superiorglove **11C Industrial Park, Springdale, NL A0J 1T0**

Water Management Plan

1. Water Source and Supply:

- **Primary Source**: The main water source for the facility is a well located on-site.
- **Water Usage**: Water is utilized in several areas, including the kitchen, washroom facilities, manufacturing, cleaning stations, and maintenance (See Water management schema…).

2. Wastewater Management:

- **Septic System**: The facility collects wastewater into a single channel that leads to a septic tank. Bioclean is added weekly to help break down bacteria in the wastewater system (Water management schema…).
- **Septic Tank and Leach Field**: Wastewater is directed from the septic tank to a leach field, ensuring treated water is safely returned to the environment (Water management schema…).

3. Stormwater and Runoff Management:

- **Directional Runoff**: According to the directional runoff site plan (21-026 - DIRECTIONAL RU…), stormwater runoff is managed by channels directing water flow towards designated areas that prevent flooding or erosion. Water flows naturally towards Indian Brook, ensuring that any excess water is absorbed or directed away from sensitive areas.
- **Green Spaces**: The parking lot and certain areas within the facility have green spaces that help absorb and filter runoff, reducing the burden on drainage systems

4. Stormwater Management:

- **Design Storm**: The stormwater management plan is based on a **100-year, 24-hour rain event**, considering climate change impacts projected until 2100. The highest projected storm intensity is **161.38 mm in 24 hours**.
- **Time of Concentration (TC)**: The TC for runoff calculation is 24 hours.
- **Runoff Coefficient (N)**: A runoff coefficient of **0.485** is applied based on the surface characteristics of the property.

- **Percolation**: Due to the high soil percolation rates on the site, water pooling and noticeable runoff streams are minimal, meaning that the ground absorbs much of the water naturally.

- **Design Flow and Sizing**:
    - The total **design area** of the Superior Glove property is **2.44 hectares**.
    - The **design flow** for the storm sewer section is calculated to be **22 L/s**, with an incremental design flow of **0.022 m³/s**.
    - A **slope** of **0.5%** is used in the design, and the sewer section employs a **Manning's coefficient (n)** of **0.012** to calculate flow through pipes.
    - The **nominal diameter of the pipes** used for stormwater management is **200 mm**, with a **flow velocity of 0.80 m/s**.
    - The system is designed with a **12% extra capacity** to handle higher flows during extreme storm events.

5. Site-Specific Runoff Directions:

- The **directional runoff site plan** indicates that stormwater flows are directed towards specific areas that can be absorbed naturally or managed through drainage infrastructure (21-026 - DIRECTIONAL RU…).
- Water is collected from various areas, including the parking lot and green spaces, which are designed to direct water efficiently into the storm sewer system or areas with high absorption potential (Water management schema…)(21-026 - DIRECTIONAL RU…).

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6. Best Practices:

- **Maintenance**: Regular maintenance of the septic tank, leach fields, and stormwater drainage systems should be scheduled to ensure longevity and efficiency.
- **Bioclean Use**: The use of Bioclean to break down bacteria in wastewater should continue as planned to maintain a healthy septic system (Water management schema…).

By combining high-efficiency water usage, robust stormwater management systems, and soil percolation strategies, this plan provides a comprehensive approach to managing water resources at the Superior Glove Works facility in Springdale, NL.

Guidelines for Preparing a Water Resources Management Plan (WRMP)

This guide provides a framework for preparing a Water Resources Management Plan (WRMP) for different types of projects, such as mining, quarrying, and site development. The plan ensures the protection of local water bodies, management of stormwater, and prevention of environmental degradation.

1. Prepare a Location Map

- **Task**: Develop a location map that identifies all streams, water bodies, and notable features within a 30-meter radius of the project footprint.
- **Key Point**: For the project involving Indian River, even though it may be slightly more than 30 meters away, its designation as a salmon river triggers Environmental Site Assessments (ESA) and necessitates close monitoring and planning.

2. Identify Streams or Water Bodies Inside the Project Footprint

- **Task**: List all streams or water bodies located within the project boundary.
- **Key Point**: If only drainage swales are present, determine whether these can be considered streams, as their function and legal designation might impact management plans.

3. Manage Streams or Water Bodies Inside the Project Footprint

- **Task**: Describe how you will handle any streams or water bodies within the project footprint. Options include:
    - **Elimination**: If the water body is unnecessary, consider removing it.
    - **Diversion**: Divert streams or water bodies to avoid project interference.
    - **Retention**: Keep the water body intact and protect it from project impacts.
- **Key Point**: Due to the high percolation rate of the existing subsurface material, most runoff will dissipate before reaching the swale, which prevents water from accumulating. Only runoff from hard surfaces may contribute to water reaching the swale or nearby water bodies.

