

## **ADDITION TO THE TECHNICAL DESCRIPTION**

### **1 WHEN DELIVERING THE OFFER IT IS NECESSARY TO OBTAIN INSIGHT INTO THE FOLLOWING DOCUMENTS:**

The as-built design for the finishing work of the 1<sup>st</sup> stage of developing the 'Staro korito' area near Trstenik

Main designs of pretreatment of Morava water in Trstenik, developed at the 'Jaroslav Černi' Institute for the Development of Water Resources during 2002.

Main designs of opening the 'Staro korito' spring in Trstenik, developed at the 'Jaroslav Černi' Institute for the Development of Water Resources during 2002.

Infiltration basin settler cleaning study developed at the 'Jaroslav Černi' Institute for the Development of Water Resources during 2001.

Study of the as-built situation of the Trstenik water supply system (infiltration basin settler cleaning) developed in August 2002.

Trstenik settler as-built layout plan P=1:1000

Trstenik infiltration basin layout plan P=1:1000 developed in August 2002 in the Čuprija water management company.

Study of releasing the water from the settler into the West Morava with the cleaning technology for

Documentation for the cleaning of the infiltration basin settler at the 'Staro korito' spring – 1<sup>st</sup> stage, developed in December 2008.

Trstenik water supply system as-built study (cleaning the settler and infiltration basin) developed in January 2009.

IB-1 Infiltration basin cleaning study developed at the 'Jaroslav Černi' Institute for the Development of Water Resources in 2013.

Preliminary design of cleaning the settler and converting the settler into the IB-2 infiltration basin, developed at the 'Jaroslav Černi' Institute for the Development of Water Resources in 2013.

Main design of the settler at the site of the IB-3 infiltration basin, developed at the 'Jaroslav Černi' Institute for the Development of Water Resources in 2013.

As-built situation design for the IB-1, IB-2 infiltration basins and settler developed in Trstenik in 2013.

## **FORMING THE CONSTRUCTION LANDFILL FOR THE TRANSPORTATION OF FOULED**

### **2 MATERIAL**

The landfill shall be formed outside of the surrounded source area in the following manner:  
a 0.5m embankment made of clay material shall be built around the landfill  
a 20cm layer of compacted clay shall be made along the bottom of thus formed cachet  
material shall be put into the cachet by way of spreading with a bulldozer in 30-50cm layers with  
compaction by way of three bulldozer passes

The landfill shall finally be covered with 50cm of clay compacted up to 95% according to PROCTOR,  
if the material shall not be transported further. The clay shall be treated with double 2% inclination  
towards the edges of the embankment.

### **3 INFILTRATION BASIN FUNCTIONALITY TEST**

After cleaning the basin and replacement of filter inside the pond, the system shall be trial filled and tested. The system shall be tested by filling one lake after another in succession. For each lake, the water shall be maintained at maximum operating level for 24h. During these 24h water levels shall be measured in all lakes, wells and piezometers at 6 hours and simultaneously water flow values in the south drainage facility shall be taken. After completing the test for one lake the next lake shall be filled, whereas the water shall be maintained at maximum level in the previous one.

The design supervision body shall issue a report on performed system operation testing after testing the operation of the system.

**IMPORTANT NOTE:** The entire spring shall not be operational for the duration of work execution. It is only possible to perform work on reinstating the function of the wells.

Item	Item Description	UoM	Quantity	Unit Price	Total
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**A. IB-1 INFILTRATION BASIN CLEANING**

- 1 Preparatory work  
 Mobilisation and transportation of the machinery, pumps and generator units (3pcs, capacity 30l/sec, one for each lake) to the construction site – site formation. Establishing the route of the transportation of the material, establishing and development of the landfill for unloading of the fouled sand and gravel. Installation of construction distribution cabinets, cables, pumps and mounting of the pipeline to West Morava, as well as securing hygienic conditions for workers on the site. Procurement of adequate mobile toilets.  
 After the completion of work all auxiliary buildings and equipment used during cleaning the infiltration basin shall be dismantled. The price shall include clearing and removal from the terrain of the spring of all machinery, vehicles and material used during the execution of the work - disassembly of the construction site.

