

An Ancient Underground Tunnel Discovered in Albano Laziale, Rome, Italy, Which Extends for Hundreds of Meters Underground

**Authors: Daniele Cataldi¹, Riccardo Bellucci², Settimio Tersigni²,
Giancarlo Valle³, Marco Tudini⁴**

Author: 1 – Vice President of Arco di Diana APS Association, Research sector, 2 – Arco di Diana APS Association, Archaeological Research Sector, 3 – Arco di Diana APS Association, Underwater Research Sector, 4 – President of Arco di Diana APS Association, Historical Research Sector.

e-mail: arcodidiana.aps@pec.it for all Authors

ABSTRACT

The explorations of the Arco di Diana APS Association made it possible to document, for the first time ever, an ancient underground conduit, located in the northern area of Albano Laziale, Rome, Italy. The archaeological discovery, surveyed for the first time and reported to the Roman Archaeological Superintendence, highlighted how this tunnel is of ancient origin and widely extended,

perhaps part of an underground water supply network used in ancient times. This study highlights the particular characteristics of the hypogeal structure and provides some working hypotheses on which to meditate.

Keywords: Tunnel, Ancient underground tunnel, Exploration, Archaeological discovery, Italy.

1.0 – INTRODUCTION

The discovery of the ancient tunnel took place thanks to Giancarlo Valle (one of the managers of the underwater sector - Arco di Diana APS) who was aware of the existence of a very long tunnel whose entrance was intercepted in the property of the Hotel Miralago (Albano Laziale, Rome Italy). Riccardo Bellucci, head of the archaeological sector, had accompanied the researcher and historian Dr. Giulio Cappa a few years earlier to the "100 mouths" aqueduct located in Palazzolo and to the Hermitage of S. Angelo in Lacu where an aqueduct carved into the rock begins. According to what was stated by Dr. Cappa, in relation to the hydraulic work that supplied water to the Castra

Albana in the Roman period, there must have been another aqueduct in addition to the known ones, and it must also have been the most important, but completely unknown. [2][3]

Until then, all those that had been explored by Riccardo Bellucci were located too low to be able to rise to this purpose. Dr. Cappa was in fact looking for a hypothetical duct at a higher altitude, that is, located much higher, which could have provided a greater flow of water to the entire Municipality of Albano Laziale, Rome, Italy, in ancient times.

1.1 CONFIRMATION OF EXPLORATION

Putting these two facts together, namely the convictions of Dr. Giulio Cappa and that relating to the presence of an underground conduit in the area of the Hotel Miralago, described by Giancarlo Valle, which was located at a higher altitude than the volcanic building of Lake Albano, it was concluded that probably this underground tunnel could be this.

On January 30, 2021, Giancarlo Valle, Marco Tudini, Settimio Tersigni and Riccardo Bellucci, went to explore this conduit, a very beautiful underground conduit.

Right from the start, the owner of the estate where the entrance to the conduit is located confirmed that according to some estimates, this must have been about 2-3 km long (information from her father). The work is totally carved in peperino, and the chisels are very well

highlighted. The inner section is approximately 180cm high and 70cm wide.

Starting from the property of the Hotel Miralago (cellar - GPS: 41.7313170, 12.6745960), you walk north, for about 25 meters, in a medieval tunnel, to then intercept the ancient tunnel of ancient origin, which is dislocated for one part towards the Capuchin Friars of Lake Albano (West), while a second section sets out towards Monte Gentile and Monte Cavo (East). The intercepted tunnel, of ancient origin, has not been explored in its total length, but only for the first 50 meters. According to this exploration (January 30, 2021), at the intersection of the two tunnels there is a hole of about 80 cm in diameter located in the second estate of the owner of the Miralago Hotel, formerly used as a well for water supply. It is therefore possible to hypothesize that this "aqueduct" of ancient origin and perfectly known in medieval times.

