in 6 regulated rivers on 379 GUs with total length of about 8.9 km and total area from 22121 m^2 to 32382 m^2 depending on water level.

The SFS has confirmed the FFS results regarding absolute necessity for hydrological information (water flow) downstream HPPs or at least information about the HPP' operational regime. It is required for carrying out of measurements for the specific flow amplitude and for river habitat modelling in compliance with the MESOHABSIM methodology.

Results obtained during fish data analysis indicate that in future the minor changes of criteria included in conditional model are needed for some fish species.

The results of 2-st round of the Field Surveys can be used for the Lielupe RB habitat modelling as well as for E-flow values evaluation.

ANNEXES

ANNEX I

Table 1. Wet year daily discharge (m^3/s), Mūša River – Ustukiai WGS

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	4.01	1.10	2.81	60.3	7.8	3.93	3.08	8.07	9.53	0.86	2.09	13.4
2	3.44	1.11	3.57	62.5	7.2	4.34	2.82	9.70	9.02	0.86	2.87	12.3
3	3.13	1.17	3.60	70.2	6.8	5.01	2.35	10.4	6.50	0.86	4.77	10.9
4	2.90	1.14	5.72	63.8	7.7	4.11	2.15	10.9	4.34	0.86	4.12	10.0
5	2.70	1.11	6.67	58.9	8.5	2.76	2.25	13.0	4.44	0.86	3.73	10.1
6	2.48	1.12	7.11	54.6	9.4	2.50	1.75	14.7	4.67	1.04	3.48	10.5
7	2.35	1.15	6.71	47.7	10.0	3.63	1.99	14.4	6.07	1.08	2.37	10.8
8	2.30	1.59	6.43	40.2	12.2	4.09	2.51	10.0	6.05	1.08	2.73	10.8
9	2.22	1.39	7.76	38.2	14.8	4.29	2.92	8.43	4.55	1.05	3.10	10.1
10	2.12	1.04	7.28	34.7	17.3	3.05	2.34	7.34	3.42	1.08	3.76	9.78
11	1.92	1.01	7.01	35.2	15.0	2.94	2.01	5.83	4.10	1.05	3.04	9.70
12	1.87	1.02	7.01	38.8	12.7	2.87	2.20	5.63	3.74	1.04	5.07	9.53
13	1.78	1.32	6.60	41.7	11.2	4.00	1.77	6.61	2.02	1.04	6.95	9.19
14	1.67	1.54	5.36	35.4	10.9	4.94	1.72	7.46	2.02	1.04	6.78	9.11
15	1.60	1.09	5.14	32.6	11.1	5.42	1.43	7.37	1.32	1.85	6.74	9.11
16	1.30	0.98	5.06	25.7	12.2	6.42	2.02	8.26	2.78	2.34	6.67	9.19
17	1.27	1.48	4.94	22.8	12.7	6.31	3.13	6.53	2.56	2.34	6.37	8.86
18	1.26	1.09	4.92	18.9	20.9	4.41	1.98	5.61	2.63	2.34	5.00	6.99
19	1.21	0.96	5.03	14.0	21.5	4.08	1.57	5.08	2.99	2.42	2.90	10.0
20	1.05	0.96	7.66	13.8	20.5	3.43	1.70	5.47	3.20	2.49	2.44	10.0
21	1.03	1.07	27.7	12.9	19.0	3.46	1.46	5.97	2.46	4.24	2.56	9.78
22	1.05	1.54	58.5	12.7	16.7	3.53	1.08	5.91	3.81	2.87	3.11	9.45
23	1.13	1.85	117.2	10	13.6	3.35	1.45	12.3	2.94	3.87	3.70	8.94
24	1.16	2.15	179.7	10.2	12.0	3.53	1.96	13.6	3.70	3.34	7.94	7.94
25	1.20	1.62	97.0	8.52	9.7	4.04	2.40	14.1	3.15	2.14	14.3	6.91
26	1.13	1.93	100.4	7.68	8.3	3.89	1.91	13.3	4.39	2.54	16.4	8.04
27	1.05	2.30	88.6	8.12	7.1	3.38	1.76	13.6	1.71	3.45	15.9	7.55
28	0.99	2.24	84.3	7.67	6.7	3.62	3.04	10.3	3.92	2.82	15.4	7.13
29	0.99		89.4	6.03	6.1	3.93	2.54	9.53	3.46	3.32	17.9	6.55
30	1.04		81.8	7.08	4.9	3.62	2.37	9.70	2.63	2.99	15.4	5.90
31	1.05		71.5		3.6		3.84	8.43		2.34		5.44

Table 2. Normal year daily discharge (m^3/s), Mūša River – Ustukiai WGS

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	20.0	9.7	5.72	45.0	6.82	5.81	1.59	1.05	1.41	3.19	52.1	14.0
2	20.2	9.0	5.17	54.7	7.89	4.31	1.59	1.04	1.56	3.03	53.6	11.2
3	26.4	8.0	2.33	77.9	8.69	4.94	1.72	1.01	1.42	1.62	58.5	8.52
4	29.4	6.7	4.16	85.2	8.60	7.68	2.72	0.96	1.13	3.04	50.4	8.42
5	30.7	5.7	3.31	89.4	8.43	8.22	2.15	0.96	1.09	2.43	44.3	14.0
6	34.2	4.7	2.36	87.7	7.35	7.51	1.65	1.02	1.09	3.88	34.0	32.1
7	33.7	4.1	2.88	83.2	6.95	7.66	1.56	1.09	1.05	2.61	31.1	47.3
8	36.2	4.0	4.39	74.6	7.21	5.14	1.54	1.10	0.98	1.27	26.7	57.3
9	33.3	4.0	2.82	64.7	7.35	4.87	1.50	1.21	1.70	3.18	25.3	54.0
10	35.2	3.3	2.14	65.3	7.22	4.44	1.45	1.28	1.47	4.89	21.3	48.5
11	30.2	2.4	2.33	62.7	8.41	3.49	1.39	1.37	1.10	2.05	20.3	42.5
12	27.2	3.7	3.11	58.5	6.69	8.04	1.37	1.52	1.00	4.70	19.7	35.3
13	25.1	5.1	2.10	50.4	9.02	6.61	1.37	1.59	1.00	3.25	17.6	32.4
14	23.4	5.1	4.45	40.9	13.2	4.00	1.32	1.47	0.94	1.39	15.9	27.6
15	22.4	3.9	4.47	36.9	13.3	3.47	1.32	1.32	1.01	3.77	14.3	22.9
16	20.5	2.7	2.92	32.1	10.9	3.84	1.35	1.19	1.80	3.33	14.6	24.0
17	18.4	1.6	6.32	30.0	9.02	3.19	1.38	1.44	1.83	1.54	16.2	21.5
18	16.1	3.2	5.67	30.3	7.61	3.15	1.34	1.36	1.33	1.32	13.2	18.6
19	13.3	3.5	3.09	25.9	7.85	2.18	1.31	1.76	1.25	3.49	10.3	16.7
20	15.8	2.8	6.90	24.4	10.37	1.92	1.28	2.34	1.69	9.36	9.70	15.8
21	15.1	1.3	7.06	20.3	8.69	2.59	1.28	2.58	2.28	3.93	9.78	18.8
22	10.3	2.2	7.08	17.8	7.24	2.24	1.26	2.67	1.54	1.63	12.7	19.8
23	9.2	4.0	7.62	17.0	6.44	1.88	1.22	1.80	1.05	8.19	9.78	19.8
24	10.8	3.7	8.11	13.2	7.03	1.75	1.17	1.83	1.37	9.87	10.0	20.4
25	8.94	3.1	8.60	13.1	6.31	1.65	1.07	1.37	1.10	6.70	11.3	19.3
26	7.32	2.3	12.0	12.1	6.60	1.61	1.05	0.89	1.03	9.28	9.70	18.1
27	8.01	2.4	20.4	12.0	7.42	1.59	1.01	0.74	0.96	12.2	9.45	17.5
28	9.45	4.3	26.2	11.5	7.58	1.59	1.05	0.72	0.87	14.5	8.60	14.7
29	9.19		31.0	10.4	6.29	1.59	1.05	0.70	0.90	17.3	5.11	16.1
30	10.0		34.3	8.02	5.20	1.65	1.05	1.57	2.36	23.8	13.8	16.8
31	10.1		39.1		4.66		1.01	1.97		39.3		17.0

Table 3. Dry year daily discharge (m^3/s), Mūša River – Ustukiai WGS

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	14.9	15.5	14.8	12.2	3.15	2.86	1.05	1.07	0.62	2.13	4.63	3.89
2	15.4	17.1	16.5	14.2	3.75	2.67	0.99	0.95	0.60	1.88	5.15	3.93
3	15.4	18.0	19.9	16.6	4.06	2.66	0.94	0.93	0.60	2.09	4.25	3.89
4	16.0	15.4	22.4	19.8	3.33	2.62	0.90	0.92	0.57	1.32	4.34	3.84
5	16.5	14.5	29.9	23.7	3.51	2.07	0.89	0.86	0.54	1.43	4.28	3.40
6	18.7	13.2	35.4	25.3	3.42	1.78	0.88	0.89	0.51	1.90	3.71	2.91
7	21.1	12.8	34.4	24.1	3.37	1.93	0.88	0.91	0.51	1.67	4.93	3.66
8	25.6	12.4	32.5	21.1	3.33	1.65	0.88	0.90	0.51	1.81	5.55	3.11
9	26.2	12.1	28.5	20.2	3.35	1.89	0.88	0.84	0.50	1.91	6.50	3.61
10	24.0	10.9	26.2	16.7	3.10	1.55	0.88	0.81	0.49	1.47	6.64	2.99
11	24.5	10.8	20.1	15.9	3.16	1.25	0.86	0.80	0.49	1.16	8.19	2.87
12	25.2	9.7	17.4	13.8	2.76	1.05	0.85	0.78	0.49	1.57	8.00	2.56
13	29.4	11.4	15.5	12.6	3.04	0.99	0.84	0.78	0.49	1.71	6.69	3.84
14	69.8	10.9	15.4	11.7	2.74	1.00	0.84	0.78	0.51	2.50	6.40	3.88
15	82.5	11.5	12.9	11.6	3.13	1.34	0.84	0.78	0.56	2.02	6.18	3.10
16	80.0	15.4	12.8	10.9	3.40	1.23	0.88	0.78	0.62	2.47	5.54	5.00
17	76.2	20.3	11.8	10.3	2.99	1.06	0.90	0.76	0.67	2.74	5.51	6.18
18	64.6	23.6	10.5	9.70	3.76	0.93	0.90	0.72	0.69	2.29	5.37	6.80
19	53.4	18.9	10.2	10.8	3.30	0.91	0.93	0.72	0.72	2.86	5.24	8.25
20	42.3	12.4	9.61	9.87	3.07	0.87	0.99	0.68	0.73	4.52	4.64	10.7
21	39.1	10.9	9.61	9.28	2.95	0.89	0.99	0.67	0.73	6.32	4.45	12.4
22	29.0	10.2	9.53	8.33	3.15	0.94	0.96	0.67	0.78	8.52	4.41	12.0
23	22.7	11.1	8.86	8.12	2.79	0.98	0.96	0.67	0.78	10.6	4.43	11.4
24	20.2	10.9	8.12	7.34	3.36	1.40	0.93	0.67	0.80	10.8	3.79	13.4
25	18.6	11.3	7.53	7.62	3.17	1.29	0.93	0.67	0.83	9.53	4.30	15.0
26	17.2	13.8	7.53	7.68	3.10	1.06	0.92	0.67	0.84	8.52	4.61	15.0
27	14.5	13.9	7.73	7.09	3.21	0.97	0.90	0.67	0.85	6.51	4.77	14.0
28	14.6	13.9	7.53	5.37	3.46	0.92	0.97	0.67	0.87	6.30	4.02	13.9
29	13.5		7.82	5.11	2.91	0.90	1.17	0.64	0.88	6.21	4.27	14.3
30	13.5		8.77	4.67	2.76	0.96	1.12	0.61	0.84	5.88	5.15	15.7
31	13.1		10.9		3.19		1.01	0.61		5.14		15.3

Table 4. Wet year daily discharge (m^3/s), Lėvuo River – Bernatoniai WGS

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	6.44	1.57	2.37	46.6	5.05	2.33	6.66	2.20	2.69	0.79	4.51	16.0
2	5.93	1.87	2.96	41.7	4.88	2.16	5.57	2.12	2.57	0.94	4.24	15.7
3	5.41	1.68	4.88	42.7	4.80	2.30	4.73	3.11	2.54	1.09	3.92	14.7
4	5.13	1.52	6.93	49.3	4.94	2.06	4.12	5.30	2.63	1.17	3.84	13.4
5	5.23	1.82	6.57	48.0	4.83	1.87	3.69	5.32	2.95	1.45	3.67	12.1
6	5.19	1.47	6.06	40.5	4.92	2.12	3.41	4.21	3.50	1.63	3.66	11.1
7	5.18	1.28	5.53	33.8	5.09	1.98	3.20	3.76	3.57	1.88	3.67	10.1
8	4.81	1.18	5.04	29.4	5.39	1.93	2.97	3.54	3.41	2.14	4.09	9.35
9	4.55	1.21	4.87	25.5	5.17	1.73	2.90	3.19	3.20	2.37	5.08	9.04
10	4.17	1.18	4.53	22.0	4.84	1.71	2.83	2.89	3.00	2.63	6.42	9.17
11	4.25	1.02	4.31	19.7	4.61	1.67	2.53	2.63	2.83	3.12	7.32	10.1
12	3.90	1.17	4.38	17.9	4.47	1.68	2.28	2.49	2.76	3.50	8.26	10.6
13	3.89	1.34	4.49	16.1	4.31	1.57	2.08	2.70	2.63	3.89	9.79	10.2
14	3.76	1.18	4.46	14.1	4.33	1.47	1.86	2.64	2.53	4.67	11.7	9.37
15	3.47	1.17	4.35	12.5	4.54	1.44	1.90	2.42	2.42	5.83	12.0	8.66
16	3.17	1.28	4.34	11.0	4.62	1.38	1.86	2.21	2.37	7.97	11.5	6.86
17	3.32	1.15	4.34	9.77	4.68	1.24	1.72	2.08	2.19	9.29	10.8	5.76
18	3.21	1.27	5.05	8.77	5.33	1.38	1.69	1.98	2.49	9.27	10.4	5.22
19	2.99	1.17	6.92	7.90	5.55	1.34	1.61	2.01	2.49	8.75	10.1	4.76
20	2.83	1.21	10.48	7.60	5.22	1.27	1.51	2.16	2.55	8.43	10.4	4.20
21	2.37	1.45	26.9	7.48	4.62	1.73	1.69	2.42	2.48	7.67	11.6	4.05
22	2.21	1.44	91.2	7.00	3.96	2.60	1.93	2.75	2.62	7.25	12.6	3.73
23	2.37	1.45	119	6.55	3.50	5.05	1.99	2.89	2.69	6.65	12.6	3.63
24	1.89	1.49	106	6.39	3.18	6.54	1.85	2.68	2.70	6.13	12.1	3.53
25	1.83	1.50	88.0	6.26	3.07	8.15	1.74	2.62	2.70	5.64	12.4	3.73
26	1.76	1.58	73.9	6.09	3.04	10.32	1.64	2.60	2.58	5.23	14.1	4.51
27	1.11	1.69	65.1	5.82	2.99	11.13	1.58	2.58	2.46	5.08	15.7	6.37
28	1.24	1.91	68.3	5.58	2.88	10.80	1.58	2.58	2.51	5.09	16.7	9.11
29	1.18		77.2	5.35	2.78	9.88	1.67	2.58	2.66	5.12	16.8	10.4
30	1.38		71.9	5.25	2.62	8.16	1.99	2.66	3.06	4.93	16.3	9.35
31	1.71		57.3		2.28		1.98	2.73		4.81		8.45

Table 5. Normal year daily discharge (m^3/s), Lėvuo River – Bernatoniai WGS

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	14.0	4.71	2.58	16.2	4.78	4.64	1.17	0.61	0.63	1.42	27.3	6.77
2	17.9	4.56	2.66	20.0	4.55	4.29	1.16	0.61	0.61	2.59	33.2	6.62
3	19.4	4.26	2.85	25.1	4.31	3.99	1.08	0.61	0.65	5.24	33.0	7.15
4	19.7	3.91	3.20	31.2	3.96	3.73	1.02	0.61	0.67	5.03	28.6	7.83
5	19.9	3.59	3.07	36.7	3.92	4.14	0.99	0.61	0.73	4.44	23.4	11.0
6	20.2	3.41	2.87	40.6	3.69	4.98	0.94	0.50	0.66	3.76	20.0	18.0
7	23.4	3.21	3.00	42.9	3.63	5.28	0.90	0.40	0.65	3.36	18.1	32.5
8	25.3	3.16	2.86	40.9	3.27	5.42	0.89	0.60	0.64	3.43	16.6	41.2
9	28.0	3.27	2.83	37.5	3.18	5.34	0.87	0.95	0.64	3.83	15.2	39.8
10	26.7	3.40	3.14	33.3	3.47	4.82	0.85	1.09	0.63	3.79	14.0	34.8
11	25.4	3.14	2.70	32.2	4.02	4.55	0.83	1.44	0.63	3.83	12.1	30.5
12	24.2	3.02	2.57	32.3	4.69	6.05	0.71	2.04	0.63	3.83	10.9	26.7
13	22.1	2.85	2.74	28.5	6.93	5.39	0.70	2.42	0.57	3.89	9.73	21.8
14	20.2	2.70	2.77	24.4	24.3	4.84	0.65	3.03	0.43	3.80	9.19	19.1
15	17.7	2.65	2.54	20.4	41.6	4.04	0.53	3.20	0.35	3.54	8.77	16.6
16	16.7	2.67	2.57	18.1	43.0	3.44	0.49	3.02	0.34	3.32	7.90	14.4
17	14.2	2.83	2.74	15.8	35.1	3.05	0.61	3.01	0.56	3.02	7.40	13.0
18	12.2	3.00	3.02	15.1	30.2	2.62	0.72	2.73	0.90	2.83	7.42	12.0
19	11.8	3.07	3.76	14.5	33.7	2.35	0.71	2.39	0.88	2.77	7.52	10.9
20	10.9	3.12	4.68	12.7	31.6	2.18	0.64	2.12	0.69	3.02	7.90	10.2
21	9.31	3.28	5.08	10.8	25.1	2.04	0.63	1.84	0.61	3.60	7.74	9.86
22	8.48	3.16	5.13	9.5	20.0	1.83	0.63	1.70	0.61	3.74	7.59	10.9
23	7.79	3.13	4.47	8.8	15.8	1.66	0.62	1.45	0.59	3.87	7.82	12.1
24	5.76	3.13	4.05	8.2	13.2	1.50	0.64	1.40	0.62	4.17	10.0	8.86
25	4.51	3.27	4.27	7.5	11.4	1.38	0.66	1.37	0.58	4.93	9.21	8.36
26	4.25	3.24	5.01	6.9	10.9	1.32	0.76	1.18	0.54	6.41	7.77	8.86
27	3.49	2.71	6.70	6.4	8.74	1.24	0.80	1.10	0.64	7.62	6.85	9.92
28	4.24	2.73	9.18	6.1	7.38	1.24	0.73	1.05	0.47	8.71	5.86	10.3
29	4.38		11.6	5.6	6.26	1.28	0.68	0.97	0.39	11.3	6.21	10.9
30	4.41		12.9	5.3	5.56	1.18	0.67	0.93	0.44	14.4	7.30	10.7
31	4.19		14.9		4.97		0.67	0.75		19.9		10.8

Table 6. Dry year daily discharge (m^3/s), Lėvuo River – Bernatoniai WGS

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	5.28	6.23	3.94	16.6	9.38	2.52	1.25	0.95	0.69	0.74	1.22	4.42
2	4.88	5.82	4.70	15.3	8.30	2.39	1.21	0.95	0.67	0.74	1.27	4.27
3	4.30	5.37	5.60	13.0	7.56	2.31	1.19	0.92	0.65	0.75	1.31	3.85
4	4.08	4.37	5.35	10.9	7.05	2.28	1.15	0.94	0.64	0.76	1.34	3.68
5	4.15	3.92	4.62	10.1	6.74	2.25	1.18	0.94	0.62	0.80	1.42	3.48
6	4.34	3.44	4.14	10.4	6.38	2.12	1.22	0.98	0.61	0.80	1.56	3.27
7	5.20	3.05	4.13	11.1	6.08	2.06	1.19	1.10	0.60	0.80	1.68	3.10
8	5.39	3.17	4.20	12.2	5.82	1.98	1.16	1.19	0.59	0.81	1.80	2.91
9	4.60	3.06	4.14	13.3	5.41	1.92	1.15	1.12	0.60	0.82	1.94	2.80
10	4.38	2.99	4.51	13.9	5.03	1.85	1.13	1.11	0.61	0.82	2.24	2.75
11	4.39	3.31	5.03	13.8	4.79	1.93	1.13	1.07	0.60	0.82	2.24	2.62
12	4.72	2.83	5.23	15.9	4.69	1.98	1.12	1.04	0.62	0.82	2.29	2.56
13	4.91	2.60	5.32	19.1	4.75	2.09	1.10	1.03	0.64	0.82	2.33	2.57
14	3.73	2.45	5.76	26.2	4.79	2.02	1.08	1.01	0.61	0.82	2.39	2.54
15	3.30	2.30	6.64	29.1	4.65	1.88	1.10	0.98	0.62	0.83	2.53	2.52
16	3.11	2.22	7.34	24.9	4.80	1.80	1.09	0.96	0.62	0.84	2.65	2.44
17	2.92	2.31	7.36	20.3	5.90	1.75	1.10	0.91	0.63	0.84	2.62	2.40
18	2.77	2.73	6.98	18.0	5.50	1.75	1.09	0.86	0.64	0.87	2.68	2.44
19	2.69	2.81	6.34	16.4	4.96	1.68	1.06	0.86	0.63	0.92	2.68	2.58
20	2.66	2.74	5.99	14.9	4.57	1.63	1.06	0.85	0.64	0.99	2.69	2.53
21	2.72	2.45	6.38	14.3	4.18	1.62	1.03	0.83	0.65	1.03	2.68	2.51
22	2.76	2.42	7.42	14.1	4.01	1.57	1.05	0.81	0.66	1.03	2.75	2.38
23	2.67	3.28	9.17	12.5	3.63	1.57	1.07	0.78	0.68	1.04	2.89	2.26
24	2.69	3.25	10.8	11.2	3.37	1.56	1.06	0.77	0.69	1.07	3.01	2.26
25	2.82	3.02	9.43	12.5	3.11	1.52	1.04	0.74	0.69	1.07	3.26	2.25
26	3.26	2.70	9.20	15.0	2.98	1.53	1.03	0.72	0.69	1.09	3.79	2.50
27	3.61	2.77	11.5	15.6	2.85	1.51	1.00	0.72	0.70	1.11	4.39	2.82
28	4.04	3.21	15.8	13.7	2.81	1.44	0.98	0.71	0.72	1.14	4.37	3.21
29	4.78		18.5	12.5	2.73	1.36	0.94	0.70	0.72	1.16	4.24	3.46
30	5.39		17.9	10.9	2.72	1.29	0.96	0.70	0.72	1.17	4.21	3.49
31	6.49		17.5		2.61		0.95	0.70		1.21		3.50

Table 7. Wet year daily discharge (m³/s), Suosa River – Stirniškiai HPP

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0.73	0.97	0.64	4.35	1.49	0.92	0.67	0.53	0.64	0.82	1.14	1.18
2	0.71	0.93	0.64	4.47	1.53	0.93	0.65	0.54	0.63	0.83	1.06	1.17
3	0.74	0.88	0.65	4.34	1.57	0.90	0.63	0.52	0.64	0.84	1.01	1.14
4	0.75	0.86	0.69	4.39	1.53	0.84	0.61	0.52	0.66	0.87	0.91	1.11
5	0.72	0.81	0.73	4.99	1.50	0.82	0.60	0.52	0.70	0.99	0.95	1.15
6	0.73	0.78	0.84	4.62	1.43	0.77	0.58	0.50	0.66	1.05	0.97	1.17
7	0.73	0.74	0.89	4.47	1.32	0.73	0.58	0.49	0.63	1.13	1.00	1.21
8	0.76	0.74	0.91	4.60	1.23	0.69	0.58	0.49	0.61	1.11	1.01	1.23
9	0.75	0.75	0.93	4.05	1.17	0.69	0.57	0.48	0.60	1.06	1.02	1.13
10	0.79	0.75	0.90	3.64	1.16	0.67	0.57	0.47	0.59	1.09	1.02	1.13
11	0.79	0.74	0.87	3.29	1.28	0.66	0.58	0.47	0.58	1.03	1.05	1.14
12	0.78	0.71	0.83	2.94	1.22	0.64	0.60	0.47	0.58	1.00	1.06	1.11
13	0.79	0.68	0.82	2.74	1.15	0.63	0.59	0.47	0.63	0.98	1.05	1.09
14	0.79	0.66	0.81	2.63	1.11	0.62	0.62	0.47	0.62	0.96	1.04	1.18
15	0.78	0.66	0.92	2.57	1.07	0.78	0.75	0.46	0.60	0.96	1.03	1.62
16	0.77	0.66	1.07	2.46	1.07	0.87	0.80	0.47	0.61	0.96	1.03	1.73
17	0.76	0.65	1.37	2.31	1.04	0.97	0.75	0.48	0.62	0.93	1.08	1.61
18	0.76	0.64	1.50	2.18	1.05	0.98	0.69	0.48	0.64	0.92	1.14	1.35
19	0.78	0.63	1.44	2.09	1.02	0.93	0.67	0.49	0.79	0.90	1.22	1.26
20	0.79	0.63	1.45	2.02	0.99	0.87	0.66	0.49	0.79	0.94	1.23	1.26
21	0.79	0.63	1.59	2.11	0.98	0.80	0.63	0.50	0.82	0.93	1.23	1.19
22	0.82	0.62	1.60	2.07	1.01	0.75	0.62	0.52	0.92	0.94	1.20	1.11
23	0.82	0.63	1.59	1.95	1.05	0.70	0.61	0.52	0.88	0.94	1.21	1.07
24	0.78	0.62	1.63	1.78	1.01	0.66	0.60	0.53	0.86	0.92	1.19	1.11
25	0.84	0.63	1.77	1.65	0.96	0.64	0.59	0.54	0.86	0.95	1.20	1.18
26	0.85	0.63	2.25	1.64	0.94	0.64	0.56	0.55	0.83	0.94	1.21	1.30
27	0.94	0.63	2.62	1.62	1.06	0.61	0.56	0.56	0.79	0.93	1.22	1.28
28	0.99	0.63	2.94	1.53	1.02	0.69	0.56	0.55	0.79	0.92	1.22	1.29
29	1.04		3.23	1.47	1.02	0.69	0.56	0.58	0.79	0.98	1.21	1.29
30	1.07		3.65	1.47	1.00	0.68	0.55	0.61	0.81	1.14	1.20	1.32
31	1.05		3.89		0.92		0.53	0.63		1.16		1.62

Table 8. Normal year daily discharge (m^3/s), Suosa River – Stirniškiai HPP

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0.61	0.54	1.25	3.63	1.17	0.62	0.45	0.37	0.39	0.43	0.64	0.77
2	0.64	0.59	1.31	3.35	1.10	0.58	0.43	0.36	0.37	0.42	0.64	0.77
3	0.64	0.64	1.16	3.08	1.05	0.56	0.42	0.35	0.37	0.43	0.65	0.78
4	0.64	0.63	1.03	2.86	1.03	0.55	0.41	0.34	0.35	0.44	0.65	0.82
5	0.65	0.62	1.03	2.59	1.00	0.53	0.40	0.39	0.37	0.51	0.65	0.81
6	0.62	0.57	1.04	2.40	1.02	0.51	0.40	0.40	0.37	0.52	0.64	0.87
7	0.62	0.55	0.98	2.28	1.14	0.50	0.41	0.37	0.36	0.52	0.63	0.87
8	0.60	0.55	1.03	2.14	1.22	0.49	0.40	0.34	0.35	0.53	0.61	0.84
9	0.59	0.55	1.13	2.05	1.52	0.47	0.42	0.33	0.37	0.51	0.61	0.83
10	0.57	0.54	1.17	1.95	1.91	0.46	0.43	0.32	0.36	0.55	0.61	0.81
11	0.55	0.55	1.20	1.91	1.55	0.45	0.43	0.32	0.35	0.54	0.64	0.79
12	0.54	0.65	1.37	2.36	1.29	0.49	0.43	0.32	0.37	0.55	0.67	0.79
13	0.53	0.71	1.55	3.01	1.15	0.52	0.44	0.30	0.35	0.54	0.67	0.79
14	0.54	0.69	1.59	2.70	1.02	0.50	0.42	0.31	0.36	0.56	0.69	0.75
15	0.52	0.66	1.57	2.48	0.93	0.50	0.42	0.31	0.34	0.61	0.69	0.68
16	0.53	0.66	1.56	2.25	0.85	0.48	0.40	0.31	0.36	0.67	0.69	0.67
17	0.52	0.65	1.57	2.19	0.82	0.47	0.39	0.32	0.36	0.68	0.70	0.67
18	0.53	0.67	1.41	2.06	0.77	0.46	0.40	0.31	0.36	0.69	0.70	0.64
19	0.52	0.72	1.35	1.86	0.75	0.44	0.38	0.33	0.35	0.67	0.69	0.64
20	0.54	0.71	1.36	1.69	0.73	0.45	0.38	0.33	0.36	0.65	0.72	0.67
21	0.53	0.65	1.34	1.55	0.70	0.44	0.37	0.34	0.36	0.62	0.74	0.63
22	0.52	0.64	1.45	1.46	0.68	0.44	0.37	0.35	0.37	0.60	0.75	0.67
23	0.51	0.65	1.77	1.38	0.64	0.44	0.36	0.37	0.38	0.59	0.80	0.77
24	0.53	0.62	1.95	1.39	0.62	0.44	0.37	0.40	0.38	0.61	0.81	0.80
25	0.52	0.64	2.18	1.35	0.62	0.44	0.35	0.41	0.39	0.59	0.87	0.80
26	0.51	0.65	2.55	1.26	0.61	0.44	0.36	0.45	0.41	0.60	0.87	0.78
27	0.52	0.80	2.96	1.23	0.62	0.49	0.36	0.44	0.42	0.60	0.83	0.78
28	0.51	1.12	3.08	1.29	0.63	0.45	0.36	0.42	0.43	0.60	0.81	0.77
29	0.52		3.40	1.26	0.64	0.46	0.36	0.43	0.42	0.59	0.78	0.77
30	0.52		3.49	1.23	0.64	0.46	0.36	0.41	0.41	0.59	0.79	0.82
31	0.51		3.66		0.63		0.37	0.41		0.63		0.76

Table 9. Dry year daily discharge (m^3/s), Suosa River – Stirniškiai HPP

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0.70	0.56	0.97	1.87	0.83	0.46	0.33	0.29	0.26	0.29	0.41	0.67
2	0.68	0.62	0.97	1.74	0.80	0.44	0.31	0.28	0.26	0.28	0.42	0.69
3	0.65	0.58	0.93	1.69	0.76	0.43	0.31	0.29	0.26	0.30	0.42	0.69
4	0.64	0.58	0.88	1.63	0.75	0.42	0.31	0.29	0.27	0.30	0.44	0.70
5	0.66	0.58	0.83	1.65	0.73	0.41	0.29	0.29	0.27	0.31	0.44	0.69
6	0.66	0.58	0.78	1.74	0.71	0.40	0.31	0.28	0.26	0.31	0.46	0.67
7	0.66	0.66	0.79	1.83	0.70	0.37	0.29	0.28	0.28	0.32	0.44	0.67
8	0.60	0.73	0.75	1.83	0.67	0.37	0.32	0.26	0.27	0.31	0.44	0.66
9	0.60	0.71	0.72	1.81	0.67	0.39	0.29	0.26	0.28	0.32	0.46	0.66
10	0.59	0.83	0.69	1.87	0.66	0.38	0.30	0.27	0.29	0.31	0.48	0.67
11	0.60	0.75	0.68	1.88	0.65	0.38	0.29	0.28	0.28	0.33	0.47	0.67
12	0.57	0.71	0.64	1.81	0.65	0.38	0.29	0.25	0.29	0.33	0.47	0.68
13	0.59	0.65	0.65	1.75	0.66	0.37	0.30	0.26	0.28	0.32	0.48	0.67
14	0.57	0.64	0.65	1.83	0,65	0.36	0.30	0.26	0.28	0.32	0.48	0.66
15	0.55	0.65	0.65	1.90	0.66	0.37	0.29	0.26	0.28	0.34	0.50	0.66
16	0.56	0.68	0.65	1.77	0.74	0.38	0.30	0.26	0.28	0.33	0.50	0.64
17	0.50	0.73	0.65	1.64	0.77	0.38	0.29	0.27	0.28	0.35	0.53	0.65
18	0.54	0.81	0.70	1.56	0.76	0.38	0.29	0.26	0.29	0.34	0.53	0.66
19	0.52	0.84	0.73	1.48	0.76	0.38	0.29	0.25	0.28	0.34	0.53	0.67
20	0.51	0.78	0.73	1.36	0.70	0.38	0.29	0.26	0.28	0.34	0.55	0.64
21	0.50	0.75	0.83	1.30	0.66	0.39	0.29	0.26	0.28	0.36	0.56	0.63
22	0.48	0.96	0.92	1.22	0.66	0.39	0.29	0.26	0.29	0.35	0.56	0.61
23	0.47	0.98	1.01	1.12	0.62	0.37	0.28	0.26	0.29	0.35	0.59	0.62
24	0.48	0.93	0.99	1.06	0.58	0.37	0.28	0.26	0.29	0.35	0.62	0.59
25	0.51	0.83	1.04	1.07	0.56	0.35	0.28	0.28	0.28	0.35	0.66	0.57
26	0.51	0.77	1.13	0.99	0.54	0.36	0.28	0.28	0.29	0.36	0.75	0.56
27	0.52	0.75	1.34	0.94	0.52	0.36	0.29	0.27	0.28	0.37	0.71	0.54
28	0.53	0.75	1.36	0.92	0.49	0.34	0.29	0.26	0.27	0.39	0.74	0.53
29	0.53		1.74	0.88	0.48	0.33	0.29	0.27	0.28	0.41	0.70	0.54
30	0.55		1.99	0.87	0.47	0.34	0.28	0.26	0.29	0.41	0.69	0.54
31	0.56		2.01		0.46		0.29	0.26		0.43		0.56

