Lynx Products
Overview and Application Manual

Lynx Products are Designed and Manufactured by

CLEARFLOW Group Inc.
Clearflow Group inc. is a solution based organization, which has grown its core capabilities around the unique and diverse capabilities of its team and its products, bringing together a group of committed, dedicated and socially conscious employees.

The organization offers diverse and eco-friendly solutions that are well thought out, engineered and when necessary - outside the box, in such areas as:

SOIL STABILIZATION & EROSION CONTROL

WATER CLARIFICATION

WATER TREATMENT SYSTEMS

METALS & NUTRIENT REDUCTIONS

ENGINEERED SOLUTIONS

Our Team will design site specific solutions which incorporate Enviro-friendly enhancements to existing and upgraded Best Management Practices (BMPs) through the integration of Lynx Products alone and/or in concert with other sediment control solutions.

Using proven techniques and BMPs we can help meet or exceed water discharge goals, allowing treated water to be released directly into the environment or to be reused for industry.

Typical Before and After Pictures, in our Lab, showing Lynx Products results

Check out our Website for real world examples, Job Histories and 3rd Party Analysis of our capabilities.

www.Clearflowgroup.com
Lynx Product - Overview:

SOIL Lynx – available in granular form
- Soil stabilization,
- Re-vegetation,
- Agricultural crops,
- Water treatment

WATER Lynx – available in Canister, Gel block and liquid form
- Storm water treatment (may be used to reduce pond size and/or number),
- Water Flow treatment,
  - ditches - rivers - creeks
  - streams - canals
- Pond water treatment
- Commercial water treatment for reuse or release

Bazookas – Act as Pipe reactor for Water Lynx Blocks, fit in back of Pick up and work with 3” trash pump and Treated Geo-Jute dispersion fields
- Construction sites, Municipal dewatering applications
- Industrial water treatment

Treated Geo-Jute Rolls – Available in wrapped rolls, 4’ x 225’, (83 sq meters)
- Used for soil stabilization - re vegetation - micro sites
- Used for polishing water to facilitate removal of super fine particulate

Lynx Treated Floating Curtains – designed for any width and depth
- Used to polish flowing water
  - ponds - creeks
  - rivers - canals

STORM Lynx Mats – Typically constructed in 3’ by 4’ mats
- Reduce sediment loading into storm water systems
SOIL Lynx Powders

Description
Predominantly a White Granular Product

Size
Packaged in 15 kg and 5 kg plastic pails equipped with carrying handles.

<table>
<thead>
<tr>
<th><strong>Soil Stabilization</strong></th>
<th>Kilograms</th>
<th>Flat to 4:1 slope</th>
<th>3:1 to 1:1 slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>9000 m²</td>
<td>4500 m²</td>
<td></td>
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<tr>
<td>5</td>
<td>3000 m²</td>
<td>1500 m²</td>
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<tr>
<td>1</td>
<td>600 m²</td>
<td>300 m²</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Additional Uses</strong></th>
<th>Product</th>
<th>Coverage</th>
<th>Special Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hydro seeding</td>
<td>7 kg</td>
<td>3000 US Gal</td>
<td>Replaces Mulch</td>
</tr>
<tr>
<td>Pond D ‘Mucking’</td>
<td>0.25 to 1 kg</td>
<td>Per cubic meter of sediment</td>
<td></td>
</tr>
</tbody>
</table>

Applications
Soil Lynx is typically applied in a dry form using hand or a variety of manual, electric and truck mounted broadcast spreaders. Soil Lynx can also be mixed with water and applied with water trucks (with agitators), hydro seeding units, and/or standard pump and spray nozzles.

1) Soil Lynx, once activated with water, binds with the soil creating a layer of porous soil that allows more water and air to penetrate the soil while reducing erosion.

2) Soil Lynx’s binding process allows it to retain water and hold seed and fertilizer in place.

Benefits
- Easy to use, easy to integrate within existing operations
- Enhanced growth characteristics, while minimizing seed/fertilizer loss
- Enhanced soil stabilization, cleaner sheet flow
- Reduced shipping, handling and storage costs – no TDG requirements.
- Reduced hydro seeding costs, and
- Enhanced performance improves customer satisfaction
REVEGETATION / TACKIFYING
Clearflow's Soil Lynx granular powders are applied to areas requiring revegetation and soil tackification. Soil Lynx holds seed and fertilizer in place during wind and rain events. It’s ability to stabilize the growth areas and retain 25% more moisture improves growth characteristics with less maintenance. Use of fertilizers can be dramatically reduced (along with a decrease of nutrients in runoff water) thus resulting in less impact to the environment.

EROSION CONTROL
SURFACE RUNOFF MITIGATION
Soil Lynx powders, activate with moisture, creating a chemical bond with surrounding soils.

This bond reduces the likelihood of dust and mitigates surface movement of sediments, reducing the movement of associated seeds and fertilizers.