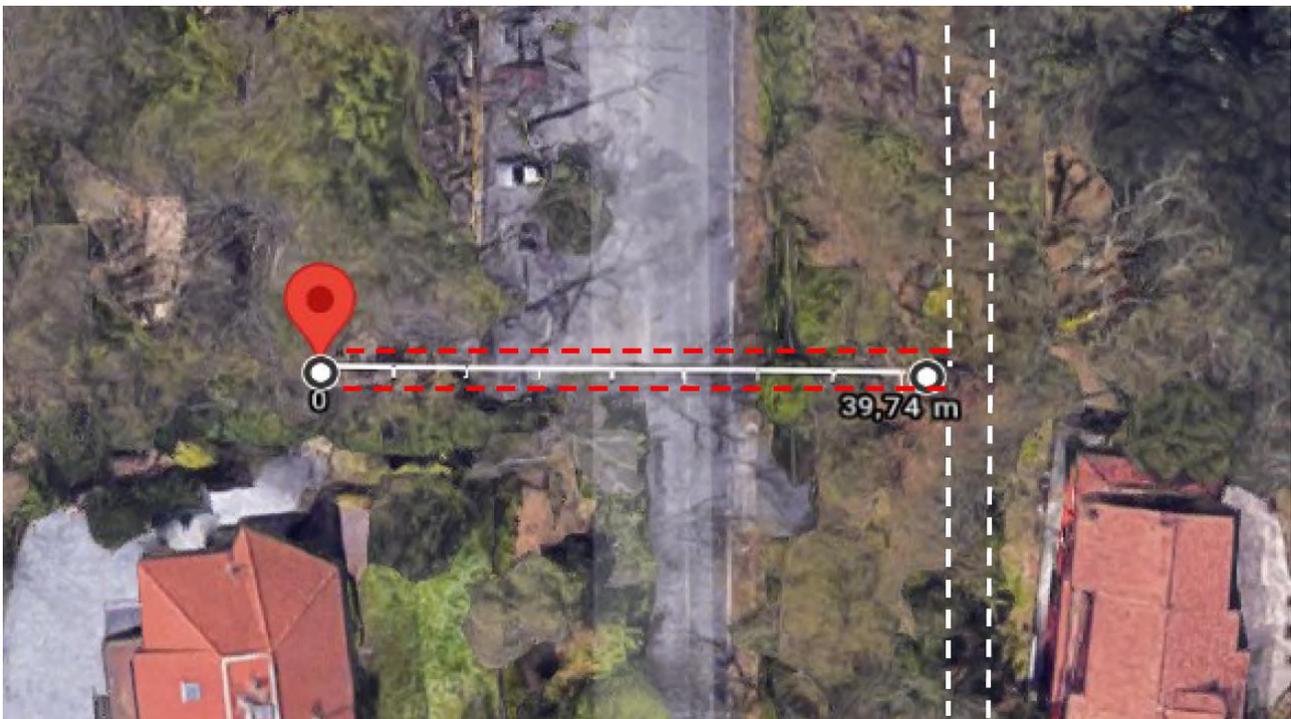


Fig. 1 – Top view of the area where the access point of the underground tunnel is located. It starts from the private estate of the Hotel Miralago, near the city of Albano, Rome, Italy, passes under the road and intercepts the ancient stretch that thus extends east and west. With the red dotted line, the main medieval tunnel, which intercepts the ancient underground tunnel (white dotted line). The measurements indicated in the map are approximate, as a technical exploration of the underground structure has yet to be performed. Credits: Google Earth; Dott. Daniele Cataldi, Arco di Diana APS.

Some research carried out by the Arco di Diana APS Association, in the days following the exploration, did not lead to any data relating to the discovery of this conduit in ancient times. you are probably facing a new discovery. It could therefore be an important and

unpublished discovery, never reported by anyone, which could be a reason for subsequent studies and findings in the area of the ancient territory of Albano Laziale (RM).

