

IN-WELL REMEDIATION SERVICES

ART

Accelerated Remediation Technologies, Inc

DYNAMIC SUBSURFACE CIRCULATION



ACCELERATED
REMEDIATION
TECHNOLOGIES, INC.



ART In-Well Integrated Case Study



Site Overview & Implementation

Hydrogeology: Complex fractured bedrock system beneath a former industrial site

Contaminants of Concern: 1,4-Dioxane, CVOCs (PCE, TCE, DCE, Vinyl Chloride), and DNAPL

Remediation Approach:

- 2015: Initial remediation trials with ART In-Well Integrated Technology
- 2016-2018: Full-scale deployment
- 2019-2021: Long-term monitoring confirming mass reduction



Performance & Results

VOC & 1,4-Dioxane Reduction: Up to 99% VOC and 70-99% 1,4-Dioxane reduction

Plume Reduction: Over 80% shrinkage, limiting further migration

Groundwater Treated: 8+ million gallons processed in-situ, reducing off-site disposal

Sustainability Impact: Eliminated 2,500+ truck trips, cutting costs and emissions

Contaminant Reduction Over Time

Sampling Date	1,4-Dioxane Reduction (%)	VOC Reduction (%)
Pilot ART In-Well Integrated Treatment (1 Year)	70	85
Full Scale Treatment (2 Years)	90	99
Long-Term Monitoring (Post-Closure)	Sustained	Non-detect

Photo: External view of ART In-Well Integrated Well



Conclusion

The **ART In-Well Integrated Technologies** effectively treated 1,4-Dioxane and VOCs in fractured bedrock, demonstrating **proven in-situ performance with sustainable and cost-effective contaminant removal**. Implemented at over **6,000 sites world-wide**, the **ART In-Well Integrated Technologies** continues to tackle complex remediation sites.

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ART IN-WELL INTEGRATED TECHNOLOGIES CASE STUDY

Rapid Redevelopment: Restoring a Heavily Impacted Site for Immediate Community Use

AT A GLANCE

- **Client:** Former pharmaceutical manufacturing site, New Jersey
- **Technology Used:** ART In-Well Integrated Technologies (In-Situ Circulating Well)
- **Implementation Duration:** Multi-year phased remediation
- **Key Outcome:** 70-99% reduction in 1,4-Dioxane and VOCs in fractured bedrock

KEY METRICS



1.3 BILLION

BTUs saved, 7,000+ tons of emissions prevented



2 YEARS

ART In-Well Integrated approach achieved site closure.



>8,000,000

gallons of contaminated water treated in-situ, eliminating 2,500+ truck trips



70-90%

reduction in 1,4-Dioxane and VOCs, 99% VOC mass removal reached in select areas



SOIL AND GROUNDWATER
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CHALLENGES

- High-profile, large, impacted site (200 AOCs)
- Soil and groundwater contamination from 1,4-Dioxane, CVOCs, and DNAPLs
- Persistent contamination in fractured bedrock, making treatment complex
- Need for a cost-effective, sustainable, and scalable solution

SOLUTIONS

- **ART In-Well Integrated Technologies:** Combines in-well air stripping, sparging, and recirculation to treat VOC areas
- **ART In-Well Integrated w Ozone:** Injected ozone to remedy 1,4 Dioxane areas
- **Tailored Remediation:** ART remedial wells minimized costs of subsurface heating in DNAPL areas



**2019 EXCELLENCE IN
ENVIRONMENTAL ENGINEERING
AND SCIENCE™ AWARDS
COMPETITION WINNERS**

The Grand Prize in Environmental Sustainability from the American Academy of Environmental Engineers and Scientists (AAEES) was awarded for this remediation project.

BENEFITS

1

No Water Extraction:

- Recirculates groundwater in situ, eliminating the need for high-volume pumping

2

Greater Efficiency, Reduced Costs, Faster Redevelopment

- Lower operational and lifecycle costs, greater sustainability for site owners.
- Site achieved NJDEP approval in record time, accelerating property reuse



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