

The Aqueducts and Water Distribution to Pompeii

Wayne Lorenz

Wright Paleohydrological Institute
Wright Water Engineers, Inc.

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Roman Aqueduct Sites

- Africa
- France
- Italy
 - Rome
 - Pompeii
- Spain
- Switzerland
- Turkey



Pont Du Gard—Nimes, S. France



Gier Aqueduct—Lyon, France



Segovia—Spain



Tyana Aqueduct—Nigde, Turkey



Rommavechia—Aqueduct Park, Rome



Alexandrina—Rome, Italy



Barbegal—Arles, S. France



Pompeii & Water





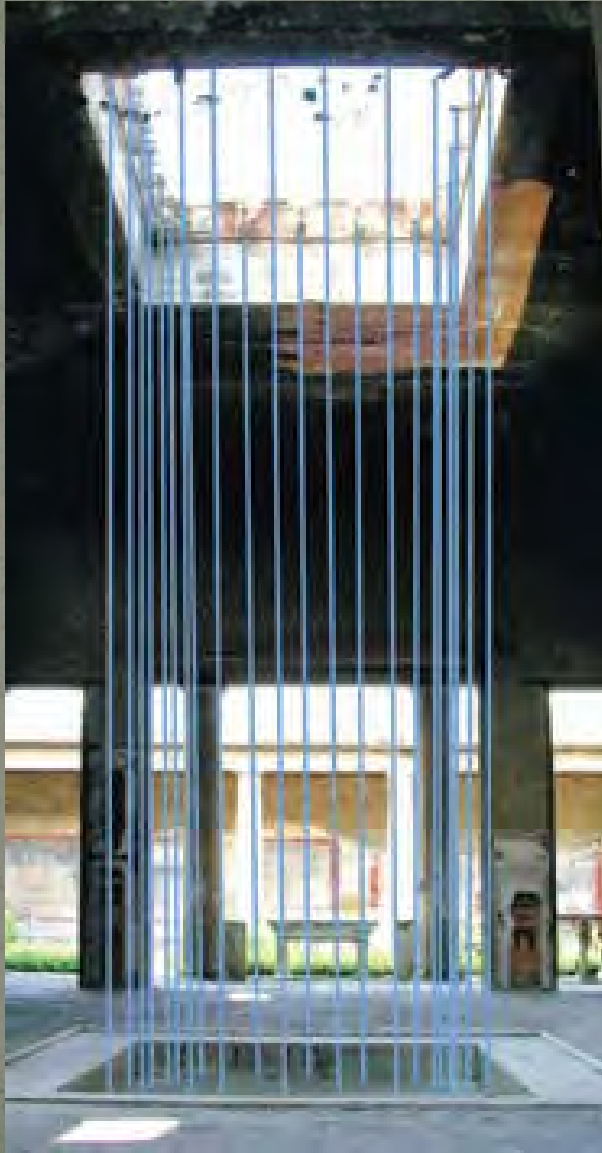
Early Pompeii Water—Rainfall Harvesting



Impluvium



Compluvium to Impluvium



Early Pompeii—Wells



Stabian Bath Well



The Story: Pompeii Water Supplies

- Groundwater & Rainfall Harvest < 80 B.C.
- Pompeii a Roman Colony 80 B.C.
 - Expansion of Baths & Water Use
- Early Aqueduct (Avella) 80 to 27 B.C.
- Augusta (Serino) Aqueduct 27 B.C.
- Earthquake February 5, 62 A.D.
- Mt. Vesuvius Eruption August 24, 79 A.D.
- Constantine Reconstruct of Serino 324 A.D.

Water Use in Pompeii

- 4 Bath Complexes – Stabian, Forum, Central, Suburban
- Public Fountains
- Industry – Fulleries
- In House