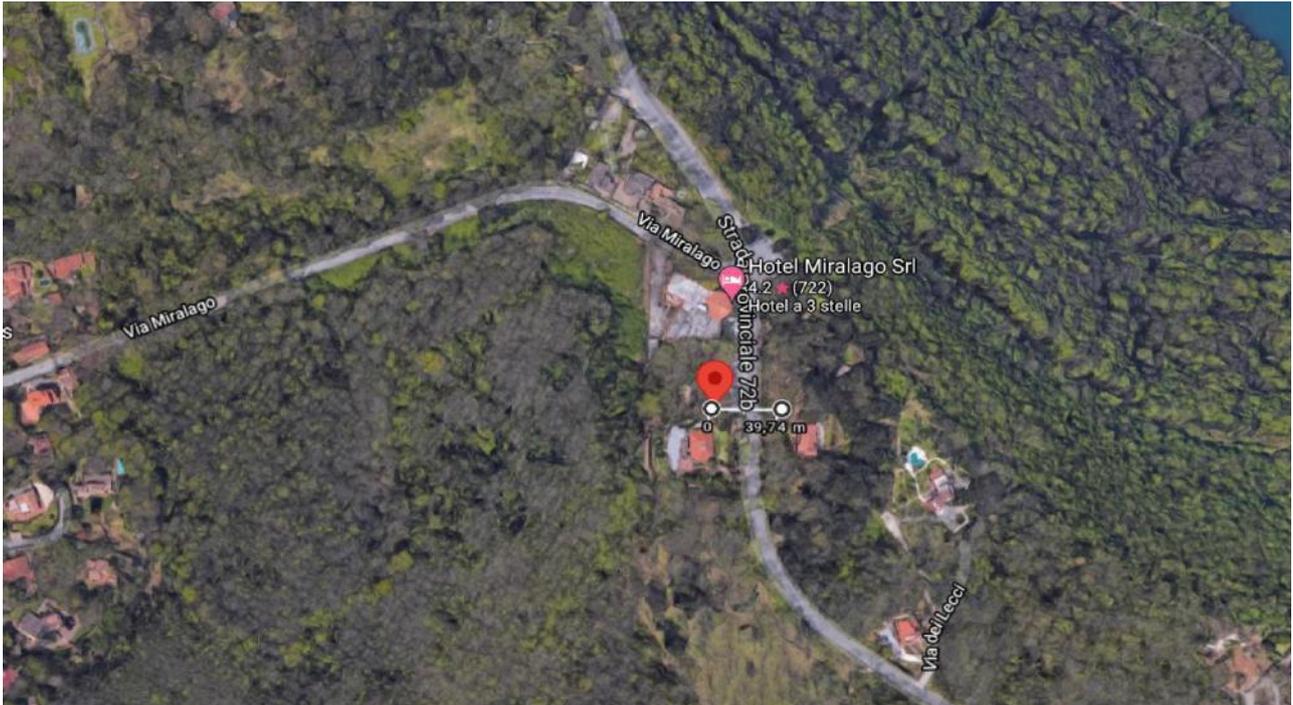


Fig. 2 – Overall view of the location of the underground structure in reference to the natural and anthropogenic elements present in the area. Credits: Google Earth; Dott. Daniele Cataldi, Arco di Diana APS.

Below are some documentary photos of the underground structure, taken on January 30, 2021,

during the first exploration carried out by the Arco di Diana APS Association:



Fig. 3 – Photographic shots inside the ancient and underground conduit. Credits: Giancarlo Valle; Arco di Diana APS.



Fig. 4 – *Photographic shots inside the ancient and underground conduit. Credits: Giancarlo Valle; Arco di Diana APS.*



Fig. 5 – Photographic shots inside the ancient and underground conduit. Pipes located just below the road surface can be seen. This proves that part of the ancient conduit was already known. Credits: Giancarlo Valle; Arco di Diana APS.



Fig. 6 – *Photographic shots inside the ancient and underground conduit. The Arco di Diana APS association (Marco Tudini, Giancarlo Valle, Settimio Tersigni and Riccardo Bellucci), explores the ancient tunnel. Credits: Giancarlo Valle; Arco di Diana APS.*



Fig. 7 – *Photographic shots inside the ancient and underground conduit. The Arco di Diana APS association (Marco Tudini, Giancarlo Valle, Settimio Tersigni and Riccardo Bellucci), explores the ancient tunnel. Credits: Giancarlo Valle; Arco di Diana APS.*