Table 10. Wet Year daily discharge (m^3/s), Berze River – Bikstu-Paleja HPP

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	2.35	1.76	1.61	4.58	2.22	0.62	0.94	0.71	1.58	1.13	2.86	3.16
2	2.46	1.69	1.81	6.04	2.33	0.79	0.82	0.75	1.82	1.23	3.31	3.11
3	2.47	1.57	2.07	6.59	2.10	0.82	0.73	0.80	1.78	1.55	3.49	2.86
4	2.39	1.50	2.27	7.08	1.89	0.77	0.69	0.80	1.66	1.77	3.44	2.66
5	2.33	1.52	2.18	7.49	1.77	0.66	0.65	0.77	1.52	1.91	3.21	2.73
6	2.29	1.57	2.39	7.18	1.84	0.55	0.63	0.74	1.35	1.84	2.76	2.93
7	2.28	1.71	2.87	6.91	1.75	0.50	0.63	0.73	1.18	1.76	2.58	3.06
8	2.18	1.93	2.81	6.40	1.63	0.46	0.61	0.80	1.06	1.69	2.55	3.08
9	2.07	2.12	2.81	6.00	1.49	0.44	0.60	0.84	0.97	1.57	2.66	2.84
10	2.08	2.39	2.95	5.96	1.40	0.41	0.61	0.83	0.96	1.74	2.61	2.55
11	2.06	2.64	3.74	5.60	1.35	0.39	0.79	0.99	1.00	1.87	2.63	2.32
12	1.87	2.41	4.04	4.79	1.31	0.38	1.01	1.18	1.10	1.98	2.67	2.44
13	1.95	2.59	3.51	4.19	1.24	0.40	1.04	1.34	1.21	2.09	2.58	2.55
14	2.37	2.62	3.41	3.71	1.17	0.42	1.12	1.40	1.25	2.08	2.55	2.52
15	2.94	2.51	3.59	3.35	1.11	0.39	1.60	1.38	1.24	2.14	2.47	2.43
16	2.77	2.16	3.84	3.21	1.07	0.41	1.83	1.36	1.28	2.20	2.24	2.52
17	2.52	1.96	3.83	3.05	0.98	0.41	1.71	1.24	1.37	2.17	2.22	2.80
18	2.56	2.02	3.86	2.83	0.89	0.41	1.58	1.12	1.30	2.15	2.34	2.64
19	2.63	1.85	3.85	2.65	0.85	0.39	1.75	1.05	1.26	2.29	2.63	2.57
20	2.83	1.73	3.99	2.61	0.80	0.40	2.11	1.05	1.27	2.34	2.71	2.72
21	2.74	1.74	3.83	2.83	0.76	0.44	2.11	1.06	1.24	2.16	2.69	2.38
22	2.55	1.63	3.74	3.75	0.72	0.49	1.75	1.07	1.30	2.05	2.77	2.34
23	2.64	1.50	3.73	3.63	0.71	0.52	1.43	1.07	1.37	1.96	2.73	2.50
24	2.81	1.56	3.86	2.80	0.69	0.62	1.39	1.15	1.37	2.01	2.67	2.49
25	2.91	1.51	3.94	2.53	0.67	1.03	1.25	1.28	1.30	2.04	2.77	2.47
26	2.78	1.67	4.22	2.51	0.71	1.55	1.10	1.37	1.24	2.10	2.88	2.41
27	2.42	1.74	4.20	2.51	0.66	1.69	0.96	1.40	1.21	2.09	2.84	2.41
28	2.01	1.70	4.42	2.43	0.61	1.67	0.84	1.39	1.22	2.04	2.99	2.56
29	2.21		4.68	2.27	0.59	1.30	0.77	1.34	1.22	1.99	2.98	3.07
30	1.99		4.75	2.14	0.55	1.13	0.77	1.29	1.19	2.08	3.04	3.51
31	1.86		4.89		0.54		0.72	1.32		2.42		3.33

Table 11. Normal Year daily discharge (m^3/s), Berze River – Bikstu-Paleja HPP

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	3.18	1.14	2.21	6.24	1.42	0.56	0.43	0.55	0.40	0.57	1.30	1.97
2	2.78	1.08	2.25	4.91	1.36	0.58	0.41	0.52	0.39	0.56	1.75	1.98
3	3.19	1.34	2.40	4.90	1.35	0.52	0.38	0.48	0.39	0.57	1.78	2.21
4	3.17	1.27	2.67	5.02	1.29	0.49	0.36	0.45	0.41	0.58	1.63	2.38
5	3.46	1.09	2.70	5.61	1.20	0.48	0.34	0.42	0.41	0.57	1.46	2.47
6	3.95	1.07	2.55	5.32	1.13	0.45	0.34	0.39	0.39	0.55	1.38	2.61
7	3.28	1.14	2.37	4.28	1.31	0.43	0.34	0.38	0.43	0.54	1.31	2.77
8	3.24	1.19	2.31	3.75	1.58	0.42	0.34	0.39	0.44	0.54	1.27	2.64
9	3.35	1.22	2.36	3.74	1.67	0.42	0.32	0.41	0.49	0.56	1.21	2.53
10	3.05	1.21	2.51	4.05	1.67	0.40	0.31	0.42	0.48	0.63	1.16	2.68
11	2.71	1.15	2.46	3.77	1.86	0.38	0.34	0.43	0.48	0.65	1.16	2.52
12	2.68	1.16	2.46	3.47	1.92	0.39	0.33	0.39	0.46	0.72	1.22	2.30
13	2.65	1.30	2.56	2.98	1.62	0.39	0.35	0.38	0.46	0.80	1.27	2.15
14	2.68	1.33	2.47	2.45	1.35	0.41	0.34	0.38	0.46	0.86	1.89	2.30
15	2.47	1.40	2.22	2.26	1.19	0.44	0.30	0.39	0.49	0.99	2.25	2.46
16	2.16	1.52	2.17	2.33	1.07	0.45	0.29	0.39	0.55	1.33	1.99	2.36
17	1.97	1.55	2.37	2.32	1.04	0.45	0.28	0.38	0.56	1.60	1.82	2.19
18	1.86	1.59	2.60	2.24	1.05	0.45	0.28	0.39	0.54	1.33	1.78	2.00
19	1.75	1.52	2.44	2.12	1.04	0.51	0.29	0.38	0.55	1.19	1.76	1.75
20	1.60	1.44	2.40	2.09	0.93	0.63	0.30	0.37	0.53	1.12	1.72	1.60
21	1.70	1.31	2.69	2.49	0.89	0.90	0.31	0.38	0.53	1.15	1.85	1.53
22	1.73	1.27	3.58	3.96	0.85	0.89	0.31	0.37	0.56	1.33	1.85	1.55
23	1.90	1.15	3.71	3.61	0.78	0.75	0.32	0.38	0.59	1.35	1.99	1.54
24	1.90	1.14	3.28	2.31	0.73	0.62	0.36	0.41	0.59	1.25	1.90	1.58
25	1.84	1.25	3.21	1.92	0.68	0.43	0.39	0.47	0.57	1.18	1.66	1.75
26	1.77	1.42	3.23	1.83	0.65	0.37	0.42	0.48	0.62	1.07	1.69	1.99
27	1.63	1.90	3.50	1.67	0.63	0.38	0.45	0.46	0.64	1.05	1.87	2.19
28	1.46	2.11	3.41	1.51	0.66	0.40	0.50	0.47	0.67	1.03	2.24	2.32
29	1.27		3.67	1.39	0.69	0.41	0.50	0.47	0.62	1.02	2.28	2.76
30	1.11		4.16	1.29	0.63	0.44	0.53	0.43	0.58	1.05	2.10	3.05
31	1.10		3.89		0.59		0.54	0.42		1.10		2.63

Table 12. Dry Year daily discharge (m^3/s), Berze River – Bikstu-Paleja HPP

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0.69	0.90	1.10	2.96	1.91	0.52	0.19	0.14	0.14	0.24	0.52	1.24
2	0.82	0.93	1.01	2.71	1.77	0.47	0.19	0.15	0.14	0.24	0.56	1.19
3	0.90	0.92	0.91	2.42	1.61	0.43	0.19	0.14	0.14	0.27	0.65	1.15
4	0.79	0.90	0.89	2.42	1.49	0.41	0.20	0.13	0.14	0.26	0.65	1.12
5	0.70	0.86	0.86	2.71	1.39	0.40	0.18	0.13	0.14	0.27	0.64	1.15
6	0.62	0.82	0.83	2.93	1.37	0.37	0.19	0.13	0.15	0.26	0.61	1.15
7	0.60	0.81	0.82	3.30	1.30	0.33	0.20	0.13	0.16	0.24	0.63	1.12
8	0.56	0.82	0.82	3.42	1.23	0.31	0.19	0.13	0.16	0.24	0.66	1.17
9	0.54	0.75	0.80	3.54	1.14	0.30	0.20	0.13	0.14	0.25	0.61	1.27
10	0.53	0.76	0.78	3.73	1.05	0.29	0.19	0.13	0.14	0.27	0.65	1.24
11	0.50	0.75	0.77	3.83	0.97	0.27	0.20	0.12	0.14	0.29	0.77	1.29
12	0.50	0.78	0.79	3.98	0.97	0.29	0.20	0.12	0.14	0.28	0.77	1.22
13	0.50	0.78	0.84	3.88	0.99	0.27	0.20	0.12	0.17	0.28	0.77	1.23
14	0.50	0.85	0.87	3.60	0.93	0.26	0.20	0.13	0.17	0.29	0.81	1.19
15	0.49	0.93	0.87	3.57	0.92	0.28	0.20	0.12	0.17	0.29	0.85	1.36
16	0.48	0.93	0.89	3.80	0.91	0.30	0.20	0.13	0.16	0.29	0.92	1.38
17	0.50	0.91	0.92	3.98	1.01	0.29	0.20	0.13	0.15	0.30	0.96	1.38
18	0.53	0.85	0.93	3.88	1.23	0.32	0.20	0.14	0.16	0.31	0.99	1.35
19	0.54	0.78	0.96	3.98	1.01	0.32	0.20	0.14	0.16	0.33	1.01	1.40
20	0.55	0.76	0.95	3.49	0.86	0.30	0.19	0.14	0.14	0.37	1.13	1.30
21	0.56	0.79	1.06	3.29	0.79	0.29	0.18	0.14	0.17	0.40	1.38	1.16
22	0.57	0.86	1.16	3.07	0.77	0.27	0.18	0.14	0.18	0.42	1.37	1.18
23	0.59	0.94	1.22	2.74	0.73	0.26	0.18	0.15	0.20	0.42	1.31	1.17
24	0.61	0.94	1.21	2.54	0.68	0.24	0.17	0.15	0.21	0.39	1.30	1.16
25	0.61	1.29	1.24	2.26	0.66	0.23	0.16	0.14	0.21	0.40	1.30	1.20
26	0.63	1.40	1.31	2.03	0.61	0.22	0.16	0.14	0.21	0.44	1.30	1.11
27	0.67	1.11	1.52	2.04	0.56	0.20	0.16	0.13	0.17	0.49	1.29	1.00
28	0.75	0.99	1.79	2.12	0.58	0.19	0.16	0.14	0.18	0.47	1.26	1.03
29	0.85		2.22	1.96	0.60	0.20	0.15	0.13	0.20	0.44	1.32	1.18
30	0.92		2.94	1.98	0.56	0.21	0.14	0.13	0.24	0.52	1.26	1.32
31	0.91		3.35		0.56		0.14	0.13		0.56		1.38

Table 13. Wet Year daily discharge (m^3/s), Auce River – upstream Bene HPP

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	1.00	0.95	0.83	1.45	0.73	0.71	0.48	0.34	0.60	0.42	1.24	1.25
2	1.02	0.91	0.94	1.79	0.74	0.71	0.41	0.34	0.62	0.50	1.50	1.23
3	1.05	0.83	1.07	2.15	0.75	0.73	0.38	0.34	0.62	0.67	1.61	1.18
4	1.04	0.78	1.12	2.62	0.75	0.72	0.35	0.33	0.58	0.79	1.57	1.13
5	1.04	0.78	1.01	3.10	0.76	0.62	0.34	0.33	0.54	0.85	1.45	1.17
6	1.08	0.80	1.06	3.19	0.80	0.56	0.32	0.31	0.50	0.82	1.23	1.25
7	1.12	0.89	1.16	2.95	0.79	0.45	0.31	0.32	0.46	0.80	1.16	1.26
8	1.14	1.02	1.10	2.81	0.77	0.41	0.30	0.35	0.45	0.73	1.12	1.25
9	1.10	1.12	1.01	2.78	0.75	0.35	0.31	0.36	0.45	0.65	1.15	1.15
10	1.14	1.23	1.12	2.47	0.73	0.30	0.35	0.37	0.45	0.73	1.13	1.08
11	1.14	1.37	1.64	2.19	0.71	0.26	0.49	0.37	0.46	0.80	1.15	1.04
12	1.05	1.24	1.81	1.94	0.68	0.24	0.53	0.38	0.47	0.84	1.20	1.11
13	1.11	1.33	1.56	2.03	0.66	0.23	0.55	0.43	0.52	0.83	1.16	1.23
14	1.31	1.34	1.52	1.86	0.61	0.22	0.58	0.48	0.53	0.86	1.11	1.24
15	1.61	1.28	1.62	1.63	0.58	0.21	0.61	0.49	0.48	0.92	1.06	1.16
16	1.51	1.09	1.64	1.52	0.53	0.20	0.60	0.48	0.47	0.94	1.00	1.15
17	1.38	0.99	1.48	1.39	0.49	0.19	0.54	0.44	0.50	0.93	0.95	1.22
18	1.40	1.02	1.36	1.24	0.45	0.18	0.51	0.41	0.45	0.98	1.02	1.09
19	1.42	0.93	1.29	1.21	0.43	0.18	0.53	0.40	0.43	1.09	1.15	1.11
20	1.52	0.86	1.33	1.16	0.41	0.18	0.58	0.41	0.45	1.13	1.11	1.15
21	1.48	0.87	1.30	1.11	0.38	0.18	0.59	0.41	0.47	1.04	1.07	1.02
22	1.38	0.82	1.34	1.10	0.36	0.18	0.53	0.44	0.51	0.96	1.11	1.03
23	1.40	0.76	1.41	1.11	0.36	0.22	0.48	0.47	0.53	0.90	1.06	1.13
24	1.48	0.80	1.51	1.07	0.37	0.30	0.51	0.53	0.53	0.86	1.02	1.17
25	1.52	0.78	1.59	0.99	0.41	0.61	0.48	0.58	0.51	0.82	1.08	1.20
26	1.45	0.86	1.80	0.92	0.44	0.78	0.44	0.62	0.47	0.82	1.11	1.18
27	1.27	0.90	1.77	0.84	0.54	0.85	0.38	0.62	0.45	0.84	1.09	1.17
28	1.07	0.85	1.71	0.79	0.59	0.81	0.34	0.63	0.42	0.84	1.18	1.30
29	1.21		1.44	0.73	0.78	0.67	0.34	0.61	0.42	0.83	1.19	1.58
30	1.11		1.32	0.71	0.76	0.61	0.33	0.57	0.41	0.89	1.20	1.84
31	1.03		1.34		0.72		0.33	0.59		1.03		1.78

Table 14. Normal Year daily discharge (m^3/s), Auce River – upstream Bene HPP

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	1.07	0.45	0.83	2.06	0.75	0.31	0.21	0.21	0.21	0.28	0.43	0.85
2	0.94	0.43	0.85	2.23	0.72	0.31	0.20	0.21	0.20	0.27	0.59	0.85
3	1.07	0.52	0.92	2.14	0.70	0.30	0.20	0.21	0.19	0.28	0.61	0.92
4	1.05	0.49	1.05	2.00	0.66	0.29	0.19	0.21	0.20	0.28	0.56	0.97
5	1.14	0.43	1.09	1.87	0.62	0.29	0.18	0.20	0.19	0.27	0.51	0.99
6	1.31	0.42	1.08	1.77	0.59	0.28	0.18	0.20	0.18	0.26	0.48	1.04
7	1.09	0.43	1.04	1.63	0.64	0.27	0.18	0.19	0.19	0.25	0.47	1.11
8	1.09	0.44	1.02	1.48	0.72	0.26	0.18	0.19	0.19	0.24	0.45	1.03
9	1.13	0.44	1.04	1.37	0.75	0.26	0.18	0.20	0.21	0.24	0.44	0.98
10	1.02	0.44	1.09	1.27	0.73	0.24	0.18	0.20	0.21	0.25	0.42	1.02
11	0.92	0.42	1.09	1.17	0.79	0.23	0.19	0.20	0.20	0.26	0.42	0.96
12	0.91	0.43	1.11	1.18	0.81	0.23	0.19	0.19	0.19	0.28	0.45	0.89
13	0.91	0.47	1.17	1.29	0.70	0.22	0.20	0.20	0.19	0.30	0.47	0.87
14	0.92	0.49	1.16	1.72	0.61	0.23	0.22	0.21	0.19	0.32	0.70	0.94
15	0.86	0.53	1.10	1.78	0.60	0.23	0.25	0.22	0.20	0.35	0.85	1.01
16	0.76	0.59	1.11	1.53	0.57	0.24	0.25	0.22	0.22	0.46	0.79	0.99
17	0.69	0.60	1.24	1.32	0.58	0.25	0.26	0.22	0.23	0.54	0.78	0.93
18	0.65	0.61	1.35	1.23	0.60	0.27	0.31	0.22	0.23	0.44	0.81	0.89
19	0.61	0.59	1.32	1.15	0.64	0.28	0.30	0.22	0.24	0.40	0.82	0.81
20	0.57	0.57	1.28	1.11	0.59	0.31	0.29	0.21	0.23	0.37	0.81	0.76
21	0.61	0.52	1.28	1.04	0.56	0.40	0.29	0.21	0.22	0.38	0.85	0.74
22	0.61	0.52	1.55	0.93	0.54	0.39	0.28	0.20	0.23	0.44	0.85	0.76
23	0.66	0.47	1.59	0.92	0.51	0.33	0.27	0.20	0.25	0.45	0.90	0.73
24	0.67	0.47	1.42	0.94	0.48	0.28	0.25	0.21	0.23	0.40	0.86	0.76
25	0.65	0.51	1.41	0.96	0.44	0.21	0.23	0.23	0.22	0.36	0.77	0.82
26	0.62	0.56	1.46	0.91	0.40	0.18	0.22	0.24	0.22	0.32	0.77	0.92
27	0.59	0.73	1.59	0.87	0.37	0.18	0.21	0.25	0.24	0.32	0.82	1.01
28	0.54	0.80	1.59	0.88	0.35	0.19	0.21	0.25	0.26	0.32	0.93	1.05
29	0.47		1.70	0.84	0.33	0.19	0.20	0.25	0.28	0.32	0.95	1.21
30	0.43		1.88	0.81	0.31	0.20	0.20	0.24	0.28	0.33	0.90	1.30
31	0.43		1.84		0.31		0.20	0.23		0.36		1.14

Table 15. Dry Year daily discharge (m^3/s), Auce River – upstream Bene HPP

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	0.28	0.39	0.44	1.27	0.82	0.23	0.077	0.058	0.055	0.10	0.22	0.53
2	0.33	0.40	0.40	1.17	0.76	0.20	0.078	0.060	0.054	0.10	0.24	0.50
3	0.37	0.40	0.35	1.03	0.69	0.19	0.079	0.058	0.057	0.11	0.28	0.49
4	0.33	0.39	0.35	1.03	0.64	0.18	0.079	0.053	0.057	0.11	0.28	0.48
5	0.30	0.37	0.35	1.18	0.60	0.17	0.072	0.053	0.056	0.11	0.27	0.49
6	0.27	0.36	0.34	1.26	0.58	0.16	0.078	0.052	0.059	0.11	0.26	0.49
7	0.26	0.35	0.35	1.33	0.55	0.14	0.079	0.051	0.065	0.10	0.26	0.48
8	0.24	0.35	0.35	1.37	0.51	0.13	0.079	0.050	0.064	0.10	0.28	0.50
9	0.24	0.33	0.35	1.42	0.48	0.13	0.082	0.052	0.058	0.11	0.26	0.54
10	0.23	0.33	0.34	1.51	0.45	0.12	0.079	0.053	0.056	0.12	0.28	0.52
11	0.23	0.33	0.33	1.58	0.41	0.12	0.080	0.051	0.056	0.12	0.33	0.54
12	0.22	0.34	0.34	1.67	0.41	0.12	0.082	0.051	0.055	0.12	0.33	0.51
13	0.22	0.34	0.36	1.63	0.42	0.11	0.083	0.051	0.070	0.12	0.33	0.52
14	0.21	0.36	0.38	1.52	0.40	0.11	0.083	0.053	0.069	0.12	0.34	0.50
15	0.21	0.40	0.38	1.51	0.39	0.12	0.083	0.048	0.068	0.12	0.36	0.57
16	0.21	0.40	0.39	1.61	0.39	0.13	0.080	0.052	0.065	0.12	0.39	0.59
17	0.22	0.40	0.40	1.69	0.43	0.12	0.085	0.054	0.062	0.13	0.41	0.59
18	0.23	0.37	0.40	1.65	0.53	0.13	0.082	0.056	0.065	0.13	0.42	0.58
19	0.23	0.34	0.42	1.70	0.43	0.14	0.081	0.059	0.066	0.14	0.43	0.60
20	0.24	0.34	0.41	1.49	0.37	0.13	0.079	0.058	0.060	0.16	0.48	0.56
21	0.24	0.35	0.47	1.41	0.34	0.12	0.075	0.059	0.069	0.17	0.59	0.50
22	0.25	0.38	0.50	1.32	0.33	0.12	0.073	0.060	0.073	0.18	0.58	0.51
23	0.26	0.41	0.54	1.18	0.31	0.11	0.074	0.061	0.083	0.18	0.56	0.50
24	0.27	0.41	0.52	1.09	0.29	0.10	0.072	0.060	0.087	0.17	0.55	0.49
25	0.27	0.56	0.54	0.97	0.29	0.096	0.067	0.059	0.089	0.17	0.56	0.51
26	0.27	0.62	0.57	0.88	0.27	0.090	0.066	0.058	0.088	0.19	0.56	0.48
27	0.29	0.45	0.67	0.88	0.24	0.085	0.066	0.054	0.072	0.21	0.55	0.43
28	0.33	0.39	0.78	0.91	0.25	0.079	0.065	0.055	0.076	0.20	0.54	0.44
29	0.37		0.96	0.84	0.26	0.081	0.060	0.053	0.081	0.19	0.56	0.50
30	0.40		1.26	0.85	0.25	0.084	0.059	0.052	0.101	0.22	0.54	0.56
31	0.39		1.44		0.24		0.057	0.053		0.24		0.59

Table 16. Wet Year daily discharge (m^3/s), Islice River – upstream Rundale HPP

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	3.09	2.41	3.26	18.15	4.15	2.19	0.86	1.06	2.17	2.44	6.04	5.79
2	3.07	2.29	3.35	18.89	3.99	3.79	1.01	1.03	2.30	2.35	5.49	5.53
3	3.03	2.23	3.83	19.48	3.78	3.54	1.07	1.05	2.24	2.30	5.00	5.28
4	3.09	2.16	4.15	21.16	3.25	2.64	0.93	1.06	2.10	2.22	4.89	5.87
5	3.09	2.24	4.49	22.93	3.26	1.89	0.86	1.03	1.91	2.30	4.49	5.56
6	2.88	2.53	5.15	20.87	3.13	1.37	0.80	0.99	1.86	2.75	4.17	6.06
7	2.93	2.75	5.48	17.34	2.80	1.20	0.84	0.98	1.71	3.02	4.20	6.13
8	2.97	2.99	5.81	15.04	2.62	1.10	0.84	2.65	1.63	3.09	4.50	5.67
9	3.10	3.21	5.72	14.27	2.47	1.00	0.83	1.81	1.52	2.88	4.54	5.65
10	3.15	3.24	5.51	13.08	2.33	0.92	0.82	1.26	1.62	3.14	4.35	5.34
11	3.17	3.30	5.71	11.09	2.26	0.85	0.86	1.15	1.90	3.54	4.41	5.74
12	3.12	3.68	5.99	9.39	2.43	0.83	1.18	1.16	2.39	3.55	4.90	5.89
13	3.12	4.18	6.37	8.41	2.08	0.88	1.64	1.12	2.90	3.67	4.80	6.29
14	3.27	4.40	6.72	8.05	1.94	1.31	1.69	1.04	2.27	3.95	4.39	6.14
15	3.16	4.23	6.66	9.07	2.27	1.29	1.85	1.00	1.85	4.17	4.17	6.52
16	3.12	4.13	6.72	7.71	2.66	1.12	2.11	0.96	1.71	4.09	4.10	6.07
17	3.15	4.32	7.24	7.02	2.36	1.18	2.07	0.94	1.72	4.13	4.18	5.42
18	3.03	4.41	7.19	6.40	2.18	1.12	1.89	0.95	1.78	4.56	4.65	4.92
19	2.88	4.02	6.89	6.06	2.29	0.97	1.71	1.24	2.76	4.46	4.99	4.81
20	3.01	4.00	6.67	5.95	2.21	0.84	1.64	1.90	3.27	4.27	5.15	4.59
21	3.17	3.83	6.93	6.86	2.19	0.76	1.56	1.81	2.58	3.99	5.87	3.94
22	3.44	3.97	7.39	7.58	2.35	0.68	1.46	1.50	2.77	3.75	5.55	4.24
23	3.31	3.78	7.37	6.84	2.39	0.65	1.48	1.30	3.01	3.44	5.41	4.97
24	3.37	3.72	7.54	6.00	2.06	0.73	1.49	1.29	2.88	2.99	5.42	4.95
25	3.14	3.65	8.99	5.29	1.70	0.95	1.35	1.47	2.65	2.84	5.22	5.03
26	2.94	3.61	10.10	4.64	1.55	1.21	1.25	1.80	2.47	2.98	4.98	4.90
27	2.56	3.47	11.08	5.30	1.74	1.28	1.21	2.15	2.42	2.85	4.78	5.08
28	2.30	3.32	12.48	5.09	1.87	1.23	1.14	2.41	2.62	2.72	4.87	5.67
29	2.29		14.38	4.34	1.72	1.11	1.09	2.29	2.75	3.12	5.15	6.01
30	2.25		15.54	3.95	1.73	0.98	1.12	2.00	2.68	4.25	5.46	6.27
31	2.36		17.13		1.43		1.11	2.00		5.19		6.51

Table 17. Normal Year daily discharge (m^3/s), Islice River – upstream Rundale HPP

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	5.54	4.72	2.48	13.37	2.34	0.71	0.45	0.45	0.41	0.53	0.99	2.39
2	5.78	5.64	2.77	13.32	2.16	0.69	0.43	0.44	0.41	0.54	1.10	2.45
3	5.97	5.90	3.20	10.54	2.07	0.66	0.40	0.42	0.41	0.58	1.45	2.34
4	6.24	5.64	3.68	9.53	2.02	0.63	0.39	0.40	0.40	0.60	1.66	2.35
5	6.47	5.37	5.12	8.88	1.98	0.65	0.39	0.39	0.42	0.59	1.60	2.84
6	6.36	5.09	7.04	8.21	1.88	0.74	0.40	0.39	0.42	0.61	1.47	3.32
7	5.80	5.03	8.97	9.30	1.86	0.82	0.40	0.42	0.40	0.60	1.41	3.18
8	5.31	5.17	11.67	8.87	2.10	0.96	0.41	0.46	0.38	0.59	1.38	2.74
9	4.64	5.34	11.45	7.56	1.95	0.93	0.39	0.48	0.36	0.58	1.37	2.39
10	4.23	5.65	10.55	6.81	1.74	0.90	0.36	0.43	0.35	0.60	1.34	2.13
11	4.02	5.60	9.56	6.32	1.66	0.87	0.34	0.37	0.34	0.58	1.29	1.87
12	3.80	5.29	9.45	5.98	1.53	0.97	0.33	0.35	0.36	0.59	1.22	1.77
13	3.63	5.08	8.88	7.57	1.54	1.09	0.34	0.34	0.40	0.65	1.20	1.82
14	3.34	4.92	8.04	8.64	1.86	0.99	0.34	0.33	0.44	0.68	1.19	1.92
15	3.35	4.48	7.80	8.91	1.83	0.87	0.78	0.33	0.47	0.69	1.18	1.92
16	3.53	3.88	7.87	8.27	1.73	0.78	0.95	0.34	0.46	0.67	1.13	1.83
17	3.74	3.46	8.15	7.19	1.55	0.70	0.78	0.34	0.43	0.64	1.24	1.79
18	3.68	3.15	7.76	6.22	1.47	0.63	0.61	0.34	0.39	0.60	1.37	1.73
19	3.64	2.93	7.56	5.63	1.65	0.57	0.53	0.34	0.37	0.56	1.43	1.52
20	3.54	2.86	8.20	5.89	1.69	0.53	0.48	0.34	0.37	0.54	1.54	1.50
21	3.53	2.77	9.22	5.46	1.53	0.51	0.44	0.34	0.37	0.54	1.60	1.68
22	3.41	2.68	11.19	4.88	1.44	0.49	0.45	0.34	0.39	0.55	1.91	1.72
23	3.46	2.73	12.61	4.28	1.35	0.46	0.50	0.34	0.39	0.59	1.94	1.95
24	4.10	2.70	12.68	3.74	1.21	0.45	0.51	0.34	0.40	0.68	1.91	2.40
25	4.32	2.55	12.64	3.38	1.11	0.48	0.50	0.35	0.42	0.71	2.00	2.31
26	4.74	2.44	12.75	3.14	1.01	0.46	0.47	0.35	0.47	0.71	2.08	2.17
27	4.86	2.33	12.28	2.95	0.93	0.46	0.44	0.36	0.52	0.68	2.18	2.12
28	4.96	2.31	13.91	2.75	0.87	0.47	0.43	0.39	0.53	0.68	2.13	2.28
29	5.02		15.01	2.64	0.83	0.47	0.44	0.41	0.54	0.70	2.14	2.18
30	4.97		15.49	2.48	0.81	0.46	0.43	0.42	0.54	0.79	2.25	2.37
31	4.75		14.31		0.77		0.43	0.41		0.86		2.86

Table 18. Dry Year daily discharge (m^3/s), Islice River – upstream Rundale HPP

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
1	1.20	0.76	2.07	9.08	2.89	0.51	0.10	0.13	0.08	0.15	0.43	1.18
2	0.92	0.80	2.68	8.62	2.48	0.45	0.09	0.12	0.08	0.15	0.44	1.07
3	0.87	0.78	2.47	7.64	2.21	0.40	0.09	0.11	0.08	0.14	0.46	0.95
4	0.92	0.75	2.28	7.48	2.24	0.35	0.09	0.10	0.09	0.14	0.48	0.90
5	1.02	0.68	1.87	8.31	2.01	0.32	0.08	0.10	0.08	0.14	0.53	0.87
6	1.09	0.76	1.49	8.89	1.67	0.30	0.10	0.10	0.08	0.14	0.55	0.83
7	1.27	0.89	1.34	9.65	1.49	0.28	0.20	0.10	0.08	0.14	0.54	0.83
8	1.16	0.98	1.55	9.35	1.35	0.26	0.20	0.12	0.08	0.14	0.61	0.80
9	0.99	0.89	1.49	7.15	1.19	0.25	0.18	0.11	0.09	0.14	0.70	0.82
10	1.00	0.84	1.40	7.42	1.06	0.22	0.17	0.10	0.10	0.15	0.68	0.87
11	1.31	0.78	1.32	7.02	0.95	0.21	0.15	0.10	0.09	0.15	0.71	0.94
12	1.30	0.74	1.44	7.65	0.92	0.21	0.13	0.09	0.09	0.15	0.85	1.03
13	1.07	0.70	1.68	8.23	0.87	0.21	0.16	0.09	0.09	0.15	0.95	1.16
14	0.88	0.64	1.84	8.67	0.80	0.20	0.37	0.08	0.09	0.16	1.07	1.29
15	0.98	1.01	1.80	9.14	0.80	0.18	0.25	0.08	0.10	0.17	1.11	1.62
16	1.05	1.36	1.86	8.43	0.78	0.18	0.19	0.08	0.11	0.23	1.07	1.72
17	0.95	1.44	1.79	7.62	0.75	0.24	0.16	0.07	0.12	0.25	1.01	1.54
18	0.87	1.58	2.25	6.99	0.81	0.34	0.14	0.08	0.12	0.28	0.97	1.47
19	0.77	1.58	2.55	5.77	0.87	0.26	0.13	0.08	0.12	0.28	0.92	1.56
20	0.69	1.39	2.46	4.86	1.00	0.21	0.12	0.08	0.13	0.31	0.86	1.48
21	0.73	1.05	2.41	4.49	0.92	0.19	0.11	0.07	0.15	0.31	0.81	1.49
22	0.71	1.33	2.39	3.98	0.81	0.17	0.11	0.07	0.17	0.31	0.75	1.81
23	0.69	1.21	2.34	3.54	0.70	0.16	0.11	0.07	0.17	0.31	0.73	1.73
24	0.68	1.06	2.43	3.26	0.59	0.16	0.11	0.07	0.17	0.32	0.81	1.60
25	0.83	0.76	2.87	3.83	0.54	0.15	0.11	0.07	0.16	0.33	0.90	1.60
26	0.90	0.67	2.93	4.97	0.62	0.14	0.11	0.07	0.16	0.36	0.97	1.37
27	0.83	1.00	4.17	4.38	0.97	0.13	0.11	0.07	0.16	0.38	0.93	1.30
28	0.83	1.15	5.11	4.39	1.01	0.12	0.11	0.08	0.15	0.41	0.93	1.28
29	0.87		5.96	4.22	0.76	0.11	0.11	0.08	0.15	0.43	1.08	1.13
30	0.81		7.02	3.53	0.63	0.10	0.12	0.09	0.15	0.43	1.21	1.04
31	0.74		8.51		0.58		0.12	0.08		0.43		0.98