Small Lead Storage For Food Prep



Decorative Water Decanters



In-House Water Features—Bronze House of the Small Bull



<http://www.pompeiiinpictures.com>

In-House Water Features—Bronze



In House Water Features—Marble



Dolphin—Marble



In-House Water Features—Basins



House of the Hanging Balcony



House of the Hanging Balcony — 1970



House of the Hanging Balcony—2012





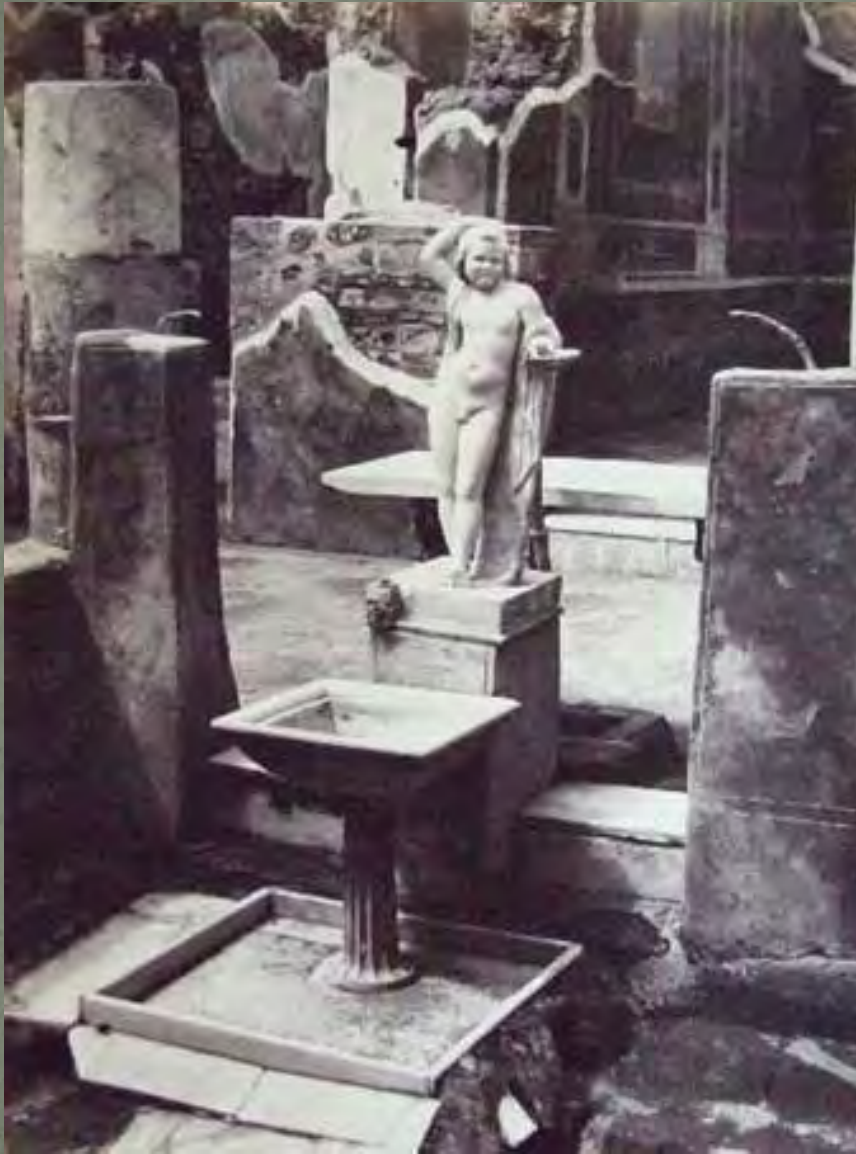


