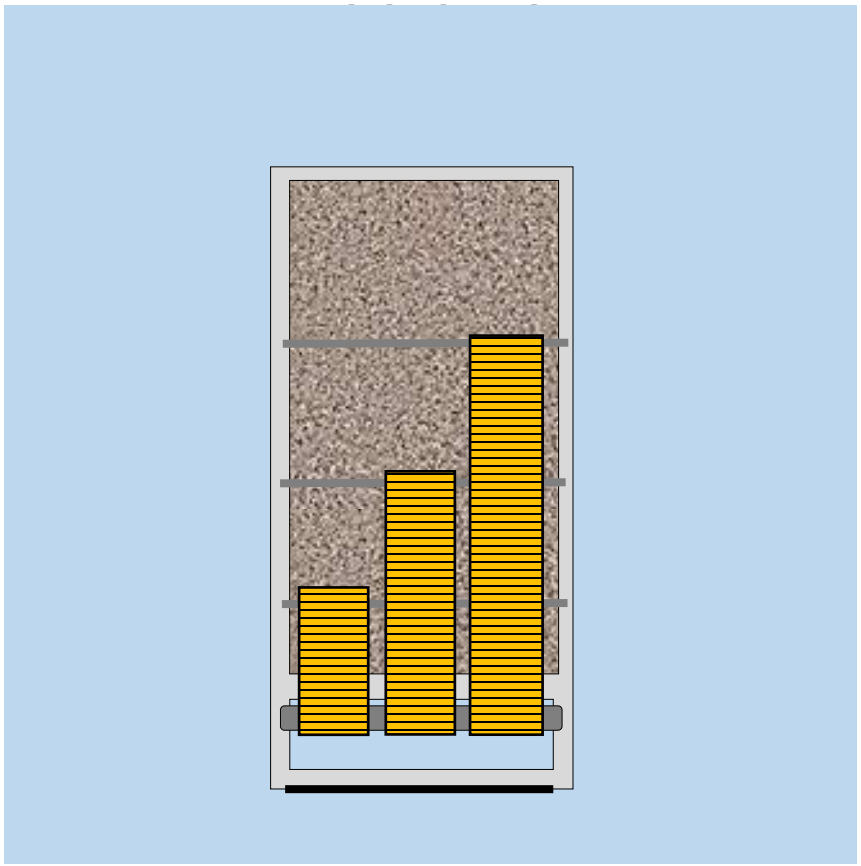
River Soil Reclamation

Recover Topsoil Lost to Streams & Rivers
Return River Bed Silt to Agricultural Origin

Restore River Channel Flow Capacity
Flood Prevention Navigation Safety Accommodate Heightened Global Warming Flow Rates



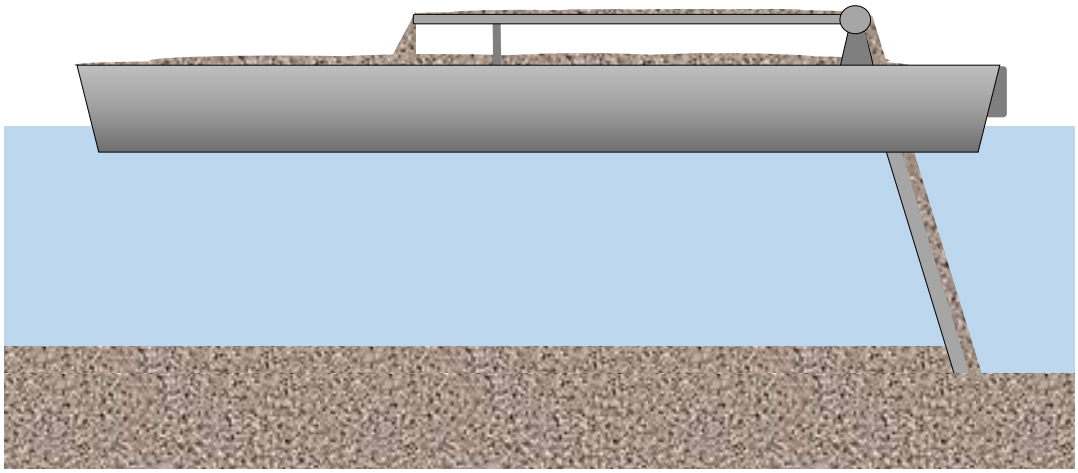
River Channel Management Barge
Overhead View

Three Adjustable Excavator-Conveyors Lift Riverbed Soil to Barge
Multiple RCM Barges Can Be Rafted Abreast & Pushed by Single Riverboat
Vertical Excavators Track Riverbed Terrain & Set Depth of Extraction
Horizontal Conveyors Vary Length to Uniformly Fill Topsoil Barge
CM Barges Can Re-Raft for Convoy Travel Upriver to Shore Soil Depot
Reclaimed Topsoil Trucked from Soil Depot to Individual Farms

