

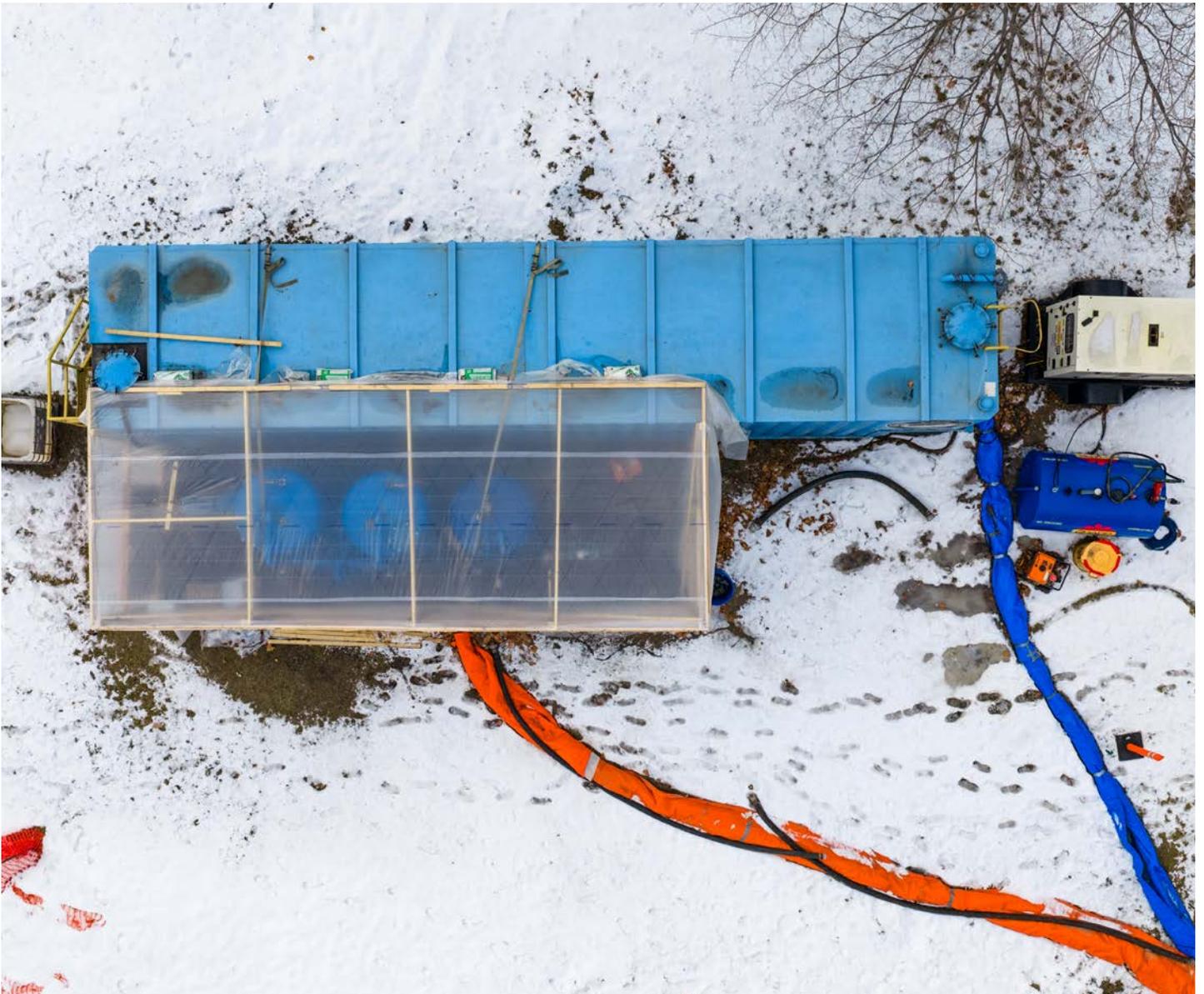


GLOBAL ENVIRONMENTAL'S GUIDE TO

# Winter Operations & Maintenance

For Construction Dewatering  
and Temporary Treatment Systems

Global Environmental  
**GLOBAL-ENV.COM**





# Introduction:

## Winter O&M on Construction Sites

Temporary dewatering and treatment systems are typically installed for speed and flexibility, not winter operation. When construction schedules extend into colder months, those systems become vulnerable to freezing, limited access, and staffing constraints.