Marble Statue Fountain



Marble Statue Fountain—Backside





In-House Valves For Flow Control



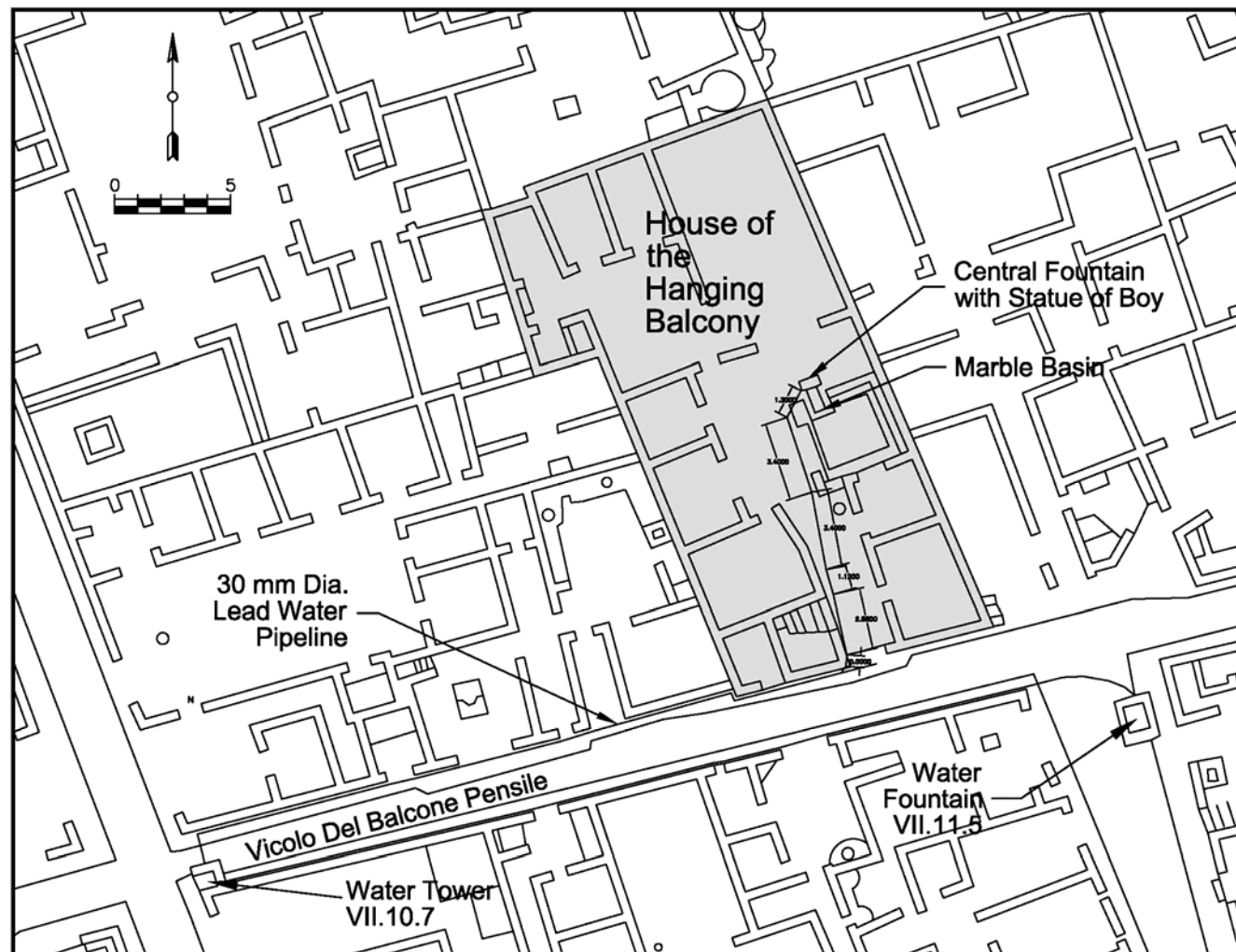
In-House Valves For Flow Control



Lead Piping In House



Plan of the House

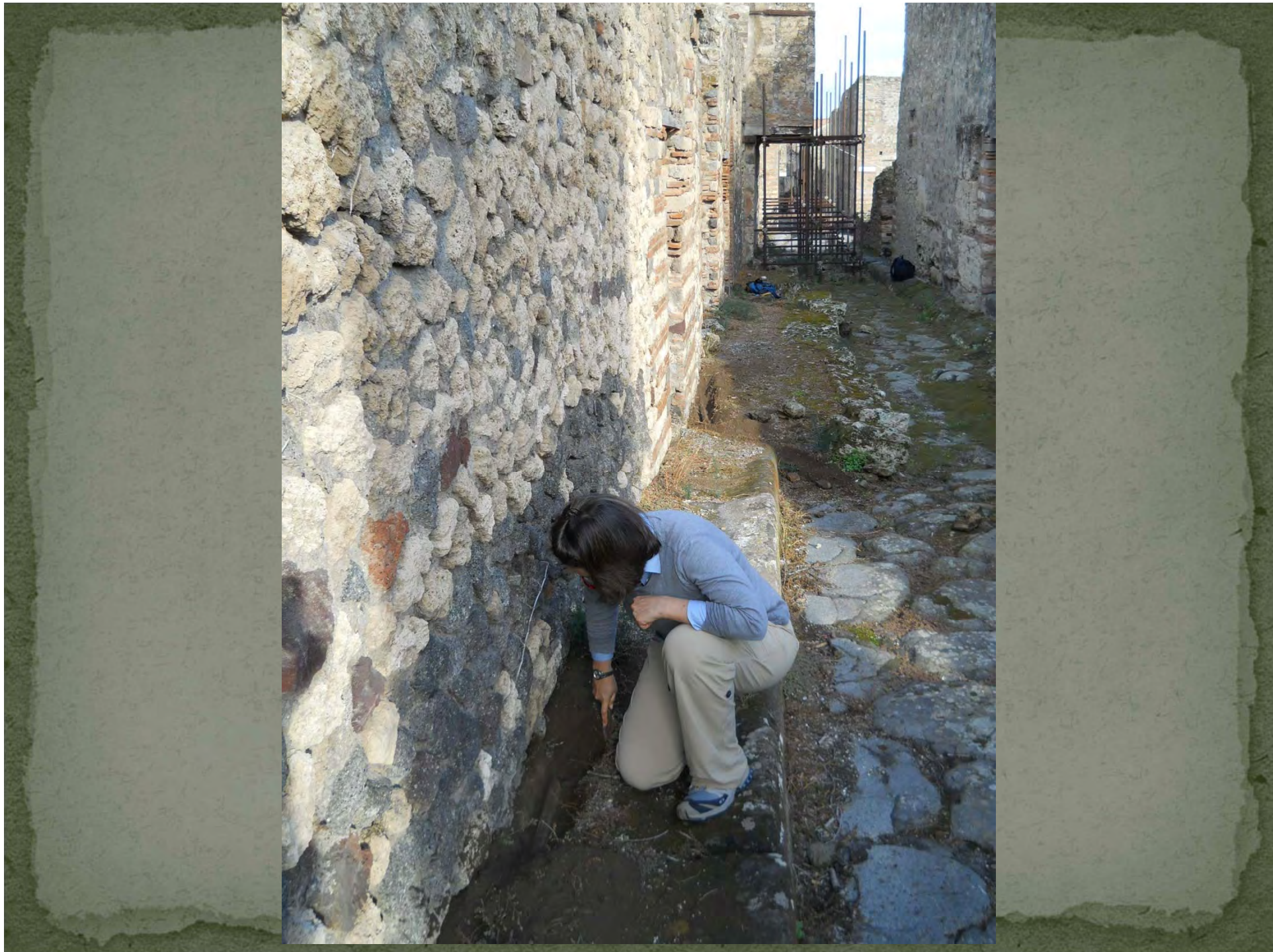


Lead Piping



Lead Piping At Door Into House







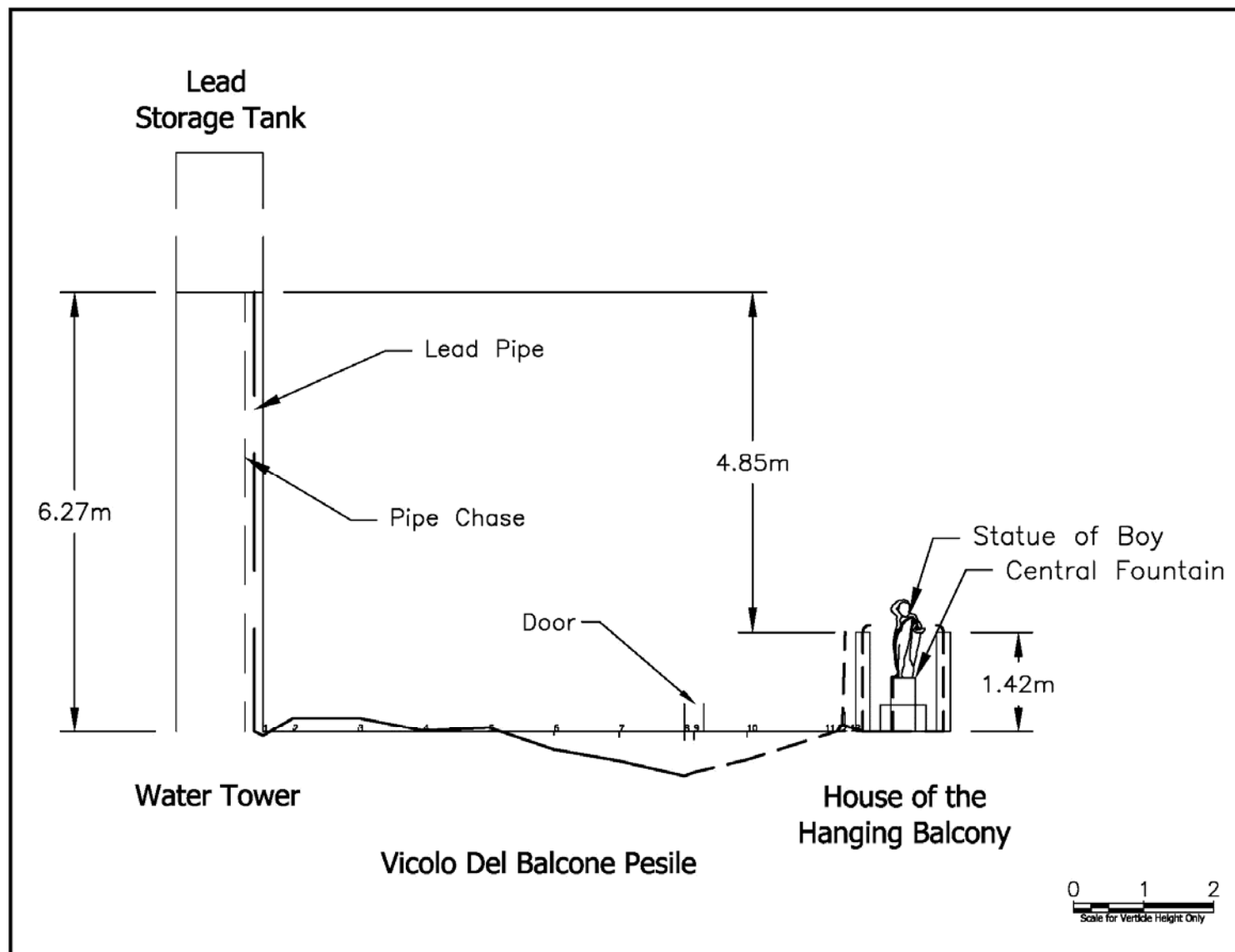
Piping Up the Street To a Water Tower



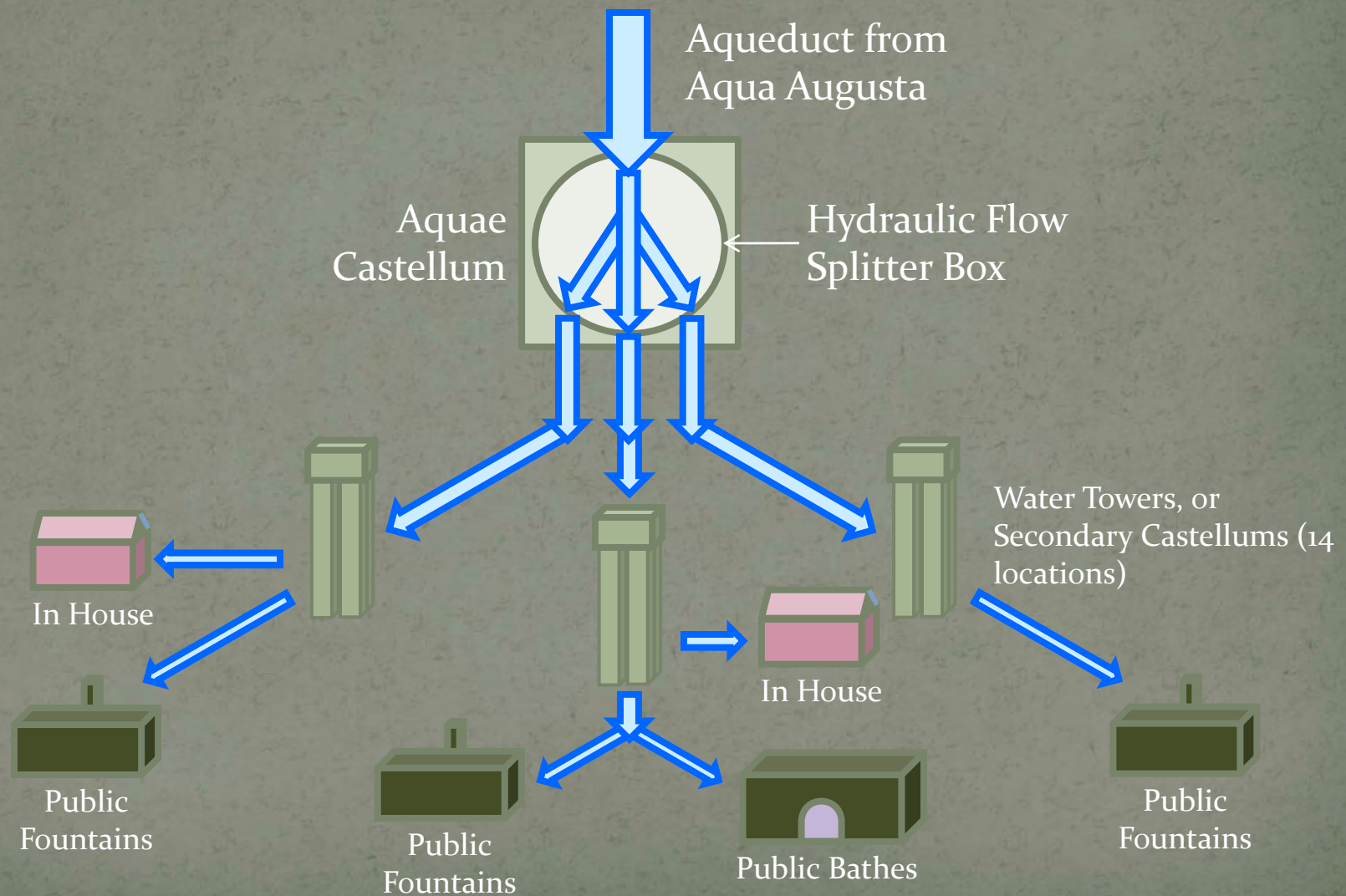