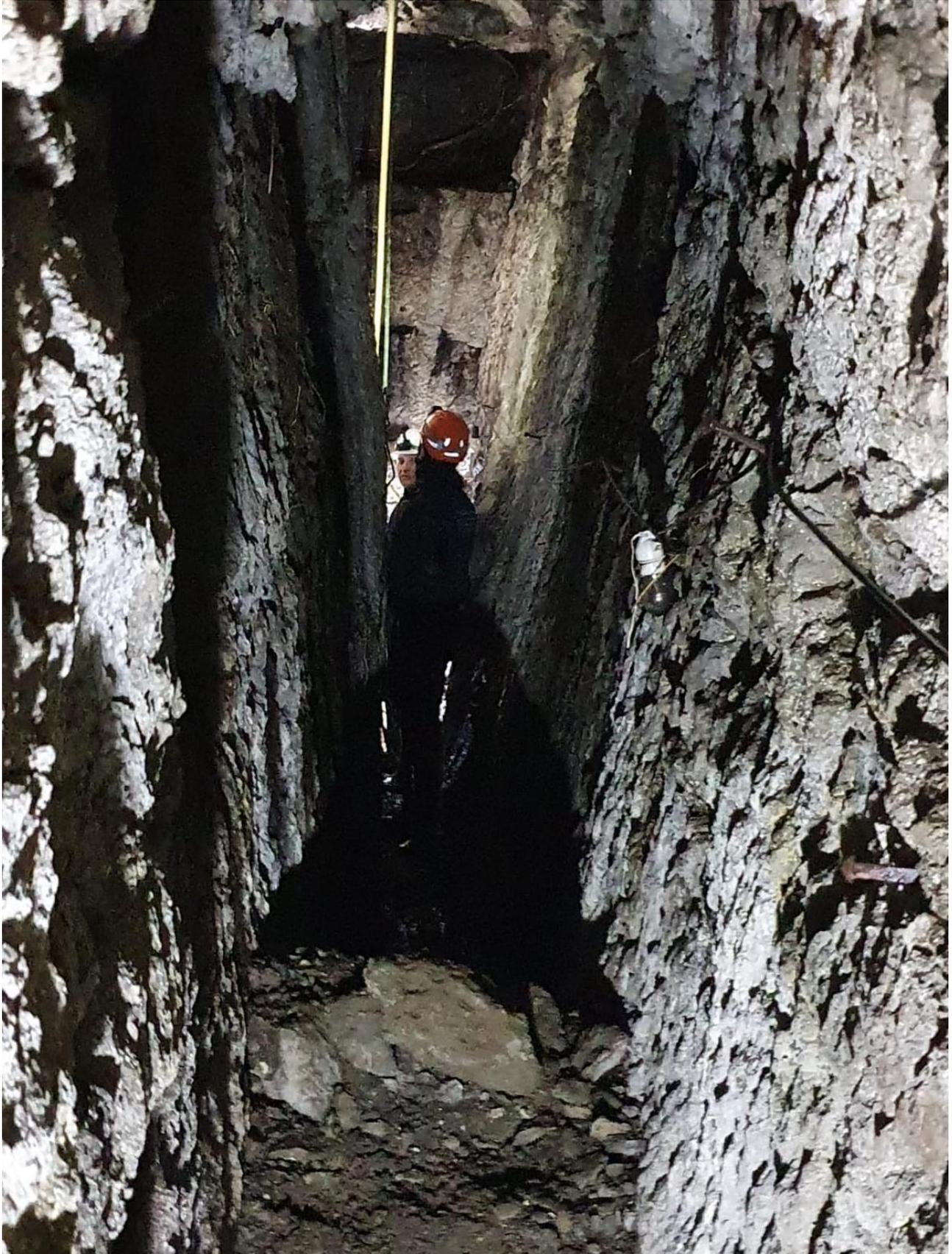


Fig. 8 – *Photographic shots inside the ancient and underground conduit. The Arco di Diana APS association (Marco Tudini, Giancarlo Valle, Settimio Tersigni and Riccardo Bellucci), explores the ancient tunnel. Credits: Giancarlo Valle; Arco di Diana APS.*



Fig. 9 – *Photographic shots inside the ancient and underground conduit. The Arco di Diana APS association (Marco Tudini, Giancarlo Valle, Settimio Tersigni and Riccardo Bellucci), explores the ancient tunnel. Credits: Giancarlo Valle; Arco di Diana APS.*



Fig. 10 – *Photographic shots inside the ancient and underground conduit. The Arco di Diana APS association (Marco Tudini, Giancarlo Valle, Settimio Tersigni and Riccardo Bellucci), explores the ancient tunnel. Credits: Giancarlo Valle; Arco di Diana APS.*



Fig. 11 – *Photographic shots inside the ancient and underground conduit. The Arco di Diana APS association (Marco Tudini, Giancarlo Valle, Settimio Tersigni and Riccardo Bellucci), explores the ancient tunnel. Credits: Giancarlo Valle; Arco di Diana APS.*



Fig. 12 – *Photographic shots inside the ancient and underground conduit. The Arco di Diana APS association (Marco Tudini, Giancarlo Valle, Settimio Tersigni and Riccardo Bellucci), explores the ancient tunnel. Credits: Giancarlo Valle; Arco di Diana APS.*

2.0 DISCUSSION

As can be understood from the documentation obtained from the exploration carried out by the Arco di Diana APS Association, part of the duct has water on its floor, while in some points calcium carbonate stalactites are visible (**Fig. 12**), perhaps useful (in part) to date the entire structure (this is obviously a hypothesis), since we do not know how and when these stalactites were

formed. Calcium carbonate is also visible in other portions of the explored duct. There is a concrete possibility that this conduit can be explored entirely and in complete safety, for its entire extension, since it was not possible to fully explore it, some openings identified in the conduit itself are located in some areas of the wooded area adjacent to the Miralago Hotel.