ANNEX II

***Table 1.* Presence (T) and absence (F) of different elements within GU-s in first sites below HPP(Lithuania)**

RIVER	DATE	HMU_TYPE	SHAD	OVERHA_VEG	SUBMV	BOULD	EMERGV	UNDB	WOOD
Mūša 1	13.06.2018	GLIDE	F	F	T	T	F	F	F
	13.06.2018	RAPID	F	F	T	T	F	F	F
	13.06.2018	POOL	F	F	T	T	F	F	F
	13.06.2018	GLIDE	F	F	T	T	F	F	F
	13.06.2018	RIFFLE	F	F	T	F	F	F	F
	13.06.2018	GLIDE	F	F	T	F	F	F	F
	13.06.2018	AQUAT_VEG	F	F	T	F	T	F	F
	13.06.2018	RAPID	F	F	T	T	F	F	F
	13.06.2018	POOL	F	F	T	T	F	F	F
	13.06.2018	GLIDE	F	F	T	T	F	F	F
	13.06.2018	POOL	F	F	T	T	F	F	F
	13.06.2018	RIFFLE	F	F	T	F	F	F	F
	13.06.2018	RAPID	F	F	T	T	F	F	F
	13.06.2018	GLIDE	F	F	T	F	F	F	F
Mūša 2	05.07.2018	RAPID	F	F	T	T	F	F	F
	05.07.2018	RAPID	F	F	T	T	F	F	F
	05.07.2018	POOL	F	F	T	T	F	F	F
	05.07.2018	GLIDE	F	F	T	T	F	F	F
	05.07.2018	RAPID	F	F	T	F	F	F	F
	05.07.2018	RIFFLE	F	F	T	F	T	F	F
	05.07.2018	RAPID	F	F	T	T	F	F	F
	05.07.2018	POOL	F	F	T	T	F	F	F
	05.07.2018	GLIDE	F	F	T	T	F	F	F
	05.07.2018	POOL	F	F	T	T	F	F	F
	05.07.2018	RAPID	F	F	T	F	F	F	F
	05.07.2018	RAPID	F	F	T	T	F	F	F
	05.07.2018	RAPID	F	F	T	F	F	F	F
Mūša 3	22.08.2018	GLIDE	F	F	T	T	F	F	F
	22.08.2018	RAPID	F	F	T	T	F	F	F

RIVER	DATE	HMU_TYPE	SHAD	OVERHA_VEG	SUBMV	BOULD	EMERGV	UNDB	WOOD
	22.08.2018	POOL	F	F	T	T	F	F	F
	22.08.2018	GLIDE	F	F	T	T	F	F	F
	22.08.2018	RIFFLE	F	F	T	F	F	F	F
	22.08.2018	GLIDE	F	F	T	F	F	F	F
	22.08.2018	AQUAT_VEG	F	F	T	F	T	F	F
	22.08.2018	RAPID	F	F	T	T	F	F	F
	22.08.2018	POOL	F	F	T	T	F	F	F
	22.08.2018	GLIDE	F	F	T	T	F	F	F
	22.08.2018	POOL	F	F	T	T	F	F	F
	22.08.2018	RIFFLE	F	F	T	F	F	F	F
	22.08.2018	RAPID	F	F	T	T	F	F	F
	22.08.2018	GLIDE	F	F	T	F	F	F	F
Mūša 4	15.01.2019	RAPID	F	F	T	T	F	F	F
	15.01.2019	RAPID	F	F	T	T	F	F	F
	15.01.2019	GLIDE	F	F	T	T	F	F	F
	15.01.2019	GLIDE	F	F	T	T	F	F	F
	15.01.2019	RAPID	F	F	T	F	F	F	F
	15.01.2019	RAPID	F	F	T	T	F	F	F
	15.01.2019	POOL	F	F	T	T	F	F	F
	15.01.2019	GLIDE	F	F	T	T	F	F	F
	15.01.2019	GLIDE	F	F	T	T	F	F	F
	15.01.2019	RAPID	F	F	T	F	F	F	F
	15.01.2019	RAPID	F	F	T	T	F	F	F
	15.01.2019	RAPID	F	F	T	F	F	F	F
Lėvuo 1	12.06.2018	AQUAT_VEG	F	F	T	T	T	F	F
	12.06.2018	GLIDE	F	T	T	T	F	F	T
	12.06.2018	GLIDE	F	F	T	T	T	F	F
	12.06.2018	GLIDE	T	T	T	F	F	F	F
	12.06.2018	POOL	T	T	T	T	F	F	T
	12.06.2018	GLIDE	T	F	T	T	F	T	T
	12.06.2018	GLIDE	F	T	T	F	T	F	F
	12.06.2018	GLIDE	T	F	T	T	T	F	F

RIVER	DATE	HMU_TYPE	SHAD	OVERHA_VEG	SUBMV	BOULD	EMERGV	UNDB	WOOD
	12.06.2018	AQUAT_VEG	F	T	F	F	T	F	F
	12.06.2018	POOL	F	T	T	T	F	F	T
Lėvuo 2	04.07.2018	GLIDE	F	F	T	T	T	F	F
	04.07.2018	GLIDE	F	F	T	T	F	T	T
	04.07.2018	GLIDE	F	F	T	T	T	F	F
	04.07.2018	GLIDE	T	T	T	T	F	T	F
	04.07.2018	POOL	F	T	T	T	F	F	T
	04.07.2018	GLIDE	T	F	T	T	F	T	T
	04.07.2018	GLIDE	F	F	T	F	F	F	F
	04.07.2018	GLIDE	F	F	T	T	T	T	F
	04.07.2018	AQUAT_VEG	F	T	F	F	T	F	F
	04.07.2018	POOL	F	F	T	T	F	F	T
Lėvuo 3	21.08.2018	AQUAT_VEG	F	F	F	T	T	F	F
	21.08.2018	GLIDE	F	F	T	T	F	F	F
	21.08.2018	AQUAT_VEG	F	F	F	F	T	F	F
	21.08.2018	GLIDE	F	F	T	F	F	F	F
	21.08.2018	GLIDE	F	F	T	T	F	F	F
	21.08.2018	POOL	F	T	F	F	F	F	F
	21.08.2018	GLIDE	F	F	F	T	T	F	F
	21.08.2018	GLIDE	T	F	T	T	T	F	F
	21.08.2018	GLIDE	F	F	T	T	F	F	F
	21.08.2018	POOL	F	F	T	T	F	F	T
	21.08.2018	GLIDE	F	T	T	T	F	F	T
Lėvuo 4	15.01.2019	GLIDE	F	F	T	T	T	F	F
	15.01.2019	RAPID	F	F	T	T	F	T	T
	15.01.2019	GLIDE	F	F	T	T	T	F	F
	15.01.2019	GLIDE	T	T	T	T	F	T	F
	15.01.2019	GLIDE	F	T	T	T	F	F	T
	15.01.2019	RAPID	T	F	T	T	F	T	T
	15.01.2019	GLIDE	F	F	T	F	F	F	F
	15.01.2019	RAPID	F	F	T	T	T	T	F
	15.01.2019	AQUAT_VEG	F	T	F	F	T	F	F

RIVER	DATE	HMU_TYPE	SHAD	OVERHA_VEG	SUBMV	BOULD	EMERGV	UNDB	WOOD
	15.01.2019	GLIDE	F	F	T	T	F	F	T
Suosa 1	17.07.2018	POOL	F	F	F	T	F	F	T
	17.07.2018	POOL	T	F	F	T	F	F	F
	17.07.2018	GLIDE	T	F	F	T	F	F	F
	17.07.2018	RIFFLE	T	F	F	T	F	F	F
	17.07.2018	POOL	T	F	F	T	F	F	T
	17.07.2018	POOL	T	F	F	T	F	F	T
	17.07.2018	POOL	T	F	F	T	F	F	T
	17.07.2018	POOL	T	F	F	T	F	F	T
	17.07.2018	GLIDE	F	F	F	T	F	F	T
	17.07.2018	CASCADE	F	F	F	T	F	F	F
	17.07.2018	POOL	T	F	F	T	F	F	T
	17.07.2018	RIFFLE	F	F	F	T	F	F	T
	17.07.2018	POOL	F	F	F	T	F	F	T
	17.07.2018	GLIDE	F	F	F	T	F	F	F
	17.07.2018	RIFFLE	F	F	F	T	F	F	F
	17.07.2018	POOL	F	F	F	T	F	F	F
	17.07.2018	RIFFLE	T	F	F	T	F	F	T
	17.07.2018	GLIDE	T	F	F	T	F	F	T
	17.07.2018	RIFFLE	T	F	F	T	F	F	F
	17.07.2018	GLIDE	T	F	F	T	F	F	T
Suosa 2	12.06.2018	POOL	F	F	F	T	F	F	T
	12.06.2018	POOL	T	F	F	T	F	F	F
	12.06.2018	GLIDE	T	F	F	T	F	F	F
	12.06.2018	RAPID	T	F	F	T	F	F	F
	12.06.2018	POOL	T	F	F	T	F	F	T
	12.06.2018	POOL	T	F	F	T	F	F	T
	12.06.2018	POOL	T	F	F	T	F	F	T
	12.06.2018	POOL	T	F	F	T	F	F	T
	12.06.2018	GLIDE	F	F	F	T	F	F	T
	12.06.2018	CASCADE	F	F	F	T	F	F	F
	12.06.2018	POOL	T	F	F	T	F	F	T

RIVER	DATE	HMU_TYPE	SHAD	OVERHA_VEG	SUBMV	BOULD	EMERGV	UNDB	WOOD
	12.06.2018	RIFFLE	F	F	F	T	F	F	T
	12.06.2018	POOL	F	F	F	T	F	F	T
	12.06.2018	GLIDE	F	F	F	T	F	F	F
	12.06.2018	RIFFLE	F	F	F	T	F	F	F
	12.06.2018	POOL	F	F	F	T	F	F	F
	12.06.2018	RAPID	T	F	F	T	F	F	T
	12.06.2018	GLIDE	T	F	F	T	F	F	T
	12.06.2018	RAPID	T	F	F	T	F	F	F
	12.06.2018	GLIDE	T	F	F	T	F	F	T

***Table 2.* Presence (T) and absence (F) of different elements within GU-s in first sites below HPP (Latvian)**

River	HMU_TYPE	BOULD	SHAD	ROOTS	SUBMV	EMERGV	UNDB	WOOD
Auce1	GLIDE	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE	TRUE
	AQUAT_VEG	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE
	GLIDE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE
	RIFFLE	TRUE	TRUE	TRUE	FALSE	FALSE	TRUE	FALSE
	GLIDE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE
Berze1	GLIDE	TRUE	TRUE	FALSE	TRUE	TRUE	FALSE	TRUE
	GLIDE	TRUE	TRUE	FALSE	TRUE	TRUE	FALSE	TRUE
	RIFFLE	TRUE	FALSE	FALSE	TRUE	TRUE	FALSE	FALSE
	GLIDE	TRUE	TRUE	FALSE	TRUE	TRUE	FALSE	FALSE
	GLIDE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE
	RIFFLE	TRUE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE
	BACKWATER	TRUE	TRUE	FALSE	TRUE	TRUE	FALSE	TRUE
	GLIDE	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE
	BACKWATER	TRUE	FALSE	TRUE	TRUE	TRUE	FALSE	TRUE
	SEC_CHAN	TRUE	FALSE	TRUE	TRUE	TRUE	FALSE	TRUE
	RIFFLE	TRUE	FALSE	FALSE	TRUE	TRUE	FALSE	TRUE
Islice1	AQUAT_VEG	FALSE	TRUE	FALSE	TRUE	TRUE	FALSE	FALSE
	RAPID	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
	AQUAT_VEG	FALSE	TRUE	FALSE	TRUE	TRUE	FALSE	FALSE
	GLIDE	TRUE	FALSE	FALSE	TRUE	TRUE	FALSE	FALSE
	BACKWATER	TRUE	FALSE	FALSE	TRUE	FALSE	FALSE	FALSE
	BACKWATER	TRUE	FALSE	TRUE	TRUE	FALSE	FALSE	FALSE
	BACKWATER	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE	FALSE
	BACKWATER	FALSE	FALSE	FALSE	TRUE	FALSE	FALSE	FALSE
	RIFFLE	FALSE	FALSE	FALSE	TRUE	FALSE	FALSE	FALSE
	AQUAT_VEG	FALSE	FALSE	FALSE	TRUE	TRUE	FALSE	FALSE

	GLIDE	TRUE	FALSE	TRUE	TRUE	TRUE	FALSE	FALSE
	BACKWATER	FALSE	FALSE	FALSE	TRUE	TRUE	FALSE	FALSE
	RIFFLE	FALSE	TRUE	TRUE	TRUE	FALSE	FALSE	FALSE
	BACKWATER	FALSE	FALSE	FALSE	TRUE	FALSE	FALSE	FALSE
	BACKWATER	FALSE	TRUE	TRUE	TRUE	TRUE	FALSE	FALSE
	POOL	FALSE	FALSE	FALSE	TRUE	FALSE	FALSE	FALSE
	GLIDE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
	BACKWATER	FALSE	FALSE	FALSE	TRUE	TRUE	FALSE	FALSE
	AQUAT_VEG	TRUE	FALSE	TRUE	TRUE	TRUE	FALSE	TRUE
	GLIDE	TRUE	FALSE	TRUE	TRUE	TRUE	TRUE	TRUE
	AQUAT_VEG	TRUE	FALSE	TRUE	TRUE	TRUE	FALSE	FALSE
	GLIDE	FALSE	FALSE	FALSE	TRUE	TRUE	FALSE	FALSE
	SEC_CHAN	FALSE	FALSE	FALSE	TRUE	TRUE	FALSE	FALSE
	POOL	FALSE	FALSE	FALSE	TRUE	TRUE	FALSE	FALSE
	POOL	FALSE	FALSE	FALSE	TRUE	TRUE	FALSE	FALSE

*BOULD-boulders, SHAD-canopy shading, ROOTS-exposed roots, SUBMV-submerged vegetation, EMERGV-emergent vegetation, UNDB-undercut banks, WOOD-woody debris

ANNEX III

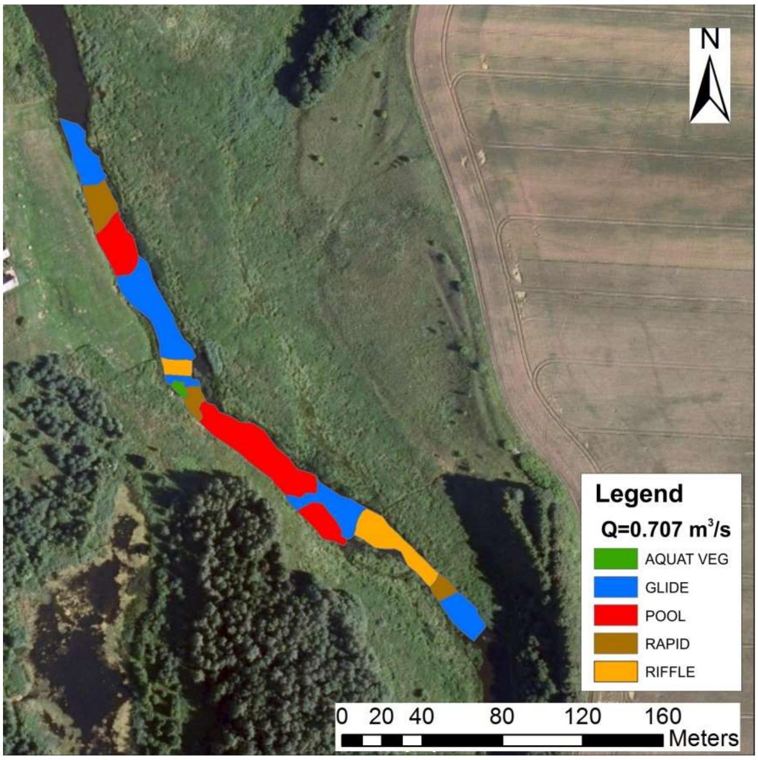

Fig. 1. Geomorphic unit map of Mūša River directly below HPP (13.06.2018)

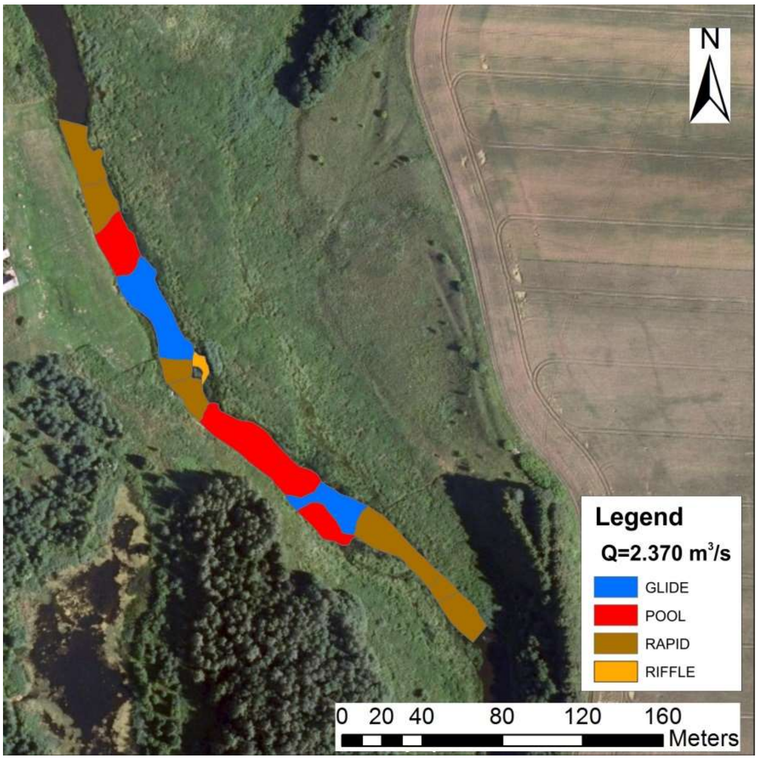

Fig. 2. Geomorphic unit map of Mūša River directly below HPP (05.07.2018)

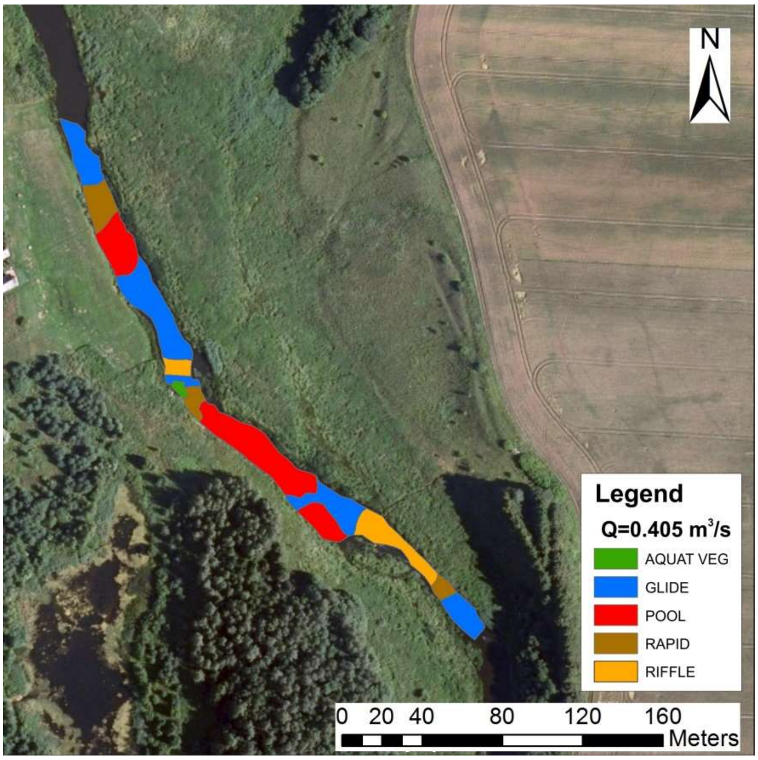

Fig. 3. Geomorphic unit map of Mūša River directly below HPP (22.08.2018)

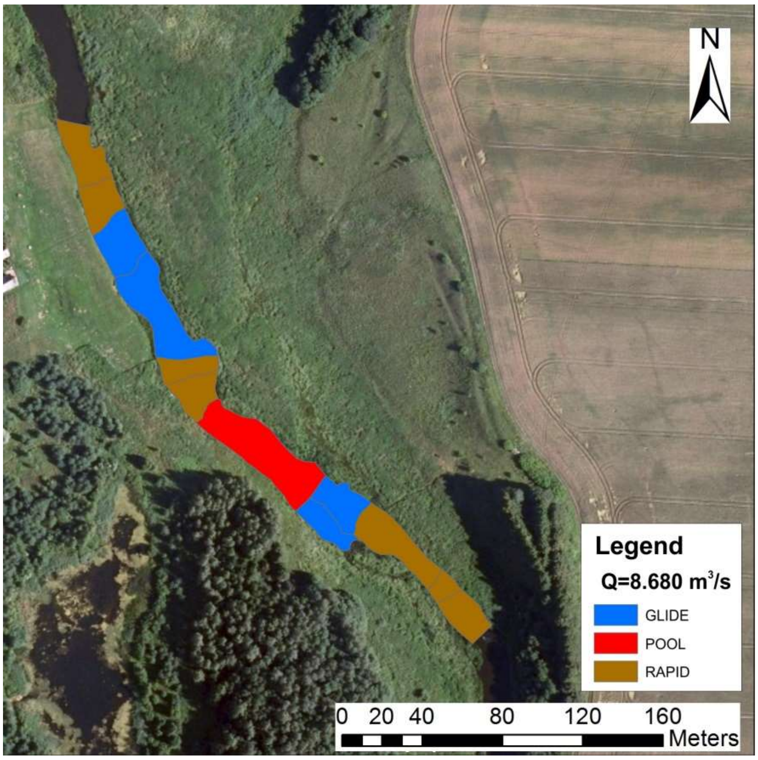

Fig. 4. Geomorphic unit map of Mūša River directly below HPP (15.01.2019)

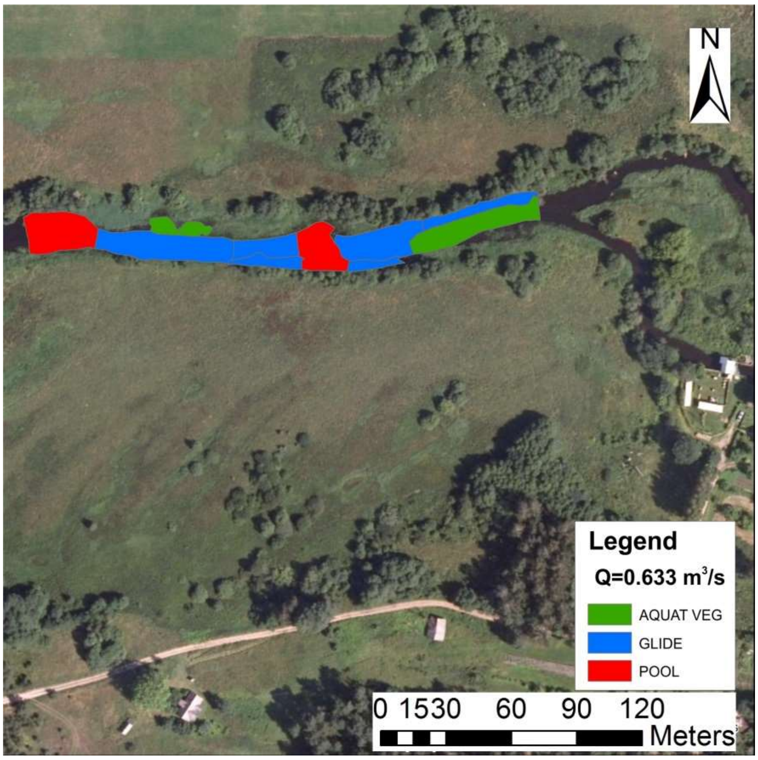

Fig. 5. Geomorphic unit map of Lėvuo River directly below HPP (12.06.2018)

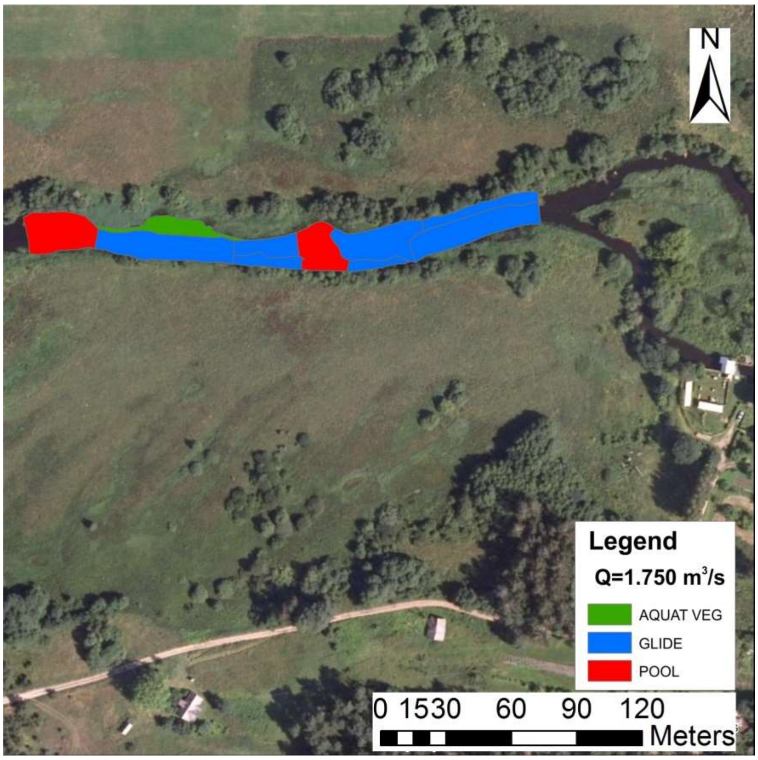

Fig. 6. Geomorphic unit map of Lėvuo River directly below HPP (04.07.2018)

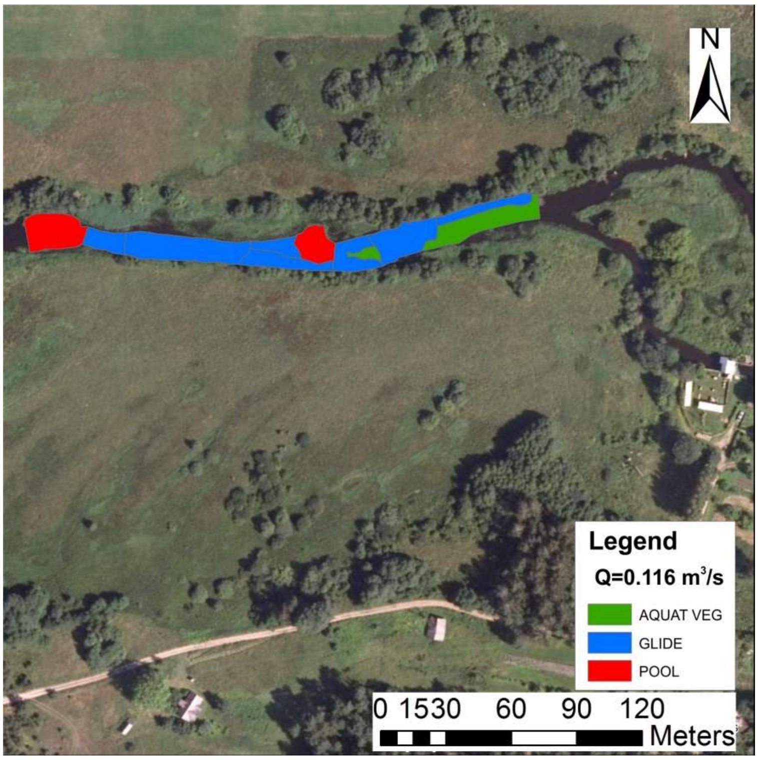

Fig. 7. Geomorphic unit map of Lėvuo River directly below HPP (21.08.2018)

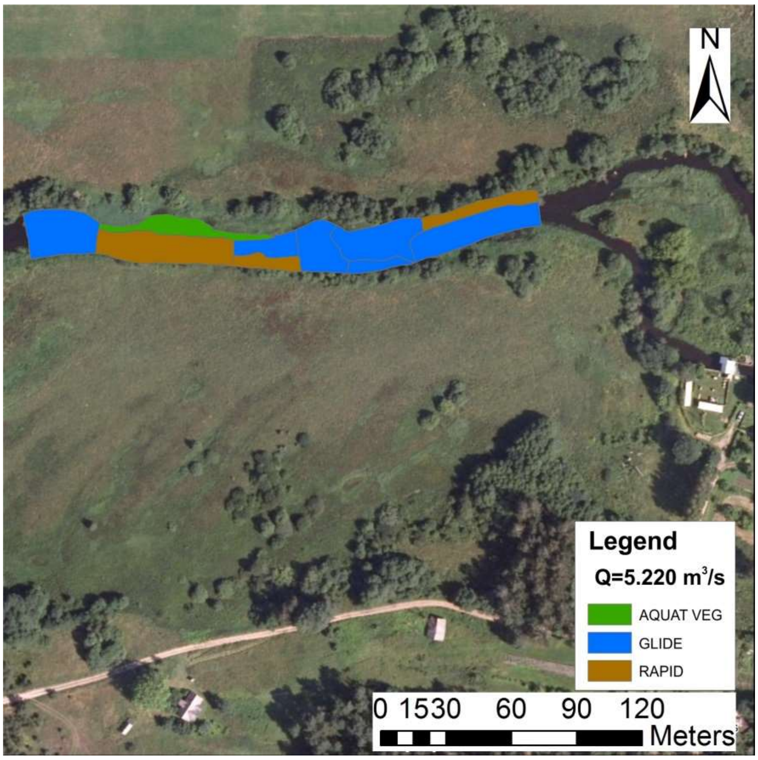

Fig. 8. Geomorphic unit map of Lėvuo River directly below HPP (15.01.2019)

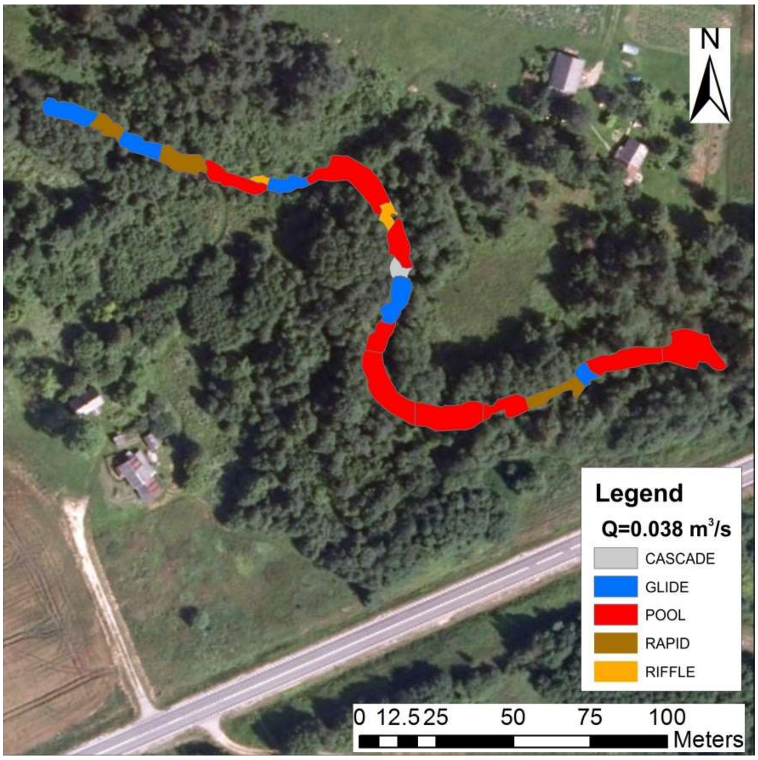

Fig. 9. Geomorphic unit map of Suosa River directly below HPP (12.06.2018)

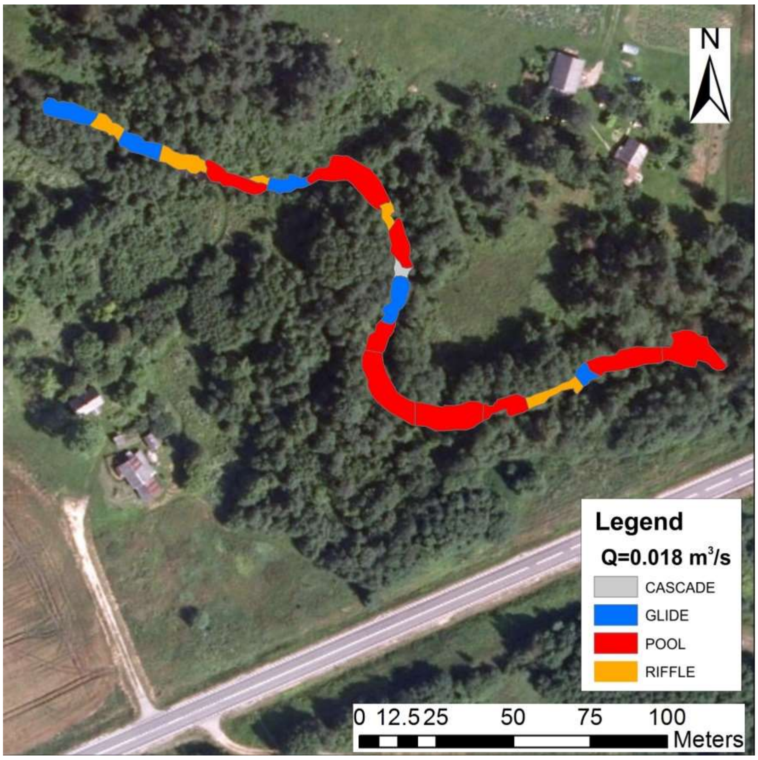

Fig. 10. Geomorphic unit map of Suosa River directly below HPP (17.07.2018)

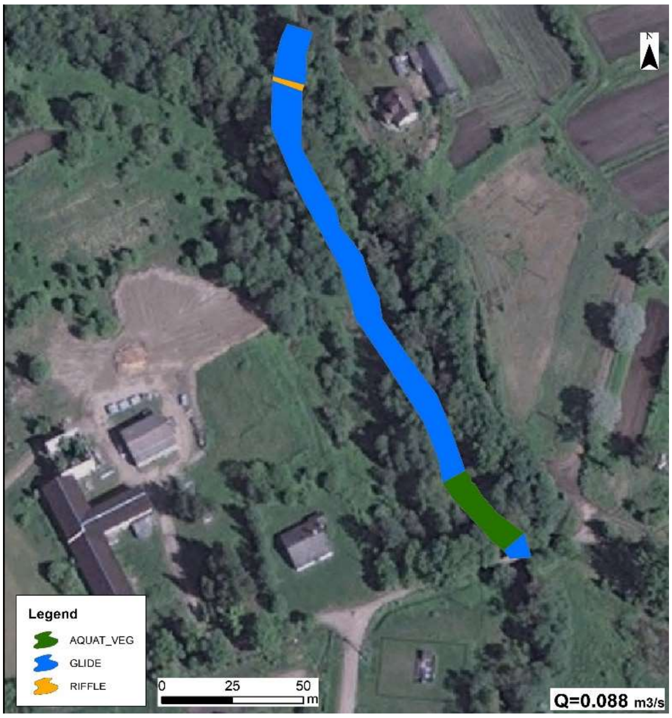

Fig. 12. Geomorphic unit map of the Auce River (site 1) directly below HPP (07.06.2018.)