Water Tower No. 9

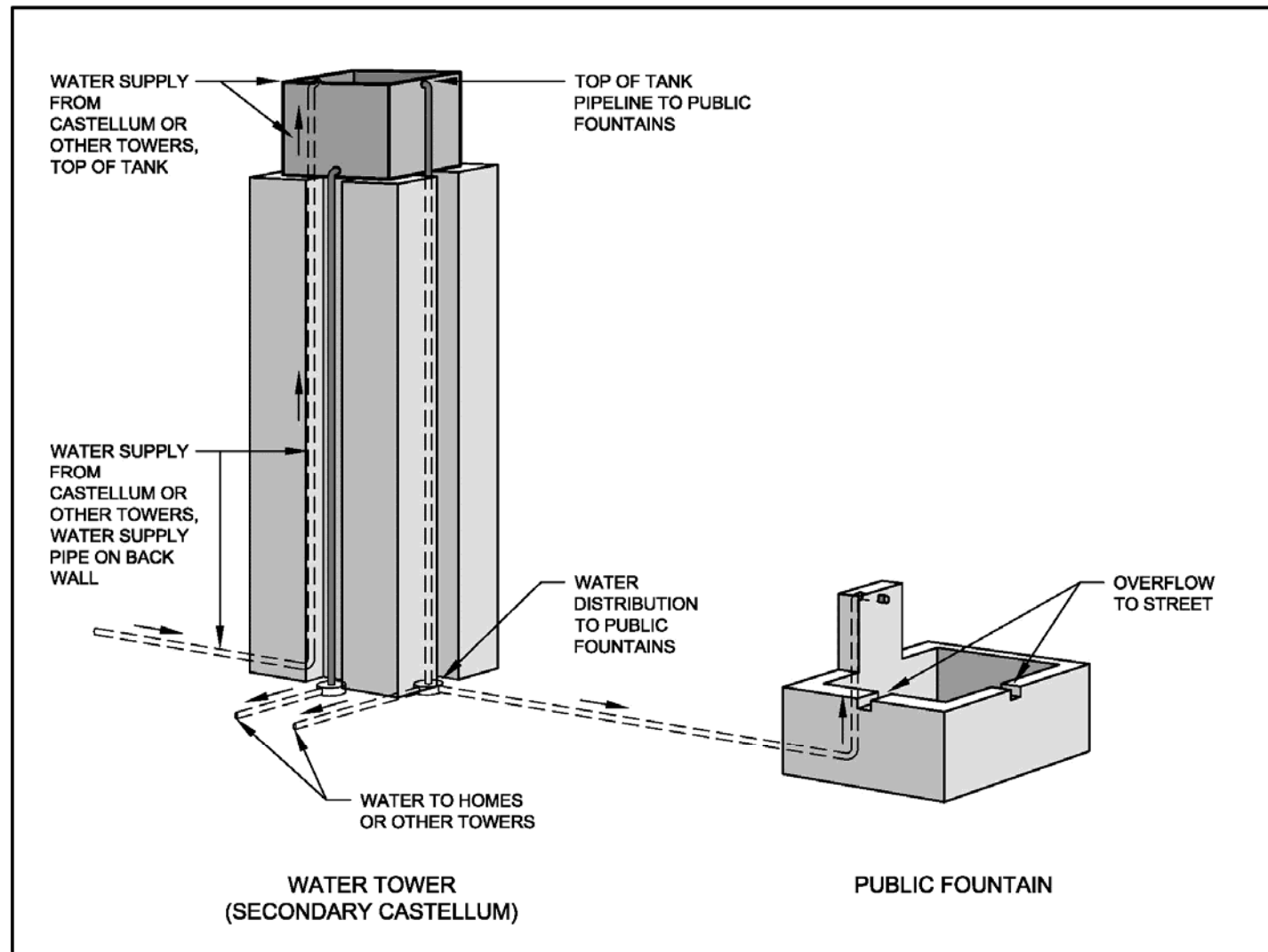






Pompeii Water Distribution Schematic





House of the Hanging Balcony



Water Towers



Water Fountains



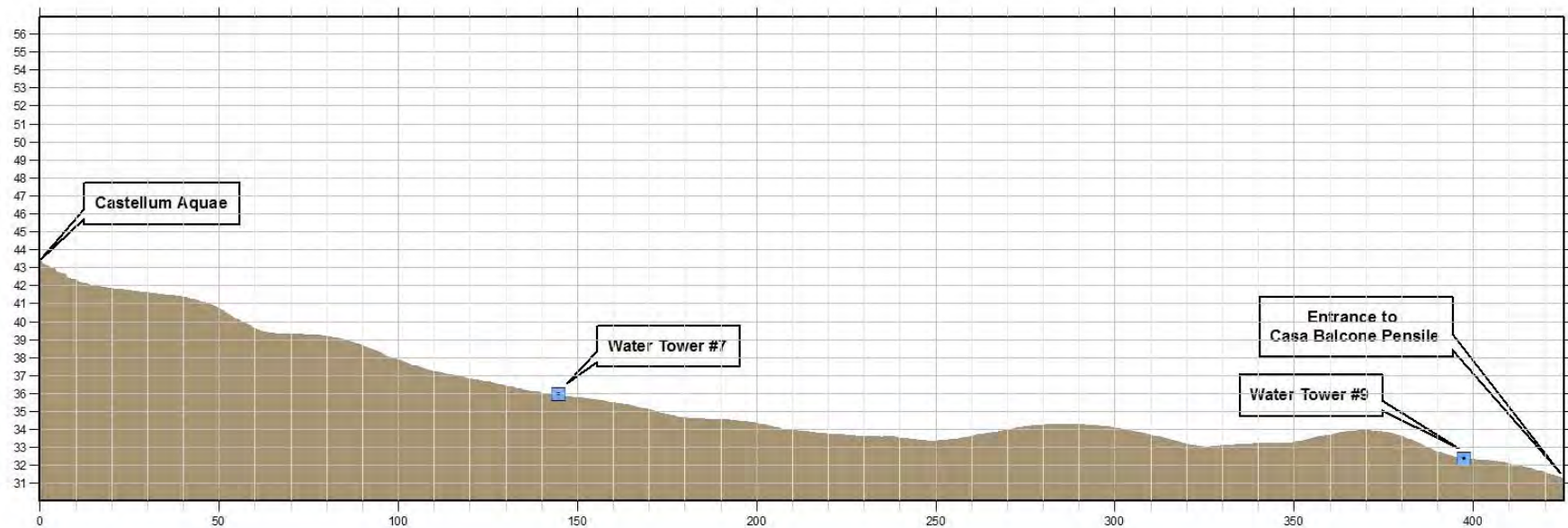
Aquae Castellum



Water Distribution Pipeline Route



Water Distribution Pipeline Profile



Scale: NOT TO SCALE

Vertical Exaggeration: 5 times

3D Model of Pompeii (RICA)



14 Water Towers



Lead Tank