SOIL Lynx can be applied to slopes up to 3:1, creating a porous soil, allowing sunlight, oxygen and water to penetrate, without eroding the slope. When used in high flow or steep slope (greater than 3:1) Soil Lynx will enhance standard best management practices.

SOIL Lynx COVERAGE

<table>
<thead>
<tr>
<th>Soil Stabilization</th>
<th>Kilograms</th>
<th>Flat to 4:1 Slope</th>
<th>3:1 to 1:1 Slope</th>
</tr>
</thead>
<tbody>
<tr>
<td>Re-Vegetation</td>
<td>15</td>
<td>9000 m²</td>
<td>4500 m²</td>
</tr>
<tr>
<td>7</td>
<td>4046 m²</td>
<td>3000 m²</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>3000 m²</td>
<td>1500 m²</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1200 m²</td>
<td>600 m²</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>600 m²</td>
<td>300 m²</td>
<td></td>
</tr>
<tr>
<td>0.5</td>
<td>300 m²</td>
<td>150 m²</td>
<td></td>
</tr>
</tbody>
</table>

**Other Uses**

- Hydroseeding: 7 kg Pail | 3000 US Gal | Replaces Mulch
- Dust Control: 28 kg Pail | Per Hectare
- Pond Demucking: 0.5 kg to 1 kg | Per cubic meter of sediment

**SOIL Lynx BENEFITS**

- Easy to apply, easy to integrate within existing operations.
- Enhanced growth characteristics, while minimizing seed and fertilizer loss
- Enhanced moisture retention
- Enhanced soil stabilization, cleaner sheet flow
- Reduced shipping, handling and storage costs
- No TDG requirements
- Reduced hydroseeding costs
- Enhanced performance improves customer satisfaction

**POND DEMUCKING**

Once the area has been sufficiently dewatered using a PR5 Water Treatment System, Soil Lynx powder can be added to the remaining mud to further dewater and tackify the sediment for easy removal with an excavator and standard dump truck. This material can potentially be re-used for revegetation and stabilization applications, further saving money and resources.

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**Version 2016**
**Description**
Semi-soft block wrapped in plastic netting and enclosed in vacuum bag. Block and netting color identify different block compositions.

**Block Size**
6.5” (W) X 9.5” (L) X 3” (H), Size may reduce if bag is punctured, as the block dries out. This will not negatively affect the characteristics of the block, but the block will need longer to hydrate.

**Coverage**
1 block will typically treat 20,000 m³ of sediment laden water. Variables affecting performance include water temperature, flow velocity, sediment load, UV radiation, and system design.

Typical design configurations are calculated using 1 Water Lynx Block for every 50 to 100 gpm of flow.

**Applications**
For optimal use ensure that the Lynx Block is fully immersed in water so the maximum surface area is available to passing fluids. Where possible small stands may be used to ensure the bottom is not immersed in the sediment.

1) Block will need to be in water for at least 20 min. to allow for proper hydration of the block to occur.

Water Lynx Blocks are easy to use in:
1) *In Situ* - natural creeks, man-made ditches, to remove suspended and dissolved materials / metals.
2) In constructed baffle grids, with rock checks, rock baffles, sandbags or standard construction materials – wood, concrete, metal, large plastic pipe, ½ pipes etc.
3) In ponds when used in conjunction with appropriate mixing devices such as aeration or fountain equipment and or waterfall designs.
4) Design criteria should include use of geo-jute to act as sediment collection and final polishing of discharge fluids.

**Benefits**
- Easy to use, easy to integrate into existing operations
- Reduced operational costs to clean a cubic meter of sediment laden water
- Reduced costs for disposal of end water, less probability of regulatory fines.
- Reduced shipping, handling and storage costs – no TDG requirements.
**WATER LYNX 394 (RED MESH)**
This blend works best with clays but also works well as a general purpose blend. This blend releases slightly slower than the other blends so it is not as effective with higher solid loads.

**WATER LYNX 360 (GREEN MESH)**
This blend works best with high pH waters, clays and sediments. This blend also releases faster than the other three and therefore works well with high sediment loads to quickly drop out some of the sediment. This blend also tends to produce large, strong flocs, so this blend is also useful as a follow-up in duplexes.

**WATER LYNX 398 (BLUE MESH)**
This blend is similar to 394 in that it works best with clays, it releases slightly faster than 394 so it works with higher solid loads. Flocs formed by this blend are generally tighter and stronger than the 494 and 394 blends, for this reason 398 is generally a good follow-up blend in a duplex.

**WATER LYNX 494 (YELLOW MESH)**
This blend is the general purpose blend that works well with clays that have more organics in them. The flocs formed are generally smaller and fluffier and treatment often requires the use of another blend afterward (WLB360) to improve the strength of the flocs.
New regulations are now limiting the use of types of coir or other mat materials having plastic netting in them. Natural jute material contains no non-degradable plastics and will degrade in 2 to 4 years. This makes jute the most environmentally preferable for use in slope and ditch stabilization.