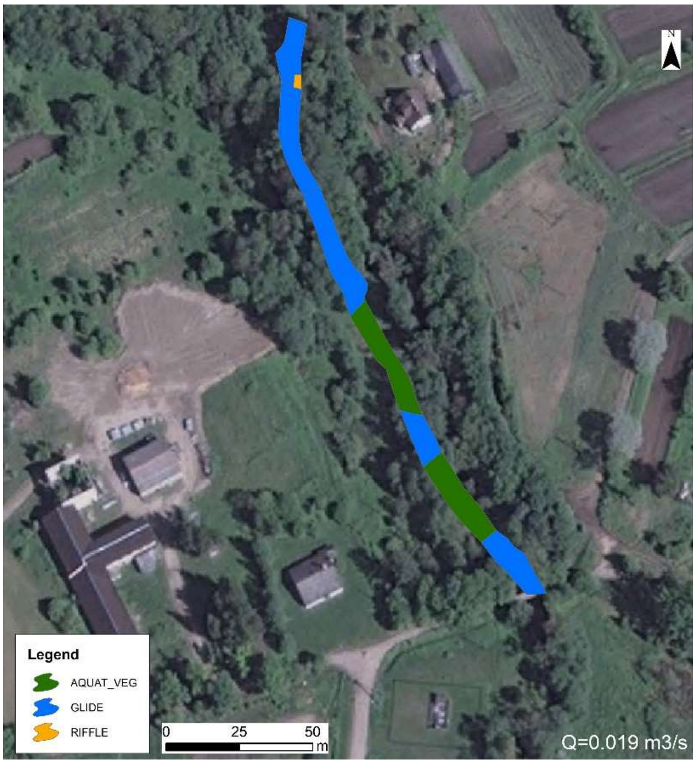

Fig. 12. Geomorphic unit map of the Auce River (site 1) directly below HPP (13.07.2018.)

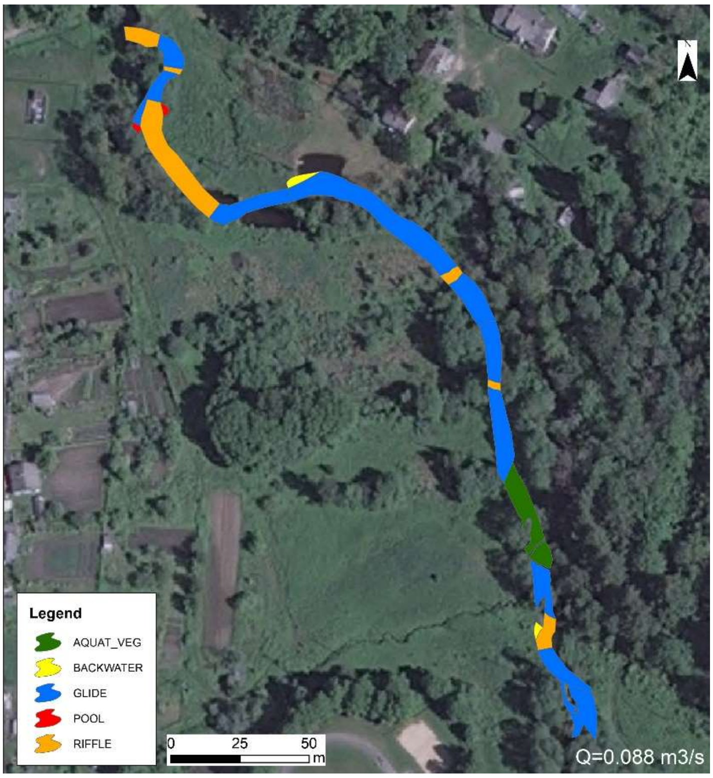

Fig. 13. Geomorphic unit map of the Auce River (site 2) directly below HPP (06.06.2018.)

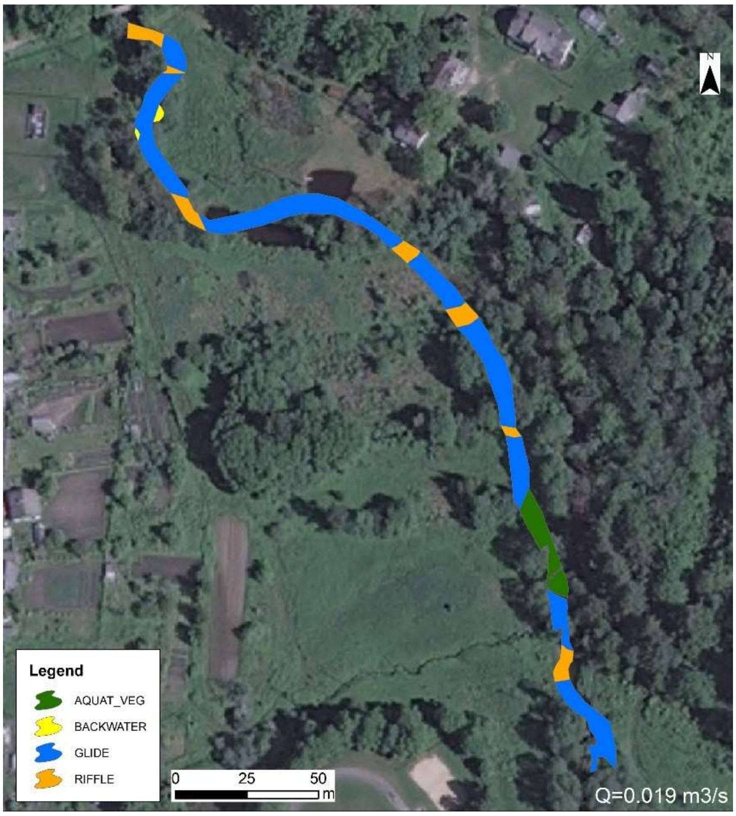

Fig. 14. Geomorphic unit map of the Auce River (site 2) directly below HPP (12.07.2018.)

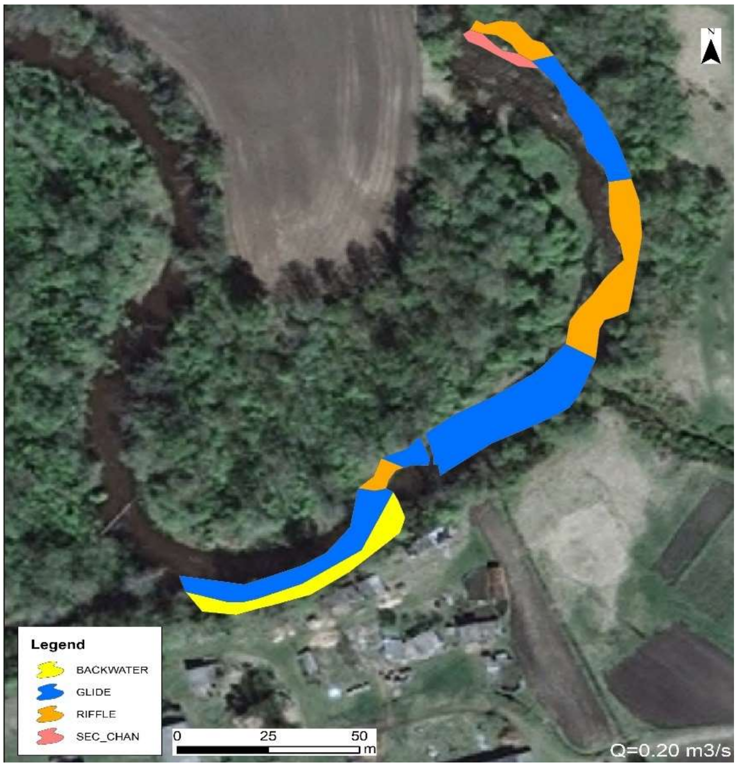

Fig. 15. Geomorphic unit map of the Berze River (site 1) below HPP (21.06.2018.)

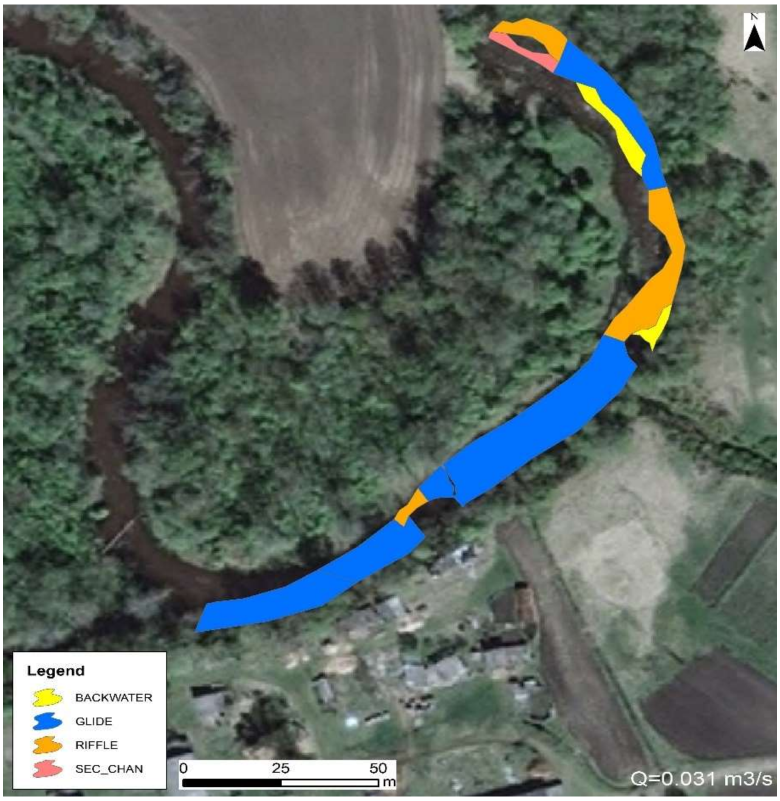

Fig. 16. Geomorphic unit map of the Berze River (site 1) below HPP (10.07.2018.)

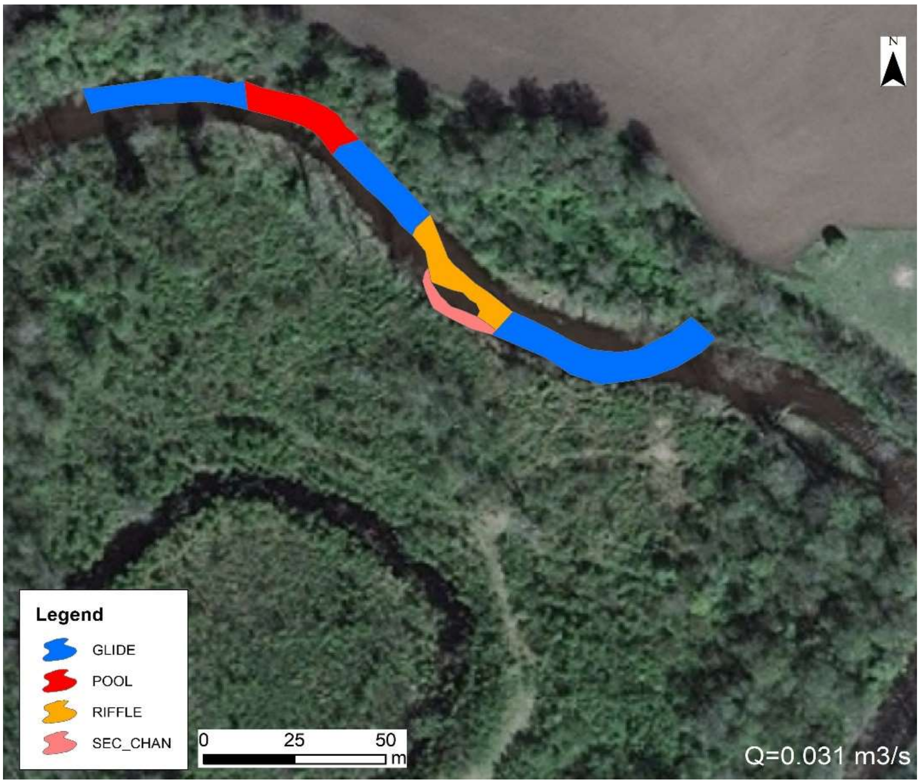

Fig. 17. Geomorphic unit map of the Berze River (site 2) below HPP (22.06.2018.)

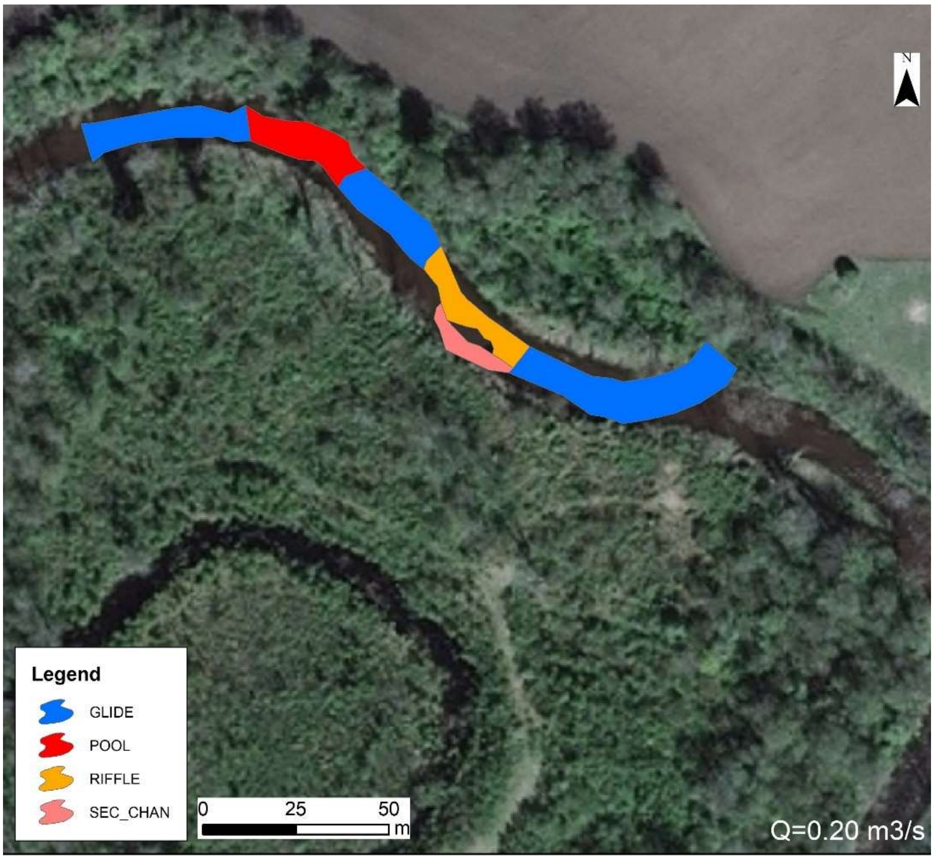

Fig. 18. Geomorphic unit map of the Berze River (site 2) below HPP (11.07.2018.)

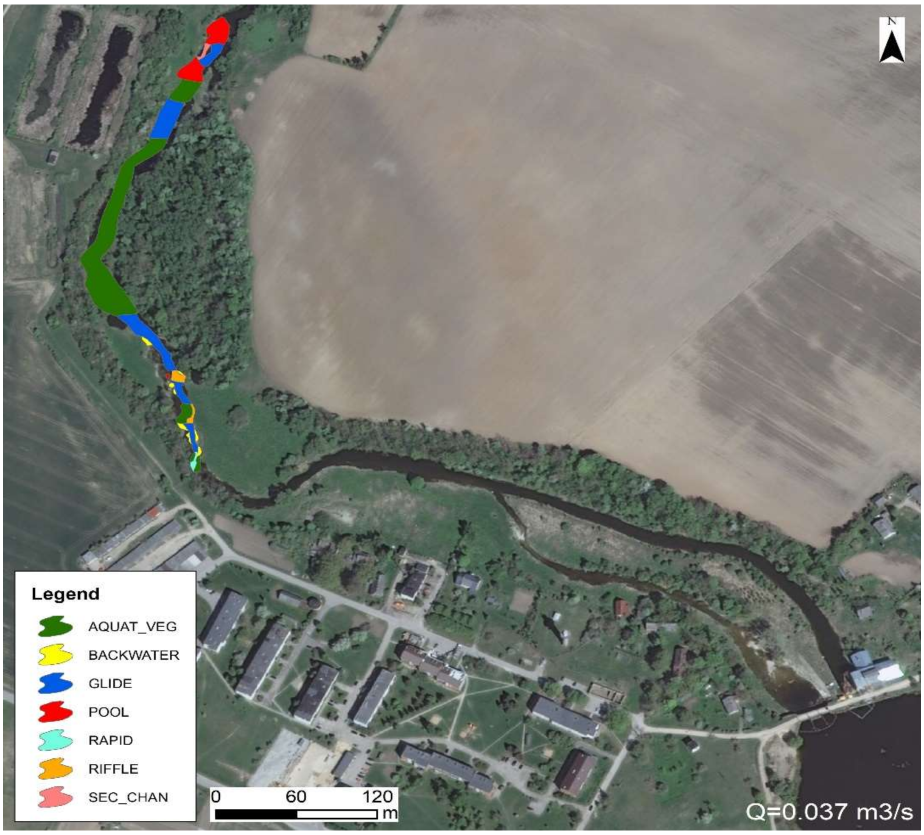

Fig. 19. Geomorphic unit map of the Islice River directly below HPP (07.06.2018.)

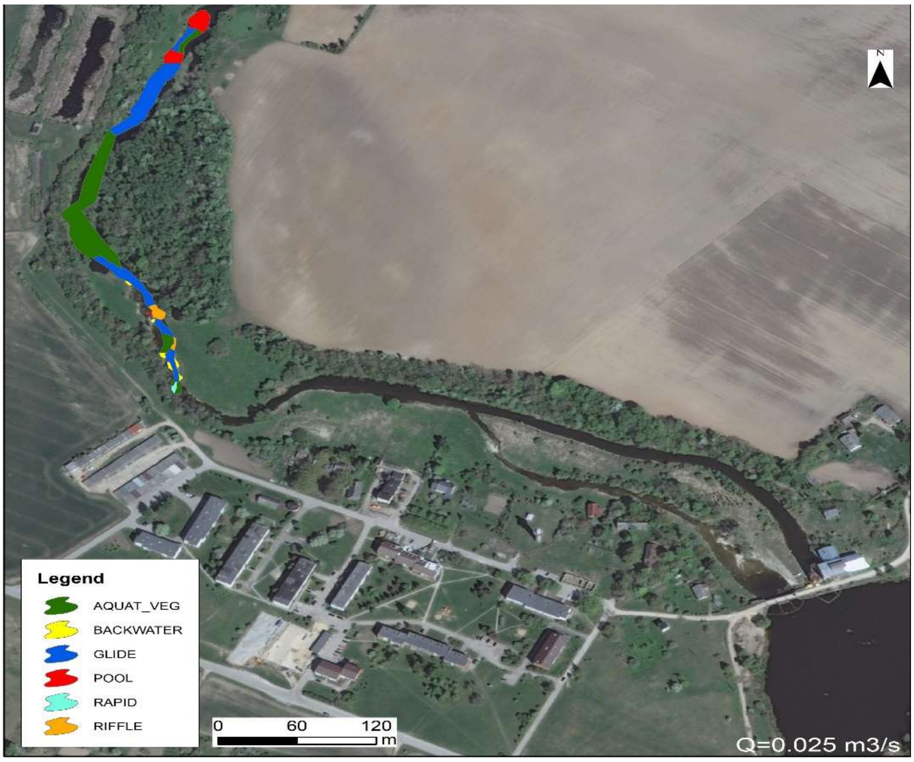

Fig. 20. Geomorphic unit map of the Islice River directly below HPP (17.07.2018.)

ANNEX IV

Table 1. **Depths and flow velocities at geomorphic unit representative points (Lithuania)**