42 Water Fountains

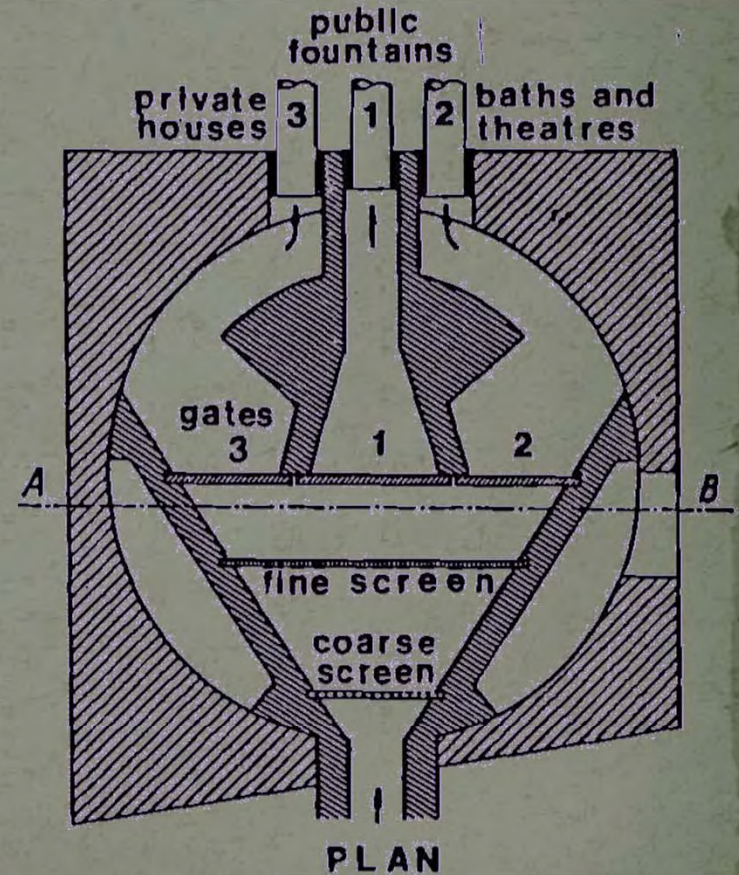




Castellum



Castellum Hydraulics



Large Diameter Lead Pipe



Valves



The Aqueduct Story

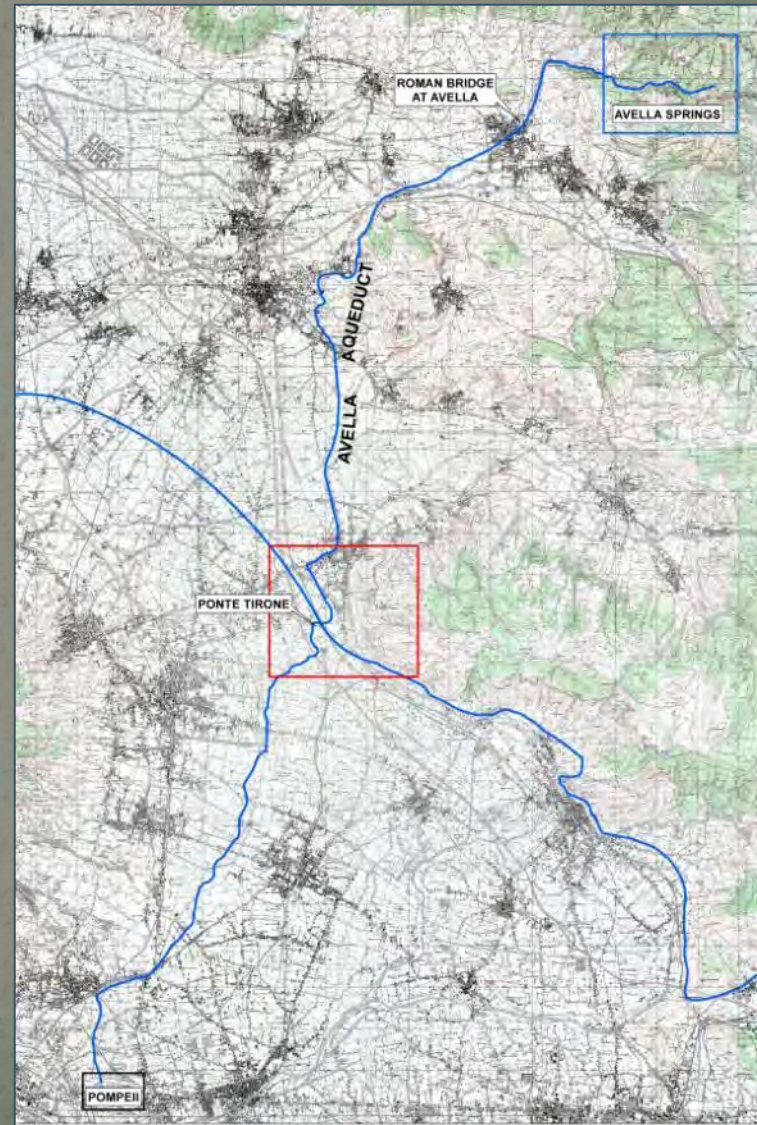
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- Earthquake February 5, 62 A.D.
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- Constantine Reconstruct of Serino 324 A.D.
- Pompeii Rediscovered 1594
- Excavations Began 1748

