# Overall Evaluation

**Ferrara** / ER-site · Italy · Project: **Nymphe**

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OVERALL ASSESSMENT

## Remediation recommended

Based on the latest sampling date: 10.2.2026 (After Remediation)

## PHASE-BY-PHASE VERDICTS

| | Before Remediation | During Remediation | | | | | | | | | | After Remediation | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Domain** | 4.4.2023 WATER | 19.12.2024 WATER | 14.1.2025 WATER | 20.2.2025 WATER | 8.4.2025 WATER | 6.5.2025 WATER | 5.6.2025 WATER | 8.7.2025 WATER | 7.8.2025 WATER | 30.10.2025 WATER | 4.12.2025 WATER | 10.2.2026 WATER | **Trend** |
| **Ecotoxicology** | E Daphnids | D Algae | D A. fischeri 15 | E A. fischeri 15 | E A. fischeri 15 | D Algae | D Algae | D Algae | D Algae | E Lettuce aquatic | E Daphnids | E Lettuce aquatic | Stable |
| **Chemistry** | High 2 high · 0 risk · 1 ok | High 2 high · 0 risk · 1 ok | High 2 high · 0 risk · 0 ok | High 2 high · 0 risk · 1 ok | High 2 high · 0 risk · 1 ok | High 2 high · 0 risk · 0 ok | High 2 high · 0 risk · 0 ok | High 2 high · 0 risk · 1 ok | High 2 high · 0 risk · 1 ok | High 2 high · 0 risk · 1 ok | High 2 high · 0 risk · 1 ok | · | Stable |
| **Supportive methods** provisional | | | | | | | | | | | | | Improving |
| Shannon index | · | 6.64 | · | · | 6.37 | 6.46 | 6.44 | 6.16 | 5.97 | 7.67 | · | 7.12 | |
| Simpson index | · | 0.98 | · | · | 0.98 | 0.98 | 0.98 | 0.98 | 0.97 | 0.99 | · | 0.99 | |
| Respiration | · | Non-conf | · | · | · | · | · | · | Non-conf | Conf | · | Conf | |
| Nitrification | Non-conf | · | · | · | · | · | · | · | · | Non-conf | · | Non-conf | |

Each column is one sampling date; a cell shows the worst result recorded across that date's samples. A phase with no samples for the selected method shows as "—". Supportive methods are shown for reference and do not move the overall stance.

## SUPPORTIVE METHODS

| SAMPLE | TYPE | METHOD (PHASE) | DIVERSITY — SHANNON (H') | DIVERSITY — SIMPSON (1–D) | NITRIFICATION | RESPIRATION | CONFORMITY |
|---|---|---|---|---|---|---|---|
| **VZ1** | Water | Before Remediation | — expected: Low | — expected: Low | 8.3% **Within ±20%** Conforming | | Conforming |
| **VZ2** | Water | Before Remediation | — expected: Low | — expected: Low | 58.1% **Exceeds ±20% — significant effect on the nitrifying community** Nonconforming | | Nonconforming |
| **VZ3** | Water | Before Remediation | — expected: Low | — expected: Low | 56.4% **Exceeds ±20% — significant effect on the nitrifying community** Nonconforming | | Nonconforming |
| **First Starting baseline** | Water | During Remediation | **6.6396** expected: Moderate or gradually increasing | **0.9794** expected: Low to moderate | | QR 0.51 **QR above 0.5 — verify the aerobic heterotrophic bacteria (AHB) count** Nonconforming | Nonconforming |
| **T2** | Water | During Remediation | **6.3737** expected: Moderate or gradually increasing | **0.9811** expected: Low to moderate | | | — |
| **T3** | Water | During Remediation | **6.4578** expected: Moderate or gradually increasing | **0.9778** expected: Low to moderate | | | — |
| **T4** | Water | During Remediation | **6.4365** expected: Moderate or gradually increasing | **0.9782** expected: Low to moderate | | | — |
| **T5** | Water | During Remediation | **6.1551** expected: Moderate or gradually increasing | **0.9791** expected: Low to moderate | | | — |
| **T6** | Water | During Remediation | **5.9665** expected: Moderate or gradually increasing | **0.9706** expected: Low to moderate | | QR 0.64 **QR above 0.5 — verify the aerobic heterotrophic bacteria (AHB) count** Nonconforming | Nonconforming |
| **NYM1 10** | Water | During Remediation | **7.6719** expected: Moderate or gradually increasing | **0.9865** expected: Low to moderate | 25.3% **Exceeds ±20% — significant effect on the nitrifying community** Nonconforming | QR 0.1 **Acceptable — QR ≤ 0.5** Conforming | Nonconforming |
| **NYM1 369 days** | Water | After Remediation | **7.1242** expected: High | **0.9871** expected: High | 47.8% **Exceeds ±20% — significant effect on the nitrifying community** Nonconforming | QR 0.03 **Acceptable — QR ≤ 0.5** Conforming | Nonconforming |

**Biodiversity trend:** Biodiversity rising across phases. Diversity (Shannon / Simpson) is read as a trend across phases (rising = recovery) and compared with the expected level per phase; respiration and nitrification are evaluated against their thresholds.