Calculated in lump	Lump	1.00		
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- 2 Survey of the as-is situation for the calculation of the amount of executed work with demarcation of the cross-section profiles.  
 For the purpose of establishing precise amounts of executed work, prior to work commencement it is necessary to survey the as-is situation on site of the infiltration basins, elevation points of the basin bottoms, embankments and partitions being reconstructed.  
 THIS WORK SHALL BE PERFORMED BY THE INVESTOR IN THE PRESENCE OF THE CONTRACTOR'S GEODETIC SERVICE. After the survey a layout of the terrain shall be done with cross-section profiles at every 20m to be enclosed with the construction diary.  
 The geodetic delineation of cross-section profiles and demarcation in the field shall be done to make all installed elements accessible for supervision checks during work execution.

Calculated in lump	Lump	1.00		
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- 3 Removal of the slurry deposited by the Morava river directly around the basins in a strip of 10.0m. The thickness of the stripped layer shall be 5-10cm.

Calculated per m2	m2	8415.00		
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*Елаборат отклањања последица поплава на инфилтрационим језерима ИЈ-1, ИЈ-2 и таложници изворишта "Старо корито" у Трстенику*

Item	Item Description	UoM	Quantity	Unit Price	Total
4	<p>Cleaning the slurry material from the bottom of the infiltration basin to the thickness of 40cm and (along the basin slope) to the thickness of 20cm, complete with transportation of the slurry material to the landfill up to 5km away.</p> <p>The water shall be drained for the duration of the excavation (continuously) which shall be included in the excavation price. The Contractor shall provide the electricity by way of generator, as well as slurry pumps, electric cables and construction distribution cabinets. The cleaning of the gravel and slurry material can be initiated only after the water level in the basin has been lowered by 0.5m under the bottom of the infiltration basin and the dried slurry.</p>				
	Calculated per m3 of excavated and transported material	m3	6960.00		
5	<p>Excavation of separated sandy materials from the bottom of the basin in the depth of approx 15cm and gravel along the slope in the depth of 15cm, complete with transportation of the slurry material to the landfill up to 5km away.</p> <p>The water shall be drained for the duration of the excavation (continuously) which shall be included in the excavation price. The Contractor shall provide the electricity by way of generator, as well as slurry pumps, electric cables and construction distribution cabinets. The cleaning of the gravel and slurry material can be initiated only after the water level in the basin has been lowered by 0.5m under the bottom of the infiltration basin and the dried slurry.</p>				
	Calculated per m3	m3	3012.00		
6	<p>Procurement, transportation and installation of separated WASHED sand, grain size 0.2-4mm, which shall not contain more than 0.2% fraction of grain size smaller than 0.2mm with leveling of the bottom. The thickness of the sand to be installed shall be 15cm.</p>				
	Calculated per m3	m3	2210.00		
7	<p>Procurement, transportation and installation of separated WASHED sand, grain size 0.2-4mm, which shall not contain more than 0.2% fraction of grain size smaller than 0.2mm with leveling, in the thickness of 15cm, along the basin slopes.</p>				
	Calculated in lump	m3	810.00		

*Елаборат отклањања последица поплава на инфилтрационим језерима ИЈ-1, ИЈ-2 и таложници изворишта "Старо корито" у Трстенику*

Item	Item Description	UoM	Quantity	Unit Price	Total
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When calculating each breakdown the Contractor's geodetic service shall survey the existing work in the presence of the geodetic service of the INVESTOR and the DESIGN SUPERVISION BODY. The survey shall be handed over with the breakdown situation, stamped and signed, as evidence.

- 8 The development of the as-built survey. The item shall include a geodetic survey – development of the situation with a sufficient number of profiles to represent the accurate extent of work performed, as well as all other appendices in accordance with the standing Law on Planning and Construction.

Calculated in lump	Lump	1.00		
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- 9 Design supervision throughout the duration of the work; development of the testing programme and final testing of the infiltration basin operation.