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
Mūša 1					
1	GLIDE	1	0.38	0.407	MESOLITHAL
1	GLIDE	2	0.22	0.256	MESOLITHAL
1	GLIDE	3	0.41	0.181	MICROLITHAL
1	GLIDE	4	0.42	0.454	MICROLITHAL
1	GLIDE	5	0.52	0.241	MICROLITHAL
1	GLIDE	6	0.29	0.275	MICROLITHAL
1	GLIDE	7	0.38	0.291	MICROLITHAL
1	GLIDE	8	0.41	0.315	MICROLITHAL
1	GLIDE	9	0.35	0.405	MICROLITHAL
1	GLIDE	10	0.40	0.180	MICROLITHAL
2	RAPID	1	0.28	0.535	MESOLITHAL
2	RAPID	2	0.29	0.294	MESOLITHAL
2	RAPID	3	0.26	0.447	MESOLITHAL
2	RAPID	4	0.27	0.362	MESOLITHAL
2	RAPID	5	0.27	0.272	MICROLITHAL
2	RAPID	6	0.29	0.412	MICROLITHAL
2	RAPID	7	0.32	0.409	MICROLITHAL
2	RAPID	8	0.25	0.375	MICROLITHAL
2	RAPID	9	0.26	0.313	MICROLITHAL
2	RAPID	10	0.34	0.509	MICROLITHAL
3	POOL	1	0.69	0.091	MICROLITHAL
3	POOL	2	0.73	0.103	MICROLITHAL
3	POOL	3	0.72	0.085	MICROLITHAL
3	POOL	4	0.58	0.087	AKAL
3	POOL	5	0.62	0.084	AKAL
3	POOL	6	0.63	0.090	AKAL
3	POOL	7	0.71	0.100	AKAL
3	POOL	8	0.68	0.110	AKAL
3	POOL	9	0.59	0.086	AKAL
3	POOL	10	0.60	0.085	AKAL
4	GLIDE	1	0.25	0.162	MESOLITHAL
4	GLIDE	2	0.24	0.154	MICROLITHAL
4	GLIDE	3	0.26	0.157	MICROLITHAL
4	GLIDE	4	0.39	0.253	MICROLITHAL
4	GLIDE	5	0.29	0.335	MICROLITHAL
4	GLIDE	6	0.40	0.400	AKAL
4	GLIDE	7	0.39	0.311	AKAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
4	GLIDE	8	0.40	0.298	AKAL
4	GLIDE	9	0.25	0.309	PSAMMAL
4	GLIDE	10	0.28	0.195	PSAMMAL
5	RIFFLE	1	0.19	0.579	MICROLITHAL
5	RIFFLE	2	0.18	0.512	MICROLITHAL
5	RIFFLE	3	0.20	0.486	MICROLITHAL
5	RIFFLE	4	0.35	0.256	MICROLITHAL
5	RIFFLE	5	0.22	0.388	MICROLITHAL
5	RIFFLE	6	0.25	0.395	MICROLITHAL
5	RIFFLE	7	0.30	0.511	MICROLITHAL
5	RIFFLE	8	0.28	0.439	MICROLITHAL
5	RIFFLE	9	0.19	0.386	MICROLITHAL
5	RIFFLE	10	0.22	0.395	AKAL
6	GLIDE	1	0.30	0.203	MICROLITHAL
6	GLIDE	2	0.26	0.318	MICROLITHAL
6	GLIDE	3	0.30	0.422	MICROLITHAL
6	GLIDE	4	0.28	0.253	MICROLITHAL
6	GLIDE	5	0.27	0.247	MICROLITHAL
6	GLIDE	6	0.31	0.305	MICROLITHAL
6	GLIDE	7	0.25	0.283	MICROLITHAL
6	GLIDE	8	0.26	0.276	MICROLITHAL
6	GLIDE	9	0.29	0.312	AKAL
6	GLIDE	10	0.27	0.212	PSAMMAL
7	AQUAT_VEG	1	0.17	0.278	MICROLITHAL
7	AQUAT_VEG	2	0.16	0.152	MICROLITHAL
7	AQUAT_VEG	3	0.18	0.160	MICROLITHAL
7	AQUAT_VEG	4	0.16	0.177	MICROLITHAL
7	AQUAT_VEG	5	0.17	0.155	MICROLITHAL
7	AQUAT_VEG	6	0.16	0.191	MICROLITHAL
7	AQUAT_VEG	7	0.18	0.183	MICROLITHAL
7	AQUAT_VEG	8	0.17	0.179	MICROLITHAL
7	AQUAT_VEG	9	0.17	0.168	PSAMMAL
7	AQUAT_VEG	10	0.16	0.218	PSAMMAL
8	RAPID	1	0.15	0.758	MESOLITHAL
8	RAPID	2	0.13	0.778	MICROLITHAL
8	RAPID	3	0.21	0.592	MICROLITHAL
8	RAPID	4	0.31	0.162	MICROLITHAL
8	RAPID	5	0.26	0.622	MICROLITHAL
8	RAPID	6	0.17	0.534	MICROLITHAL
8	RAPID	7	0.25	0.701	MICROLITHAL
8	RAPID	8	0.22	0.633	MICROLITHAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
8	RAPID	9	0.26	0.586	AKAL
8	RAPID	10	0.25	0.499	AKAL
9	POOL	1	0.72	0.081	GIGALITHAL
9	POOL	2	0.60	0.200	GIGALITHAL
9	POOL	3	0.64	0.263	GIGALITHAL
9	POOL	4	1.03	0.081	MESOLITHAL
9	POOL	5	0.66	0.197	MESOLITHAL
9	POOL	6	0.90	0.137	MESOLITHAL
9	POOL	7	0.80	0.169	MESOLITHAL
9	POOL	8	0.78	0.103	MESOLITHAL
9	POOL	9	0.81	0.173	MESOLITHAL
9	POOL	10	0.74	0.201	MESOLITHAL
10	GLIDE	1	0.25	0.134	MESOLITHAL
10	GLIDE	2	0.24	0.128	MICROLITHAL
10	GLIDE	3	0.31	0.197	MICROLITHAL
10	GLIDE	4	0.31	0.162	MICROLITHAL
10	GLIDE	5	0.56	0.097	MICROLITHAL
10	GLIDE	6	0.17	0.278	AKAL
10	GLIDE	7	0.15	0.238	AKAL
10	GLIDE	8	0.30	0.188	AKAL
10	GLIDE	9	0.24	0.223	PSAMMAL
10	GLIDE	10	0.27	0.241	PSAMMAL
11	POOL	1	0.65	0.118	MESOLITHAL
11	POOL	2	0.73	0.079	MICROLITHAL
11	POOL	3	0.82	0.112	MICROLITHAL
11	POOL	4	0.66	0.128	MICROLITHAL
11	POOL	5	0.80	0.058	MICROLITHAL
11	POOL	6	0.60	0.053	MICROLITHAL
11	POOL	7	0.63	0.101	MICROLITHAL
11	POOL	8	0.78	0.087	MICROLITHAL
11	POOL	9	0.75	0.091	MICROLITHAL
11	POOL	10	0.72	0.105	MICROLITHAL
12	RIFFLE	1	0.20	0.369	MACROLITHAL
12	RIFFLE	2	0.20	0.435	MESOLITHAL
12	RIFFLE	3	0.22	0.648	MESOLITHAL
12	RIFFLE	4	0.38	0.357	MESOLITHAL
12	RIFFLE	5	0.22	0.368	MICROLITHAL
12	RIFFLE	6	0.23	0.833	MICROLITHAL
12	RIFFLE	7	0.23	0.748	MICROLITHAL
12	RIFFLE	8	0.11	0.752	MICROLITHAL
12	RIFFLE	9	0.12	0.761	MICROLITHAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
12	RIFFLE	10	0.21	0.585	MICROLITHAL
13	RAPID	1	0.20	0.413	MESOLITHAL
13	RAPID	2	0.21	0.545	MESOLITHAL
13	RAPID	3	0.37	0.294	MICROLITHAL
13	RAPID	4	0.35	0.312	MICROLITHAL
13	RAPID	5	0.28	0.501	MICROLITHAL
13	RAPID	6	0.30	0.422	MICROLITHAL
13	RAPID	7	0.27	0.389	MICROLITHAL
13	RAPID	8	0.22	0.361	MICROLITHAL
13	RAPID	9	0.30	0.415	MICROLITHAL
13	RAPID	10	0.28	0.533	MICROLITHAL
14	GLIDE	1	0.36	0.291	MICROLITHAL
14	GLIDE	2	0.31	0.239	MICROLITHAL
14	GLIDE	3	0.35	0.218	MICROLITHAL
14	GLIDE	4	0.32	0.225	MICROLITHAL
14	GLIDE	5	0.37	0.150	MICROLITHAL
14	GLIDE	6	0.21	0.368	MICROLITHAL
14	GLIDE	7	0.25	0.239	MICROLITHAL
14	GLIDE	8	0.34	0.295	MICROLITHAL
14	GLIDE	9	0.26	0.213	MICROLITHAL
14	GLIDE	10	0.29	0.228	AKAL
Mūša 2					
1	RAPID	1	0.42	0.549	MESOLITHAL
1	RAPID	2	0.56	0.767	MESOLITHAL
1	RAPID	3	0.38	0.761	MICROLITHAL
1	RAPID	4	0.51	0.631	MICROLITHAL
1	RAPID	5	0.43	0.722	MICROLITHAL
1	RAPID	6	0.55	0.586	MICROLITHAL
1	RAPID	7	0.52	0.519	MICROLITHAL
1	RAPID	8	0.49	0.630	MICROLITHAL
1	RAPID	9	0.46	0.649	MICROLITHAL
1	RAPID	10	0.45	0.711	MICROLITHAL
2	RAPID	1	0.48	0.548	MESOLITHAL
2	RAPID	2	0.44	0.820	MESOLITHAL
2	RAPID	3	0.36	0.714	MESOLITHAL
2	RAPID	4	0.37	0.644	MESOLITHAL
2	RAPID	5	0.41	0.703	MICROLITHAL
2	RAPID	6	0.45	0.693	MICROLITHAL
2	RAPID	7	0.39	0.711	MICROLITHAL
2	RAPID	8	0.42	0.652	MICROLITHAL
2	RAPID	9	0.43	0.611	MICROLITHAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
2	RAPID	10	0.37	0.593	MICROLITHAL
3	GLIDE	1	0.90	0.231	MICROLITHAL
3	GLIDE	2	0.63	0.172	MICROLITHAL
3	GLIDE	3	0.80	0.187	MICROLITHAL
3	GLIDE	4	0.68	0.228	AKAL
3	GLIDE	5	0.75	0.175	AKAL
3	GLIDE	6	0.83	0.193	AKAL
3	GLIDE	7	0.66	0.199	AKAL
3	GLIDE	8	0.72	0.181	AKAL
3	GLIDE	9	0.81	0.177	AKAL
3	GLIDE	10	0.69	0.213	AKAL
4	GLIDE	1	0.50	0.441	MESOLITHAL
4	GLIDE	2	0.51	0.407	MICROLITHAL
4	GLIDE	3	0.53	0.332	MICROLITHAL
4	GLIDE	4	0.44	0.389	MICROLITHAL
4	GLIDE	5	0.46	0.345	MICROLITHAL
4	GLIDE	6	0.49	0.403	AKAL
4	GLIDE	7	0.52	0.399	AKAL
4	GLIDE	8	0.44	0.385	AKAL
4	GLIDE	9	0.47	0.301	PSAMMAL
4	GLIDE	10	0.50	0.285	PSAMMAL
5	RAPID	1	0.36	0.778	MICROLITHAL
5	RAPID	2	0.24	0.849	MICROLITHAL
5	RAPID	3	0.47	0.419	MICROLITHAL
5	RAPID	4	0.46	0.739	MICROLITHAL
5	RAPID	5	0.39	0.633	MICROLITHAL
5	RAPID	6	0.41	0.691	MICROLITHAL
5	RAPID	7	0.38	0.686	MICROLITHAL
5	RAPID	8	0.40	0.642	MICROLITHAL
5	RAPID	9	0.37	0.604	MICROLITHAL
5	RAPID	10	0.36	0.465	AKAL
6	RIFFLE	1	0.32	0.457	MESOLITHAL
6	RIFFLE	2	0.28	0.669	MICROLITHAL
6	RIFFLE	3	0.22	0.591	MICROLITHAL
6	RIFFLE	4	0.25	0.702	MICROLITHAL
6	RIFFLE	5	0.31	0.621	MICROLITHAL
6	RIFFLE	6	0.23	0.491	MICROLITHAL
6	RIFFLE	7	0.28	0.500	MICROLITHAL
6	RIFFLE	8	0.30	0.671	MICROLITHAL
6	RIFFLE	9	0.29	0.605	MICROLITHAL
6	RIFFLE	10	0.33	0.519	AKAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
7	RAPID	1	0.27	1.068	MESOLITHAL
7	RAPID	2	0.25	0.767	MICROLITHAL
7	RAPID	3	0.68	0.651	MICROLITHAL
7	RAPID	4	0.70	0.704	MICROLITHAL
7	RAPID	5	0.54	0.711	MICROLITHAL
7	RAPID	6	0.51	0.699	MICROLITHAL
7	RAPID	7	0.50	0.732	MICROLITHAL
7	RAPID	8	0.48	0.811	MICROLITHAL
7	RAPID	9	0.46	0.808	AKAL
7	RAPID	10	0.49	0.753	PSAMMAL
8	POOL	1	0.78	0.215	GIGALITHAL
8	POOL	2	1.00	0.322	GIGALITHAL
8	POOL	3	1.10	0.268	GIGALITHAL
8	POOL	4	0.94	0.216	MESOLITHAL
8	POOL	5	0.87	0.223	MESOLITHAL
8	POOL	6	0.95	0.249	MESOLITHAL
8	POOL	7	1.11	0.295	MESOLITHAL
8	POOL	8	0.94	0.281	MESOLITHAL
8	POOL	9	0.89	0.223	MESOLITHAL
8	POOL	10	0.86	0.265	MESOLITHAL
9	GLIDE	1	0.52	0.281	MESOLITHAL
9	GLIDE	2	0.34	0.350	MICROLITHAL
9	GLIDE	3	0.25	0.375	MICROLITHAL
9	GLIDE	4	0.37	0.297	MICROLITHAL
9	GLIDE	5	0.42	0.312	MICROLITHAL
9	GLIDE	6	0.38	0.208	AKAL
9	GLIDE	7	0.36	0.217	AKAL
9	GLIDE	8	0.45	0.289	AKAL
9	GLIDE	9	0.47	0.311	PSAMMAL
9	GLIDE	10	0.51	0.295	PSAMMAL
10	POOL	1	0.74	0.208	MESOLITHAL
10	POOL	2	0.85	0.312	MICROLITHAL
10	POOL	3	0.91	0.218	MICROLITHAL
10	POOL	4	0.79	0.257	MICROLITHAL
10	POOL	5	0.91	0.225	MICROLITHAL
10	POOL	6	0.68	0.241	MICROLITHAL
10	POOL	7	0.75	0.200	MICROLITHAL
10	POOL	8	0.69	0.211	MICROLITHAL
10	POOL	9	0.90	0.245	MICROLITHAL
10	POOL	10	0.89	0.260	MICROLITHAL
11	RAPID	1	0.38	0.733	MACROLITHAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
11	RAPID	2	0.31	0.892	MESOLITHAL
11	RAPID	3	0.28	0.225	MESOLITHAL
11	RAPID	4	0.27	0.218	MESOLITHAL
11	RAPID	5	0.38	0.632	MICROLITHAL
11	RAPID	6	0.30	0.391	MICROLITHAL
11	RAPID	7	0.26	0.341	MICROLITHAL
11	RAPID	8	0.33	0.587	MICROLITHAL
11	RAPID	9	0.32	0.611	MICROLITHAL
11	RAPID	10	0.36	0.709	MICROLITHAL
12	RAPID	1	0.44	1.218	MESOLITHAL
12	RAPID	2	0.43	0.895	MESOLITHAL
12	RAPID	3	0.39	0.698	MICROLITHAL
12	RAPID	4	0.47	0.861	MICROLITHAL
12	RAPID	5	0.42	0.717	MICROLITHAL
12	RAPID	6	0.37	0.822	MICROLITHAL
12	RAPID	7	0.34	0.712	MICROLITHAL
12	RAPID	8	0.35	0.683	MICROLITHAL
12	RAPID	9	0.45	0.815	MICROLITHAL
12	RAPID	10	0.48	0.833	MICROLITHAL
13	RAPID	1	0.73	0.585	MICROLITHAL
13	RAPID	2	0.46	0.441	MICROLITHAL
13	RAPID	3	0.55	0.516	MICROLITHAL
13	RAPID	4	0.57	0.588	MICROLITHAL
13	RAPID	5	0.48	0.711	MICROLITHAL
13	RAPID	6	0.51	0.310	MICROLITHAL
13	RAPID	7	0.41	0.426	MICROLITHAL
13	RAPID	8	0.38	0.335	MICROLITHAL
13	RAPID	9	0.53	0.412	MICROLITHAL
13	RAPID	10	0.50	0.516	AKAL
Mūša 3					
1	GLIDE	1	0.29	0.489	MESOLITHAL
1	GLIDE	2	0.34	0.222	MESOLITHAL
1	GLIDE	3	0.43	0.278	MICROLITHAL
1	GLIDE	4	0.39	0.382	MICROLITHAL
1	GLIDE	5	0.36	0.549	MICROLITHAL
1	GLIDE	6	0.31	0.441	MICROLITHAL
1	GLIDE	7	0.34	0.268	MICROLITHAL
1	GLIDE	8	0.32	0.354	MICROLITHAL
1	GLIDE	9	0.37	0.315	MICROLITHAL
1	GLIDE	10	0.36	0.295	MICROLITHAL
2	RAPID	1	0.38	0.419	MESOLITHAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
2	RAPID	2	0.18	0.642	MESOLITHAL
2	RAPID	3	0.24	0.759	MESOLITHAL
2	RAPID	4	0.34	0.454	MESOLITHAL
2	RAPID	5	0.30	0.914	MICROLITHAL
2	RAPID	6	0.21	0.221	MICROLITHAL
2	RAPID	7	0.24	0.342	MICROLITHAL
2	RAPID	8	0.19	0.219	MICROLITHAL
2	RAPID	9	0.20	0.196	MICROLITHAL
2	RAPID	10	0.24	0.185	MICROLITHAL
3	POOL	1	0.66	0.093	MICROLITHAL
3	POOL	2	0.78	0.028	MICROLITHAL
3	POOL	3	0.78	0.103	MICROLITHAL
3	POOL	4	0.64	0.178	AKAL
3	POOL	5	0.46	0.133	AKAL
3	POOL	6	0.52	0.094	AKAL
3	POOL	7	0.49	0.085	AKAL
3	POOL	8	0.50	0.102	AKAL
3	POOL	9	0.46	0.114	AKAL
3	POOL	10	0.44	0.095	AKAL
4	GLIDE	1	0.22	0.341	MESOLITHAL
4	GLIDE	2	0.32	0.332	MICROLITHAL
4	GLIDE	3	0.37	0.313	MICROLITHAL
4	GLIDE	4	0.33	0.191	MICROLITHAL
4	GLIDE	5	0.33	0.288	MICROLITHAL
4	GLIDE	6	0.31	0.300	AKAL
4	GLIDE	7	0.33	0.169	AKAL
4	GLIDE	8	0.26	0.113	AKAL
4	GLIDE	9	0.22	0.146	PSAMMAL
4	GLIDE	10	0.24	0.125	PSAMMAL
5	RIFFLE	1	0.14	0.827	MICROLITHAL
5	RIFFLE	2	0.16	0.438	MICROLITHAL
5	RIFFLE	3	0.15	0.578	MICROLITHAL
5	RIFFLE	4	0.18	0.701	MICROLITHAL
5	RIFFLE	5	0.19	0.542	MICROLITHAL
5	RIFFLE	6	0.17	0.649	MICROLITHAL
5	RIFFLE	7	0.15	0.415	MICROLITHAL
5	RIFFLE	8	0.21	0.391	MICROLITHAL
5	RIFFLE	9	0.19	0.574	MICROLITHAL
5	RIFFLE	10	0.18	0.514	AKAL
6	GLIDE	1	0.35	0.438	MICROLITHAL
6	GLIDE	2	0.30	0.219	MICROLITHAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
6	GLIDE	3	0.25	0.294	MICROLITHAL
6	GLIDE	4	0.28	0.159	MICROLITHAL
6	GLIDE	5	0.26	0.162	MICROLITHAL
6	GLIDE	6	0.23	0.212	MICROLITHAL
6	GLIDE	7	0.24	0.213	MICROLITHAL
6	GLIDE	8	0.22	0.197	MICROLITHAL
6	GLIDE	9	0.27	0.185	AKAL
6	GLIDE	10	0.21	0.186	PSAMMAL
7	AQUAT_VEG	1	0.15	0.166	MICROLITHAL
7	AQUAT_VEG	2	0.12	0.103	MICROLITHAL
7	AQUAT_VEG	3	0.17	0.211	MICROLITHAL
7	AQUAT_VEG	4	0.11	0.164	MICROLITHAL
7	AQUAT_VEG	5	0.14	0.142	MICROLITHAL
7	AQUAT_VEG	6	0.16	0.184	MICROLITHAL
7	AQUAT_VEG	7	0.13	0.161	MICROLITHAL
7	AQUAT_VEG	8	0.14	0.181	MICROLITHAL
7	AQUAT_VEG	9	0.18	0.152	PSAMMAL
7	AQUAT_VEG	10	0.11	0.149	PSAMMAL
8	RAPID	1	0.22	0.479	MESOLITHAL
8	RAPID	2	0.25	0.322	MICROLITHAL
8	RAPID	3	0.21	0.451	MICROLITHAL
8	RAPID	4	0.29	0.321	MICROLITHAL
8	RAPID	5	0.14	0.295	MICROLITHAL
8	RAPID	6	0.16	0.263	MICROLITHAL
8	RAPID	7	0.19	0.892	MICROLITHAL
8	RAPID	8	0.21	0.719	MICROLITHAL
8	RAPID	9	0.20	0.601	AKAL
8	RAPID	10	0.17	0.801	AKAL
9	POOL	1	0.78	0.084	GIGALITHAL
9	POOL	2	0.99	0.093	GIGALITHAL
9	POOL	3	0.70	0.100	GIGALITHAL
9	POOL	4	0.87	0.068	MESOLITHAL
9	POOL	5	0.75	0.065	MESOLITHAL
9	POOL	6	0.71	0.048	MESOLITHAL
9	POOL	7	0.64	0.091	MESOLITHAL
9	POOL	8	0.77	0.103	MESOLITHAL
9	POOL	9	0.56	0.112	MESOLITHAL
9	POOL	10	0.69	0.101	MESOLITHAL
10	GLIDE	1	0.24	0.407	MESOLITHAL
10	GLIDE	2	0.21	0.266	MICROLITHAL
10	GLIDE	3	0.18	0.168	MICROLITHAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
10	GLIDE	4	0.23	0.218	MICROLITHAL
10	GLIDE	5	0.46	0.098	MICROLITHAL
10	GLIDE	6	0.23	0.114	AKAL
10	GLIDE	7	0.19	0.126	AKAL
10	GLIDE	8	0.24	0.096	AKAL
10	GLIDE	9	0.16	0.134	PSAMMAL
10	GLIDE	10	0.25	0.111	PSAMMAL
11	POOL	1	0.60	0.081	MESOLITHAL
11	POOL	2	0.69	0.069	MICROLITHAL
11	POOL	3	0.80	0.098	MICROLITHAL
11	POOL	4	0.62	0.062	MICROLITHAL
11	POOL	5	0.75	0.061	MICROLITHAL
11	POOL	6	0.58	0.046	MICROLITHAL
11	POOL	7	0.61	0.090	MICROLITHAL
11	POOL	8	0.74	0.101	MICROLITHAL
11	POOL	9	0.73	0.093	MICROLITHAL
11	POOL	10	0.65	0.084	MICROLITHAL
12	RIFFLE	1	0.16	0.761	MACROLITHAL
12	RIFFLE	2	0.22	0.564	MESOLITHAL
12	RIFFLE	3	0.35	0.667	MESOLITHAL
12	RIFFLE	4	0.20	0.618	MESOLITHAL
12	RIFFLE	5	0.23	0.563	MICROLITHAL
12	RIFFLE	6	0.11	0.867	MICROLITHAL
12	RIFFLE	7	0.19	0.909	MICROLITHAL
12	RIFFLE	8	0.16	0.914	MICROLITHAL
12	RIFFLE	9	0.17	0.833	MICROLITHAL
12	RIFFLE	10	0.18	0.817	MICROLITHAL
13	RAPID	1	0.29	0.441	MESOLITHAL
13	RAPID	2	0.18	0.604	MESOLITHAL
13	RAPID	3	0.33	0.369	MICROLITHAL
13	RAPID	4	0.31	0.438	MICROLITHAL
13	RAPID	5	0.21	0.332	MICROLITHAL
13	RAPID	6	0.22	0.421	MICROLITHAL
13	RAPID	7	0.27	0.542	MICROLITHAL
13	RAPID	8	0.19	0.376	MICROLITHAL
13	RAPID	9	0.29	0.349	MICROLITHAL
13	RAPID	10	0.27	0.363	MICROLITHAL
14	GLIDE	1	0.31	0.246	MICROLITHAL
14	GLIDE	2	0.26	0.196	MICROLITHAL
14	GLIDE	3	0.33	0.264	MICROLITHAL
14	GLIDE	4	0.30	0.185	MICROLITHAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
14	GLIDE	5	0.31	0.214	MICROLITHAL
14	GLIDE	6	0.19	0.213	MICROLITHAL
14	GLIDE	7	0.21	0.173	MICROLITHAL
14	GLIDE	8	0.31	0.175	MICROLITHAL
14	GLIDE	9	0.20	0.184	MICROLITHAL
14	GLIDE	10	0.23	0.169	AKAL
Mūša 4					
1	RAPID	1	0.71	0.739	MESOLITHAL
1	RAPID	2	0.85	1.034	MESOLITHAL
1	RAPID	3	0.69	1.021	MICROLITHAL
1	RAPID	4	0.80	0.851	MICROLITHAL
1	RAPID	5	0.72	0.963	MICROLITHAL
1	RAPID	6	0.83	0.789	MICROLITHAL
1	RAPID	7	0.84	0.703	MICROLITHAL
1	RAPID	8	0.80	0.855	MICROLITHAL
1	RAPID	9	0.76	0.857	MICROLITHAL
1	RAPID	10	0.77	0.961	MICROLITHAL
2	RAPID	1	0.78	0.689	MESOLITHAL
2	RAPID	2	0.76	1.031	MESOLITHAL
2	RAPID	3	0.66	0.907	MESOLITHAL
2	RAPID	4	0.65	0.811	MESOLITHAL
2	RAPID	5	0.73	0.879	MICROLITHAL
2	RAPID	6	0.77	0.872	MICROLITHAL
2	RAPID	7	0.70	0.893	MICROLITHAL
2	RAPID	8	0.70	0.829	MICROLITHAL
2	RAPID	9	0.71	0.776	MICROLITHAL
2	RAPID	10	0.66	0.742	MICROLITHAL
3	GLIDE	1	1.20	0.536	MICROLITHAL
3	GLIDE	2	0.91	0.392	MICROLITHAL
3	GLIDE	3	1.09	0.421	MICROLITHAL
3	GLIDE	4	0.99	0.516	AKAL
3	GLIDE	5	1.03	0.399	AKAL
3	GLIDE	6	1.10	0.432	AKAL
3	GLIDE	7	0.96	0.450	AKAL
3	GLIDE	8	1.02	0.411	AKAL
3	GLIDE	9	1.10	0.405	AKAL
3	GLIDE	10	0.97	0.473	AKAL
4	GLIDE	1	0.80	0.809	MESOLITHAL
4	GLIDE	2	0.83	0.741	MICROLITHAL
4	GLIDE	3	0.81	0.615	MICROLITHAL
4	GLIDE	4	0.76	0.712	MICROLITHAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
4	GLIDE	5	0.74	0.636	MICROLITHAL
4	GLIDE	6	0.77	0.743	AKAL
4	GLIDE	7	0.80	0.721	AKAL
4	GLIDE	8	0.76	0.713	AKAL
4	GLIDE	9	0.75	0.552	PSAMMAL
4	GLIDE	10	0.79	0.523	PSAMMAL
5	RAPID	1	0.56	0.967	MICROLITHAL
5	RAPID	2	0.43	1.053	MICROLITHAL
5	RAPID	3	0.66	0.521	MICROLITHAL
5	RAPID	4	0.65	0.916	MICROLITHAL
5	RAPID	5	0.60	0.785	MICROLITHAL
5	RAPID	6	0.63	0.843	MICROLITHAL
5	RAPID	7	0.59	0.850	MICROLITHAL
5	RAPID	8	0.60	0.792	MICROLITHAL
5	RAPID	9	0.57	0.756	MICROLITHAL
5	RAPID	10	0.55	0.569	AKAL
6	RAPID	1	0.56	1.270	MESOLITHAL
6	RAPID	2	0.54	0.915	MICROLITHAL
6	RAPID	3	0.99	0.769	MICROLITHAL
6	RAPID	4	1.00	0.845	MICROLITHAL
6	RAPID	5	0.85	0.842	MICROLITHAL
6	RAPID	6	0.80	0.830	MICROLITHAL
6	RAPID	7	0.81	0.869	MICROLITHAL
6	RAPID	8	0.79	0.960	MICROLITHAL
6	RAPID	9	0.75	0.963	AKAL
6	RAPID	10	0.80	0.895	PSAMMAL
7	POOL	1	1.11	0.495	GIGALITHAL
7	POOL	2	1.29	0.743	GIGALITHAL
7	POOL	3	1.41	0.621	GIGALITHAL
7	POOL	4	1.25	0.508	MESOLITHAL
7	POOL	5	1.17	0.515	MESOLITHAL
7	POOL	6	1.24	0.580	MESOLITHAL
7	POOL	7	1.41	0.685	MESOLITHAL
7	POOL	8	1.23	0.653	MESOLITHAL
7	POOL	9	1.16	0.516	MESOLITHAL
7	POOL	10	1.13	0.618	MESOLITHAL
8	GLIDE	1	0.84	0.660	MESOLITHAL
8	GLIDE	2	0.65	0.821	MICROLITHAL
8	GLIDE	3	0.54	0.865	MICROLITHAL
8	GLIDE	4	0.66	0.696	MICROLITHAL
8	GLIDE	5	0.71	0.728	MICROLITHAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
8	GLIDE	6	0.68	0.485	AKAL
8	GLIDE	7	0.69	0.515	AKAL
8	GLIDE	8	0.73	0.671	AKAL
8	GLIDE	9	0.76	0.723	PSAMMAL
8	GLIDE	10	0.80	0.695	PSAMMAL
9	POOL	1	1.04	0.485	MESOLITHAL
9	POOL	2	1.16	0.730	MICROLITHAL
9	POOL	3	1.19	0.519	MICROLITHAL
9	POOL	4	1.10	0.600	MICROLITHAL
9	POOL	5	1.20	0.523	MICROLITHAL
9	POOL	6	0.97	0.567	MICROLITHAL
9	POOL	7	1.04	0.467	MICROLITHAL
9	POOL	8	0.98	0.491	MICROLITHAL
9	POOL	9	1.21	0.575	MICROLITHAL
9	POOL	10	1.18	0.601	MICROLITHAL
10	RAPID	1	0.66	1.133	MACROLITHAL
10	RAPID	2	0.63	1.315	MESOLITHAL
10	RAPID	3	0.59	0.615	MESOLITHAL
10	RAPID	4	0.57	0.711	MESOLITHAL
10	RAPID	5	0.67	0.975	MICROLITHAL
10	RAPID	6	0.60	0.654	MICROLITHAL
10	RAPID	7	0.57	0.813	MICROLITHAL
10	RAPID	8	0.63	0.912	MICROLITHAL
10	RAPID	9	0.62	0.946	MICROLITHAL
10	RAPID	10	0.65	1.094	MICROLITHAL
11	RAPID	1	0.73	1.614	MESOLITHAL
11	RAPID	2	0.74	1.161	MESOLITHAL
11	RAPID	3	0.70	0.913	MICROLITHAL
11	RAPID	4	0.76	1.134	MICROLITHAL
11	RAPID	5	0.72	0.945	MICROLITHAL
11	RAPID	6	0.68	1.088	MICROLITHAL
11	RAPID	7	0.66	0.937	MICROLITHAL
11	RAPID	8	0.65	0.899	MICROLITHAL
11	RAPID	9	0.74	1.076	MICROLITHAL
11	RAPID	10	0.78	1.095	MICROLITHAL
12	RAPID	1	1.02	1.094	MICROLITHAL
12	RAPID	2	0.78	0.814	MICROLITHAL
12	RAPID	3	0.85	0.963	MICROLITHAL
12	RAPID	4	0.88	1.104	MICROLITHAL
12	RAPID	5	0.79	1.111	MICROLITHAL
12	RAPID	6	0.80	0.654	MICROLITHAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
12	RAPID	7	0.73	0.814	MICROLITHAL
12	RAPID	8	0.68	0.699	MICROLITHAL
12	RAPID	9	0.81	0.785	MICROLITHAL
12	RAPID	10	0.82	0.965	AKAL
Lėvuo 1					
1	AQUAT_VEG	1	0.50	0.137	AKAL
1	AQUAT_VEG	2	0.56	0.071	PSAMMAL
1	AQUAT_VEG	3	0.47	0.122	PSAMMAL
1	AQUAT_VEG	4	0.46	0.140	PSAMMAL
1	AQUAT_VEG	5	0.51	0.115	PSAMMAL
1	AQUAT_VEG	6	0.53	0.112	PSAMMAL
1	AQUAT_VEG	7	0.48	0.087	PSAMMAL
1	AQUAT_VEG	8	0.47	0.095	PSAMMAL
1	AQUAT_VEG	9	0.55	0.132	PSAMMAL
1	AQUAT_VEG	10	0.52	0.100	PSAMMAL
2	GLIDE	1	0.63	0.281	PSAMMAL
2	GLIDE	2	0.40	0.350	AKAL
2	GLIDE	3	0.46	0.278	PSAMMAL
2	GLIDE	4	0.36	0.391	MICROLITHAL
2	GLIDE	5	0.45	0.128	PSAMMAL
2	GLIDE	6	0.48	0.211	PSAMMAL
2	GLIDE	7	0.44	0.253	PSAMMAL
2	GLIDE	8	0.47	0.330	AKAL
2	GLIDE	9	0.51	0.197	PSAMMAL
2	GLIDE	10	0.43	0.192	PSAMMAL
3	GLIDE	1	0.48	0.172	MICROLITHAL
3	GLIDE	2	0.46	0.147	PSAMMAL
3	GLIDE	3	0.51	0.197	MEZOLITHAL
3	GLIDE	4	0.43	0.144	PSAMMAL
3	GLIDE	5	0.44	0.156	PSAMMAL
3	GLIDE	6	0.42	0.170	AKAL
3	GLIDE	7	0.47	0.159	PSAMMAL
3	GLIDE	8	0.51	0.163	PSAMMAL
3	GLIDE	9	0.48	0.148	PSAMMAL
3	GLIDE	10	0.50	0.167	PSAMMAL
4	GLIDE	1	0.49	0.137	PSAMMAL
4	GLIDE	2	0.44	0.056	PSAMMAL
4	GLIDE	3	0.41	0.209	PSAMMAL
4	GLIDE	4	0.32	0.222	AKAL
4	GLIDE	5	0.43	0.231	MICROLITHAL
4	GLIDE	6	0.37	0.059	PSAMMAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
4	GLIDE	7	0.47	0.182	PSAMMAL
4	GLIDE	8	0.43	0.165	PSAMMAL
4	GLIDE	9	0.39	0.213	PSAMMAL
4	GLIDE	10	0.44	0.093	PSAMMAL
5	POOL	1	0.88	0.037	PSAMMAL
5	POOL	2	0.75	0.043	PSAMMAL
5	POOL	3	0.90	0.039	PSAMMAL
5	POOL	4	1.00	0.041	PSAMMAL
5	POOL	5	0.91	0.037	PSAMMAL
5	POOL	6	0.72	0.044	PSAMMAL
5	POOL	7	0.79	0.041	PSAMMAL
5	POOL	8	0.70	0.039	PSAMMAL
5	POOL	9	0.89	0.038	PSAMMAL
5	POOL	10	0.76	0.042	AKAL
6	GLIDE	1	0.77	0.162	PSAMMAL
6	GLIDE	2	0.76	0.109	PSAMMAL
6	GLIDE	3	0.60	0.156	AKAL
6	GLIDE	4	0.71	0.169	MICROLITHAL
6	GLIDE	5	0.64	0.146	PSAMMAL
6	GLIDE	6	0.73	0.111	PSAMMAL
6	GLIDE	7	0.67	0.157	PSAMMAL
6	GLIDE	8	0.75	0.124	PSAMMAL
6	GLIDE	9	0.71	0.117	PSAMMAL
6	GLIDE	10	0.62	0.166	PSAMMAL
7	GLIDE	1	0.58	0.043	PSAMMAL
7	GLIDE	2	0.68	0.062	AKAL
7	GLIDE	3	0.64	0.046	PSAMMAL
7	GLIDE	4	0.70	0.019	PSAMMAL
7	GLIDE	5	0.61	0.054	PSAMMAL
7	GLIDE	6	0.58	0.062	PSAMMAL
7	GLIDE	7	0.62	0.071	PSAMMAL
7	GLIDE	8	0.68	0.053	PSAMMAL
7	GLIDE	9	0.59	0.049	PSAMMAL
7	GLIDE	10	0.63	0.060	PSAMMAL
8	GLIDE	1	0.76	0.231	PSAMMAL
8	GLIDE	2	0.61	0.069	PSAMMAL
8	GLIDE	3	0.67	0.103	PSAMMAL
8	GLIDE	4	0.48	0.313	AKAL
8	GLIDE	5	0.55	0.221	PSAMMAL
8	GLIDE	6	0.58	0.281	PSAMMAL
8	GLIDE	7	0.64	0.311	AKAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
8	GLIDE	8	0.57	0.065	PSAMMAL
8	GLIDE	9	0.63	0.118	PSAMMAL
8	GLIDE	10	0.62	0.193	PSAMMAL
9	AQUAT_VEG	1	0.21	0.000	PSAMMAL
9	AQUAT_VEG	2	0.28	0.000	PSAMMAL
9	AQUAT_VEG	3	0.17	0.000	PSAMMAL
9	AQUAT_VEG	4	0.15	0.000	PSAMMAL
9	AQUAT_VEG	5	0.22	0.000	PSAMMAL
9	AQUAT_VEG	6	0.18	0.000	PSAMMAL
9	AQUAT_VEG	7	0.22	0.000	PSAMMAL
9	AQUAT_VEG	8	0.17	0.000	SAPROPEL
9	AQUAT_VEG	9	0.20	0.000	SAPROPEL
9	AQUAT_VEG	10	0.21	0.000	SAPROPEL
10	POOL	1	0.86	0.093	PSAMMAL
10	POOL	2	0.90	0.059	PSAMMAL
10	POOL	3	0.85	0.088	PSAMMAL
10	POOL	4	1.00	0.063	PSAMMAL
10	POOL	5	0.94	0.061	PSAMMAL
10	POOL	6	0.99	0.071	PSAMMAL
10	POOL	7	0.85	0.063	PSAMMAL
10	POOL	8	1.01	0.068	PSAMMAL
10	POOL	9	0.93	0.059	PSAMMAL
10	POOL	10	0.98	0.062	PSAMMAL
Lėvuo 2					
1	GLIDE	1	0.81	0.169	AKAL
1	GLIDE	2	0.84	0.155	PSAMMAL
1	GLIDE	3	0.77	0.102	PSAMMAL
1	GLIDE	4	0.75	0.137	PSAMMAL
1	GLIDE	5	0.76	0.170	PSAMMAL
1	GLIDE	6	0.81	0.161	PSAMMAL
1	GLIDE	7	0.79	0.149	PSAMMAL
1	GLIDE	8	0.70	0.155	PSAMMAL
1	GLIDE	9	0.73	0.160	PSAMMAL
1	GLIDE	10	0.80	0.114	PSAMMAL
2	GLIDE	1	0.91	0.275	PSAMMAL
2	GLIDE	2	0.72	0.209	AKAL
2	GLIDE	3	0.75	0.360	PSAMMAL
2	GLIDE	4	0.66	0.313	MICROLITHAL
2	GLIDE	5	0.76	0.389	PSAMMAL
2	GLIDE	6	0.80	0.281	PSAMMAL
2	GLIDE	7	0.82	0.315	PSAMMAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
2	GLIDE	8	0.73	0.292	AKAL
2	GLIDE	9	0.68	0.311	PSAMMAL
2	GLIDE	10	0.71	0.244	PSAMMAL
3	GLIDE	1	0.77	0.277	PSAMMAL
3	GLIDE	2	0.78	0.232	PSAMMAL
3	GLIDE	3	0.80	0.316	MEZOLITHAL
3	GLIDE	4	0.75	0.234	PSAMMAL
3	GLIDE	5	0.71	0.249	PSAMMAL
3	GLIDE	6	0.80	0.265	AKAL
3	GLIDE	7	0.82	0.293	PSAMMAL
3	GLIDE	8	0.65	0.301	MICROLITHAL
3	GLIDE	9	0.70	0.232	PSAMMAL
3	GLIDE	10	0.69	0.215	PSAMMAL
4	GLIDE	1	0.79	0.221	PSAMMAL
4	GLIDE	2	0.72	0.206	PSAMMAL
4	GLIDE	3	0.74	0.334	PSAMMAL
4	GLIDE	4	0.63	0.356	AKAL
4	GLIDE	5	0.76	0.371	MICROLITHAL
4	GLIDE	6	0.72	0.285	PSAMMAL
4	GLIDE	7	0.78	0.325	PSAMMAL
4	GLIDE	8	0.75	0.216	PSAMMAL
4	GLIDE	9	0.68	0.293	PSAMMAL
4	GLIDE	10	0.69	0.311	PSAMMAL
5	POOL	1	1.18	0.136	PSAMMAL
5	POOL	2	1.06	0.153	PSAMMAL
5	POOL	3	1.19	0.144	PSAMMAL
5	POOL	4	1.28	0.149	PSAMMAL
5	POOL	5	1.22	0.129	PSAMMAL
5	POOL	6	1.01	0.161	PSAMMAL
5	POOL	7	1.08	0.148	PSAMMAL
5	POOL	8	1.01	0.142	PSAMMAL
5	POOL	9	1.15	0.152	PSAMMAL
5	POOL	10	1.07	0.146	AKAL
6	GLIDE	1	1.07	0.262	PSAMMAL
6	GLIDE	2	1.04	0.219	PSAMMAL
6	GLIDE	3	0.91	0.253	AKAL
6	GLIDE	4	1.00	0.277	MICROLITHAL
6	GLIDE	5	0.95	0.236	PSAMMAL
6	GLIDE	6	1.01	0.251	PSAMMAL
6	GLIDE	7	0.96	0.242	PSAMMAL
6	GLIDE	8	0.94	0.225	PSAMMAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
6	GLIDE	9	1.03	0.231	PSAMMAL
6	GLIDE	10	1.02	0.249	PSAMMAL
7	GLIDE	1	0.89	0.157	PSAMMAL
7	GLIDE	2	0.96	0.223	AKAL
7	GLIDE	3	0.95	0.171	PSAMMAL
7	GLIDE	4	0.99	0.072	PSAMMAL
7	GLIDE	5	0.94	0.194	PSAMMAL
7	GLIDE	6	0.98	0.149	PSAMMAL
7	GLIDE	7	0.90	0.115	PSAMMAL
7	GLIDE	8	0.89	0.103	PSAMMAL
7	GLIDE	9	0.93	0.161	PSAMMAL
7	GLIDE	10	0.92	0.165	PSAMMAL
8	GLIDE	1	1.03	0.373	PSAMMAL
8	GLIDE	2	0.94	0.139	PSAMMAL
8	GLIDE	3	0.98	0.208	PSAMMAL
8	GLIDE	4	0.76	0.411	AKAL
8	GLIDE	5	0.85	0.355	PSAMMAL
8	GLIDE	6	0.87	0.248	PSAMMAL
8	GLIDE	7	0.93	0.211	AKAL
8	GLIDE	8	0.85	0.195	PSAMMAL
8	GLIDE	9	0.90	0.367	PSAMMAL
8	GLIDE	10	0.88	0.218	PSAMMAL
9	AQUAT_VEG	1	0.51	0.000	PSAMMAL
9	AQUAT_VEG	2	0.57	0.000	PSAMMAL
9	AQUAT_VEG	3	0.48	0.000	PSAMMAL
9	AQUAT_VEG	4	0.46	0.000	PSAMMAL
9	AQUAT_VEG	5	0.51	0.018	PSAMMAL
9	AQUAT_VEG	6	0.56	0.000	PSAMMAL
9	AQUAT_VEG	7	0.50	0.000	PSAMMAL
9	AQUAT_VEG	8	0.55	0.018	SAPROPEL
9	AQUAT_VEG	9	0.48	0.000	SAPROPEL
9	AQUAT_VEG	10	0.49	0.018	SAPROPEL
10	POOL	1	1.16	0.188	PSAMMAL
10	POOL	2	1.21	0.211	PSAMMAL
10	POOL	3	1.14	0.176	PSAMMAL
10	POOL	4	1.30	0.222	PSAMMAL
10	POOL	5	1.26	0.219	PSAMMAL
10	POOL	6	1.10	0.181	PSAMMAL
10	POOL	7	1.11	0.221	PSAMMAL
10	POOL	8	1.15	0.201	PSAMMAL
10	POOL	9	1.22	0.215	PSAMMAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
10	POOL	10	1.30	0.197	PSAMMAL
Lėvuo 3					
1	AQUAT_VEG	1	0.29	0.093	AKAL
1	AQUAT_VEG	2	0.33	0.090	PSAMMAL
1	AQUAT_VEG	3	0.30	0.020	PSAMMAL
1	AQUAT_VEG	4	0.31	0.019	PSAMMAL
1	AQUAT_VEG	5	0.39	0.020	PSAMMAL
1	AQUAT_VEG	6	0.30	0.020	PSAMMAL
1	AQUAT_VEG	7	0.35	0.020	PSAMMAL
1	AQUAT_VEG	8	0.35	0.018	PSAMMAL
1	AQUAT_VEG	9	0.30	0.020	PSAMMAL
1	AQUAT_VEG	10	0.33	0.073	PSAMMAL
2	GLIDE	1	0.37	0.071	PSAMMAL
2	GLIDE	2	0.40	0.068	PSAMMAL
2	GLIDE	3	0.34	0.020	PSAMMAL
2	GLIDE	4	0.31	0.084	PSAMMAL
2	GLIDE	5	0.20	0.103	PSAMMAL
2	GLIDE	6	0.27	0.062	PSAMMAL
2	GLIDE	7	0.15	0.108	PSAMMAL
2	GLIDE	8	0.16	0.266	MICROLITHAL
2	GLIDE	9	0.22	0.172	AKAL
2	GLIDE	10	0.28	0.179	AKAL
3	GLIDE	1	0.32	0.037	PSAMMAL
3	GLIDE	2	0.25	0.093	MEZOLITHAL
3	GLIDE	3	0.43	0.043	PSAMMAL
3	GLIDE	4	0.32	0.068	AKAL
3	GLIDE	5	0.35	0.050	PSAMMAL
3	GLIDE	6	0.29	0.058	PSAMMAL
3	GLIDE	7	0.34	0.087	MICROLITHAL
3	GLIDE	8	0.31	0.049	PSAMMAL
3	GLIDE	9	0.28	0.061	PSAMMAL
3	GLIDE	10	0.33	0.056	PSAMMAL
4	AQUAT_VEG	1	0.26	0.020	PSAMMAL
4	AQUAT_VEG	2	0.22	0.018	MEZOLITHAL
4	AQUAT_VEG	3	0.32	0.020	PSAMMAL
4	AQUAT_VEG	4	0.29	0.019	AKAL
4	AQUAT_VEG	5	0.28	0.018	PSAMMAL
4	AQUAT_VEG	6	0.26	0.020	PSAMMAL
4	AQUAT_VEG	7	0.31	0.018	MICROLITHAL
4	AQUAT_VEG	8	0.25	0.016	PSAMMAL
4	AQUAT_VEG	9	0.27	0.020	PSAMMAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
4	AQUAT_VEG	10	0.28	0.019	PSAMMAL
5	GLIDE	1	0.36	0.075	PSAMMAL
5	GLIDE	2	0.30	0.092	PSAMMAL
5	GLIDE	3	0.39	0.106	MEZOLITHAL
5	GLIDE	4	0.38	0.087	PSAMMAL
5	GLIDE	5	0.42	0.030	PSAMMAL
5	GLIDE	6	0.41	0.082	AKAL
5	GLIDE	7	0.43	0.075	PSAMMAL
5	GLIDE	8	0.38	0.073	PSAMMAL
5	GLIDE	9	0.32	0.080	PSAMMAL
5	GLIDE	10	0.42	0.100	MICROLITHAL
6	GLIDE	1	0.38	0.078	PSAMMAL
6	GLIDE	2	0.54	0.114	PSAMMAL
6	GLIDE	3	0.63	0.025	AKAL
6	GLIDE	4	0.65	0.081	MICROLITHAL
6	GLIDE	5	0.55	0.062	PSAMMAL
6	GLIDE	6	0.39	0.068	PSAMMAL
6	GLIDE	7	0.48	0.079	PSAMMAL
6	GLIDE	8	0.52	0.073	PSAMMAL
6	GLIDE	9	0.61	0.105	PSAMMAL
6	GLIDE	10	0.58	0.085	PSAMMAL
7	POOL	1	0.66	0.050	PSAMMAL
7	POOL	2	0.80	0.019	PSAMMAL
7	POOL	3	0.78	0.020	PSAMMAL
7	POOL	4	0.83	0.020	PSAMMAL
7	POOL	5	0.79	0.018	PSAMMAL
7	POOL	6	0.68	0.017	PSAMMAL
7	POOL	7	0.81	0.025	PSAMMAL
7	POOL	8	0.76	0.020	PSAMMAL
7	POOL	9	0.82	0.019	PSAMMAL
7	POOL	10	0.79	0.050	AKAL
8	GLIDE	1	0.53	0.050	AKAL
8	GLIDE	2	0.41	0.020	PSAMMAL
8	GLIDE	3	0.36	0.018	PSAMMAL
8	GLIDE	4	0.45	0.020	PSAMMAL
8	GLIDE	5	0.47	0.020	PSAMMAL
8	GLIDE	6	0.51	0.020	PSAMMAL
8	GLIDE	7	0.46	0.018	PSAMMAL
8	GLIDE	8	0.50	0.021	PSAMMAL
8	GLIDE	9	0.48	0.043	PSAMMAL
8	GLIDE	10	0.49	0.020	PSAMMAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
9	GLIDE	1	0.47	0.020	PSAMMAL
9	GLIDE	2	0.56	0.071	AKAL
9	GLIDE	3	0.63	0.038	PSAMMAL
9	GLIDE	4	0.53	0.058	PSAMMAL
9	GLIDE	5	0.57	0.033	PSAMMAL
9	GLIDE	6	0.43	0.028	PSAMMAL
9	GLIDE	7	0.46	0.032	PSAMMAL
9	GLIDE	8	0.52	0.038	PSAMMAL
9	GLIDE	9	0.49	0.067	AKAL
9	GLIDE	10	0.55	0.053	PSAMMAL
10	GLIDE	1	0.54	0.053	PSAMMAL
10	GLIDE	2	0.60	0.037	PSAMMAL
10	GLIDE	3	0.55	0.034	PSAMMAL
10	GLIDE	4	0.50	0.069	AKAL
10	GLIDE	5	0.65	0.043	PSAMMAL
10	GLIDE	6	0.61	0.051	PSAMMAL
10	GLIDE	7	0.58	0.048	PSAMMAL
10	GLIDE	8	0.49	0.063	AKAL
10	GLIDE	9	0.53	0.058	PSAMMAL
10	GLIDE	10	0.55	0.039	PSAMMAL
11	POOL	1	0.77	0.018	PSAMMAL
11	POOL	2	0.65	0.018	PSAMMAL
11	POOL	3	0.86	0.020	PSAMMAL
11	POOL	4	0.89	0.000	PSAMMAL
11	POOL	5	0.80	0.018	PSAMMAL
11	POOL	6	0.66	0.020	PSAMMAL
11	POOL	7	0.80	0.020	PSAMMAL
11	POOL	8	0.79	0.018	PSAMMAL
11	POOL	9	0.75	0.019	PSAMMAL
11	POOL	10	0.69	0.022	PSAMMAL
Lėvuo 4					
1	GLIDE	1	1.01	0.569	AKAL
1	GLIDE	2	1.03	0.524	PSAMMAL
1	GLIDE	3	0.95	0.345	PSAMMAL
1	GLIDE	4	0.98	0.463	PSAMMAL
1	GLIDE	5	0.96	0.569	PSAMMAL
1	GLIDE	6	1.03	0.541	PSAMMAL
1	GLIDE	7	1.01	0.502	PSAMMAL
1	GLIDE	8	0.90	0.521	PSAMMAL
1	GLIDE	9	0.93	0.534	PSAMMAL
1	GLIDE	10	0.99	0.382	PSAMMAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
2	RAPID	1	1.13	0.795	PSAMMAL
2	RAPID	2	0.92	0.611	AKAL
2	RAPID	3	0.95	1.043	PSAMMAL
2	RAPID	4	0.89	0.901	MICROLITHAL
2	RAPID	5	0.96	1.099	PSAMMAL
2	RAPID	6	1.02	0.815	PSAMMAL
2	RAPID	7	1.01	0.911	PSAMMAL
2	RAPID	8	0.95	0.842	AKAL
2	RAPID	9	0.90	0.902	PSAMMAL
2	RAPID	10	0.89	0.713	PSAMMAL
3	GLIDE	1	0.98	0.783	PSAMMAL
3	GLIDE	2	1.00	0.650	PSAMMAL
3	GLIDE	3	1.03	0.891	MEZOLITHAL
3	GLIDE	4	0.99	0.668	PSAMMAL
3	GLIDE	5	0.90	0.713	PSAMMAL
3	GLIDE	6	1.00	0.741	AKAL
3	GLIDE	7	1.05	0.825	PSAMMAL
3	GLIDE	8	0.85	0.851	MICROLITHAL
3	GLIDE	9	0.90	0.659	PSAMMAL
3	GLIDE	10	0.94	0.611	PSAMMAL
4	GLIDE	1	1.01	0.541	PSAMMAL
4	GLIDE	2	0.90	0.505	PSAMMAL
4	GLIDE	3	0.95	0.810	PSAMMAL
4	GLIDE	4	0.87	0.859	AKAL
4	GLIDE	5	0.97	0.903	MICROLITHAL
4	GLIDE	6	0.94	0.697	PSAMMAL
4	GLIDE	7	0.98	0.786	PSAMMAL
4	GLIDE	8	0.95	0.521	PSAMMAL
4	GLIDE	9	0.92	0.713	PSAMMAL
4	GLIDE	10	0.93	0.756	PSAMMAL
5	GLIDE	1	1.35	0.521	PSAMMAL
5	GLIDE	2	1.29	0.594	PSAMMAL
5	GLIDE	3	1.40	0.554	PSAMMAL
5	GLIDE	4	1.45	0.579	PSAMMAL
5	GLIDE	5	1.42	0.496	PSAMMAL
5	GLIDE	6	1.23	0.619	PSAMMAL
5	GLIDE	7	1.30	0.567	PSAMMAL
5	GLIDE	8	1.27	0.546	PSAMMAL
5	GLIDE	9	1.35	0.586	PSAMMAL
5	GLIDE	10	1.26	0.561	AKAL
6	RAPID	1	1.28	0.938	PSAMMAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
6	RAPID	2	1.26	0.781	PSAMMAL
6	RAPID	3	1.14	0.911	AKAL
6	RAPID	4	1.23	0.996	MICROLITHAL
6	RAPID	5	1.15	0.853	PSAMMAL
6	RAPID	6	1.20	0.902	PSAMMAL
6	RAPID	7	1.16	0.870	PSAMMAL
6	RAPID	8	1.17	0.807	PSAMMAL
6	RAPID	9	1.25	0.834	PSAMMAL
6	RAPID	10	1.24	0.896	PSAMMAL
7	GLIDE	1	1.10	0.742	PSAMMAL
7	GLIDE	2	1.15	0.992	AKAL
7	GLIDE	3	1.17	0.806	PSAMMAL
7	GLIDE	4	1.23	0.349	PSAMMAL
7	GLIDE	5	1.16	0.928	PSAMMAL
7	GLIDE	6	1.17	0.715	PSAMMAL
7	GLIDE	7	1.14	0.548	PSAMMAL
7	GLIDE	8	1.10	0.497	PSAMMAL
7	GLIDE	9	1.12	0.763	PSAMMAL
7	GLIDE	10	1.13	0.765	PSAMMAL
8	GLIDE	1	1.26	0.964	PSAMMAL
8	GLIDE	2	1.14	0.534	PSAMMAL
8	GLIDE	3	1.17	0.776	PSAMMAL
8	GLIDE	4	0.98	0.983	AKAL
8	GLIDE	5	1.07	0.938	PSAMMAL
8	GLIDE	6	1.09	0.915	PSAMMAL
8	GLIDE	7	1.13	0.812	AKAL
8	GLIDE	8	1.04	0.723	PSAMMAL
8	GLIDE	9	1.10	1.009	PSAMMAL
8	GLIDE	10	1.07	0.816	PSAMMAL
9	AQUAT_VEG	1	0.72	0.342	PSAMMAL
9	AQUAT_VEG	2	0.77	0.215	PSAMMAL
9	AQUAT_VEG	3	0.71	0.223	PSAMMAL
9	AQUAT_VEG	4	0.69	0.248	PSAMMAL
9	AQUAT_VEG	5	0.70	0.197	PSAMMAL
9	AQUAT_VEG	6	0.75	0.311	PSAMMAL
9	AQUAT_VEG	7	0.72	0.401	PSAMMAL
9	AQUAT_VEG	8	0.76	0.256	SAPROPEL
9	AQUAT_VEG	9	0.70	0.287	SAPROPEL
9	AQUAT_VEG	10	0.69	0.189	SAPROPEL
10	GLIDE	1	1.37	0.389	PSAMMAL
10	GLIDE	2	1.48	0.458	PSAMMAL

