

Phytoremediation of a Wisconsin Brownfield with Poplars

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Phytoremediation

General term – Use of plants to clean up or remediate contaminated soil, sludges, sediments, and groundwater through contaminant removal, degradation, or containment.

- Brownfields –

**Industrial areas that have
contaminated soils and
groundwater from past
chemical spills or leaks
(Usually not available for
economic development)**

Several Phytoremediation Processes

- **Extraction**
- **Filtration**
- **Stabilization**
- **Degradation**
- **Volatilization**

American Quality Fibers

Menasha, Wisconsin, USA

Fox River Valley – Central Wisconsin







Principal Contaminants – Exceeding Standards

- Metals**

 - Arsenic**

 - Chromium**

 - Lead**

- Volatile Organic Compounds – Solvents**

 - Trichloroethane (TCA)**

 - Trichloroethene (TCE)**

 - Tetrachloroethene**

Depth – Down to 5 m



Phased Phyto Strategy

- | | |
|------------------|------------------------------------|
| Phase I | Plant material screening |
| Phase II | Verification – site factors |
| Phase III | Demonstration on site |
| Phase IV | Scale up - deployment |

Why Poplars ?

- **Phreatophytes – high water uptake**
- **Easy to propagate**
- **Fast growing – short rotations**
- **Genetic research available**
- **Wide range of applications**
- **Large root system – coppicing**
- **Favorable biochemical processes**

Poplars Used:

Aspen

Cottonwood

Hybrid Poplars











Wisconsin Department

Natural Resources

Urban Forestry Grant

2006

Cooperating Partners

- **Wisconsin Department of Natural Resources
Remediation and Redevelopment Program
Division Forestry**
- **Winnebago County, Wisconsin**
- **OMNNI Associates**
- **Environmental Forestry Consultants**
- **University of Wisconsin - Madison**

























Results to Date

- Outstanding tree growth
- Decreased water table
- Decreased contaminants in groundwater
- Favorable public reaction

Future Plans

- **Monitoring**
- **Add Native Prairie
Aesthetics
Wildlife Habitat**
- **Pruning / Thinning**



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