Earlier Aqueduct—The Avella

- Archeological Sites
- Historic Literature
 - Paulinus Poem - 407 A.D.
 - Murano - 1894
- Scientific - Chemical & Mineralogical
 - Ohlig - 2001
- Engineering - Sources, Topography, and Gradient (Using GPS and GIS Tools)

Refined Alignment of the Avella Aqueduct

- Springs 34 km
- Topo Dictates Route
- Ongoing Archeological Site Investigations



Avella Section



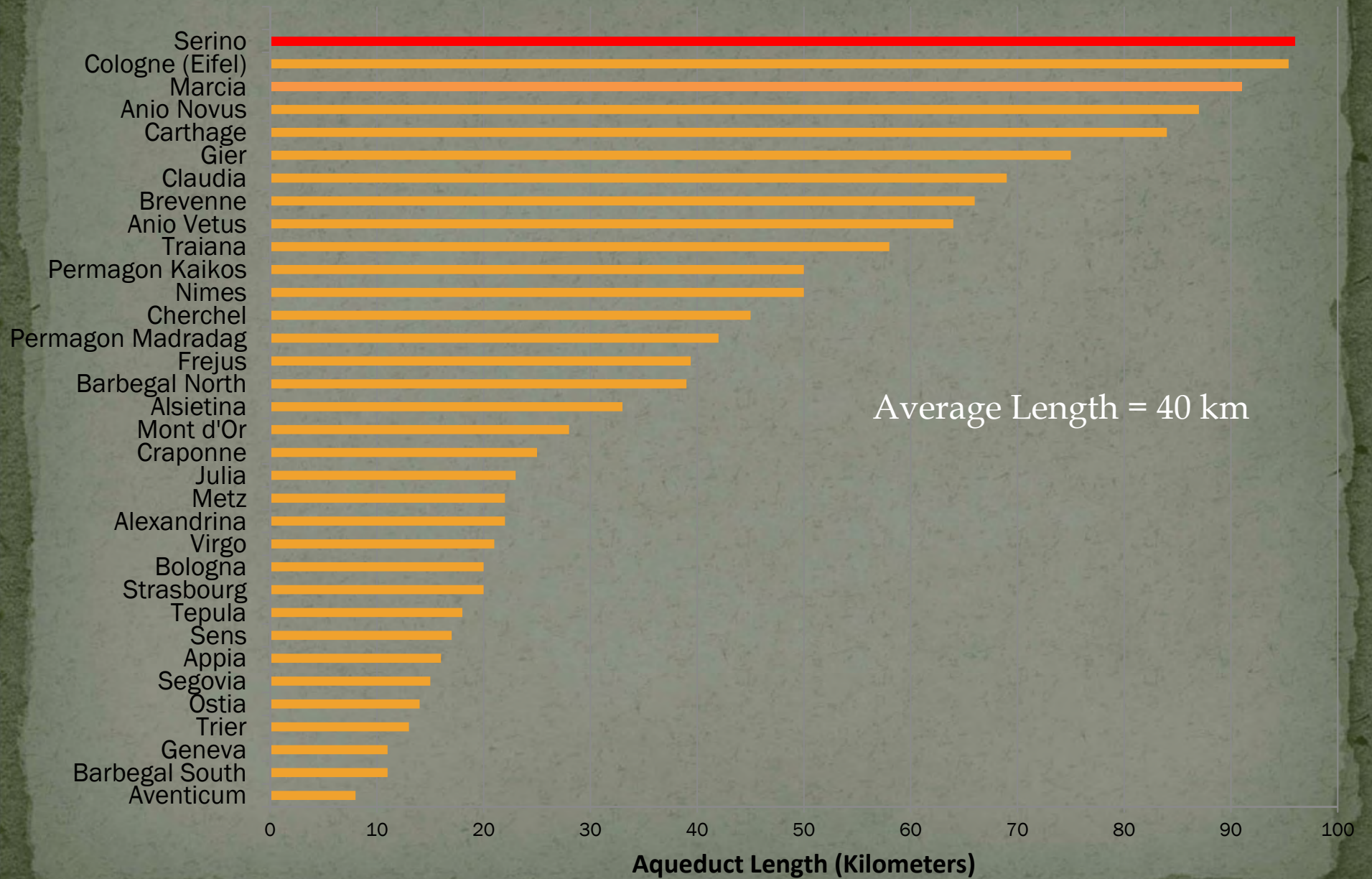
Avella Aqueduct Bridge



Pompeii – Augusta or Serino Aqueduct