HMU NUM	HMU TYPE	PNTNUM	DEPTH, m	VELOCITY, m/s	SUBSTRATE
10	GLIDE	3	1.36	0.387	PSAMMAL
10	GLIDE	4	1.49	0.472	PSAMMAL
10	GLIDE	5	1.48	0.453	PSAMMAL
10	GLIDE	6	1.30	0.387	PSAMMAL
10	GLIDE	7	1.31	0.452	PSAMMAL
10	GLIDE	8	1.34	0.445	PSAMMAL
10	GLIDE	9	1.42	0.458	PSAMMAL
10	GLIDE	10	1.50	0.416	PSAMMAL

Table 2. **Depths and flow velocities at geomorphic unit representative points (Latvia)**

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
12.07.2018.	Auce1	GLIDE	1	0.17	0.067	MICROLITHAL
12.07.2018.	Auce1	GLIDE	2	0.12	0.019	AKAL
12.07.2018.	Auce1	GLIDE	3	0.08	0.038	MESOLITHAL
12.07.2018.	Auce1	GLIDE	4	0.14	0.015	AKAL
12.07.2018.	Auce1	GLIDE	5	0.13	0.055	MICROLITHAL
12.07.2018.	Auce1	GLIDE	6	0.12	0.001	AKAL
12.07.2018.	Auce1	GLIDE	7	0.16	0.056	MICROLITHAL
12.07.2018.	Auce1	AQUATIC_VEG	1	0.1	0.053	MESOLITHAL
12.07.2018.	Auce1	AQUATIC_VEG	2	0.14	0.024	MICROLITHAL
12.07.2018.	Auce1	AQUATIC_VEG	3	0.11	0.05	AKAL
12.07.2018.	Auce1	AQUATIC_VEG	4	0.1	0.029	PSAMMAL
12.07.2018.	Auce1	AQUATIC_VEG	5	0.24	0.021	MICROLITHAL
12.07.2018.	Auce1	AQUATIC_VEG	6	0.17	0.02	MESOLITHAL
12.07.2018.	Auce1	AQUATIC_VEG	7	0.25	0.03	MICROLITHAL
12.07.2018.	Auce1	AQUATIC_VEG	8	0.18	0.001	PSAMMAL
12.07.2018.	Auce1	AQUATIC_VEG	9	0.3	0.004	MICROLITHAL
12.07.2018.	Auce1	AQUATIC_VEG	10	0.28	0.013	AKAL
12.07.2018.	Auce1	AQUATIC_VEG	11	0.11	0.002	MICROLITHAL
12.07.2018.	Auce1	GLIDE	1	0.09	0.054	AKAL
12.07.2018.	Auce1	GLIDE	2	0.13	0.058	PSAMMAL
12.07.2018.	Auce1	GLIDE	3	0.11	0.016	MICROLITHAL
12.07.2018.	Auce1	GLIDE	4	0.08	0.018	AKAL
12.07.2018.	Auce1	GLIDE	5	0.09	0.092	MICROLITHAL
12.07.2018.	Auce1	GLIDE	6	0.07	0.132	MICROLITHAL
12.07.2018.	Auce1	GLIDE	7	0.09	0.078	AKAL
12.07.2018.	Auce1	GLIDE	8	0.08	0.088	MICROLITHAL
12.07.2018.	Auce1	GLIDE	9	0.07	0.036	PSAMMAL
12.07.2018.	Auce1	GLIDE	1	0.08	0.081	MICROLITHAL
12.07.2018.	Auce1	GLIDE	2	0.1	0.026	AKAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
12.07.2018.	Auce1	GLIDE	3	0.1	0.017	AKAL
12.07.2018.	Auce1	GLIDE	4	0.12	0.023	MICROLITHAL
12.07.2018.	Auce1	GLIDE	5	0.12	0.023	PSAMMAL
12.07.2018.	Auce1	GLIDE	6	0.13	0.036	AKAL
12.07.2018.	Auce1	GLIDE	7	0.14	0.001	MICROLITHAL
12.07.2018.	Auce1	AQUATIC_VEG	1	0.1	0.003	PSAMMAL
12.07.2018.	Auce1	AQUATIC_VEG	2	0.08	0.101	MICROLITHAL
12.07.2018.	Auce1	AQUATIC_VEG	3	0.09	0.073	PSAMMAL
12.07.2018.	Auce1	AQUATIC_VEG	4	0.07	0.099	AKAL
12.07.2018.	Auce1	AQUATIC_VEG	5	0.07	0.001	PSAMMAL
12.07.2018.	Auce1	AQUATIC_VEG	6	0.1	0.054	AKAL
12.07.2018.	Auce1	AQUATIC_VEG	7	0.09	0.149	AKAL
12.07.2018.	Auce1	AQUATIC_VEG	8	0.09	0.092	AKAL
12.07.2018.	Auce1	AQUATIC_VEG	9	0.07	0.022	AKAL
12.07.2018.	Auce1	AQUATIC_VEG	10	0.13	0.161	PSAMMAL
12.07.2018.	Auce1	RIFFLE	1	0.1	0.178	AKAL
12.07.2018.	Auce1	RIFFLE	2	0.13	0.152	PSAMMAL
12.07.2018.	Auce1	RIFFLE	3	0.11	0.26	AKAL
12.07.2018.	Auce1	RIFFLE	4	0.09	0.251	AKAL
12.07.2018.	Auce1	RIFFLE	5	0.08	0.412	AKAL
12.07.2018.	Auce1	RIFFLE	6	0.11	0.165	AKAL
12.07.2018.	Auce1	RIFFLE	7	0.08	0.169	MESOLITHAL
12.07.2018.	Auce1	GLIDE	1	0.08	0.087	AKAL
12.07.2018.	Auce1	GLIDE	2	0.08	0.101	MESOLITHAL
12.07.2018.	Auce1	GLIDE	3	0.08	0.025	AKAL
12.07.2018.	Auce1	GLIDE	4	0.09	0.045	MICROLITHAL
12.07.2018.	Auce1	GLIDE	5	0.08	0.089	MICROLITHAL
12.07.2018.	Auce1	GLIDE	6	0.18	0.045	MICROLITHAL
12.07.2018.	Auce1	GLIDE	7	0.1	0.011	MICROLITHAL
06.06.2018.	Auce2	GLIDE	1	15	0.018	AKAL
06.06.2018.	Auce2	GLIDE	2	16	0.06	AKAL
06.06.2018.	Auce2	GLIDE	3	19	0.19	MESOLITHAL
06.06.2018.	Auce2	GLIDE	4	22	0.166	AKAL
06.06.2018.	Auce2	GLIDE	5	24	0.165	MICROLITHAL
06.06.2018.	Auce2	GLIDE	6	19	0.19	MESOLITHAL
06.06.2018.	Auce2	GLIDE	7	22	0.166	AKAL
06.06.2018.	Auce2	GLIDE	1	23	0.151	AKAL
06.06.2018.	Auce2	GLIDE	2	19	0.215	PSAMMAL
06.06.2018.	Auce2	GLIDE	3	25	0.108	MICROLITHAL
06.06.2018.	Auce2	GLIDE	4	22	0.204	AKAL
06.06.2018.	Auce2	GLIDE	5	26	0.287	MICROLITHAL
06.06.2018.	Auce2	GLIDE	6	16	0.097	PSAMMAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
06.06.2018.	Auce2	GLIDE	7	42	0.171	MICROLITHAL
06.06.2018.	Auce2	GLIDE	8	42	0.171	MICROLITHAL
06.06.2018.	Auce2	GLIDE	9	38	0.055	MICROLITHAL
06.06.2018.	Auce2	GLIDE	10	23	0.09	PSAMMAL
06.06.2018.	Auce2	GLIDE	11	28	0.035	AKAL
06.06.2018.	Auce2	GLIDE	12	15	0.195	MESOLITHAL
06.06.2018.	Auce2	GLIDE	13	27	0.243	AKAL
06.06.2018.	Auce2	GLIDE	14	27	0.226	PSAMMAL
06.06.2018.	Auce2	GLIDE	15	24	0.276	MICROLITHAL
06.06.2018.	Auce2	GLIDE	16	26	0.228	AKAL
06.06.2018.	Auce2	GLIDE	17	28	0.086	MICROLITHAL
06.06.2018.	Auce2	GLIDE	18	25	0.33	AKAL
06.06.2018.	Auce2	GLIDE	19	18	0.113	AKAL
06.06.2018.	Auce2	GLIDE	20	23	0.16	MICROLITHAL
06.06.2018.	Auce2	GLIDE	21	20	0.128	PSAMMAL
06.06.2018.	Auce2	GLIDE	22	18	0.156	AKAL
06.06.2018.	Auce2	GLIDE	23	20	0.16	MESOLITHAL
06.06.2018.	Auce2	GLIDE	24	23	0.059	AKAL
06.06.2018.	Auce2	GLIDE	25	18	0.001	PSAMMAL
06.06.2018.	Auce2	GLIDE	26	20	0.101	PSAMMAL
06.06.2018.	Auce2	GLIDE	27	24	0.12	MICROLITHAL
06.06.2018.	Auce2	GLIDE	28	17	0.19	MICROLITHAL
06.06.2018.	Auce2	GLIDE	29	17	0.101	MICROLITHAL
06.06.2018.	Auce2	GLIDE	30	16	0.273	PSAMMAL
06.06.2018.	Auce2	GLIDE	31	11	0.105	PSAMMAL
06.06.2018.	Auce2	GLIDE	32	19	0.208	AKAL
06.06.2018.	Auce2	GLIDE	33	16	0.099	PSAMMAL
06.06.2018.	Auce2	GLIDE	34	17	0.091	AKAL
06.06.2018.	Auce2	GLIDE	35	16	0.139	AKAL
06.06.2018.	Auce2	GLIDE	36	9	0.104	PSAMMAL
06.06.2018.	Auce2	RIFFLE	1	10	0.288	MICROLITHAL
06.06.2018.	Auce2	RIFFLE	2	12	0.239	MICROLITHAL
06.06.2018.	Auce2	RIFFLE	3	12	0.205	MICROLITHAL
06.06.2018.	Auce2	RIFFLE	4	10	0.288	MICROLITHAL
06.06.2018.	Auce2	RIFFLE	5	12	0.239	MICROLITHAL
06.06.2018.	Auce2	RIFFLE	6	12	0.205	MICROLITHAL
06.06.2018.	Auce2	RIFFLE	7	12	0.205	MESOLITHAL
06.06.2018.	Auce2	GLIDE	1	11	0.122	AKAL
06.06.2018.	Auce2	GLIDE	2	13	0.086	MICROLITHAL
06.06.2018.	Auce2	GLIDE	3	19	0.107	AKAL
06.06.2018.	Auce2	GLIDE	4	10	0.016	MESOLITHAL
06.06.2018.	Auce2	GLIDE	5	11	0.305	MICROLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
06.06.2018.	Auce2	GLIDE	6	17	0.083	MICROLITHAL
06.06.2018.	Auce2	GLIDE	7	17	0.083	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	1	0.08	0.113	AKAL
13.07.2018.	Auce2	RIFFLE	2	0.1	0.285	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	3	0.11	0.197	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	4	0.08	0.239	AKAL
13.07.2018.	Auce2	RIFFLE	5	0.1	0.175	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	6	0.12	0.164	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	7	0.11	0.197	MICROLITHAL
13.07.2018.	Auce2	GLIDE	1	0.22	0.08	MICROLITHAL
13.07.2018.	Auce2	GLIDE	2	0.23	0.015	MESOLITHAL
13.07.2018.	Auce2	GLIDE	3	0.22	0.045	MICROLITHAL
13.07.2018.	Auce2	GLIDE	4	0.14	0.031	MICROLITHAL
13.07.2018.	Auce2	GLIDE	5	0.11	0.031	MICROLITHAL
13.07.2018.	Auce2	GLIDE	6	0.145	0.019	AKAL
13.07.2018.	Auce2	GLIDE	7	0.28	0.021	AKAL
13.07.2018.	Auce2	RIFFLE	1	0.07	0.221	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	2	0.06	0.324	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	3	0.145	0.145	AKAL
13.07.2018.	Auce2	RIFFLE	4	0.19	0.116	PSAMMAL
13.07.2018.	Auce2	RIFFLE	5	0.13	0.203	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	6	0.13	0.203	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	7	0.07	0.221	MICROLITHAL
13.07.2018.	Auce2	GLIDE	1	0.18	0.073	MICROLITHAL
13.07.2018.	Auce2	GLIDE	2	0.14	0.167	MESOLITHAL
13.07.2018.	Auce2	GLIDE	3	0.17	0.083	AKAL
13.07.2018.	Auce2	GLIDE	4	0.19	0.013	MICROLITHAL
13.07.2018.	Auce2	GLIDE	5	0.11	0.001	MICROLITHAL
13.07.2018.	Auce2	GLIDE	6	0.12	0.268	MICROLITHAL
13.07.2018.	Auce2	GLIDE	7	0.16	0.022	AKAL
13.07.2018.	Auce2	GLIDE	8	0.11	0.089	MICROLITHAL
13.07.2018.	Auce2	BACKWATER	1	0.16	0.001	MESOLITHAL
13.07.2018.	Auce2	BACKWATER	2	0.2	0.001	MESOLITHAL
13.07.2018.	Auce2	BACKWATER	3	0.07	0.001	AKAL
13.07.2018.	Auce2	BACKWATER	4	0.16	0.001	MESOLITHAL
13.07.2018.	Auce2	BACKWATER	5	0.16	0.001	MESOLITHAL
13.07.2018.	Auce2	BACKWATER	6	0.07	0.001	AKAL
13.07.2018.	Auce2	BACKWATER	7	0.07	0.001	AKAL
13.07.2018.	Auce2	BACKWATER	1	0.12	0.001	AKAL
13.07.2018.	Auce2	BACKWATER	2	0.09	0.001	PSAMMAL
13.07.2018.	Auce2	BACKWATER	3	0.12	0.001	AKAL
13.07.2018.	Auce2	BACKWATER	4	0.12	0.001	AKAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
13.07.2018.	Auce2	BACKWATER	5	0.09	0.001	PSAMMAL
13.07.2018.	Auce2	BACKWATER	6	0.12	0.001	AKAL
13.07.2018.	Auce2	BACKWATER	7	0.12	0.001	AKAL
13.07.2018.	Auce2	RIFFLE	1	0.09	0.145	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	2	0.07	0.097	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	3	0.1	0.069	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	4	0.09	0.147	AKAL
13.07.2018.	Auce2	RIFFLE	5	0.1	0.095	AKAL
13.07.2018.	Auce2	RIFFLE	6	0.08	0.365	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	7	0.08	0.269	MICROLITHAL
13.07.2018.	Auce2	GLIDE	1	0.2	0.005	MICROLITHAL
13.07.2018.	Auce2	GLIDE	2	0.1	0.077	MEGALITHAL
13.07.2018.	Auce2	GLIDE	3	0.16	0.027	MICROLITHAL
13.07.2018.	Auce2	GLIDE	4	0.17	0.042	AKAL
13.07.2018.	Auce2	GLIDE	5	0.11	0.073	MICROLITHAL
13.07.2018.	Auce2	GLIDE	6	0.13	0.172	MICROLITHAL
13.07.2018.	Auce2	GLIDE	7	0.11	0.022	AKAL
13.07.2018.	Auce2	GLIDE	8	0.16	0.023	MICROLITHAL
13.07.2018.	Auce2	GLIDE	9	0.12	0.013	MICROLITHAL
13.07.2018.	Auce2	GLIDE	10	0.14	0.076	MICROLITHAL
13.07.2018.	Auce2	GLIDE	11	0.11	0.035	AKAL
13.07.2018.	Auce2	RIFFLE	1	0.08	0.201	AKAL
13.07.2018.	Auce2	RIFFLE	2	0.09	0.061	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	3	0.1	0.058	AKAL
13.07.2018.	Auce2	RIFFLE	4	0.11	0.082	AKAL
13.07.2018.	Auce2	RIFFLE	5	0.09	0.137	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	6	0.08	0.201	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	7	0.09	0.137	MICROLITHAL
13.07.2018.	Auce2	GLIDE	1	0.07	0.043	PSAMMAL
13.07.2018.	Auce2	GLIDE	2	0.09	0.027	AKAL
13.07.2018.	Auce2	GLIDE	3	0.13	0.008	MICROLITHAL
13.07.2018.	Auce2	GLIDE	4	0.16	0.032	AKAL
13.07.2018.	Auce2	GLIDE	5	0.18	0.01	MICROLITHAL
13.07.2018.	Auce2	GLIDE	6	0.07	0.025	MEGALITHAL
13.07.2018.	Auce2	GLIDE	7	0.07	0.034	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	1	0.07	0.103	AKAL
13.07.2018.	Auce2	RIFFLE	2	0.07	0.159	AKAL
13.07.2018.	Auce2	RIFFLE	3	0.06	0.206	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	4	0.07	0.272	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	5	0.07	0.19	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	6	0.06	0.206	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	7	0.07	0.189	AKAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
13.07.2018.	Auce2	GLIDE	1	0.1	0.03	MICROLITHAL
13.07.2018.	Auce2	GLIDE	2	0.08	0.031	AKAL
13.07.2018.	Auce2	GLIDE	3	0.16	0.038	AKAL
13.07.2018.	Auce2	GLIDE	4	0.145	0.036	MICROLITHAL
13.07.2018.	Auce2	GLIDE	5	0.155	0.027	MICROLITHAL
13.07.2018.	Auce2	GLIDE	6	0.08	0.034	MEGALITHAL
13.07.2018.	Auce2	GLIDE	7	0.16	0.038	AKAL
13.07.2018.	Auce2	RIFFLE	1	0.1	0.118	MESOLITHAL
13.07.2018.	Auce2	RIFFLE	2	0.145	0.328	MESOLITHAL
13.07.2018.	Auce2	RIFFLE	3	0.16	0.249	MESOLITHAL
13.07.2018.	Auce2	RIFFLE	4	0.1	0.118	MESOLITHAL
13.07.2018.	Auce2	RIFFLE	5	0.145	0.328	MESOLITHAL
13.07.2018.	Auce2	RIFFLE	6	0.16	0.249	MESOLITHAL
13.07.2018.	Auce2	RIFFLE	7	0.145	0.328	MESOLITHAL
13.07.2018.	Auce2	GLIDE	1	0.155	0.058	AKAL
13.07.2018.	Auce2	GLIDE	2	0.1	0.081	AKAL
13.07.2018.	Auce2	GLIDE	3	0.16	0.002	MICROLITHAL
13.07.2018.	Auce2	GLIDE	4	0.08	0.018	MESOLITHAL
13.07.2018.	Auce2	GLIDE	5	0.14	0.028	MICROLITHAL
13.07.2018.	Auce2	GLIDE	6	0.11	0.006	AKAL
13.07.2018.	Auce2	GLIDE	7	0.16	0.024	MICROLITHAL
13.07.2018.	Auce2	AQUATIC_VEG	1	0.16	0.16	MICROLITHAL
13.07.2018.	Auce2	AQUATIC_VEG	2	0.13	0.13	AKAL
13.07.2018.	Auce2	AQUATIC_VEG	3	0.11	0.11	MICROLITHAL
13.07.2018.	Auce2	AQUATIC_VEG	4	0.1	0.1	AKAL
13.07.2018.	Auce2	AQUATIC_VEG	5	0.1	0.1	AKAL
13.07.2018.	Auce2	AQUATIC_VEG	6	0.08	0.08	PSAMMAL
13.07.2018.	Auce2	AQUATIC_VEG	7	0.1	0.1	MICROLITHAL
13.07.2018.	Auce2	AQUATIC_VEG	1	0.22	0.001	MICROLITHAL
13.07.2018.	Auce2	AQUATIC_VEG	2	0.39	0.001	MICROLITHAL
13.07.2018.	Auce2	AQUATIC_VEG	3	0.2	0.001	MICROLITHAL
13.07.2018.	Auce2	AQUATIC_VEG	4	0.13	0.086	MICROLITHAL
13.07.2018.	Auce2	AQUATIC_VEG	5	0.39	0.001	MICROLITHAL
13.07.2018.	Auce2	AQUATIC_VEG	6	0.2	0.001	MICROLITHAL
13.07.2018.	Auce2	AQUATIC_VEG	7	0.13	0.086	MICROLITHAL
13.07.2018.	Auce2	GLIDE	1	0.155	0.001	MICROLITHAL
13.07.2018.	Auce2	GLIDE	2	0.13	0.001	MICROLITHAL
13.07.2018.	Auce2	GLIDE	3	0.1	0.001	PELAL
13.07.2018.	Auce2	GLIDE	4	0.13	0.001	MICROLITHAL
13.07.2018.	Auce2	GLIDE	5	0.1	0.001	PELAL
13.07.2018.	Auce2	GLIDE	6	0.1	0.001	PELAL
13.07.2018.	Auce2	GLIDE	7	0.13	0.001	MICROLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
13.07.2018.	Auce2	GLIDE	8	0.27	0.024	MICROLITHAL
13.07.2018.	Auce2	GLIDE	9	0.18	0.001	AKAL
13.07.2018.	Auce2	GLIDE	10	0.38	0.003	MICROLITHAL
13.07.2018.	Auce2	GLIDE	11	0.27	0.024	MICROLITHAL
13.07.2018.	Auce2	GLIDE	12	0.18	0.001	AKAL
13.07.2018.	Auce2	GLIDE	13	0.38	0.003	MICROLITHAL
13.07.2018.	Auce2	GLIDE	14	0.27	0.024	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	1	0.11	0.378	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	2	0.1	0.329	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	3	0.11	0.378	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	4	0.1	0.329	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	5	0.11	0.378	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	6	0.1	0.329	MICROLITHAL
13.07.2018.	Auce2	RIFFLE	7	0.1	0.329	MICROLITHAL
13.07.2018.	Auce2	GLIDE	1	0.06	0.005	PSAMMAL
13.07.2018.	Auce2	GLIDE	2	0.06	0.144	MICROLITHAL
13.07.2018.	Auce2	GLIDE	3	0.17	0.087	AKAL
13.07.2018.	Auce2	GLIDE	4	0.1	0.04	AKAL
13.07.2018.	Auce2	GLIDE	5	0.11	0.115	MICROLITHAL
13.07.2018.	Auce2	GLIDE	6	0.09	0.042	MICROLITHAL
13.07.2018.	Auce2	GLIDE	7	0.24	0.052	MICROLITHAL
13.07.2018.	Auce2	GLIDE	8	0.12	0.018	MICROLITHAL
13.07.2018.	Auce2	GLIDE	9	0.1	0.082	PSAMMAL
13.07.2018.	Auce2	GLIDE	10	0.11	0.018	MICROLITHAL
13.07.2018.	Auce2	GLIDE	11	0.12	0.018	MICROLITHAL
13.07.2018.	Auce2	GLIDE	12	0.1	0.082	PSAMMAL
13.07.2018.	Auce2	GLIDE	13	0.11	0.018	MICROLITHAL
13.07.2018.	Auce2	GLIDE	14	0.12	0.018	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	1	0.1	0.314	MESOLITHAL
07.06.2018.	Auce2	RIFFLE	2	0.09	0.114	MESOLITHAL
07.06.2018.	Auce2	RIFFLE	3	0.08	0.439	MESOLITHAL
07.06.2018.	Auce2	RIFFLE	4	0.1	0.161	MESOLITHAL
07.06.2018.	Auce2	RIFFLE	5	0.1	0.043	AKAL
07.06.2018.	Auce2	RIFFLE	6	0.11	0.046	AKAL
07.06.2018.	Auce2	RIFFLE	7	0.08	0.06	MESOLITHAL
07.06.2018.	Auce2	GLIDE	1	0.29	0.027	MICROLITHAL
07.06.2018.	Auce2	GLIDE	2	0.2	0.01	AKAL
07.06.2018.	Auce2	GLIDE	3	0.16	0.058	MESOLITHAL
07.06.2018.	Auce2	GLIDE	4	0.17	0.037	MICROLITHAL
07.06.2018.	Auce2	GLIDE	5	0.11	0.069	AKAL
07.06.2018.	Auce2	GLIDE	6	0.08	0.072	MICROLITHAL
07.06.2018.	Auce2	GLIDE	7	0.07	0.121	MICROLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
07.06.2018.	Auce2	RIFFLE	1	0.07	0.167	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	2	0.07	0.114	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	3	0.09	0.263	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	4	0.08	0.322	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	5	0.08	0.25	AKAL
07.06.2018.	Auce2	RIFFLE	6	0.12	0.096	AKAL
07.06.2018.	Auce2	RIFFLE	7	0.09	0.126	MICROLITHAL
07.06.2018.	Auce2	GLIDE	1	0.26	0.06	MESOLITHAL
07.06.2018.	Auce2	GLIDE	2	0.09	0.058	AKAL
07.06.2018.	Auce2	GLIDE	3	0.1	0.093	AKAL
07.06.2018.	Auce2	GLIDE	4	0.16	0.157	MICROLITHAL
07.06.2018.	Auce2	GLIDE	5	0.18	0.189	MESOLITHAL
07.06.2018.	Auce2	GLIDE	6	0.12	0.032	AKAL
07.06.2018.	Auce2	GLIDE	7	0.2	0.199	MICROLITHAL
07.06.2018.	Auce2	POOL	1	0.29	0.044	PELAL
07.06.2018.	Auce2	POOL	2	0.12	0.05	AKAL
07.06.2018.	Auce2	POOL	3	0.22	0.02	PELAL
07.06.2018.	Auce2	POOL	4	0.12	0.05	AKAL
07.06.2018.	Auce2	POOL	5	0.22	0.02	PELAL
07.06.2018.	Auce2	POOL	6	0.12	0.05	AKAL
07.06.2018.	Auce2	POOL	7	0.22	0.02	PELAL
07.06.2018.	Auce2	POOL	1	0.16	0.01	PELAL
07.06.2018.	Auce2	POOL	2	0.16	0.01	PELAL
07.06.2018.	Auce2	POOL	3	0.13	0.03	PELAL
07.06.2018.	Auce2	POOL	4	0.17	0.01	PELAL
07.06.2018.	Auce2	POOL	5	0.13	0.03	PELAL
07.06.2018.	Auce2	POOL	6	0.16	0.01	PELAL
07.06.2018.	Auce2	POOL	7	0.13	0.03	PELAL
07.06.2018.	Auce2	GLIDE	1	0.08	0.178	PSAMMAL
07.06.2018.	Auce2	GLIDE	2	0.18	0.194	AKAL
07.06.2018.	Auce2	GLIDE	3	0.12	0.156	PSAMMAL
07.06.2018.	Auce2	GLIDE	4	0.17	0.152	PSAMMAL
07.06.2018.	Auce2	GLIDE	5	0.08	0.178	PSAMMAL
07.06.2018.	Auce2	GLIDE	6	0.12	0.156	PSAMMAL
07.06.2018.	Auce2	GLIDE	7	0.17	0.152	PSAMMAL
07.06.2018.	Auce2	RIFFLE	1	0.24	0.365	AKAL
07.06.2018.	Auce2	RIFFLE	2	0.19	0.318	AKAL
07.06.2018.	Auce2	RIFFLE	3	0.24	0.099	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	4	0.16	0.227	AKAL
07.06.2018.	Auce2	RIFFLE	5	0.08	0.042	MEGALITHAL
07.06.2018.	Auce2	RIFFLE	6	0.14	0.34	AKAL
07.06.2018.	Auce2	RIFFLE	7	0.29	0.303	MICROLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
07.06.2018.	Auce2	RIFFLE	8	0.2	0.447	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	9	0.16	0.459	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	10	0.13	0.433	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	11	0.1	0.443	AKAL
07.06.2018.	Auce2	RIFFLE	12	0.11	0.534	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	13	0.12	0.405	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	14	0.1	0.266	AKAL
07.06.2018.	Auce2	GLIDE	1	0.155	0.01	MESOLITHAL
07.06.2018.	Auce2	GLIDE	2	0.16	0.155	MESOLITHAL
07.06.2018.	Auce2	GLIDE	3	0.12	0.117	AKAL
07.06.2018.	Auce2	GLIDE	4	0.17	0.44	MICROLITHAL
07.06.2018.	Auce2	GLIDE	5	0.3	0.23	MICROLITHAL
07.06.2018.	Auce2	GLIDE	6	0.25	0.044	AKAL
07.06.2018.	Auce2	GLIDE	7	0.09	0.055	MESOLITHAL
07.06.2018.	Auce2	GLIDE	1	0.26	0.104	MICROLITHAL
07.06.2018.	Auce2	GLIDE	2	0.16	0.017	AKAL
07.06.2018.	Auce2	GLIDE	3	0.25	0.145	MICROLITHAL
07.06.2018.	Auce2	GLIDE	4	0.26	0.08	AKAL
07.06.2018.	Auce2	GLIDE	5	0.18	0.1	MESOLITHAL
07.06.2018.	Auce2	GLIDE	6	0.21	0.26	MICROLITHAL
07.06.2018.	Auce2	GLIDE	7	0.17	0.183	MICROLITHAL
07.06.2018.	Auce2	GLIDE	8	0.07	0.01	AKAL
07.06.2018.	Auce2	GLIDE	9	0.11	0.13	AKAL
07.06.2018.	Auce2	GLIDE	10	0.21	0.313	MICROLITHAL
07.06.2018.	Auce2	GLIDE	11	0.12	0.337	MESOLITHAL
07.06.2018.	Auce2	GLIDE	12	0.18	0.178	AKAL
07.06.2018.	Auce2	GLIDE	13	0.22	0.161	MICROLITHAL
07.06.2018.	Auce2	GLIDE	14	0.24	0.06	PELAL
07.06.2018.	Auce2	GLIDE	15	0.2	0.14	MICROLITHAL
07.06.2018.	Auce2	GLIDE	16	0.23	0.055	MICROLITHAL
07.06.2018.	Auce2	GLIDE	17	0.16	0.125	MESOLITHAL
07.06.2018.	Auce2	GLIDE	18	0.17	0.188	MICROLITHAL
07.06.2018.	Auce2	GLIDE	19	0.11	0.306	AKAL
07.06.2018.	Auce2	GLIDE	20	0.14	0.176	MICROLITHAL
07.06.2018.	Auce2	GLIDE	21	0.13	0.01	AKAL
07.06.2018.	Auce2	GLIDE	22	0.12	0.083	AKAL
07.06.2018.	Auce2	GLIDE	23	0.14	0.04	AKAL
07.06.2018.	Auce2	GLIDE	24	0.19	0.039	MICROLITHAL
07.06.2018.	Auce2	GLIDE	25	0.11	0.089	MESOLITHAL
07.06.2018.	Auce2	BACKWATER	1	0.16	0.001	AKAL
07.06.2018.	Auce2	BACKWATER	2	0.16	0.001	AKAL
07.06.2018.	Auce2	BACKWATER	3	0.06	0.001	PELAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
07.06.2018.	Auce2	BACKWATER	4	0.14	0.001	AKAL
07.06.2018.	Auce2	BACKWATER	5	0.16	0.001	AKAL
07.06.2018.	Auce2	BACKWATER	6	0.06	0.001	PELAL
07.06.2018.	Auce2	BACKWATER	7	0.16	0.001	AKAL
07.06.2018.	Auce2	RIFFLE	1	0.11	0.252	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	2	0.11	0.289	MESOLITHAL
07.06.2018.	Auce2	RIFFLE	3	0.14	0.237	AKAL
07.06.2018.	Auce2	RIFFLE	4	0.1	0.276	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	5	0.11	0.253	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	6	0.1	0.276	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	7	0.14	0.237	AKAL
07.06.2018.	Auce2	GLIDE	1	0.16	0.35	MESOLITHAL
07.06.2018.	Auce2	GLIDE	2	0.19	0.43	MESOLITHAL
07.06.2018.	Auce2	GLIDE	3	0.16	0.469	MESOLITHAL
07.06.2018.	Auce2	GLIDE	4	0.2	0.223	AKAL
07.06.2018.	Auce2	GLIDE	5	0.16	0.35	MESOLITHAL
07.06.2018.	Auce2	GLIDE	6	0.2	0.223	AKAL
07.06.2018.	Auce2	GLIDE	7	0.19	0.223	MICROLITHAL
07.06.2018.	Auce2	GLIDE	1	0.16	0.076	MICROLITHAL
07.06.2018.	Auce2	GLIDE	2	0.23	0.05	MICROLITHAL
07.06.2018.	Auce2	GLIDE	3	0.17	0.055	AKAL
07.06.2018.	Auce2	GLIDE	4	0.12	0.002	PSAMMAL
07.06.2018.	Auce2	GLIDE	5	0.2	0.05	AKAL
07.06.2018.	Auce2	GLIDE	6	0.18	0.01	MICROLITHAL
07.06.2018.	Auce2	GLIDE	7	0.14	0.024	MICROLITHAL
07.06.2018.	Auce2	AQUATIC_VEG	1	0.2	0.05	MICROLITHAL
07.06.2018.	Auce2	AQUATIC_VEG	2	0.18	0.4	AKAL
07.06.2018.	Auce2	AQUATIC_VEG	3	0.2	0.062	MICROLITHAL
07.06.2018.	Auce2	AQUATIC_VEG	4	0.16	0.042	MICROLITHAL
07.06.2018.	Auce2	AQUATIC_VEG	5	0.12	0.05	AKAL
07.06.2018.	Auce2	AQUATIC_VEG	6	0.16	0.113	AKAL
07.06.2018.	Auce2	AQUATIC_VEG	7	0.1	0.1	PSAMMAL
07.06.2018.	Auce2	AQUATIC_VEG	1	0.14	0.05	MICROLITHAL
07.06.2018.	Auce2	AQUATIC_VEG	2	0.2	0.001	MICROLITHAL
07.06.2018.	Auce2	AQUATIC_VEG	3	0.27	0.001	MICROLITHAL
07.06.2018.	Auce2	AQUATIC_VEG	4	0.25	0.001	MICROLITHAL
07.06.2018.	Auce2	AQUATIC_VEG	5	0.25	0.001	AKAL
07.06.2018.	Auce2	AQUATIC_VEG	6	0.18	0.001	AKAL
07.06.2018.	Auce2	AQUATIC_VEG	7	0.25	0.001	AKAL
07.06.2018.	Auce2	GLIDE	1	0.26	0.068	MICROLITHAL
07.06.2018.	Auce2	GLIDE	2	0.26	0.053	MICROLITHAL
07.06.2018.	Auce2	GLIDE	3	0.25	0.034	MICROLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
07.06.2018.	Auce2	GLIDE	4	0.14	0.1	AKAL
07.06.2018.	Auce2	GLIDE	5	0.12	0.1	PSAMMAL
07.06.2018.	Auce2	GLIDE	6	0.21	0.013	MICROLITHAL
07.06.2018.	Auce2	GLIDE	7	0.22	0.014	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	1	0.08	0.302	MESOLITHAL
07.06.2018.	Auce2	RIFFLE	2	0.07	0.502	MESOLITHAL
07.06.2018.	Auce2	RIFFLE	3	0.09	0.286	MESOLITHAL
07.06.2018.	Auce2	RIFFLE	4	0.08	0.302	MESOLITHAL
07.06.2018.	Auce2	RIFFLE	5	0.07	0.502	MESOLITHAL
07.06.2018.	Auce2	RIFFLE	6	0.09	0.286	MESOLITHAL
07.06.2018.	Auce2	RIFFLE	7	0.09	0.286	MESOLITHAL
07.06.2018.	Auce2	GLIDE	1	0.14	0.009	PSAMMAL
07.06.2018.	Auce2	GLIDE	2	0.08	0.127	PSAMMAL
07.06.2018.	Auce2	GLIDE	3	0.12	0.023	AKAL
07.06.2018.	Auce2	GLIDE	4	0.14	0.001	MICROLITHAL
07.06.2018.	Auce2	GLIDE	5	0.1	0.086	MICROLITHAL
07.06.2018.	Auce2	GLIDE	6	0.16	0.08	MICROLITHAL
07.06.2018.	Auce2	GLIDE	7	0.12	0.049	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	1	0.08	0.001	AKAL
07.06.2018.	Auce2	RIFFLE	2	0.12	0.411	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	3	0.14	0.301	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	4	0.07	0.419	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	5	0.08	0.083	PSAMMAL
07.06.2018.	Auce2	RIFFLE	6	0.12	0.07	MICROLITHAL
07.06.2018.	Auce2	RIFFLE	7	0.155	0.082	MICROLITHAL
07.06.2018.	Auce2	BACKWATER	1	0.16	0.001	PELAL
07.06.2018.	Auce2	BACKWATER	2	0.1	0.001	MICROLITHAL
07.06.2018.	Auce2	BACKWATER	3	0.07	0.001	PELAL
07.06.2018.	Auce2	BACKWATER	4	0.1	0.001	MICROLITHAL
07.06.2018.	Auce2	BACKWATER	5	0.07	0.001	PELAL
07.06.2018.	Auce2	BACKWATER	6	0.1	0.001	PELAL
07.06.2018.	Auce2	BACKWATER	7	0.07	0.001	PELAL
07.06.2018.	Auce2	GLIDE	1	0.18	0.071	MICROLITHAL
07.06.2018.	Auce2	GLIDE	2	0.18	0.016	MESOLITHAL
07.06.2018.	Auce2	GLIDE	3	0.1	0.096	AKAL
07.06.2018.	Auce2	GLIDE	4	0.18	0.111	MICROLITHAL
07.06.2018.	Auce2	GLIDE	5	0.1	0.096	AKAL
07.06.2018.	Auce2	GLIDE	6	0.18	0.111	MICROLITHAL
07.06.2018.	Auce2	GLIDE	7	0.18	0.071	MICROLITHAL
07.06.2018.	Auce2	GLIDE	1	0.09	0.103	PSAMMAL
07.06.2018.	Auce2	GLIDE	2	0.12	0.094	PSAMMAL
07.06.2018.	Auce2	GLIDE	3	0.13	0.137	MICROLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
07.06.2018.	Auce2	GLIDE	4	0.14	0.074	MICROLITHAL
07.06.2018.	Auce2	GLIDE	5	0.11	0.051	MICROLITHAL
07.06.2018.	Auce2	GLIDE	6	0.12	0.094	PSAMMAL
07.06.2018.	Auce2	GLIDE	7	0.13	0.137	MICROLITHAL
07.06.2018.	Auce2	GLIDE	1	0.13	0.001	PSAMMAL
07.06.2018.	Auce2	GLIDE	2	0.12	0.001	MICROLITHAL
07.06.2018.	Auce2	GLIDE	3	0.13	0.001	MICROLITHAL
07.06.2018.	Auce2	GLIDE	4	0.11	0.001	MICROLITHAL
07.06.2018.	Auce2	GLIDE	5	0.13	0.001	PSAMMAL
07.06.2018.	Auce2	GLIDE	6	0.12	0.001	MICROLITHAL
07.06.2018.	Auce2	GLIDE	7	0.13	0.001	MICROLITHAL
11.07.2018.	Berze1	GLIDE	1	0.26	0.048	MEGALITHAL
11.07.2018.	Berze1	GLIDE	2	0.43	0.022	MACROLITHAL
11.07.2018.	Berze1	GLIDE	3	0.18	0.045	MACROLITHAL
11.07.2018.	Berze1	GLIDE	4	0.31	0.077	MESOLITHAL
11.07.2018.	Berze1	GLIDE	5	0.4	0.07	MESOLITHAL
11.07.2018.	Berze1	GLIDE	6	0.32	0.072	MACROLITHAL
11.07.2018.	Berze1	GLIDE	7	0.14	0.005	MESOLITHAL
11.07.2018.	Berze1	GLIDE	1	0.36	0.055	MEGALITHAL
11.07.2018.	Berze1	GLIDE	2	0.38	0.001	MACROLITHAL
11.07.2018.	Berze1	GLIDE	3	0.54	0.031	MESOLITHAL
11.07.2018.	Berze1	GLIDE	4	0.32	0.007	MEGALITHAL
11.07.2018.	Berze1	GLIDE	5	0.44	0.024	MACROLITHAL
11.07.2018.	Berze1	GLIDE	6	0.4	0.023	MACROLITHAL
11.07.2018.	Berze1	GLIDE	7	0.37	0.01	MESOLITHAL
11.07.2018.	Berze1	RIFFLE	1	0.11	0.386	MEGALITHAL
11.07.2018.	Berze1	RIFFLE	2	0.13	0.105	MACROLITHAL
11.07.2018.	Berze1	RIFFLE	3	0.18	0.283	MEGALITHAL
11.07.2018.	Berze1	RIFFLE	4	0.145	0.384	MACROLITHAL
11.07.2018.	Berze1	RIFFLE	5	0.145	0.487	MACROLITHAL
11.07.2018.	Berze1	RIFFLE	6	0.13	0.48	MEGALITHAL
11.07.2018.	Berze1	RIFFLE	7	0.17	0.38	MACROLITHAL
11.07.2018.	Berze1	GLIDE	1	0.39	0.086	MACROLITHAL
11.07.2018.	Berze1	GLIDE	2	0.36	0.001	MEGALITHAL
11.07.2018.	Berze1	GLIDE	3	0.35	0.052	MEGALITHAL
11.07.2018.	Berze1	GLIDE	4	0.16	0.107	MESOLITHAL
11.07.2018.	Berze1	GLIDE	5	0.29	0.001	MESOLITHAL
11.07.2018.	Berze1	GLIDE	6	0.13	0.101	MEGALITHAL
11.07.2018.	Berze1	GLIDE	7	0.32	0.001	MEGALITHAL
11.07.2018.	Berze1	GLIDE	1	0.18	0.063	MESOLITHAL
11.07.2018.	Berze1	GLIDE	2	0.4	0.028	MACROLITHAL
11.07.2018.	Berze1	GLIDE	3	0.28	0.034	AKAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
11.07.2018.	Berze1	GLIDE	4	0.46	0.001	MESOLITHAL
11.07.2018.	Berze1	GLIDE	5	0.62	0.01	MEGALITHAL
11.07.2018.	Berze1	GLIDE	6	0.28	0.028	MICROLITHAL
11.07.2018.	Berze1	GLIDE	7	0.29	0.028	MACROLITHAL
11.07.2018.	Berze1	RIFFLE	1	0.17	0.131	MACROLITHAL
11.07.2018.	Berze1	RIFFLE	2	0.18	0.19	MACROLITHAL
11.07.2018.	Berze1	RIFFLE	3	0.1	0.142	MEGALITHAL
11.07.2018.	Berze1	RIFFLE	4	0.1	0.16	MACROLITHAL
11.07.2018.	Berze1	RIFFLE	5	0.12	0.031	MACROLITHAL
11.07.2018.	Berze1	RIFFLE	6	0.1	0.143	MACROLITHAL
11.07.2018.	Berze1	RIFFLE	7	0.12	0.11	MEGALITHAL
11.07.2018.	Berze1	RIFFLE	8	0.18	0.201	MEGALITHAL
11.07.2018.	Berze1	RIFFLE	9	0.13	0.265	MACROLITHAL
11.07.2018.	Berze1	BACKWATER	1	0.1	0.001	MEGALITHAL
11.07.2018.	Berze1	BACKWATER	2	0.1	0.001	MEGALITHAL
11.07.2018.	Berze1	BACKWATER	3	0.19	0.001	MEGALITHAL
11.07.2018.	Berze1	BACKWATER	4	0.14	0.001	MEGALITHAL
11.07.2018.	Berze1	BACKWATER	5	0.11	0.001	MEGALITHAL
11.07.2018.	Berze1	BACKWATER	6	0.18	0.001	MEGALITHAL
11.07.2018.	Berze1	BACKWATER	7	0.1	0.001	MEGALITHAL
11.07.2018.	Berze1	GLIDE	1	0.2	0.005	MESOLITHAL
11.07.2018.	Berze1	GLIDE	2	0.59	0.001	MACROLITHAL
11.07.2018.	Berze1	GLIDE	3	0.25	0.101	MEGALITHAL
11.07.2018.	Berze1	GLIDE	4	0.33	0.073	MACROLITHAL
11.07.2018.	Berze1	GLIDE	5	0.4	0.057	MESOLITHAL
11.07.2018.	Berze1	GLIDE	6	0.46	0.021	MEGALITHAL
11.07.2018.	Berze1	GLIDE	7	0.2	0.08	MACROLITHAL
11.07.2018.	Berze1	GLIDE	8	0.16	0.119	MACROLITHAL
11.07.2018.	Berze1	GLIDE	9	0.13	0.042	MEGALITHAL
11.07.2018.	Berze1	BACKWATER	1	0.2	0.001	MEGALITHAL
11.07.2018.	Berze1	BACKWATER	2	0.21	0.001	MACROLITHAL
11.07.2018.	Berze1	BACKWATER	3	0.13	0.001	MACROLITHAL
11.07.2018.	Berze1	BACKWATER	4	0.19	0.001	MACROLITHAL
11.07.2018.	Berze1	BACKWATER	5	0.2	0.001	MACROLITHAL
11.07.2018.	Berze1	BACKWATER	6	0.18	0.001	MACROLITHAL
11.07.2018.	Berze1	BACKWATER	7	0.09	0.001	MEGALITHAL
11.07.2018.	Berze1	SEC.CHANNEL	1	0.11	0.048	MEGALITHAL
11.07.2018.	Berze1	SEC.CHANNEL	2	0.13	0.001	MACROLITHAL
11.07.2018.	Berze1	SEC.CHANNEL	3	0.1	0.123	MACROLITHAL