4. Calculate Stormwater Runoff for a 1 in 100-Year, 24-Hour Event

- **Task**: Use climate change projections and storm event data to estimate the volume of stormwater runoff during a 1 in 100-year, 24-hour rain event.
- **Key Point**: This data is vital for designing adequate drainage and runoff management systems (21-026 Directional Runoff attached).

5. Manage 1 in 100-Year Stormwater Runoff

- **Task**: Detail how to manage stormwater runoff from a 1 in 100-year event. Options include:
    - **Direct Discharge**: Discharging water directly into nearby streams or water bodies.
    - **Detention Ponds**: Storing water in detention ponds and releasing it gradually.
- **Key Point**: For this project, all runoff flows over vegetated areas or into a swale, which outlets overland before reaching the property boundary or adjacent lands. This system prevents direct water discharge into nearby rivers or water bodies.

6. Prepare a Schematic Diagram of On-Site Drainage

- **Task**: Create a diagram that clearly shows the on-site drainage plan, including swales, detention ponds, and outlets.
- **Key Point**: Ensure the schematic reflects the drainage network's capacity to manage large stormwater events and direct water away from critical infrastructure (21-026 Directional Runoff attached).

7. Manage Dewatering of Mining/Quarry Pits

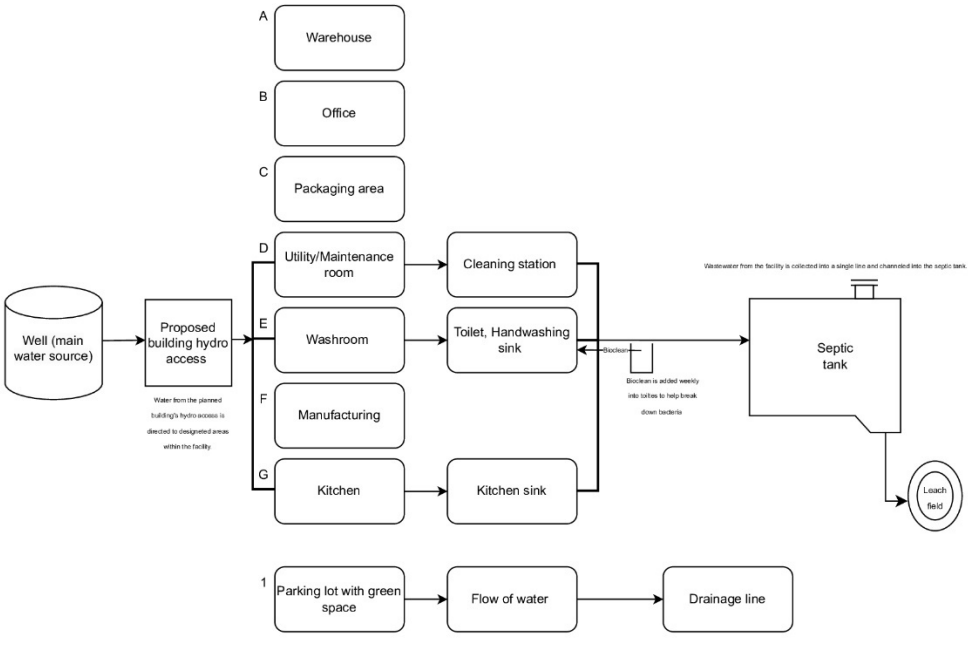
- **Task**: If applicable, describe dewatering procedures for mining or quarry pits.
- **Key Point**: This does not apply to the current project, but for mining/quarry projects, include procedures for handling groundwater and preventing contamination.

8. Prevent Land Erosion

- **Task**: Outline preventive measures to mitigate the risk of erosion due to runoff and drainage. These measures help preserve water quality and quantity in natural water bodies.
- **Best Practices**:
    - **Vegetation**: Increase vegetation between buildings and natural water bodies to act as a natural filter for runoff.
    - **Check Dams**: Check dams along drainage swales to slow down concentrated runoff, reducing the potential for erosion and protecting water bodies from sedimentation.

By following these guidelines, the Water Resources Management Plan will provide comprehensive coverage of water-related issues for various project types, ensuring environmental protection and compliance with regulations.

Water Management Plan Schematic Diagram
Superior Glove Works - Springdale



Superior Glove Works

21-026 Directional Runoff Site Plan