Calculated in lump	Lump	1		
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<b>IB-1 INFILTRATION BASIN CLEANING TOTAL</b>
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All prices w/o VAT

Item	Item Description	UoM	Quantity	Unit Price	Total
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**5. IB-2 INFILTRATION BASIN CLEANING**

- 1 Rehabilitation of the partition embankment between the infiltration basin IB-2 and the settlers

Calculated in lump	Lump	1.00		
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- 2 Survey of the as-is situation for the calculation of the amount of executed work with demarcation of the cross-section profiles.

For the purpose of establishing precise amounts of executed work, prior to work commencement it is necessary to survey the as-is situation on site of the infiltration basins, elevation points of the basin bottoms, embankments and partitions being reconstructed.

THIS WORK SHALL BE PERFORMED BY THE INVESTOR IN THE PRESENCE OF THE CONTRACTOR'S GEODETIC SERVICE. After the survey a layout of the terrain shall be done with cross-section profiles at every 20m to be enclosed with the construction diary.

The geodetic delineation of cross-section profiles and demarcation in the field shall be done to make all installed elements accessible for supervision checks during work execution.

Calculated in lump	Lump	1.00		
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- 3 Removal of the slurry deposited by the Morava river directly around the basins in a strip of 10.0m. The thickness of the stripped layer shall be 5-10cm.

Calculated per m2	m2	5390.00		
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- 4 Cleaning the slurry material from the bottom of the infiltration basin to the thickness of 40cm and (along the basin slope) to the thickness of 20cm, complete with transportation of the slurry material to the landfill up to 5km away.

The water shall be drained for the duration of the excavation (continuously) which shall be included in the excavation price. The Contractor shall provide the electricity by way of generator, as well as slurry pumps, electric cables and construction distribution cabinets. The cleaning of the gravel and slurry material can be initiated only after the water level in the basin has been lowered by 0.5m under the bottom of the infiltration basin and the dried slurry.

Calculated per m3 of excavated and transported material	m3	3580.00		
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- 5 Excavation of separated sandy materials from the bottom of the basin in the depth of approx 15cm and gravel along the slope in the depth of 15cm, complete with transportation of the slurry material to the landfill up to 5km away.

The water shall be drained for the duration of the excavation (continuously) which shall be included in the excavation price. The Contractor shall provide the electricity by way of generator, as well as slurry pumps, electric cables and construction distribution cabinets. The cleaning of the gravel and slurry material can be initiated only after the water level in the basin has been lowered by 0.5m under the bottom of the infiltration basin and the dried slurry.

Calculated per m3	m3	1870.00		
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- 6 Procurement, transportation and installation of separated WASHED sand, grain size 0.2-4mm, which shall not contain more than 0.2% fraction of grain size smaller than 0.2mm with leveling of the bottom.  
The thickness of the sand to be installed shall be 15cm.

Calculated per m3	m3	1170.00		
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- 7 Procurement, transportation and installation of separated WASHED sand, grain size 0.2-4mm, which shall not contain more than 0.2% fraction of grain size smaller than 0.2mm with leveling, in the thickness of 15cm, along the basin slopes.

Calculated in lump	m3	700.00		
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When calculating each breakdown the Contractor's geodetic service shall survey the existing work in the presence of the geodetic service of the INVESTOR and the DESIGN SUPERVISION BODY. The survey shall be handed over with the breakdown situation, stamped and signed, as evidence.

- 8 The development of the as-built survey. The item shall include a geodetic survey – development of the situation with a sufficient number of profiles to represent the accurate extent of work performed, as well as all other appendices in accordance with the standing Law on Planning and Construction.

Calculated in lump	Lump	1.00		
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- 9 Design supervision throughout the duration of the work; development of the testing programme and final testing of the infiltration basin operation.