Flood-Causing Riverbed Sediment Causally Linked to $37 Billion/Year Flood Damage
RCM Barge Transforms River-Clogging Sediment to $10/Cubic Yard Topsoil Replacement
Estimate Soil Value @ $40,000 per RCM Barge

River Channel Management Barge
Profile View

New Construction or Retro-Fit



Word Model of River Sediment Life Cycle

Rains always bring erosion products into Earth's river channels and transport them to oceans and lakes. The Mass Agricultural Age has greatly increased the magnitude of bare topsoil and erosion losses to rivers and streams. Turbid river waters deposit mobilized silt primarily at river deltas and curves. Over time the river bed thickens with silt, deepening the mud layer, with consequential current increase. Storm episodes bring temporary high currents that erode deltas and curve silt accumulations. This intermittent sweeping of the river channel moderates current rise. Inevitable permanent riverbed accumulations will cause more frequent and precipitous flooding and meandering at flood stage, redepositing some silt onto adjacent land as modest soil recycling. Thickening riverbed silt changes the river drop rate from head to mouth, ultimately slowing current and arresting sweep-cleaning capacity. River-earth dynamics ultimately compel human intervention to recycle river-mobilized soil to (1) keep riverside geography stable, (2) avoid adjacent infrastructure damage, and (3) replace agricultural topsoil before total loss to unrecoverable saline deposits in world oceans.

Impact of Global Warming on Rivers

The rise in temperature brought by global warming will have a significant impact on sea levels throughout the world. Continental boundaries will be redefining smaller as inundations mature to a permanent loss of seacoast. One consequence of this expansion of oceanic boundaries is more rainfall, owing to the larger evaporation surface presented to the heavens. Increasing rainfall will raise lake water levels and cause river currents to increase. While riverbed sediment levels are high, faster currents will bring more river meandering and floods.

River Channel Management

The River Channel Management Barge (RCMB) might be regarded a much needed first response to replenish vanishing topsoil before it is rendered valueless in the world's oceans. Riverbed silt accumulations entail substantial societal costs due to flood damage and navigation hazard. River Channel Management Barges can turn this extreme negative into a profitable positive for American agribusiness. Extant fields weakened by topsoil loss are becoming

less addressable by industrial chemical rehabilitation. Steady-state societal living eventually will constrain tapping rich soil fields elsewhere. A closed-loop recycling answer like convoys of RCMBs has emergent long-range viability.

The RCMB initiative for soil conservation has a derivative benefit of moderating flood damage attributable to global warming. By transferring fertile riverbed material to upstream agricultural land assets, the river cross-section and flow capacity enlarges. Intensified rain activity will bring faster currents, but momentum damage from rapids, river meandering, and direct flood damage will be less with from an expanded channel.

Furrow Management

Even more stabilizing of agricultural munificence is preventing topsoil from eroding into streams and rivers of the nation in the first place. An initiative known as Furrow Management (FM) is offered to immobilize and retain precious topsoil. The initial solution for Furrow Management was to annually sow rye grass in plowed soil furrows between crop rows to (1) keep the topsoil securely in place and (2) improve soil moisture retention. Both grass and plant residues could be annually plowed under to re-nutrify the field. An even lower cost solution involves one-time sowing of agri fields with perennial grass to perpetually hold onto top soil. In the case of erosion-free perennial grass, food crops can be planted within a smaller, loose-soil zone. These "soil reserves" keep bare topsoil hemmed by stationary sod that also moderates hot-weather evaporation losses. Only the small soil trough (instead of the whole field) need be fortified with end-of-season plant residuals, perennial grass cuttings, and compost to rejuvenate land growing capacity.

In the context of a maturing, post-industrial society, the U.S. diet can be expected to moderate from labor work energy potencies to a lesser knowledge work level. This reduced demand for food energy opens pathways for more traditional and natural agricultural initiatives to maintain soil potency while feeding America. For example, previous heavy reliance on industrial chemical fortification of soils to maximize area productivity might shift to slower-acting soil support measures: composting, plowing-under crop residuals, investing surplus FM grass clippings in the focal bare soil grow zone, and simply letting fields now holding their topsoil lay fallow on a rotating seven-year cycle (a 14% production curtailment that might match the emerging, leaner advanced society dietary protocol AND allow slower decomposition processes to re-build soil values).

Erosion-Free Grassy Crop Field Geometry Enabling Furrow Management to Retain Topsoil
More Than 75% Topsoil Erosion Avoidance