Steep Slopes:
Steep slopes present particular erosion control problems. Soil erosion of sections protected by slope reduced the erosion by 54% whereas jute geotextile reduced erosion by 99% compared with the bare slope. (Source: Wolverhampton University study, Dr. David Mitchell)

Solutions to Erosion Control Problems
- Used to solve erosion control problems for over 30 years
- Easy and economical to install
- Biodegradable within 3-5 years
- Highly absorptive - up to five times its own weight in water
- Hugs all ground surfaces to hold soil and seed in place
- Helps prevent undercutting
- No synthetic netting to interfere with mowers
- No synthetic netting to injure or trap birds or animals
- Acts as soil nutrient - puts back two tons of rich organic matter per acre
- Accepts hydrosowing before AND after installation
- Open weave construction allows overseeding after installation and after initial vegetation is established
- Ideal for bio-engineering applications
- Earth-tone color blends in with all habitats
- Natural fiber, undyed and unbleached, without toxins
- Applicable to all climate and soil conditions

Applications and Uses:
- Golf course construction and maintenance
- Embankments and slopes
- Civic beautification
- Landfills
- Highway construction
- Landscape improvement
- Sod Stabilization
- Lakes and stream banks
- Mining reclamation
- Commercial development
- Mining reclamation
- Nurseries
- Military bases
- Industrial development
- Farm and agricultural
- Hydrosowing
- Ski slopes
- Pipeline construction
- Wetland reclamation
- Drainage ditches
Clearflows treated floc curtains and dispersion fields are typically installed downstream of Clearflow’s Water Lynx Blocks as a final polishing mechanism for fine sediment. The Floc Curtains have a large open weave to minimize hydraulicing issues. Unlike standard sediment curtains, which do not allow for flow and use retention times as key factors in sedimentation, Clearflow’s Floc Curtains want the flow so that the fine sediment can be captured and removed from the water column thus greatly reducing TSS (Total Suspended Solids).

Microscopic view of Floc Curtains and sediment attachment
Bazooka – Pipe Reactors

Bazooka Pipe Reactors are made of light weight HDPE Pipe, perfectly sized to fit in the back of a standard pickup box. The Bazooka operates at approximately 150 – 200 GPM and works in conjunction with 3” trash pump, standard cam lock fittings, our environmentally friendly blocks and our Geo-Jute dispersion field.

Benefits     -     Easy installation – Sets up quickly - treats high turbidity - can be configured with tanks to fit into restricted footprint areas - release water can be discharged directly into environment or storm drains – minimal supervision required.

STORM Lynx Mats

Storm Lynx is a low profile, high visibility, water clarification solution that assists in the collection of sediment and debris—prior to its entry into storm water management systems—with minimal flow restriction.

Benefits     -     Easy installation - Conforms to any curb height and shape - Environmentally friendly Passive water clarification - Excellent results - Rechargeable & reusable
**Water Treatment Systems**

**Description**
Clearflow's internationally patented PR5 reactor(s) are designed to enhance the effectiveness of Lynx Products, enhancing the reduction of Total Suspended Solid loads.

Water flow entering the equipment can be controlled to provide optimum reaction conditions for flocculation. The end result is greater removal efficiency with larger particles making them easier to settle and trap.

**Size**
Scalable to fit available space and volume considerations

**Applications**
PR5 Systems are used to treat sediment laden water in industrial, construction, mining, oil & gas, agriculture and wetland applications. Water is pumped from the site and can be discharged back to the environment or a storage system for re-use.

Lakes, ponds or standing water can be cycled through the PR5 System and returned to the basin or to storage tanks for possible recycle. Suspended material, metals and nutrients responsible for algal blooms can be captured in settling tanks or by the use of Clearflow filter mediums

<table>
<thead>
<tr>
<th>Before (1160 NTU, pH 11.2)</th>
<th>In a small footprint</th>
<th>After (20 NTU, pH 7.5)</th>
</tr>
</thead>
</table>

Portable, Environmentally Friendly

![Portable, Environmentally Friendly](image-url)
Pipeline Right-of-Way, Brooks, AB;
Extreme slope in Fall of 2009, Re-veg, tackification and fast growth

Nitinat DFO Fish Hatchery, Vancouver Island, BC;
Easy to install & set up, Small footprint, Environmentally Friendly, Direct discharge into fish bearing creek at 175 GPM using PR5 Water Treatment Systems

Scalable from 5 gpm to “Infinity & Beyond”

Trailer Units
In-ground Systems
In-situ Placement

Job Histories available at www.Clearflowgroup.com

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Send Samples (Pre-Paid) to Sherwood Park Office – Attn: Jesse M, Senior Chemist,
Visit our Website www.Clearflowgroup.com for sample requirements