11.07.2018.	Berze1	SEC.CHANNEL	4	0.13	0.023	MEGALITHAL
11.07.2018.	Berze1	SEC.CHANNEL	5	0.08	0.145	MEGALITHAL
11.07.2018.	Berze1	SEC.CHANNEL	6	0.09	0.168	MEGALITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
11.07.2018.	Berze1	SEC.CHANNEL	7	0.1	0.14	MEGALITHAL
11.07.2018.	Berze1	RIFFLE	1	0.11	0.558	MACROLITHAL
11.07.2018.	Berze1	RIFFLE	2	0.13	0.431	MEGALITHAL
11.07.2018.	Berze1	RIFFLE	3	0.2	0.235	MESOLITHAL
11.07.2018.	Berze1	RIFFLE	4	0.16	0.397	MACROLITHAL
11.07.2018.	Berze1	RIFFLE	5	0.23	0.29	MEGALITHAL
11.07.2018.	Berze1	RIFFLE	6	0.14	0.39	MEGALITHAL
11.07.2018.	Berze1	RIFFLE	7	0.13	0.42	MEGALITHAL
21.06.2018.	Berze1	GLIDE	1	0.42	0.018	MEGALITHAL
21.06.2018.	Berze1	GLIDE	2	0.33	0.06	MACROLITHAL
21.06.2018.	Berze1	GLIDE	3	0.34	0.015	MACROLITHAL
21.06.2018.	Berze1	GLIDE	4	0.29	0.021	MACROLITHAL
21.06.2018.	Berze1	GLIDE	5	0.33	0.002	MESOLITHAL
21.06.2018.	Berze1	GLIDE	6	0.46	0.006	MESOLITHAL
21.06.2018.	Berze1	GLIDE	7	0.37	0.22	MESOLITHAL
21.06.2018.	Berze1	BACKWATER	1	0.37	0.001	MEGALITHAL
21.06.2018.	Berze1	BACKWATER	2	0.17	0.001	MACROLITHAL
21.06.2018.	Berze1	BACKWATER	3	0.16	0.001	MESOLITHAL
21.06.2018.	Berze1	BACKWATER	4	0.19	0.001	MEGALITHAL
21.06.2018.	Berze1	BACKWATER	5	0.17	0.001	MACROLITHAL
21.06.2018.	Berze1	BACKWATER	6	0.16	0.001	MACROLITHAL
21.06.2018.	Berze1	BACKWATER	7	0.2	0.001	MESOLITHAL
21.06.2018.	Berze1	RIFFLE	1	0.11	0.12	MACROLITHAL
21.06.2018.	Berze1	RIFFLE	2	0.12	0.23	MACROLITHAL
21.06.2018.	Berze1	RIFFLE	3	0.16	0.35	MEGALITHAL
21.06.2018.	Berze1	RIFFLE	4	0.09	0.23	MACROLITHAL
21.06.2018.	Berze1	RIFFLE	5	0.09	0.31	MACROLITHAL
21.06.2018.	Berze1	RIFFLE	6	0.08	0.19	MEGALITHAL
21.06.2018.	Berze1	RIFFLE	7	0.14	0.11	MEGALITHAL
21.06.2018.	Berze1	GLIDE	1	0.31	0.03	MEGALITHAL
21.06.2018.	Berze1	GLIDE	2	0.36	0.015	MACROLITHAL
21.06.2018.	Berze1	GLIDE	3	0.2	0.0225	MESOLITHAL
21.06.2018.	Berze1	GLIDE	4	0.19	0.03	MESOLITHAL
21.06.2018.	Berze1	GLIDE	5	0.16	0.038	MEGALITHAL
21.06.2018.	Berze1	GLIDE	6	0.16	0.03	MEGALITHAL
21.06.2018.	Berze1	GLIDE	7	0.2	0.025	MEGALITHAL
21.06.2018.	Berze1	GLIDE	1	0.34	0.029	MESOLITHAL
21.06.2018.	Berze1	GLIDE	2	0.41	0.025	MACROLITHAL
21.06.2018.	Berze1	GLIDE	3	0.4	0.013	AKAL
21.06.2018.	Berze1	GLIDE	4	0.48	0.001	MESOLITHAL
21.06.2018.	Berze1	GLIDE	5	0.63	0.004	MACROLITHAL
21.06.2018.	Berze1	GLIDE	6	0.26	0.014	MICROLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
21.06.2018.	Berze1	GLIDE	7	0.31	0.012	MEGALITHAL
21.06.2018.	Berze1	RIFFLE	1	0.16	0.148	MACROLITHAL
21.06.2018.	Berze1	RIFFLE	2	0.13	0.096	MACROLITHAL
21.06.2018.	Berze1	RIFFLE	3	0.1	0.091	MEGALITHAL
21.06.2018.	Berze1	RIFFLE	4	0.08	0.029	MACROLITHAL
21.06.2018.	Berze1	RIFFLE	5	0.2	0.46	MACROLITHAL
21.06.2018.	Berze1	RIFFLE	6	0.26	0.164	MEGALITHAL
21.06.2018.	Berze1	RIFFLE	7	0.17	0.16	MEGALITHAL
21.06.2018.	Berze1	GLIDE	1	0.52	0.066	MEGALITHAL
21.06.2018.	Berze1	GLIDE	2	0.29	0.047	MACROLITHAL
21.06.2018.	Berze1	GLIDE	3	0.09	0.001	MACROLITHAL
21.06.2018.	Berze1	GLIDE	4	0.1	0.001	MEGALITHAL
21.06.2018.	Berze1	GLIDE	5	0.1	0.001	MESOLITHAL
21.06.2018.	Berze1	GLIDE	6	0.38	0.009	MACROLITHAL
21.06.2018.	Berze1	GLIDE	7	0.26	0.081	MACROLITHAL
21.06.2018.	Berze1	RIFFLE	1	0.11	0.19	MEGALITHAL
21.06.2018.	Berze1	RIFFLE	2	0.09	0.32	MACROLITHAL
21.06.2018.	Berze1	RIFFLE	3	0.12	0.41	MACROLITHAL
21.06.2018.	Berze1	RIFFLE	4	0.17	0.29	MEGALITHAL
21.06.2018.	Berze1	RIFFLE	5	0.1	0.49	MEGALITHAL
21.06.2018.	Berze1	RIFFLE	6	0.2	0.16	MEGALITHAL
21.06.2018.	Berze1	RIFFLE	7	0.16	0.214	MEGALITHAL
21.06.2018.	Berze1	SEC.CHANNEL	1	0.09	0.01	MEGALITHAL
21.06.2018.	Berze1	SEC.CHANNEL	2	0.16	0.001	MACROLITHAL
21.06.2018.	Berze1	SEC.CHANNEL	3	0.08	0.126	MACROLITHAL
21.06.2018.	Berze1	SEC.CHANNEL	4	0.09	0.115	MEGALITHAL
21.06.2018.	Berze1	SEC.CHANNEL	5	0.11	0.031	MEGALITHAL
21.06.2018.	Berze1	SEC.CHANNEL	6	0.1	0.028	MEGALITHAL
21.06.2018.	Berze1	SEC.CHANNEL	7	0.16	0.012	MEGALITHAL
11.07.2018.	Berze2	GLIDE	1	0.37	0.043	MESOLITHAL
11.07.2018.	Berze2	GLIDE	2	0.12	0.012	MESOLITHAL
11.07.2018.	Berze2	GLIDE	3	0.36	0.001	MACROLITHAL
11.07.2018.	Berze2	GLIDE	4	0.31	0.004	MESOLITHAL
11.07.2018.	Berze2	GLIDE	5	0.5	0.003	MICROLITHAL
11.07.2018.	Berze2	GLIDE	6	0.35	0.01	MICROLITHAL
11.07.2018.	Berze2	GLIDE	7	0.48	0.02	MICROLITHAL
11.07.2018.	Berze2	RIFFLE	1	0.09	0.107	MEGALITHAL
11.07.2018.	Berze2	RIFFLE	2	0.14	0.293	MEGALITHAL
11.07.2018.	Berze2	RIFFLE	3	0.11	0.444	MESOLITHAL
11.07.2018.	Berze2	RIFFLE	4	0.16	0.254	MACROLITHAL
11.07.2018.	Berze2	RIFFLE	5	0.16	0.362	MESOLITHAL
11.07.2018.	Berze2	RIFFLE	6	0.12	0.475	MEGALITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
11.07.2018.	Berze2	RIFFLE	7	0.2	0.141	MICROLITHAL
11.07.2018.	Berze2	SEC.CHANNEL	1	0.1	0.137	AKAL
11.07.2018.	Berze2	SEC.CHANNEL	2	0.13	0.001	MICROLITHAL
11.07.2018.	Berze2	SEC.CHANNEL	3	0.16	0.001	PSAMMAL
11.07.2018.	Berze2	SEC.CHANNEL	4	0.09	0.159	AKAL
11.07.2018.	Berze2	SEC.CHANNEL	5	0.1	0.079	MEGALITHAL
11.07.2018.	Berze2	SEC.CHANNEL	6	0.09	0.093	MACROLITHAL
11.07.2018.	Berze2	SEC.CHANNEL	7	0.19	0.001	MESOLITHAL
11.07.2018.	Berze2	GLIDE	1	0.28	0.001	MESOLITHAL
11.07.2018.	Berze2	GLIDE	2	0.22	0.001	MESOLITHAL
11.07.2018.	Berze2	GLIDE	3	0.41	0.004	MACROLITHAL
11.07.2018.	Berze2	GLIDE	4	0.29	0.001	MESOLITHAL
11.07.2018.	Berze2	GLIDE	5	0.59	0.001	MEGALITHAL
11.07.2018.	Berze2	GLIDE	6	0.44	0.004	MACROLITHAL
11.07.2018.	Berze2	GLIDE	7	0.51	0.001	PSAMMAL
11.07.2018.	Berze2	POOL	1	0.59	0.001	MICROLITHAL
11.07.2018.	Berze2	POOL	2	0.85	0.001	MEGALITHAL
11.07.2018.	Berze2	POOL	3	1	0.001	PSAMMAL
11.07.2018.	Berze2	POOL	4	0.42	0.001	MACROLITHAL
11.07.2018.	Berze2	POOL	5	0.46	0.004	MACROLITHAL
11.07.2018.	Berze2	POOL	6	0.72	0.01	MESOLITHAL
11.07.2018.	Berze2	POOL	7	0.61	0.009	MESOLITHAL
11.07.2018.	Berze2	GLIDE	1	0.4	0.001	MEGALITHAL
11.07.2018.	Berze2	GLIDE	2	0.39	0.028	MESOLITHAL
11.07.2018.	Berze2	GLIDE	3	0.38	0.032	MACROLITHAL
11.07.2018.	Berze2	GLIDE	4	0.32	0.018	MICROLITHAL
11.07.2018.	Berze2	GLIDE	5	0.22	0.008	MEGALITHAL
11.07.2018.	Berze2	GLIDE	6	0.38	0.001	AKAL
11.07.2018.	Berze2	GLIDE	7	0.76	0.001	MICROLITHAL
11.07.2018.	Berze2	GLIDE	8	0.32	0.008	MEGALITHAL
22.06.2018.	Berze2	GLIDE	1	0.54	0.063	MESOLITHAL
22.06.2018.	Berze2	GLIDE	2	0.51	0.089	MESOLITHAL
22.06.2018.	Berze2	GLIDE	3	0.34	0.069	MACROLITHAL
22.06.2018.	Berze2	GLIDE	4	0.31	0.003	MESOLITHAL
22.06.2018.	Berze2	GLIDE	5	0.41	0.041	MICROLITHAL
22.06.2018.	Berze2	GLIDE	6	0.51	0.053	MICROLITHAL
22.06.2018.	Berze2	GLIDE	7	0.5	0.065	MICROLITHAL
22.06.2018.	Berze2	RIFFLE	8	0.4	0.103	MESOLITHAL
22.06.2018.	Berze2	RIFFLE	1	0.17	0.236	MEGALITHAL
22.06.2018.	Berze2	RIFFLE	2	0.2	0.28	MESOLITHAL
22.06.2018.	Berze2	RIFFLE	3	0.1	0.533	MACROLITHAL
22.06.2018.	Berze2	RIFFLE	4	0.22	0.43	MEGALITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
22.06.2018.	Berze2	RIFFLE	5	0.16	0.792	MEGALITHAL
22.06.2018.	Berze2	RIFFLE	6	0.31	0.165	MICROLITHAL
22.06.2018.	Berze2	SEC.CHANNEL	7	0.18	0.5	MEGALITHAL
22.06.2018.	Berze2	SEC.CHANNEL	1	0.18	0.278	MACROLITHAL
22.06.2018.	Berze2	SEC.CHANNEL	2	0.11	0.464	MESOLITHAL
22.06.2018.	Berze2	SEC.CHANNEL	3	0.18	0.239	AKAL
22.06.2018.	Berze2	SEC.CHANNEL	4	0.1	0.172	MICROLITHAL
22.06.2018.	Berze2	SEC.CHANNEL	5	0.11	0.043	PSAMMAL
22.06.2018.	Berze2	SEC.CHANNEL	6	0.16	0.299	AKAL
22.06.2018.	Berze2	GLIDE	7	0.11	0.137	MESOLITHAL
22.06.2018.	Berze2	GLIDE	1	0.31	0.043	MACROLITHAL
22.06.2018.	Berze2	GLIDE	2	0.32	0.044	MACROLITHAL
22.06.2018.	Berze2	GLIDE	3	0.63	0.014	PSAMMAL
22.06.2018.	Berze2	GLIDE	4	0.48	0.12	MESOLITHAL
22.06.2018.	Berze2	GLIDE	5	0.5	0.018	MESOLITHAL
22.06.2018.	Berze2	GLIDE	6	0.58	0.002	MEGALITHAL
22.06.2018.	Berze2	POOL	7	0.61	0.04	MICROLITHAL
22.06.2018.	Berze2	POOL	1	0.78	0.002	MEGALITHAL
22.06.2018.	Berze2	POOL	2	1	0.008	PSAMMAL
22.06.2018.	Berze2	POOL	3	0.89	0.003	MACROLITHAL
22.06.2018.	Berze2	POOL	4	1.18	0.013	MACROLITHAL
22.06.2018.	Berze2	POOL	5	1.1	0.01	MESOLITHAL
22.06.2018.	Berze2	POOL	6	0.46	0.065	MESOLITHAL
22.06.2018.	Berze2	GLIDE	7	0.54	0.007	MESOLITHAL
22.06.2018.	Berze2	GLIDE	1	0.46	0.069	MICROLITHAL
22.06.2018.	Berze2	GLIDE	2	0.49	0.082	MACROLITHAL
22.06.2018.	Berze2	GLIDE	3	0.47	0.03	MEGALITHAL
22.06.2018.	Berze2	GLIDE	4	0.52	0.047	MICROLITHAL
22.06.2018.	Berze2	GLIDE	5	0.82	0.016	AKAL
22.06.2018.	Berze2	GLIDE	6	0.62	0.001	MEGALITHAL
22.06.2018.	Berze2	GLIDE	7	1	0.014	MEGALITHAL
17.07.2018.	Islice	RAPID	1	0.08	0.255	MESOLITHAL
17.07.2018.	Islice	RAPID	2	0.13	0.102	MESOLITHAL
17.07.2018.	Islice	RAPID	3	0.1	0.43	MESOLITHAL
17.07.2018.	Islice	RAPID	4	0.16	0.171	MICROLITHAL
17.07.2018.	Islice	RAPID	5	0.11	0.149	MESOLITHAL
17.07.2018.	Islice	RAPID	6	0.09	0.382	MESOLITHAL
17.07.2018.	Islice	RAPID	7	0.1	0.224	MESOLITHAL
17.07.2018.	Islice	AQUATIC_VEG	1	0.08	0.001	MESOLITHAL
17.07.2018.	Islice	AQUATIC_VEG	2	0.05	0.001	MESOLITHAL
17.07.2018.	Islice	AQUATIC_VEG	3	0.04	0.001	MESOLITHAL
17.07.2018.	Islice	AQUATIC_VEG	1	0.08	0.001	MESOLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
17.07.2018.	Islice	AQUATIC_VEG	2	0.1	0.182	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	3	0.06	0.001	MESOLITHAL
17.07.2018.	Islice	BACKWATER	1	0.34	0.001	MACROLITHAL
17.07.2018.	Islice	BACKWATER	2	0.41	0.001	MACROLITHAL
17.07.2018.	Islice	BACKWATER	3	0.37	0.001	MICROLITHAL
17.07.2018.	Islice	BACKWATER	4	0.34	0.001	MEGALITHAL
17.07.2018.	Islice	GLIDE	1	0.48	0.042	MACROLITHAL
17.07.2018.	Islice	GLIDE	2	0.44	0.027	MICROLITHAL
17.07.2018.	Islice	GLIDE	3	0.34	0.056	MEGALITHAL
17.07.2018.	Islice	GLIDE	4	0.45	0.003	MESOLITHAL
17.07.2018.	Islice	GLIDE	5	0.33	0.027	MESOLITHAL
17.07.2018.	Islice	GLIDE	6	0.26	0.013	MICROLITHAL
17.07.2018.	Islice	GLIDE	7	0.16	0.058	MICROLITHAL
17.07.2018.	Islice	BACKWATER	1	0.32	0.001	MESOLITHAL
17.07.2018.	Islice	BACKWATER	2	0.48	0.001	MESOLITHAL
17.07.2018.	Islice	BACKWATER	3	0.41	0.001	MACROLITHAL
17.07.2018.	Islice	BACKWATER	4	0.29	0.001	MESOLITHAL
17.07.2018.	Islice	BACKWATER	5	0.24	0.001	MICROLITHAL
17.07.2018.	Islice	BACKWATER	1	0.38	0.001	AKAL
17.07.2018.	Islice	BACKWATER	2	0.3	0.001	MESOLITHAL
17.07.2018.	Islice	BACKWATER	3	0.36	0.001	MACROLITHAL
17.07.2018.	Islice	BACKWATER	4	0.27	0.001	MICROLITHAL
17.07.2018.	Islice	BACKWATER	5	0.33	0.001	MACROLITHAL
17.07.2018.	Islice	BACKWATER	1	0.15	0.001	MICROLITHAL
17.07.2018.	Islice	BACKWATER	2	0.22	0.001	MESOLITHAL
17.07.2018.	Islice	BACKWATER	3	0.25	0.001	MICROLITHAL
17.07.2018.	Islice	BACKWATER	4	0.2	0.001	AKAL
17.07.2018.	Islice	BACKWATER	5	0.3	0.001	MICROLITHAL
17.07.2018.	Islice	RIFFLE	1	0.11	0.332	AKAL
17.07.2018.	Islice	RIFFLE	2	0.14	0.232	AKAL
17.07.2018.	Islice	RIFFLE	3	0.11	0.356	AKAL
17.07.2018.	Islice	RIFFLE	4	0.1	0.223	AKAL
17.07.2018.	Islice	RIFFLE	5	0.07	0.444	MICROLITHAL
17.07.2018.	Islice	RIFFLE	6	0.15	0.271	MICROLITHAL
17.07.2018.	Islice	RIFFLE	7	0.11	0.356	AKAL
17.07.2018.	Islice	AQUATIC_VEG	1	0.16	0.001	AKAL
17.07.2018.	Islice	AQUATIC_VEG	2	0.21	0.001	PSAMMAL
17.07.2018.	Islice	AQUATIC_VEG	3	0.15	0.001	PSAMMAL
17.07.2018.	Islice	AQUATIC_VEG	4	0.16	0.001	AKAL
17.07.2018.	Islice	GLIDE	1	0.25	0.024	AKAL
17.07.2018.	Islice	GLIDE	2	0.36	0.048	MICROLITHAL
17.07.2018.	Islice	GLIDE	3	0.34	0.037	MICROLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
17.07.2018.	Islice	GLIDE	4	0.23	0.027	MICROLITHAL
17.07.2018.	Islice	GLIDE	5	0.13	0.016	MICROLITHAL
17.07.2018.	Islice	GLIDE	6	0.2	0.086	MICROLITHAL
17.07.2018.	Islice	GLIDE	7	0.11	0.068	MICROLITHAL
17.07.2018.	Islice	BACKWATER	1	0.28	0.001	MICROLITHAL
17.07.2018.	Islice	BACKWATER	2	0.11	0.001	AKAL
17.07.2018.	Islice	BACKWATER	3	0.2	0.001	MICROLITHAL
17.07.2018.	Islice	BACKWATER	4	0.2	0.001	MICROLITHAL
17.07.2018.	Islice	BACKWATER	1	0.13	0.001	AKAL
17.07.2018.	Islice	BACKWATER	2	0.12	0.001	MICROLITHAL
17.07.2018.	Islice	BACKWATER	3	0.11	0.001	MICROLITHAL
17.07.2018.	Islice	BACKWATER	4	0.12	0.001	AKAL
17.07.2018.	Islice	POOL	1	0.29	0.001	MESOLITHAL
17.07.2018.	Islice	POOL	2	0.24	0.001	MESOLITHAL
17.07.2018.	Islice	POOL	3	0.18	0.001	AKAL
17.07.2018.	Islice	POOL	4	0.2	0.001	MICROLITHAL
17.07.2018.	Islice	POOL	5	0.14	0.001	MESOLITHAL
17.07.2018.	Islice	POOL	6	0.19	0.001	MESOLITHAL
17.07.2018.	Islice	POOL	7	0.16	0.001	AKAL
17.07.2018.	Islice	POOL	8	0.16	0.001	MICROLITHAL
17.07.2018.	Islice	RIFFLE	1	0.1	0.179	AKAL
17.07.2018.	Islice	RIFFLE	2	0.07	0.323	AKAL
17.07.2018.	Islice	RIFFLE	3	0.07	0.226	AKAL
17.07.2018.	Islice	RIFFLE	4	0.11	0.231	MICROLITHAL
17.07.2018.	Islice	RIFFLE	5	0.11	0.042	AKAL
17.07.2018.	Islice	RIFFLE	6	0.07	0.23	MICROLITHAL
17.07.2018.	Islice	RIFFLE	7	0.11	0.251	AKAL
17.07.2018.	Islice	GLIDE	1	0.15	0.001	AKAL
17.07.2018.	Islice	GLIDE	2	0.13	0.001	AKAL
17.07.2018.	Islice	GLIDE	3	0.09	0.001	MICROLITHAL
17.07.2018.	Islice	GLIDE	4	0.12	0.001	AKAL
17.07.2018.	Islice	GLIDE	5	0.11	0.239	AKAL
17.07.2018.	Islice	GLIDE	6	0.13	0.103	MICROLITHAL
17.07.2018.	Islice	GLIDE	7	0.16	0.098	MICROLITHAL
17.07.2018.	Islice	GLIDE	8	0.18	0.203	MICROLITHAL
17.07.2018.	Islice	GLIDE	9	0.15	0.15	MICROLITHAL
17.07.2018.	Islice	GLIDE	10	0.14	0.012	AKAL
17.07.2018.	Islice	GLIDE	11	0.44	0.017	AKAL
17.07.2018.	Islice	BACKWATER	1	0.15	0.001	MICROLITHAL
17.07.2018.	Islice	BACKWATER	2	0.12	0.001	MICROLITHAL
17.07.2018.	Islice	BACKWATER	3	0.23	0.001	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	4	0.31	0.022	AKAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
17.07.2018.	Islice	AQUATIC_VEG	5	0.21	0.047	AKAL
17.07.2018.	Islice	AQUATIC_VEG	6	0.15	0.091	AKAL
17.07.2018.	Islice	AQUATIC_VEG	7	0.21	0.008	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	8	0.18	0.042	MESOLITHAL
17.07.2018.	Islice	AQUATIC_VEG	9	0.29	0.02	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	10	0.21	0.001	MESOLITHAL
17.07.2018.	Islice	AQUATIC_VEG	11	0.35	0.005	MESOLITHAL
17.07.2018.	Islice	AQUATIC_VEG	12	0.46	0.003	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	13	0.36	0.001	AKAL
17.07.2018.	Islice	AQUATIC_VEG	14	0.44	0.002	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	15	0.3	0.001	MESOLITHAL
17.07.2018.	Islice	AQUATIC_VEG	16	0.34	0.016	MACROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	17	0.41	0.002	MESOLITHAL
17.07.2018.	Islice	AQUATIC_VEG	18	0.29	0.002	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	19	0.24	0.001	AKAL
17.07.2018.	Islice	AQUATIC_VEG	20	0.22	0.01	AKAL
17.07.2018.	Islice	AQUATIC_VEG	21	0.21	0.003	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	22	0.42	0.002	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	23	0.47	0.003	AKAL
17.07.2018.	Islice	AQUATIC_VEG	24	0.1	0.001	AKAL
17.07.2018.	Islice	AQUATIC_VEG	25	0.44	0.002	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	26	0.59	0.003	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	27	0.42	0.01	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	28	0.3	0.01	AKAL
17.07.2018.	Islice	AQUATIC_VEG	29	0.63	0.001	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	30	0.81	0.001	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	31	0.5	0.001	MEGALITHAL
17.07.2018.	Islice	AQUATIC_VEG	32	0.54	0.001	AKAL
17.07.2018.	Islice	AQUATIC_VEG	33	0.62	0.05	MESOLITHAL
17.07.2018.	Islice	AQUATIC_VEG	34	0.6	0.005	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	35	0.51	0.004	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	36	0.44	0.008	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	37	0.18	0.006	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	38	0.14	0.122	MICROLITHAL
17.07.2018.	Islice	GLIDE	1	0.46	0.007	MICROLITHAL
17.07.2018.	Islice	GLIDE	2	0.45	0.013	MACROLITHAL
17.07.2018.	Islice	GLIDE	3	0.62	0.001	MICROLITHAL
17.07.2018.	Islice	GLIDE	4	0.21	0.008	MESOLITHAL
17.07.2018.	Islice	GLIDE	5	0.44	0.017	AKAL
17.07.2018.	Islice	GLIDE	6	0.23	0.028	MESOLITHAL
17.07.2018.	Islice	GLIDE	7	0.18	0.07	MESOLITHAL
17.07.2018.	Islice	GLIDE	8	0.18	0.076	MESOLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
17.07.2018.	Islice	GLIDE	9	0.16	0.094	MESOLITHAL
17.07.2018.	Islice	POOL	1	0.52	0.001	MESOLITHAL
17.07.2018.	Islice	POOL	2	0.63	0.009	MESOLITHAL
17.07.2018.	Islice	POOL	3	0.71	0.009	MESOLITHAL
17.07.2018.	Islice	POOL	4	0.7	0.001	MESOLITHAL
17.07.2018.	Islice	POOL	5	0.45	0.018	MACROLITHAL
17.07.2018.	Islice	POOL	6	0.67	0.013	MESOLITHAL
17.07.2018.	Islice	POOL	7	0.49	0.024	MESOLITHAL
17.07.2018.	Islice	AQUATIC_VEG	1	0.24	0.035	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	2	0.25	0.006	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	3	0.28	0.001	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	4	0.29	0.01	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	5	0.21	0.001	MICROLITHAL
17.07.2018.	Islice	AQUATIC_VEG	6	0.23	0.009	MESOLITHAL
17.07.2018.	Islice	AQUATIC_VEG	7	0.18	0.023	MESOLITHAL
17.07.2018.	Islice	GLIDE	1	0.17	0.014	MICROLITHAL
17.07.2018.	Islice	GLIDE	2	0.23	0.019	MESOLITHAL
17.07.2018.	Islice	GLIDE	3	0.25	0.008	AKAL
17.07.2018.	Islice	POOL	1	0.4	0.004	MICROLITHAL
17.07.2018.	Islice	POOL	2	0.52	0.011	MESOLITHAL
17.07.2018.	Islice	POOL	3	0.75	0.002	MESOLITHAL
17.07.2018.	Islice	POOL	4	0.89	0.001	MESOLITHAL
17.07.2018.	Islice	POOL	5	0.8	0.001	MESOLITHAL
17.07.2018.	Islice	POOL	6	0.83	0.001	MESOLITHAL
17.07.2018.	Islice	POOL	7	0.69	0.001	AKAL
06.07.2018.	Islice	AQUATIC_VEG	1	0.05	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	2	0.02	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	3	0.04	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	4	0.05	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	5	0.02	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	6	0.04	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	7	0.05	0.001	MICROLITHAL
06.07.2018.	Islice	RAPID	1	0.17	0.217	MESOLITHAL
06.07.2018.	Islice	RAPID	2	0.14	0.2	MICROLITHAL
06.07.2018.	Islice	RAPID	3	0.13	0.365	MICROLITHAL
06.07.2018.	Islice	RAPID	4	0.09	0.301	MICROLITHAL
06.07.2018.	Islice	RAPID	5	0.11	0.406	MICROLITHAL
06.07.2018.	Islice	RAPID	6	0.17	0.286	MESOLITHAL
06.07.2018.	Islice	RAPID	7	0.19	0.27	MESOLITHAL
06.07.2018.	Islice	AQUATIC_VEG	1	0.04	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	2	0.05	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	3	0.02	0.001	MICROLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
06.07.2018.	Islice	AQUATIC_VEG	4	0.04	0.001	MICROLITHAL
06.07.2018.	Islice	GLIDE	1	0.36	0.17	MACROLITHAL
06.07.2018.	Islice	GLIDE	2	0.44	0.015	MESOLITHAL
06.07.2018.	Islice	GLIDE	3	0.52	0.05	MESOLITHAL
06.07.2018.	Islice	GLIDE	4	0.28	0.174	MEGALITHAL
06.07.2018.	Islice	GLIDE	5	0.52	0.036	MESOLITHAL
06.07.2018.	Islice	GLIDE	6	0.24	0.216	MESOLITHAL
06.07.2018.	Islice	GLIDE	7	0.42	0.01	AKAL
06.07.2018.	Islice	GLIDE	8	0.45	0.22	MESOLITHAL
06.07.2018.	Islice	GLIDE	9	0.26	0.021	MESOLITHAL
06.07.2018.	Islice	GLIDE	10	0.18	0.196	MICROLITHAL
06.07.2018.	Islice	BACKWATER	1	0.26	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	2	0.38	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	3	0.42	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	4	0.46	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	5	0.48	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	6	0.48	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	7	0.42	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	1	0.34	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	2	0.18	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	3	0.1	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	4	0.35	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	5	0.34	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	6	0.18	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	7	0.18	0.001	MEGALITHAL
06.07.2018.	Islice	BACKWATER	1	0.2	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	2	0.3	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	3	0.11	0.001	AKAL
06.07.2018.	Islice	BACKWATER	4	0.2	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	5	0.3	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	6	0.2	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	7	0.3	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	1	0.31	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	2	0.31	0.001	AKAL
06.07.2018.	Islice	BACKWATER	3	0.15	0.001	AKAL
06.07.2018.	Islice	BACKWATER	4	0.27	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	5	0.31	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	6	0.31	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	7	0.15	0.001	AKAL
06.07.2018.	Islice	RIFFLE	1	0.11	0.376	AKAL
06.07.2018.	Islice	RIFFLE	2	0.14	0.356	MICROLITHAL
06.07.2018.	Islice	RIFFLE	3	0.16	0.176	MICROLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
06.07.2018.	Islice	RIFFLE	4	0.16	0.278	AKAL
06.07.2018.	Islice	RIFFLE	5	0.17	0.397	MICROLITHAL
06.07.2018.	Islice	RIFFLE	6	0.2	0.407	MICROLITHAL
06.07.2018.	Islice	RIFFLE	7	0.33	0.204	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	1	0.22	0.001	AKAL
06.07.2018.	Islice	AQUATIC_VEG	2	0.02	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	3	0.28	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	4	0.04	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	5	0.06	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	6	0.28	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	7	0.04	0.001	MICROLITHAL
06.07.2018.	Islice	GLIDE	1	0.32	0.028	AKAL
06.07.2018.	Islice	GLIDE	2	0.3	0.02	MICROLITHAL
06.07.2018.	Islice	GLIDE	3	0.49	0.01	MICROLITHAL
06.07.2018.	Islice	GLIDE	4	0.31	0.185	MICROLITHAL
06.07.2018.	Islice	GLIDE	5	0.21	0.012	MICROLITHAL
06.07.2018.	Islice	GLIDE	6	0.14	0.049	MICROLITHAL
06.07.2018.	Islice	GLIDE	7	0.15	0.19	MICROLITHAL
06.07.2018.	Islice	GLIDE	8	0.16	0.107	MICROLITHAL
06.07.2018.	Islice	BACKWATER	1	0.16	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	2	0.14	0.001	AKAL
06.07.2018.	Islice	BACKWATER	3	0.09	0.001	AKAL
06.07.2018.	Islice	BACKWATER	4	0.14	0.001	AKAL
06.07.2018.	Islice	BACKWATER	5	0.09	0.001	AKAL
06.07.2018.	Islice	BACKWATER	6	0.14	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	7	0.09	0.001	MICROLITHAL
06.07.2018.	Islice	RIFFLE	1	0.08	0.256	MICROLITHAL
06.07.2018.	Islice	RIFFLE	2	0.11	0.364	MICROLITHAL
06.07.2018.	Islice	RIFFLE	3	0.09	0.146	AKAL
06.07.2018.	Islice	RIFFLE	4	0.08	0.489	AKAL
06.07.2018.	Islice	RIFFLE	5	0.08	0.279	MICROLITHAL
06.07.2018.	Islice	RIFFLE	6	0.15	0.222	MICROLITHAL
06.07.2018.	Islice	RIFFLE	7	0.11	0.081	MICROLITHAL
06.07.2018.	Islice	BACKWATER	1	0.26	0.001	MESOLITHAL
06.07.2018.	Islice	BACKWATER	2	0.24	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	3	0.17	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	4	0.24	0.001	AKAL
06.07.2018.	Islice	BACKWATER	5	0.24	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	6	0.17	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	7	0.17	0.001	AKAL
06.07.2018.	Islice	BACKWATER	1	0.29	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	2	0.22	0.001	MESOLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
06.07.2018.	Islice	BACKWATER	3	0.18	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	4	0.22	0.001	MESOLITHAL
06.07.2018.	Islice	BACKWATER	5	0.18	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	6	0.22	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	7	0.18	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	1	0.16	0.001	AKAL
06.07.2018.	Islice	POOL	2	0.12	0.001	MESOLITHAL
06.07.2018.	Islice	POOL	3	0.17	0.001	AKAL
06.07.2018.	Islice	POOL	4	0.18	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	5	0.12	0.001	MESOLITHAL
06.07.2018.	Islice	POOL	6	0.17	0.001	AKAL
06.07.2018.	Islice	POOL	7	0.18	0.001	MICROLITHAL
06.07.2018.	Islice	GLIDE	1	0.19	0.3	AKAL
06.07.2018.	Islice	GLIDE	2	0.18	0.174	MICROLITHAL
06.07.2018.	Islice	GLIDE	3	0.16	0.01	AKAL
06.07.2018.	Islice	GLIDE	4	0.21	0.221	MICROLITHAL
06.07.2018.	Islice	GLIDE	5	0.46	0.013	MICROLITHAL
06.07.2018.	Islice	GLIDE	6	0.21	0.152	MICROLITHAL
06.07.2018.	Islice	GLIDE	7	0.18	0.2	AKAL
06.07.2018.	Islice	GLIDE	8	0.18	0.05	PSAMMAL
06.07.2018.	Islice	GLIDE	9	0.3	0.01	MICROLITHAL
06.07.2018.	Islice	GLIDE	10	0.4	0.01	MICROLITHAL
06.07.2018.	Islice	GLIDE	11	0.4	0.014	MICROLITHAL
06.07.2018.	Islice	GLIDE	12	0.38	0.16	MICROLITHAL
06.07.2018.	Islice	BACKWATER	1	0.44	0.001	PSAMMAL
06.07.2018.	Islice	BACKWATER	2	0.37	0.001	AKAL
06.07.2018.	Islice	BACKWATER	3	0.22	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	4	0.44	0.001	PSAMMAL
06.07.2018.	Islice	BACKWATER	5	0.37	0.001	AKAL
06.07.2018.	Islice	BACKWATER	6	0.22	0.001	MICROLITHAL
06.07.2018.	Islice	BACKWATER	7	0.22	0.001	AKAL
06.07.2018.	Islice	AQUATIC_VEG	1	0.5	0.01	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	2	0.39	0.006	MESOLITHAL
06.07.2018.	Islice	AQUATIC_VEG	3	0.38	0.003	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	4	0.31	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	5	0.32	0.01	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	6	0.37	0.001	AKAL
06.07.2018.	Islice	AQUATIC_VEG	7	0.32	0.104	AKAL
06.07.2018.	Islice	AQUATIC_VEG	8	0.41	0.001	AKAL
06.07.2018.	Islice	AQUATIC_VEG	9	0.57	0.001	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	10	0.64	0.009	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	11	0.72	0.01	MICROLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
06.07.2018.	Islice	AQUATIC_VEG	12	0.87	0.01	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	13	0.38	0.013	MEGALITHAL
06.07.2018.	Islice	AQUATIC_VEG	14	0.5	0.016	AKAL
06.07.2018.	Islice	AQUATIC_VEG	15	0.62	0.018	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	16	0.29	0.015	MEGALITHAL
06.07.2018.	Islice	AQUATIC_VEG	17	0.45	0.014	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	18	0.4	0.011	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	19	0.58	0.07	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	20	0.15	0.08	MICROLITHAL
06.07.2018.	Islice	GLIDE	1	0.62	0.04	MICROLITHAL
06.07.2018.	Islice	GLIDE	2	0.41	0.03	MESOLITHAL
06.07.2018.	Islice	GLIDE	3	0.32	0.011	AKAL
06.07.2018.	Islice	GLIDE	4	0.32	0.01	AKAL
06.07.2018.	Islice	GLIDE	5	0.22	0.172	AKAL
06.07.2018.	Islice	GLIDE	6	0.15	0.146	MICROLITHAL
06.07.2018.	Islice	GLIDE	7	0.16	0.176	MICROLITHAL
06.07.2018.	Islice	GLIDE	8	0.28	0.091	MESOLITHAL
06.07.2018.	Islice	GLIDE	9	0.5	0.033	MESOLITHAL
06.07.2018.	Islice	GLIDE	10	0.48	0.021	MESOLITHAL
06.07.2018.	Islice	GLIDE	11	0.36	0.004	MESOLITHAL
06.07.2018.	Islice	GLIDE	12	0.35	0.008	MEGALITHAL
06.07.2018.	Islice	GLIDE	13	0.7	0.01	MESOLITHAL
06.07.2018.	Islice	GLIDE	14	0.67	0.041	MESOLITHAL
06.07.2018.	Islice	GLIDE	15	0.57	0.012	MESOLITHAL
06.07.2018.	Islice	GLIDE	16	0.52	0.032	MESOLITHAL
06.07.2018.	Islice	AQUATIC_VEG	1	0.29	0.035	AKAL
06.07.2018.	Islice	AQUATIC_VEG	2	0.31	0.042	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	3	0.33	0.015	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	4	0.27	0.01	AKAL
06.07.2018.	Islice	AQUATIC_VEG	5	0.23	0.075	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	6	0.21	0.023	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	7	0.21	0.096	MICROLITHAL
06.07.2018.	Islice	AQUATIC_VEG	8	0.26	0.034	AKAL
06.07.2018.	Islice	GLIDE	1	0.25	0.009	MICROLITHAL
06.07.2018.	Islice	GLIDE	2	0.29	0.05	MICROLITHAL
06.07.2018.	Islice	GLIDE	3	0.26	0.065	MESOLITHAL
06.07.2018.	Islice	GLIDE	4	0.31	0.052	AKAL
06.07.2018.	Islice	GLIDE	5	0.33	0.003	MICROLITHAL
06.07.2018.	Islice	GLIDE	6	0.37	0.06	MICROLITHAL
06.07.2018.	Islice	GLIDE	7	0.37	0.06	MICROLITHAL
06.07.2018.	Islice	SEC_CHAN	1	0.3	0.001	MICROLITHAL
06.07.2018.	Islice	SEC_CHAN	2	0.21	0.026	MICROLITHAL

