

INVESTMENT FACT SHEET

13, Drilling of boreholes for Natural Attenuation² potential assessment in Parma FUA

Project index number and acronym	CE32 AMIIGA
Responsible partner (PP name and number)	GIG, Główny Instytut Górnictwa
Linked to pilot action (number and title)	Pilot action 4, Assessment of Natural Attenuation potential as a remediation option in Parma FUA (IT)
Project website	https://www.interreg-central.eu/Content.Node/AMIIGA.html
Delivery date	13.11.2017

Description and technical characteristics of the investment

ca. 2.000-6.000 characters (depending on the investment size and related costs)

The investment consists of 7 monitoring wells (MWs). 6 MW were drilled up to 25 meters from the ground level and screened at different depths but in the same shallow aquifer. AMIIGA_PZ9 was drilled up to 30 m.

The holes were drilled with a diameter of 152 mm. A continuous core drilling (100% salvaged material), with a 4 inch diameter, was performed; the extracted carrots were photographed and placed in special cataloging boxes. The new MW were equipped with a nontoxic PVC (certified by the manufacturer) case with a diameter of 3 inch and with a lock and a cast iron plate or a standard MW cover.

The fenestrated sections have holes with a diameter of 1 mm. The drainage of the piezometric tube consists of siliceous gravel of 3-4 mm diameter; the sections of filtering tube were isolated with a mixture of cement and bentonite, pressure-injected from the bottom of the hole.

After the realization of each piezometer, a purge was performed by forced pumping, ended with the extraction of clear water; the purge water has been disposed of at an authorized facility, identifying a C.E.R. code.

The areas in which the piezometers were realized are all owned by the Municipality of Parma, in places of immediate accessibility.

For the realization of the piezometers, and in accordance with the regional legislation (Regional Regulation n. 41/01, art. 17), the Project Report and the Final Report were drawn up, both sent to the competent regional offices.

Investment costs (EUR) including a break-down of main cost items

29.879,43 €, included taxes

Description of Processing	Amount €
1) Round-trip equipment transport, installation on the first drilling point	700
2) Moving equipment to further survey and piezometer execution points	1.000
3) Continuous core drilling DN 101 mm from 0,0 to 25,0 m	10.010
4) Coating with temporary operating column DN 127 mm	1.820
5) Cataloging boxes	555
6) Hole bore with coating installation DN 152 mm from 0,0 to 25,0 m	867,5
7) PVC pipes of 3 "(90 mm / 80mm) compliant with DM 174/2004, both blind and fenestrated with light 1 mm, threaded in thickness (5-6 mm), in non-toxic PVC, certified by the manufacturer	2.255,5
8) Header cementation	227,5
9) Intermediate cementation with Compactonic	345
10) Supply and installation of siliceous gravel drainage type SATAF 107 □ 3-4 mm	337,5
11) Supply and installation of a manhole cover with a lockable watertight expansion cap	700
12) Purging and development of piezometers with submersible or self-priming electric pump	700
13) Characterization analysis of purge water	0
14) Charges collection and transport of piezometers purge water, purge water disposal (presumably as hazardous waste C.E.R. 16 10 01 *), provision of containers for temporary storage	0
15) Elaboration of the Project Report and the Final Report, pursuant to Regional Regulation no. 41/01, art. 17. The final report must contain the photographic documentation of the cataloging boxes	700
16) Execution of permeability test (Lefranc)	1.560
17) Execution of permeability test (Slug test)	2.000
TOTAL AMOUNT (NET OF SECURITY CHARGES))	23.778,00
Security charges not subject to discount (3% on works - excluding item 15)	713,34
WORKS SUMMARY (VAT 22% EXCLUDED)	24.491,34

Investment location

NUTS 3	Address (Street, house number, postal code, city, country)	GPS coordinates
<p>Nuts0: IT, ITALY Nuts1: ITH, Nord-Est Nuts2: ITH5, Emilia-Romagna Nuts3: ITH52, Parma</p>	<p>All the new MWs are located in the city of Parma (Italy) with the same zip code: 43122</p> <p>AMIIGA_PZ3 is located in Via Pasini parking area North, AMIIGA_PZ4 is located in Via Pasini parking area South, AMIIGA_PZ5 is located in Via Leporati, AMIIGA_PZ6 is located in Piazzale Matteotti, AMIIGA_PZ7 is located in Via Ugo Bassi North Villetta, AMIIGA_PZ8 is located in Strada Farnese and AMIIGA_PZ9 is located in viale dei Mille.</p>	<p>AMIIGA_PZ3 has the following coordinates: X= 1604011, Y = 4962355, AMIIGA_PZ4 has the following coordinates: X= 1603971, Y = 4962158, AMIIGA_PZ5 has the following coordinates: X= 1603700, Y = 4961622, AMIIGA_PZ6 has the following coordinates: X= 1604084, Y = 4961593, AMIIGA_PZ7 has the following coordinates: X= 1603916, Y = 4960703, AMIIGA_PZ8 has the following coordinates: X= 1603156, Y = 4959176 and AMIIGA_PZ9 has the following coordinates: X= 1603890, Y = 603861 The coordinate system is EPSG = 30003</p>

Duration and process of investment implementation

Start date	End date
13.11.2017	20.6.2018

Major milestones of investment implementation

Max. 1.000 characters

Thanks to the investment, now the Municipality of Parma owns a monitoring network of the shallow aquifer (no deeper than 25 m) in a portion of the city (west side of the urbanized area).

The analysis carried out in the new monitoring network, for some campaigns further implemented by use of some private piezometers, led to the discovery of a situation of chlorinated hydrocarbon contamination in the Arlecchino kindergarden area (located in the North-West side of the urbanized area): in this area, the local environmental Authorities are drawing a risk analysis up: the study will be ready next autumn.

Ownership and durability of the investment (e.g. maintenance, financing)

Max. 2.000 characters

The MW were drilled in public area owned by the Municipality of Parma. The new MW are now part of a new public monitoring network of the shallow aquifer.

The MWs do not require periodical maintenance. All the MWs except AMIIGA_PZ8 are protected by a cast iron plate; only AMIIGA_PZ8 is protected by a standard MW cover because it is located in a green area.

Municipality of Parma will periodically monitor the new MWs to assess the degree of contamination and, in general, the state and quality of the groundwater.

The pilot site of P.le Santa Croce is inserted in an area of the city of Parma in which a reclamation procedure has been officially activated; the results of the AMIIGA project provided the local authorities with further and more detailed knowledge to continue this procedure: specifically, the need to continue monitoring the piezometric network implemented was formalized.

Since the entity in charge of such monitoring is the Municipality of Parma, the municipal administration will be activated to include in the next public budget (2020 - 2021) the amount for the costs of sampling and analysis of groundwater, to be performed every six months.

References to related pilot action (output fact sheet) and relevant deliverables (e.g. pilot action report, studies) and web-links.

If applicable, additional documentation, pictures or images to be provided as annex

(Max. 1.000 characters)

For further details see deliverables D.T2.4.3 (investment preparation documentation), D.T2.4.4 (report from drilling the monitoring NA wells) and the output fact sheet of the Pilot action 4.

Deliverable D.T2.4.4 contains pictures of the realization of the MW, while the attachment to D.T2.4.4 is the final report of the drilling prepared by the drilling company.

Project products:

- Guidelines (D.T1.4.3): <https://www.interreg-central.eu/Content.Node/D.T1.4.3-final-version-guidelines---ENG-1.pdf>
- Final Brochure (D.C.5.2): <https://www.interreg-central.eu/Content.Node/AMIIGA---final-brochure-LR.pdf>