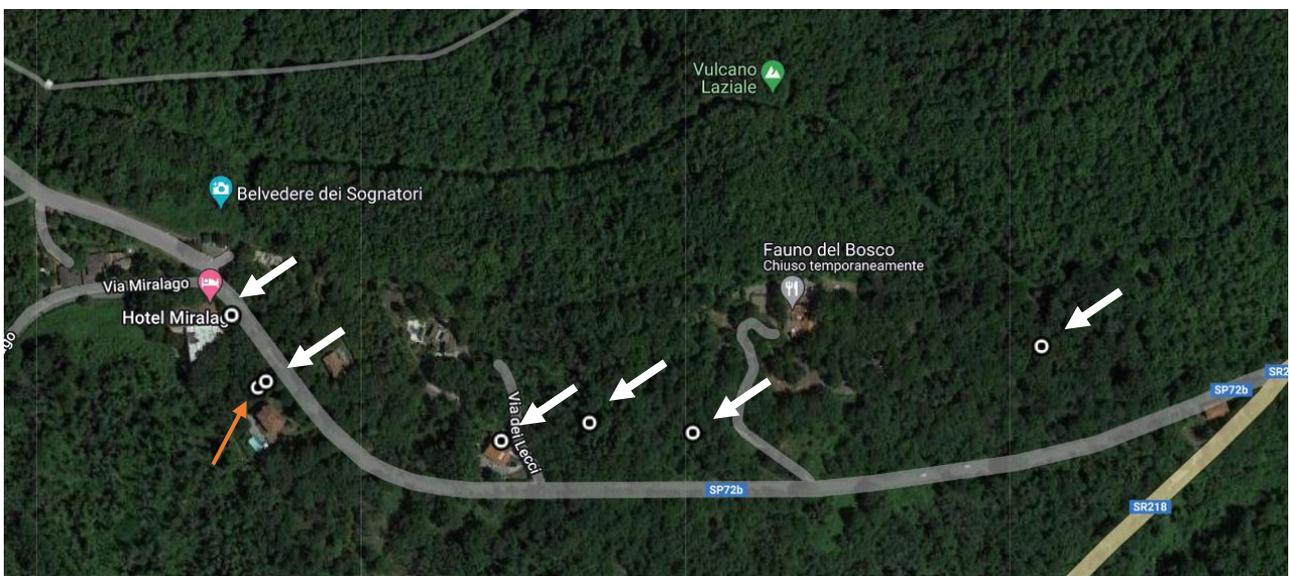


Fig. 13 – Satellite map showing the points where the ventilation shafts of the ancient underground conduit are located (white arrows), and the entrance to it (orange arrow). The extent within which these accesses are located is certainly not underestimated, amounting to hundreds of meters. Credits: Dott. Daniele Cataldi; Arco di Diana APS; Google Maps.

During the exploration of the conduit, the Arco di Diana APS Association was able to identify a series of wells that communicate with the outside (a total of 6 were identified), the number of wells could certainly be much greater given that the extension of the ancient tunnel extends well beyond the section explored (**Fig. 13**).

The location of these shafts tells us how the ancient tunnel extends below the ground. On 8 August 2021, the Arco di Diana APS Association carried out some altimetric and exploratory surveys in the area of the Lake Albano Basin. The first altimetric surveys have

highlighted the altitudes of some archaeological sites; the results showed that the tunnel in question is located at an altitude of 495 meters above sea level, a very high altitude, the highest compared to other hydraulic archaeological structures in the area (**Fig. 14**).

This indicates that this tunnel is probably capable of supplying water to all the other ancient places where cisterns and nymphaeums were once found.

The higher share shows us how this tunnel was able to supply water to all places (cities or inhabited centers).

ALTITUDE OF THE VARIOUS ARCHAEOLOGICAL AREAS IN THE BASIN OF ALBANO LAKE

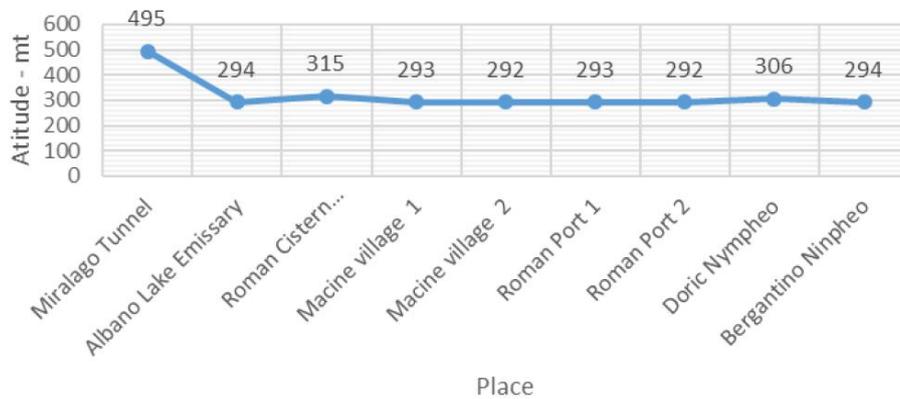


Fig. 14 – Elevations of the major archaeological sites located in the area of Lake Albanno. Credits: Arco di Diana APS.

The altimetric surveys, carried out on 8 August 2021 by Riccardo Bellucci, Settimio Tersigni and Giancarlo Valle, have scientifically highlighted how this ancient hydraulic structure (tunnel) can really be the conduit that Prof. Giulio Coppa, now disappeared, had sought after for years, whose work was also assisted by researcher Riccardo Bellucci who for 10 years (2010 corca), had explored all the water structures in the area.

In this case, the hypothesis that this conduit is in fact the ancient water structure that we expected to find, can certainly be accepted, also in relation to the characteristics of the conduit itself. On 9 September 2021, the Arco di Diana APS Association performed a new exploration of the underground conduit, this time documenting the position of the surface wells that are located along the path of the tunnel and their relative distances in meters (**Fig. 15**):