## VISUAL OVERALL ASSESSMENT

### Ecotoxicology

| | Before Remediation | During Remediation | | | | | | | | | | After Remediation |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4.4.2023 WATER | 19.12.2024 WATER | 14.1.2025 WATER | 20.2.2025 WATER | 8.4.2025 WATER | 6.5.2025 WATER | 5.6.2025 WATER | 8.7.2025 WATER | 7.8.2025 WATER | 30.10.2025 WATER | 4.12.2025 WATER | 10.2.2026 WATER |
| A. fischeri 15 | C | C | D | E | E | C | C | C | C | D | D | D |
| A. fischeri 30 | C | C | C | E | E | C | C | C | C | D | D | D |
| Algae | D | D | D | D | D | D | D | D | D | D | D | D |
| Daphnids | E | D | D | D | E | D | D | D | D | D | E | D |
| Lettuce aquatic | D | C | C | C | C | C | C | C | C | E | D | E |
| **Worst (per date)** | **E** | **D** | **D** | **E** | **E** | **D** | **D** | **D** | **D** | **E** | **E** | **E** |

Result: **Stable across phases**

### Chemistry

| | Before Remediation | During Remediation | | | | | | | | | After Remediation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4.4.2023 WATER | 19.12.2024 WATER | 14.1.2025 WATER | 20.2.2025 WATER | 8.4.2025 WATER | 6.5.2025 WATER | 5.6.2025 WATER | 8.7.2025 WATER | 7.8.2025 WATER | 30.10.2025 WATER | 4.12.2025 WATER | 10.2.2026 WATER |
| Heavy Metals | High | High | High | High | High | High | High | High | High | High | High | · |
| Industrial Chemical | High | High | High | High | High | High | High | High | High | High | High | · |
| Others | None | None | — | None | None | — | — | None | None | None | None | · |
| **Worst (per date)** | **High** | **High** | **High** | **High** | **High** | **High** | **High** | **High** | **High** | **High** | **High** | · |

Result: **Stable across phases**

### Supportive methods

| | Before Remediation | During Remediation | | | | | | | | | After Remediation |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | 4.4.2023 WATER | 19.12.2024 WATER | 14.1.2025 WATER | 20.2.2025 WATER | 8.4.2025 WATER | 6.5.2025 WATER | 5.6.2025 WATER | 8.7.2025 WATER | 7.8.2025 WATER | 30.10.2025 WATER | 4.12.2025 WATER | 10.2.2026 WATER |
| Shannon index | · | 6.64 | · | · | 6.37 | 6.46 | 6.44 | 6.16 | 5.97 | 7.67 | · | 7.12 |
| Simpson index | · | 0.98 | · | · | 0.98 | 0.98 | 0.98 | 0.98 | 0.97 | 0.99 | · | 0.99 |
| Respiration | · | Non-conf | · | · | · | · | · | · | Non-conf | Conf | · | Conf |
| Nitrification | Non-conf | · | · | · | · | · | · | · | · | Non-conf | · | Non-conf |

Result: **Biodiversity rising across phases**

## CONCLUSION

Based on the most recent data (After Remediation) for Ferrara – ER-site, the site is assessed as: Remediation recommended. Chemistry: no classified measurements available for this phase. Ecotoxicology: dominant category is E (Very high toxicity). The most sensitive organism is Lettuce aquatic. Across the recorded phases, chemistry risk is stable across phases and ecotoxicity is stable across phases. Recommendation: the contamination level still warrants action — continue or adjust the remediation strategy, identify the main contaminant, and re-sample to confirm a downward trend. Biology / supportive methods (provisional): biodiversity rising across phases; nitrification exceeds ±20% — significant effect on the nitrifying community. These indicators are shown for reference and do not yet affect the overall stance.

Auto-generated draft. Supportive-method values are provisional and do not yet affect the overall stance.