Winter-related failures are rarely driven by temperature alone. Freeze risk is influenced by system layout, flow continuity, exposure, staffing, and how systems are adapted as conditions change.

Without planning, winter conditions can lead to shutdowns, damaged equipment, and construction delays.

This guide provides practical winter O&M guidance for construction-supported systems, with a focus on temporary dewatering and short-duration treatment setups. Its goal is to help teams anticipate freeze risk, make early decisions, and maintain reliable operation through winter conditions.





# Section 01: Why Winter is Different for Temporary Treatment Systems

Unlike permanent remediation systems, temporary treatment systems are often not designed for cold-weather operation. Exposed piping, flexible hoses, intermittent flow, and evolving site layouts increase vulnerability as temperatures drop.

## Winter introduces compounding challenges:

- Exposed components freeze quickly
- Frozen ground can alter flow behavior
- Site access becomes more difficult during snow and ice events
- Staffing and response times fluctuate during storms and holidays

Because these systems directly support construction activities, failures can quickly affect schedules. Successful winter operations depend on early recognition of these risks and timely system adjustments.

### 05.

#### Seasonal Transition or Demobilization

**Operations and documentation are managed deliberately.**  
As conditions change, systems may return to standard operation or be safely shut down, with winter-related adjustments and repairs clearly documented.