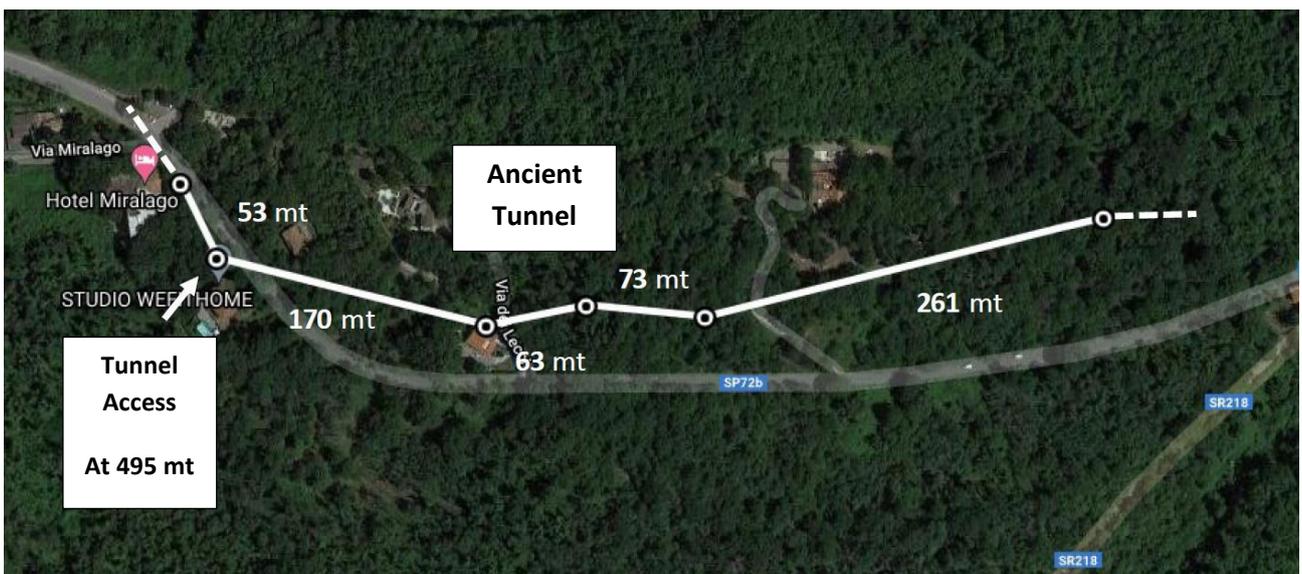


Fig. 15 – Satellite map showing the reconstruction of the extension of the tunnel below the ground surface. Credits: Google Maps; Arco di Diana APS; Dott. Daniele Cataldi.

This documentation made it possible to highlight part of the location of the wells, with respect to the surrounding

area. The GPS (Global Positioning System) positions of the wells themselves are summarized below (Fig. 16):

Measured item	GPS (Global Positioning System) Position
Well 1 - Ovest	41.731797, 12.674390
Acces of the Tunnel	41.731374, 12.674678
Well 1 - Est	41.7309907, 12.6766742
Well 2 - Est	41.7311101, 12.6774202
Well 3 - Est	41.7310448, 12.6782994
Well 4 - Est	41.731599, 12.6812486

Fig. 16 – GPS portion of the wells identified by the explorations carried out by the Association in 2021. Credits: Arco di Diana APS, Dott. Daniele Cataldi.

These wells are several meters apart from each other. The total length over which these wells extend is approximately 620 meters, the distances calculated with

respect to their GPS position (Global Positioning System) and the well just following are grouped below (Fig. 17):

Measured item	Distance
Well 1 – Ovest → Access of the tunnel	53 mt
Access of the tunnel → Well 1 Est	170 mt
Well 1 – Est → Well 2 Est	63 mt
Well 2 – Est → Well 3 Est	73 mt
Well 3 – Est → Well 4 Est	261 mt

Fig. 17 – Distance of the wells in meters, measured by means of the explorations carried out by the Association. Credits: Arco di Diana APS, Dott. Daniele Cataldi.

