



Demo Site No. 10b: Antiparos Island, Greece

CW as pre-treatment for disinfection targeting water reuse of primary treated effluent in small insular communities

Municipality of Antiparos – MUOA



General Description of the Demo Site



- Antiparos is next to Paros Island, in the Aegean Cyclades complex
 - Area: 35.10 km²
 - Permanent population: 1,211 inh. (2011)
 - Seasonal residents & tourists: 1,000 (2012)
- Negative impacts on natural & socio-economic environment due to untreated WW
 - Groundwater & marine contamination
 - Generation of unpleasant odours
 - Development issues & impacts on local economy

The WWTP of Antiparos

- 40 year time horizon
 - Projected population in the final phase
 - 2,000 permanent population
 - 2,000 seasonal residents & tourists
 - Mean daily capacity (year 2055): 640 m³/day
 - Current mean daily capacity (peak): 320 m³/day



Aerial photo (Google Earth, 2016)



View of the WWTP

Expected Benefits of the Demo Site

- Reliable performance & improved quality of treated WW
- Environmental protection
- Low operational & maintenance costs
- Increased system marketability in similar conditions
- Improved quality of life

cNES for Wastewater Treatment

Pre-treatment: Engineered Systems

- Screening & grit removal
 - Two coarse screens
 - Aerated grit chamber
- Sedimentation
 - Two Imhoff tanks



Secondary treatment: Natural Systems

- Two Stages of Constructed Wetlands
 - Six sealed beds of vertical subsurface flow, planted with common reeds (Phragmites Communis)
 - 4 beds for stage I (460 m² each)
 - 2 beds for stage II (750 m² each)
- Stabilization Pond
 - Average depth: 1.5 m
 - Minimum retention time: 7 days, during winter



Post-treatment: Engineered Systems

- Chlorination
 - Chlorination tank: Addition of NaOCl
- Dechlorination
 - Dechlorination well: Addition of Na₂S₂O₅



Reuse of Treated Wastewater

- Irrigation of public spaces
- Fire protection

Quality targets for treated effluents

Parameter	Units	Limit
Biochemical Oxygen Demand (BOD ₅)	mg/L	≤20
Chemical Oxygen Demand (COD)	mg/L	≤80
Total Solids (TS)	mg/L	≤25
Total Nitrogen (TN)	mg/L	≤15
Total Phosphorus (TP)	mg/L	≤10
Total Coliforms	no./100mL	≤500
Fecal Coliforms (FC)	no./100mL	≤100
Residual Chlorine	mg/L	≤1