### 01.

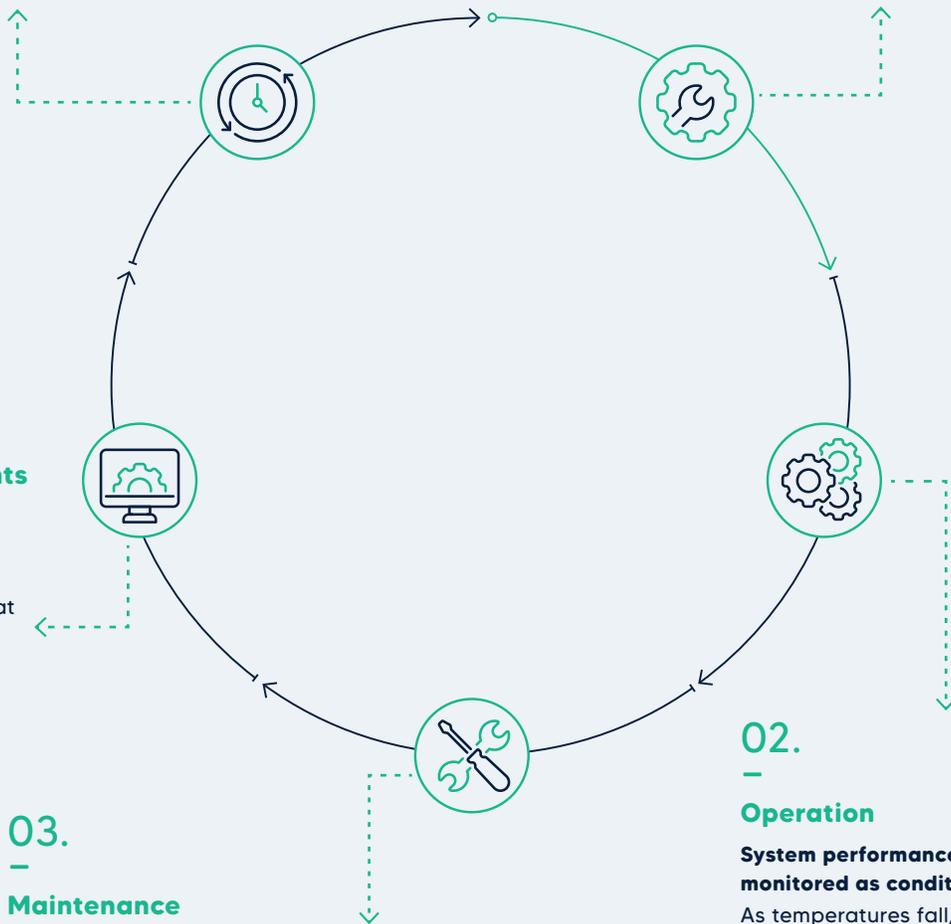
#### Design & Installation

**Early layout decisions affect winter risk.**  
System layout, flow paths, and component placement influence how vulnerable a temporary system is to freezing once temperatures drop.

### 04.

#### Winter Adjustments

**Systems are adapted to remain functional in cold conditions.**  
Heating, insulation, heat trace, and operating practices are adjusted based on temperature trends, flow continuity, and site access.



### 03.

#### Maintenance

**Winter increases wear and the risk of component damage.**  
Limited winterization and cold exposure raise the likelihood of frozen or damaged piping, valves, heaters, and enclosures, requiring timely repairs and component replacement.

### 02.

#### Operation

**System performance is monitored as conditions change.**  
As temperatures fall, flow behavior, exposure points, and equipment response shift, requiring closer tracking of system readings, sampling results, and compliance indicators.



## Section 02: Freeze Risk Assessment and Early Planning

### Freeze Risk Is More Than Temperature

Freeze risk is driven by multiple factors working together:

- Flow rate and operating continuity
- Ground conditions and exposure
- System configuration and size
- Staffing levels and site access
- Ability to monitor conditions remotely

High-flow, continuously operating systems tolerate cold weather better than low-flow or intermittently operated systems. Small-diameter piping, stagnant sections, and exposed hoses are typically the first to freeze.



### Practical Temperature Bands for Planning

Winter planning should consider temperature trends rather than a single cutoff:

- **40°F and above:**  
Monitor forecasts and begin winterization planning.
- **30-35°F (overnight lows):**  
Exposed and stagnant components are at risk.
- **20-29°F (sustained lows):**  
Review & asses systems operating in winter mode.
- **0-19°F:**  
Unprotected or low-flow components are likely to freeze quickly.

These ranges support planning and should be applied using site-specific judgment.



### Early Decisions: Shut Down or Winterize

Before freezing conditions arrive, teams should decide whether systems will be shut down and drained or winterized to continue operation.

#### Shut down and drain may be appropriate when:

- Systems operate intermittently or can tolerate downtime
- Construction activities allow pauses in dewatering
- Power or overnight staffing is limited

#### Winterization for continued operation is typically required when:

- Continuous drawdown is needed to support excavation or foundations
- System downtime would impact construction schedules
- Reliable power and access are available

Both approaches can be effective when planned in advance.



## Section 03: Winterization Tactics for Construction Sites



### Enclosures and Layout

For systems operating through sustained freezing conditions, temporary enclosures help reduce freeze risk and improve reliability. These enclosures typically use framing and reinforced plastic to encapsulate pumps, piping, and treatment components.

**When winterization is planned early, systems can be laid out to:**

- Minimize exposed piping
- Simplify enclosure construction
- Maintain safe access for inspections

Enclosures should be built to withstand snow and wind loads and inspected regularly for damage.



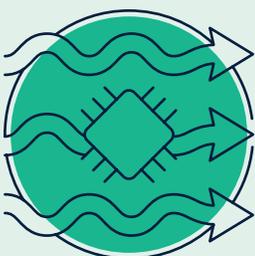
### Heat, Insulation, and Temperature Control

Winterized enclosures are commonly maintained between 50-70°F to prevent freezing and buffer temperature swings. Drafts and cold spots often pose greater risk than average enclosure temperature.