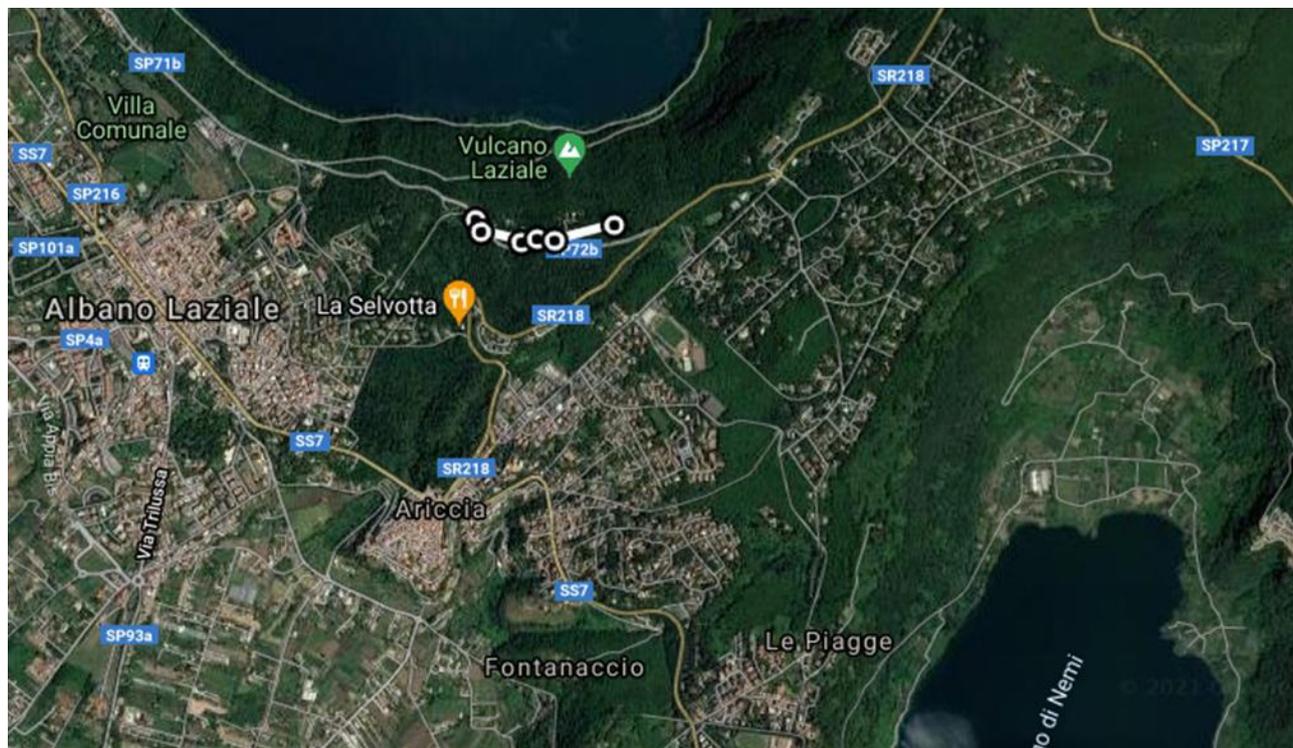


Fig. 18 – Overall view in a satellite photo of the location of the explored section of the underground tunnel subject of this study. Credits: Google Maps; Dott. Daniele Cataldi.

Obviously, these distances do not provide us with the actual internal length of the underground conduit, since this does not run linearly but is characterized by curves in addition to the fact that it extends well beyond the stretch explored by the researchers of Arco di Diana APS. The documentary work carried out on 9 September 2021, by Giancarlo Valle, Settimio Tersigni and Riccardo Bellucci, made it possible to highlight further information relating to the underground conduit, located near the Basin of Lake Albano, and currently

being studied and researched by of the Arco di Diana APS Association.

In this case the photographic documentation made it possible to certify previously not emerged details of the internal section of the Tunnel.

Some of these images, taken on the same day, have been included below:



Fig. 19 – *The first ever photo shoot, on the surface, of the opening of one of the wells documented by the exploration carried out on 9 September 2021. Credits: Arco di Diana APS.*



Fig. 20 – *Photo of 9 September 2021, taken from the surface of the ground where the accesses to the wells open. In this case, the depth of the well that reaches the ancient underground conduit is documented. Credits: Arco di Diana*



Fig. 21 – Presence of calcium carbonate statallites inside the ancient tunnel explored on 9 September 2021. Giancarlo Valle, Credits: Arco di Diana APS.

The documentation of the internal section carried out on 9 September 2021, made it possible to observe previously unexplored parts of the tunnel, even if this is probably located for hundreds of meters east and west, with respect to the entry point. (Fig. 21).

The exploration of 9 September 2021 (last exploration): Riccardo Bellucci, Settimio Tersigni and Giancarlo Valle enter the Tunnel, the latter takes the lead of the exploration team, and has two halogen / sub lights and a GoPro camera positioned on the helmet on. They arrive at the metal ladder, or the well where they built a small dam to draw water with the submerged pump from the surface.

Settimio Tersigni and Giancarlo Valle with difficulty overcome the ladder that is an obstacle inside the tunnel, continuing in the conduit while Riccardo Bellucci remains in place trying to move the ladder. then we proceed with the exploration and meet other wells / siphons. from the siphon of the iron staircase onwards, each well has regular and equal incisions on opposite

sides of the well itself; it should be an obvious recess useful for accessing the bottom of the pit itself and for intercepting the surface of the ground again once you have descended.

The Tunnel has always similar dimensions but in some points it narrows and you can only proceed by walking side by side. There is then, in front of a point where the continuity (never in a straight line) of the conduit is lost (perhaps the opposing excavation teams, who made it, made an error of about one meter to meet). You then find yourself in another small climb, until you find yourself at a curve to the right (90 °) for about two meters and then to the left (90 ° curve), with a flooded siphon about 120 cm high. water from the bottom and about 12 meters long; still ahead the bottom going up again you are dry again, then proceeding further forward you see the ogive shape / section of the duct that lowers (in height) up to about 110/120 cm while the dry bottom has, already from 15 meters, a flat and regular shape at the sides and a regular drainage channel in the center.