Calculated in lump	Lump	1		
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<b>IB-2 INFILTRATION BASIN CLEANING TOTAL</b>
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All prices w/o VAT

Item	Item Description	UoM	Quantity	Unit Price	Total
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#### U. SETTLER CLEANING

- 1 Rehabilitation of water leakage from the undeveloped pond No 4 into the regulated settler basin No 3.
1. Cleaning the bank portion of the cachet No 4 with careful levelling of the partition embankment slope
  2. Preparation of the 4.0m wide and 4.5m long watertight carpet rolled on a 5m long metal bar. Prepare 8 rolls (material provided by the Investor)
  3. Careful unrolling along the slope of the partition embankment, complete with fixing the ends of rolls using metal bars or weights. Rolls shall overlap by 25-30cm
  4. Careful spreading of natural grain size gravel over the spread watertight carpet in minimum 15cm thickness. Spreading shall start from the top of the carpet.

Calculated in lump	Lump	1.00		
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- 2 Survey of the as-is situation for the calculation of the amount of executed work with demarcation of the cross-section profiles.

For the purpose of establishing precise amounts of executed work, prior to work commencement it is necessary to survey the as-is situation on site of the infiltration basins, elevation points of the basin bottoms, embankments and partitions being reconstructed.

THIS WORK SHALL BE PERFORMED BY THE INVESTOR IN THE PRESENCE OF THE CONTRACTOR'S GEODETIC SERVICE. After the survey a layout of the terrain shall be done with cross-section profiles at every 20m to be enclosed with the construction diary. The geodetic delineation of cross-section profiles and demarcation in the field shall be done to make all installed elements accessible for supervision checks during work execution.

Calculated in lump	Lump	1.00		
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- 3 Removal of the slurry deposited by the Morava river directly around the basins in a strip of 10.0m. The thickness of the stripped layer shall be 5-10cm.

Calculated per m2	m2	4180.00		
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- 5 Cleaning the slurry material from the bottom of the settler to the thickness of 30cm and (along the settler slope) to the thickness of 10cm, complete with transportation of the slurry material to the landfill up to 5km away.

The water shall be drained for the duration of the excavation (continuously) which shall be included in the excavation price. The Contractor shall provide the electricity by way of generator, as well as slurry pumps, electric cables and construction distribution cabinets. The cleaning of the gravel and slurry material can be initiated only after the water level in the basin has been lowered in the settler and the dried slurry.

Calculated per m <sup>3</sup>	M <sup>3</sup>	1965.00		
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- 8 The development of the as-built survey. The item shall include a geodetic survey – development of the situation with a sufficient number of profiles to represent the accurate extent of work performed, as well as all other appendices in accordance with the standing Law on Planning and Construction.

Calculated in lump	Lump	1.00		
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- 9 Design supervision throughout the duration of the work; development of the testing programme and final testing of the infiltration basin operation.

Calculated in lump	Lump	1		
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<b>SETTLER CLEANING TOTAL</b>
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All prices w/o VAT

Item	Item Description	UoM	Quantity	Unit Price	Total
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**E. FENCING AROUND THE SPRING**

1. Geodetic marking of the spring perimeter.

Calculated per m'	m'	500		
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2. Procurement, transportation and mounting (concreting) of 3.0m long 10x10cm concrete posts with slanting 50cm tops.

Calculated per piece	pcs	250		
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3. Procurement, transportation and mounting of 2.0m tall woven wire fence, diameter min 3.1mm with 4x4mm loops.

Calculated per m'	m'	500		
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4. Procurement, transportation and mounting of 2.2mm diameter barbed wire in three lines.

Calculated per m'	m'	1500		
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5. Excavation of 600mm diameter holes for post mounting.

Calculated per piece	pcs	250		
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6. Reconstruction of the existing damaged fence. Replacement of damaged – broken posts and barbed wire fully according to the situation of the existing fence.

Calculated per m'	m'	1000		
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**FENCING AROUND THE SPRING TOTAL**

All prices w/o VAT

**F. SUMMARY**

<b>A.</b>	<b>IB-1 INFILTRATION BASIN CLEANING</b>	
<b>B.</b>	<b>IB-2 INFILTRATION BASIN CLEANING</b>	
<b>C.</b>	<b>SETTLER CLEANING</b>	
<b>E.</b>	<b>FENCE AROUND THE SPRING</b>	
	<b>TOTAL (A+B+C+E)</b>	

All prices w/o VAT