**Insulation is commonly used for:**

- Continuously flowing hoses or piping outside enclosures
- Exposed valves, risers, and fittings

Where flow is continuous and exposure is limited, insulation alone may be sufficient.



### Heat Trace: When Additional Protection Is Needed

Heat trace refers to electrically powered heating cable installed along piping or components to maintain temperatures above freezing when insulation alone is insufficient.

**On construction sites, heat trace is commonly used for:**

- Intermittently operated or low-flow lines
- Critical piping that must remain operational
- Components exposed to wind or splash

Heat trace systems rely on consistent power and proper installation. Power loss, damaged insulation, and undocumented circuits are common failure points and should be checked routinely.



## Section 04: Common Freeze-Related Failure Points

Freeze-related failures on construction sites most often occur at **small or overlooked components**, not major equipment.

High-risk areas include:

- Small lines, dead legs, and low points
- Valves, sample ports, and fittings
- Layflat hoses and connections
- Steel components holding residual water
- Transitions between heated and exposed piping

If a component can hold water, it can freeze.



## Section 05: Heater Use and Safety

Portable heaters are commonly used to maintain enclosure temperatures during winter operations. Indirect-fired heaters, with combustion outside the enclosure, are often preferred because they reduce the risk of carbon monoxide and limit exposure to open flames and exhaust in confined spaces.

Where power is available, electric heaters may be used to reduce fueling and CO concerns.

Key considerations include:

- Adequate ventilation and CO awareness
- Maintaining clearances to combustibles
- Securing heaters and fuel lines
- Including heaters in routine winter inspections

Heaters should be treated as part of the system, not temporary accessories.





## Section 06: Winter O&M Scheduling, Monitoring, and Response

Winter inspections should focus on enclosure condition, exposed piping, heat trace functionality, and signs of reduced flow or ice formation. Inspection frequency often increases during sustained freezing conditions.

### Remote Monitoring: A Key Winter Advantage

Remote monitoring provides real-time visibility into system performance without requiring constant site presence. Telemetry and dashboards allow teams to track flow, temperature, and alarm conditions as weather changes.

Remote monitoring supports winter operations by:

- Detecting freeze risk and equipment failures early
- Providing full system visibility through live dashboards
- Reducing unnecessary site visits during storms
- Allowing faster response without sending personnel into the field
- Supporting lean staffing during severe weather and holidays

Clear escalation paths and on-call protocols should be established before winter begins.





## Section 07: Winter Operations Done Right

### Staffing, Access, and Compliance

Winter conditions can complicate site access and affect staff availability, particularly when response is required. While some construction sites maintain a daily operator through winter, others rely on automated treatment systems without full-time onsite staffing. In both cases, winter conditions can extend response times and increase the coordination required for site visits when issues arise.

For automated systems, remote monitoring helps identify developing issues early; however, limited staff availability, travel conditions, and site constraints can still delay physical response. When intervention is required, winter site visits often take longer and require additional planning, staging, and safety considerations.

Permitting and compliance requirements remain in effect during winter operations. Missed inspections, delayed sampling, and weather-related deviations should be documented as they occur. Detailed winter O&M logs help demonstrate deliberate system management when access is limited, or conditions affect standard workflows.

Winter O&M does not require emergency-driven responses. It requires preparation, coordination, and disciplined execution, especially construction sites where systems were not originally designed for winter use.

Global Environmental supports construction teams through winter planning, system winterization, remote monitoring, and ongoing O&M. With the right approach, temporary dewatering and treatment systems can operate reliably throughout the cold-weather season.

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## Ready to optimize?

Schedule a system evaluation today and see how Global Environmental can improve your environmental performance, reduce long-term costs, and ensure compliance with confidence.

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Visit [global-env.com](https://global-env.com) to learn more or schedule a consultation.