Datums	River	HMU_TYPE	PNTNUM	DEPTH	VELOCITY	SUBSTRATE
06.07.2018.	Islice	SEC_CHAN	3	0.28	0.009	MESOLITHAL
06.07.2018.	Islice	SEC_CHAN	4	0.26	0.011	MICROLITHAL
06.07.2018.	Islice	SEC_CHAN	5	0.2	0.034	AKAL
06.07.2018.	Islice	SEC_CHAN	6	0.26	0.011	MICROLITHAL
06.07.2018.	Islice	SEC_CHAN	7	0.2	0.034	AKAL
06.07.2018.	Islice	POOL	1	0.71	0.009	MICROLITHAL
06.07.2018.	Islice	POOL	2	0.64	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	3	0.66	0.016	MICROLITHAL
06.07.2018.	Islice	POOL	4	0.85	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	5	0.86	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	6	0.76	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	7	0.78	0.002	MICROLITHAL
06.07.2018.	Islice	POOL	8	0.87	0.001	MESOLITHAL
06.07.2018.	Islice	POOL	9	0.55	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	10	0.58	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	1	0.84	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	2	0.95	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	3	0.82	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	4	0.96	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	5	0.82	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	6	0.56	0.001	MICROLITHAL
06.07.2018.	Islice	POOL	7	0.52	0.001	MICROLITHAL

ANNEX V

Field Work Protocol for Latvian Fish data collecting

Parameters:
Card square: by scale map prepared by the Latvian geospatial agency 1 : 50000 (http://map.lgia.gov.lv/index.php?lang=0&cPath=4_15_29);
Date: dd/mm/year;
River basin district: Venta;
River basin;
River;
Site code;
Site: closest populated site or another reference point – bridge with road code number, Farmstead with name.
Project name: ECOFLOW;
Habitat: by expert opinion: rhithral or patomal conditions;
Long X: WGS84_latsystem;
Lat Y: WGS84_latsystem;
Fishing effort: time in minutes;
Fishing area length: m- measured;
Fishing area width: m- measured;
River width: m- measured or maps data;
Fished area: m^2- calculated form length and width;
Average depth: m- measured;
Maximal depth: m- measured;
Morphological modifications: yes/no- expert opinion;
Shading: 4 ranges from no, occasional, predominant, total-expert opinion;
Habitat: riffle, rapid, pool (in %from fished area)-expert opinion;
Flow speed: m/s- measured;
Vegetation by intensity: no, low, average, intensive-expert opinion;
By type: flowering plants; algae; water moss- expert opinion;
Surroundings: wood, meadows, arable land, populated place, industrial area (in %from the area)
Signs of pollution: expert opinion;
Composition of river bead: bedrock, boulders, pebble/cobble; gravel, sand, silt, clay (in % from the fished area)- expert opinion;
Organic components on the river bead: wooden debris; mud; marlstone (in % from the total area)-expert opinion;
Water temperature:°C-measured;
Oxygen: mg/l- measured;
pH: measured;
Water conductivity: μS/cm.

Average densities of fish per 100 m^2 in studied Lielupe Riber Basin' rivers (Latvia)

Scinetific name	Auce		Berze		Islice	
	Ind./100 m2	Share, %	Ind./100 m2	Share, %	Ind./100 m2	Share, %
Leucaspius delineatus					3.9	1.7
Alburnus alburnus			0.2	<1	5.5	2.3
Cottus gobio			0.2	<1		
Squalius cephalus			5.4	12.6	65.5	27.8
Leuciscus leuciscus			0.2	<1	0.6	<1
Carassius carassius					0.1	<1
Phoxinus phoxinus	30.2	42.2	4	9.3	2.1	<1
Rhodeus amarus	2.6	3.6			0.3	<1
Perca fluviatilis	0.8	1.1	6.2	14.4	2.6	1.1
Gobio gobio	32	44.7	2	4.7	22.2	9.4
Leuciscus idus					3.8	1.6
Pungitius pungitius					14.8	6.3
Carassius gibelio					0.3	<1
Rutilus rutilus	1.8	2.5	9	20.9	7	3
Cobitis taenia	0.4	<1	1.8	4.2	23.6	10.1
Barbatula barbatula	2.8	3.9	13.8	32.1	80.3	34.1

Gasterosteus aculeatus	1	1.4			1.9	<1
Lampetra planeri			-	-		
Orconectes limosus					-	-