Roman Aqueducts Lengths



Tunneled Sections—Rugged Terrain



Tunneled Sections—Deep



Arched Sections—Mura de'Arce



Near Mura de'Arce—Mt. Vesuvius



Archaeological Site at Ponte Tirone

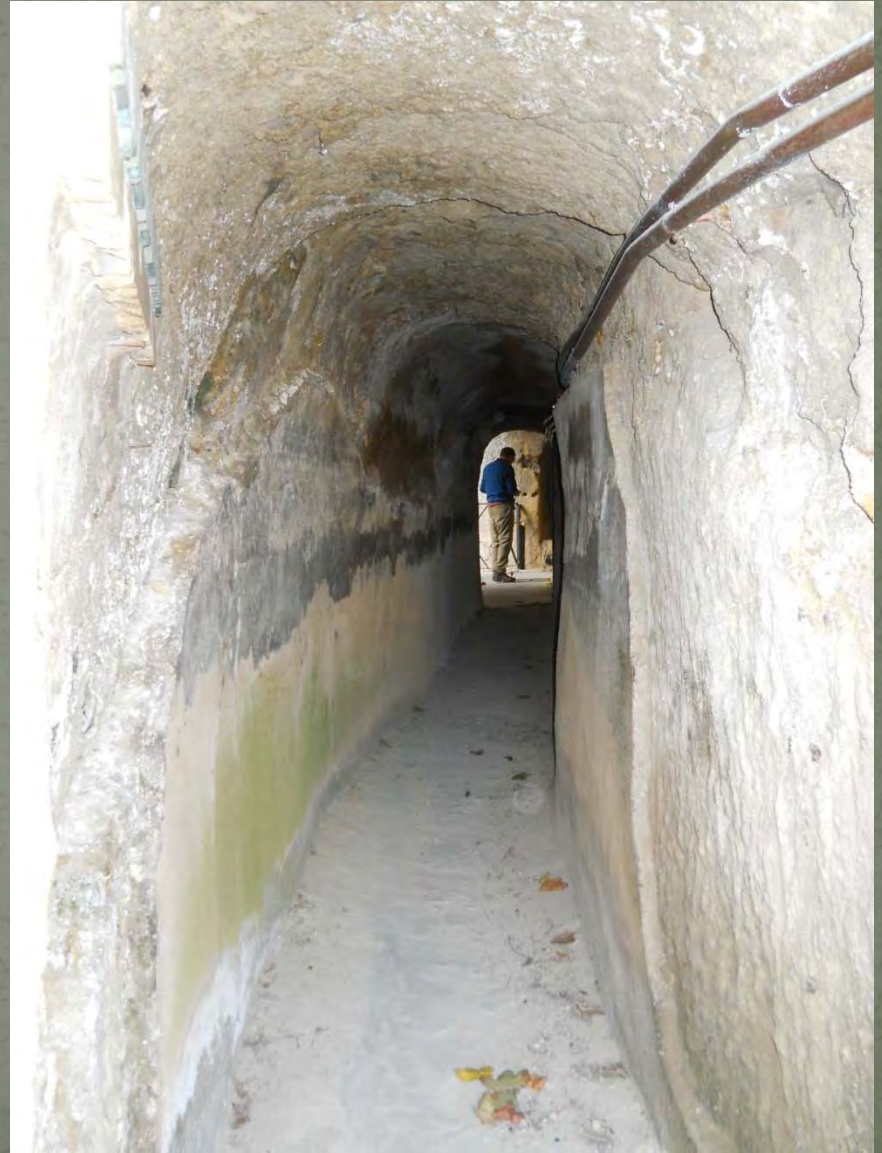




Arched Sections—Ponte Rossi



Tunneled Section—Downtown Naples



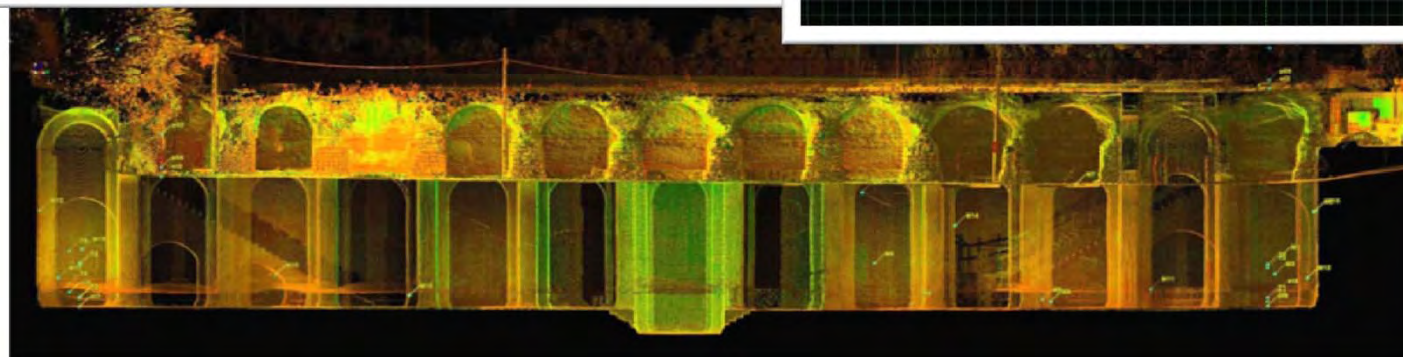
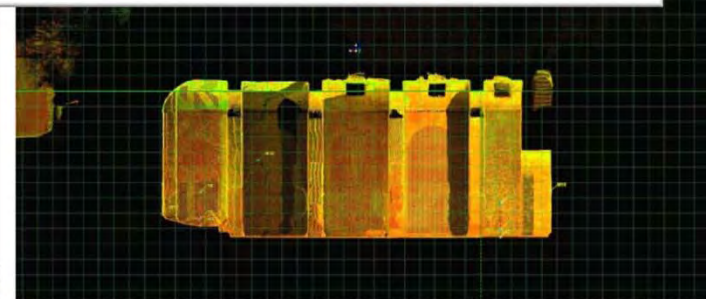
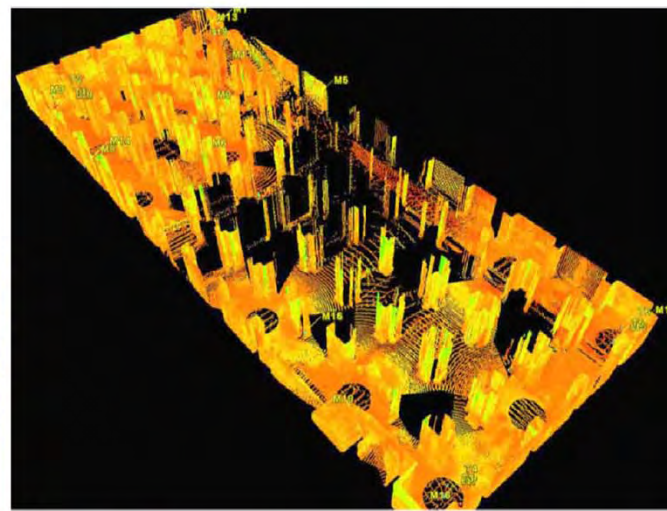
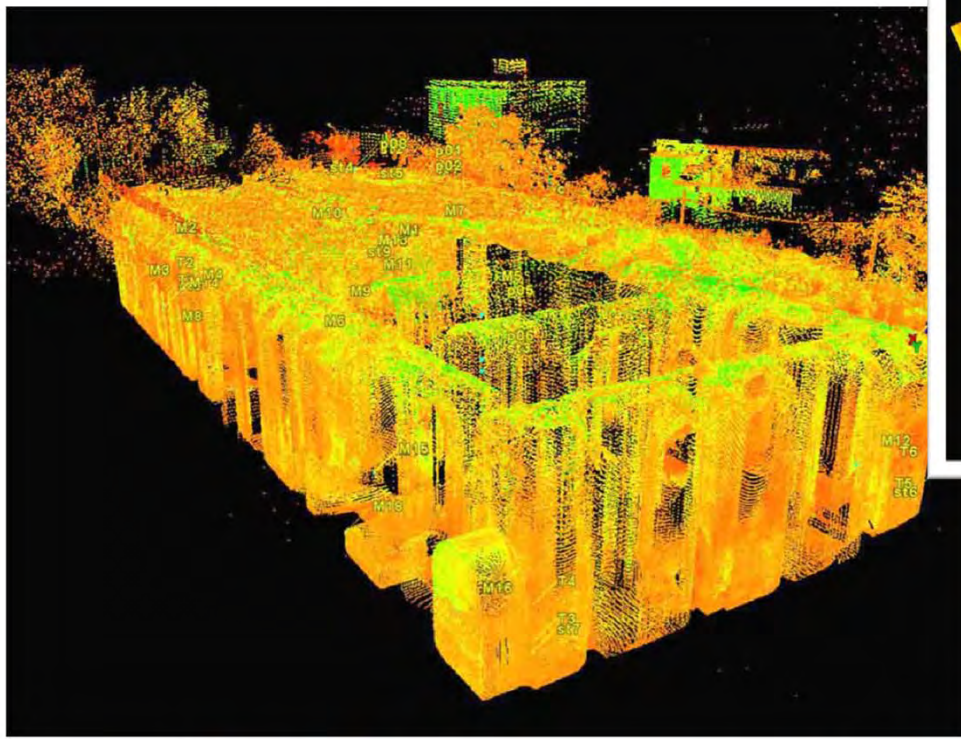
Locating Ancient Aqueducts In Baia