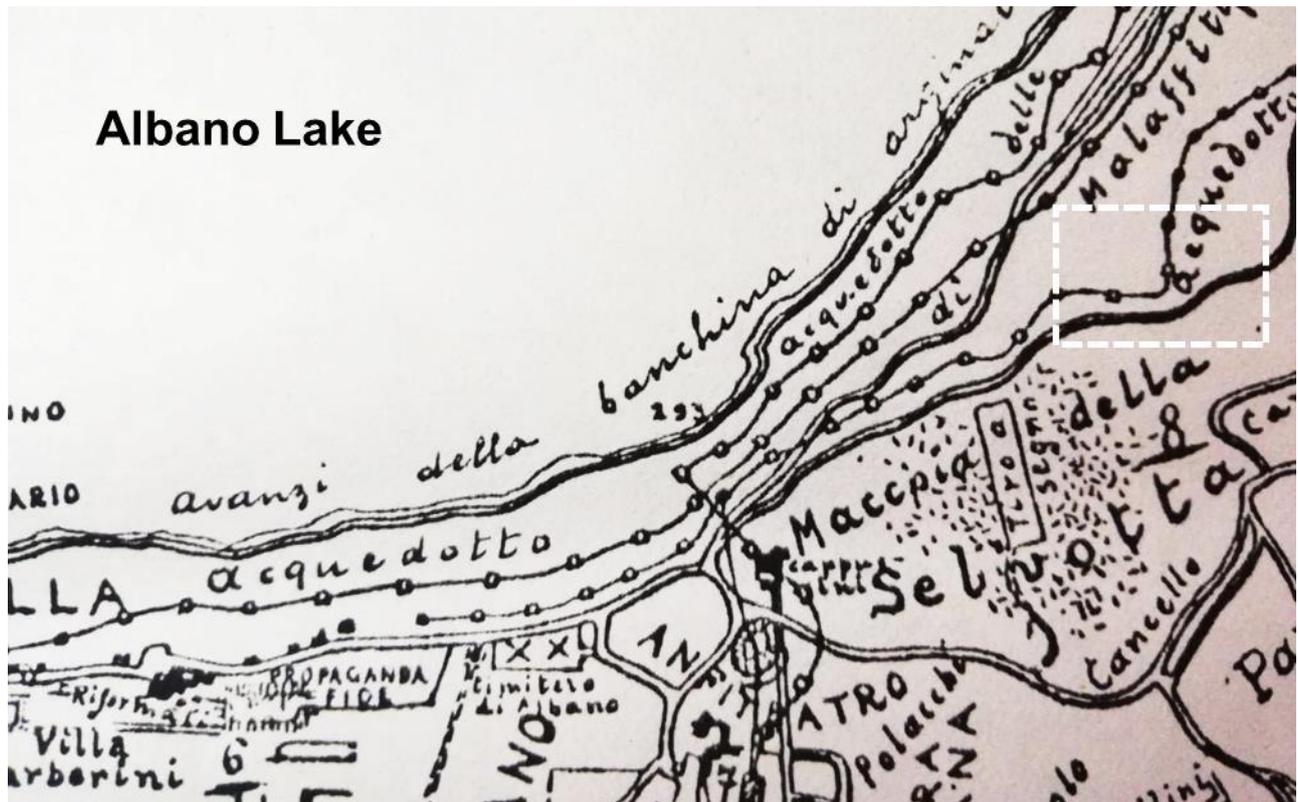


Fig. 22 – The map created by the archaeologist Giuseppe Lugli, this does not show this ancient conduit in the geographical area in which it is located (area delimited with a dotted line), so it is probably considered an ancient tunnel never recorded before. Credits: Dott. Giuseppe Lugli.

The archaeological map (Fig. 22) made by G. Lugli [1] does not contemplate the presence of this duct in the

geographical area where it is located. This means that it is almost certainly an unknown ancient tunnel and herefore an important archaeological discovery.

3.0 CONCLUSIONS

In conclusion of this study, we can affirm that we are facing an underground structure remodeled in recent times (for a small portion), the wells also equipped with metal steps, which were used for storing wine or food, in addition to the presence of pipes and ropes. These structural changes are clearly from the modern era, although some alterations, as well as the access from the Hotel Miralago in Albano Laziale, Rome, Italy, is probably of medieval origin. Most of the tunnel is still unexplored today, although it is possible to hypothesize that during the aerial bombardments, which took place during the Second World War, the inhabitants of the place hid inside this underground structure, to escape from the bombings and enemy roundups.

The exploration of this underground structure raises many questions about our ancient past and the ability that ancient populations possessed to build impressive water structures.

The academic and scientific world is waiting to deepen this discovery which may be unique and not already registered in the past, especially by the archaeologist Lugli, who does not give any historical information.

We are therefore talking about an archaeological element never known before

REFERENCES

- [1] G. Lugli – Carta archeologica dell'AGER ALBANUS – Danesi – 1914.
- [2] G. Giordano – I Colli Albani. Alla scoperta del vulcano di Roma - Newsletter INGV - Istituto Nazionale di Geofisica e Vulcanologia – 2020.
- [3] S. Madonna, S. Nisio, L. Ciccioli, F. Vessella – Clima e vegetazione nell'area dei Colli Albani: confronto tra fonti e cartografia storica e proxy data climatici – Memorie Descrittive della Carta Geologica d'Italia – 2023.

Acknowledgments: We thank Dr. Simona Carosi (Roman Archaeological Superintendence) for her irreplaceable collaboration and availability, as well as for having allowed the Arco di Diana APS Association to explore and study this underground complex.