Piscina Mirabilis—Water Storage



Laser Scans of Piscina Mirabilis



Pompeii - Aqua Augusta-Serino Aqueduct



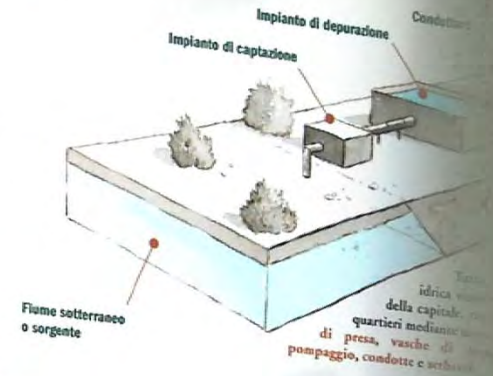
Limestone Geology and Water Supply

Cervara e Monte L'Erata, invece che scorrere in superficie, tendono ad infiltrarsi in profondità nel terreno, fluendo lungo le fratture e i giunti fra i vari strati rocciosi inclinati verso la valle dell'Aniene.

o una piscina olimpionica in 4 minuti. Sgorga attraverso un insieme di grandi e piccole sorgenti, allineate per un breve tratto lungo le pendici occidentali dei Monti Simbruini.

Gli addetti ai lavori la chiamano "trappola idrogeologica"; è il contesto sotterraneo che spiega come in un'area limitata possa concentrarsi tanta acqua.

Per le condizioni geologiche locali, l'area fra **Marano Equo** e **Agosta** è l'unica in cui, attraverso le tante sorgenti ai piedi del versante, la falda riesce ad affiorare direttamente senza dover attraversare altre rocce, meno permeabili, che più a sud ne rallentano e "polverizzano" il flusso. Una parte di acqua si infiltra anche nei terreni della piana alluvionale dell'Aniene, imbibendoli come una spugna e formando delle **ampie polle**.



la lentissima dissoluzione del calcare
provoca continuamente il
movimento e porta alla formazione di autentici
sistemi, che scendendo si raccolgono
in depressioni e laghi sotterranei.



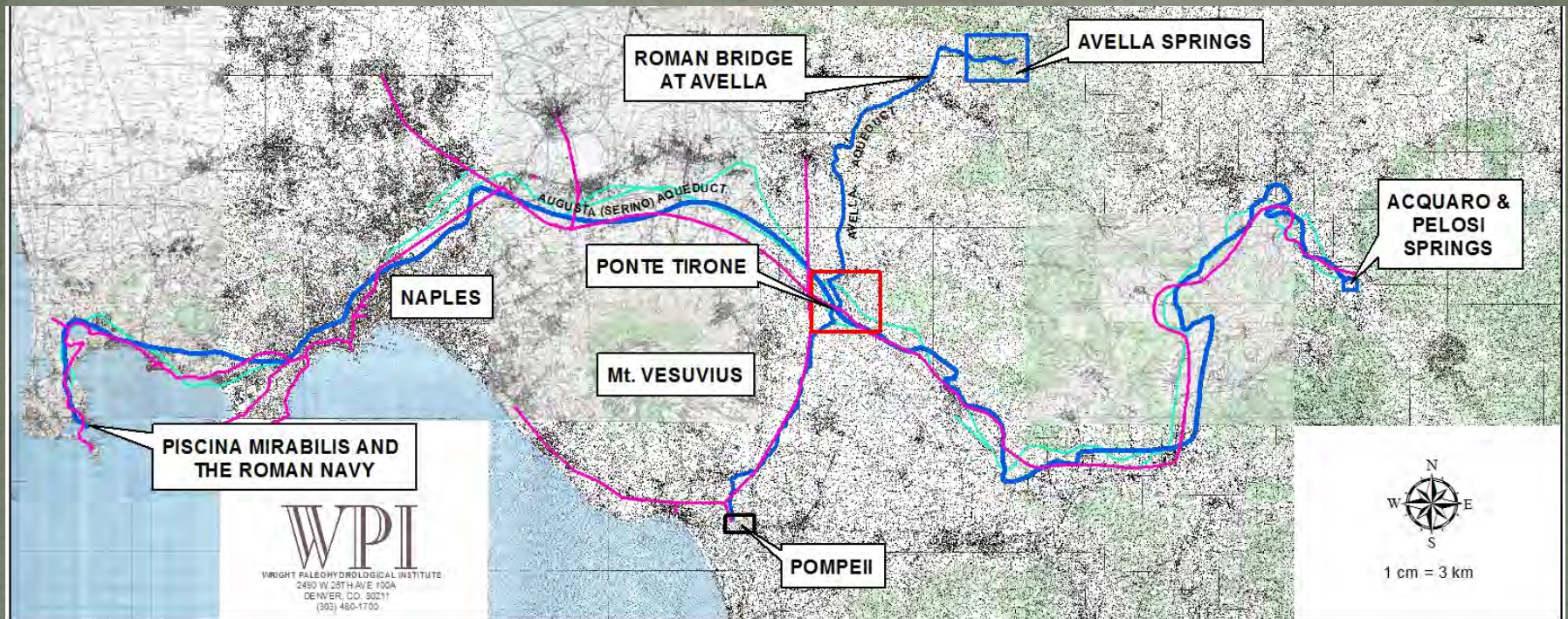
Catchment Areas & Infiltration



Acquaro & Pelosi Springs



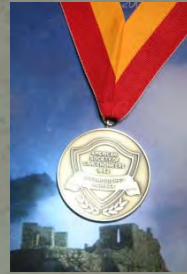
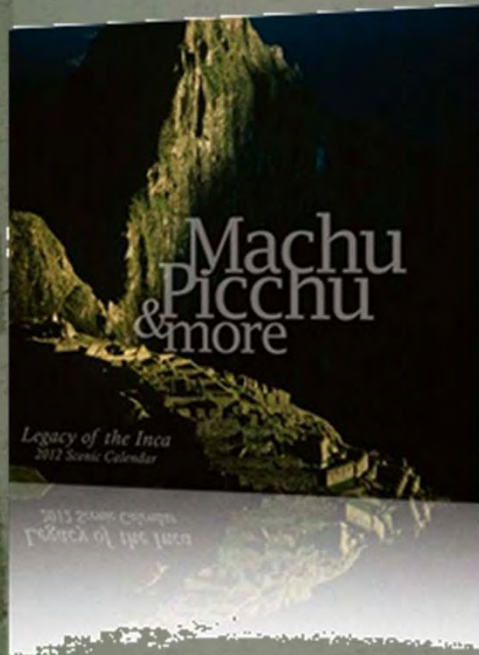
Further Research



Local Expert Workshop



Wright Paleohydrological Institute



www.wrightpaleo.com

Ken Wright
Andrew Earles
Wayne Lorenz

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