



Landscape System ONE:

Permaculture Design: Sustainable Farming as Interpreted from Indegenous Farming Methods

Permaculture is a system of agricultural and social design principles centered around simulating or directly utilizing the patterns and features observed in natural ecosystems. The term permaculture was developed and coined by David Holmgren, then a graduate student, and his professor, Bill Mollison, in 1978. The word permaculture originally referred to “permanent agriculture”, but was expanded to stand also for “permanent culture”, as it was understood that social aspects were integral to a truly sustainable system as inspired by Masanobu Fukuoka’s natural farming philosophy.

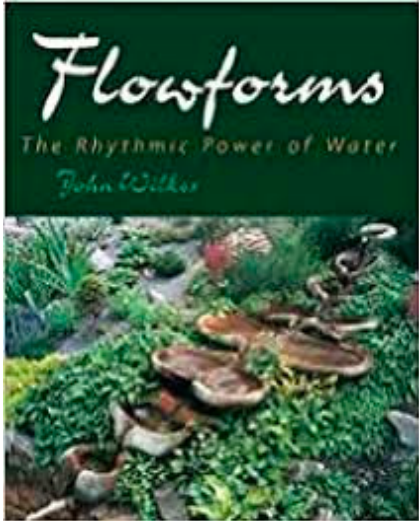
It has many branches that include, but are not limited to, ecological design, ecological engineering, environmental design, construction. Permaculture also includes integrated water resources management that develops sustainable architecture, and regenerative and self-maintained habitat and agricultural systems modelled from natural ecosystems.

Mollison has said: “Permaculture is a philosophy of working with, rather than against nature; of protracted and thoughtful observation rather than protracted and thoughtless labour; and of looking at plants and animals in all their functions, rather than treating any area as a single product system.”

Landscape System TWO

Flowforms and Biodynamic Farming:

A Biodynamic Farming Design Innovation of John Wilkes inspired by the writing and work of Rudolf Steiner

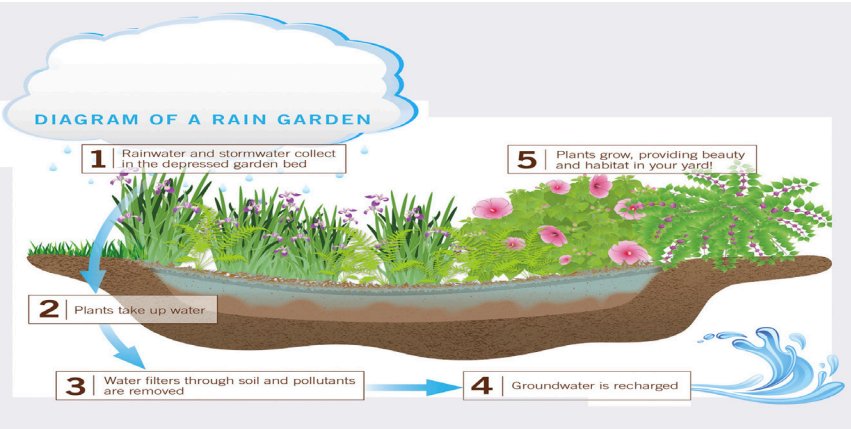


Traditional Flowforms are sculpted basins that create “structured water” by simulating the flow of water through a natural stream. As water flows through a stream the water hits rocks and other objects, rolls over on itself and thus oxygenates. Structured water, sometimes called magnetized or hexagonal water, refers to water with a structure that’s been altered to form a hexagonal cluster. This cluster of water molecules is believed to share similarities with water that hasn’t been polluted or contaminated by human processes. The inherent flow dynamics of water causes water to roll over in a double spiral pattern. Continued rolling over in a double spiral pattern “energizes” water creating a spiritual vortex. Biodynamic Farming is a revolutionary method of farming coined by Rudolf Steiner. Biodynamic agriculture is a form of alternative agriculture very similar to organic farming, but it includes various esoteric concepts drawn from the ideas of Rudolf Steiner (1861–1925). Initially developed in 1924, it was the first of the organic agriculture movements. In Biodynamic Farming, natural fertilizers and herbicides are created by adding compost tea, dried insectoratory plants to the water in the flowform creating healing and protective tonics for plant production.

Landscape System THREE

Raingardens and Biocells:

Rain Gardens and Biocells are forms of Green Infastrucrture used in landscape design to mitigate stormwater run-off.



Landscape System FOUR

HugelKulture:

From Wikipedia- Hugelkultur is a German word meaning mound culture or hill culture.[3] It is said to have been practiced in German and Eastern European societies for hundreds of years. Hugelkultur bed prior to being covered with soil. The term is first published in a 1962 German gardening booklet by Herrman Andrä.[5] Inspired by observation of the diversity and success of plants growing in a pile of woody debris, “mound culture” is suggested (as opposed to “flatland culture”).[5] This was also posited as an easy way to utilise woody debris without burning, which was illegal.[5] Andrä appears to have been influenced by Rudolf Steiner’s biodynamic agriculture. Steiner explained his biodynamic philosophy as developed through meditation and clairvoyance, rejecting scientific inquiry on the grounds that his methods were “true and correct unto themselves.”[6] Andrä quotes a 1924 lecture on biodynamics by Steiner, which describes mixing of soil with composting or decaying material in earthen hillocks.[5] Joined by author Hans Beba, another German gardener, “Hill Culture - the horticultural method of the future” was revised and republished several times in the 1970s and 1980s.[5][7] The technique was later adopted and developed by Sepp Holzer, an Austrian permaculture advocate.[8] More recent permaculture advocates such as Paul Wheaton and Geoff Lawton strongly promote Hugelkultur beds as a perfect permaculture design.[9]



FLOW Utilizes the philosophy of Permaculture which is a set of design principles centered on whole systems thinking, simulating, or directly utilizing the patterns and resilient features observed in natural ecosystems. It uses these principles in a growing number of fields from regenerative agriculture, rewilding, and community resilience. Site selection for FLOW would be determined using best practices in Landscape Architecture including LiDAR Technology merged with oral histories of local people. These systems are intended to be developed in a co-creative design and implementation process.

Landscape System FIVE

Keyline Grading and Drainage:

A Water Harvesting Methodology from P.A. Yeoman’s Water for Every Farm

Keyline design is a technique for maximizing beneficial use of water resources of a piece of land. The Keyline refers to a specific topographic feature linked to water flow. Beyond that however, Keyline can be seen as a collection of design principles, techniques and systems for development of rural and urban landscapes.

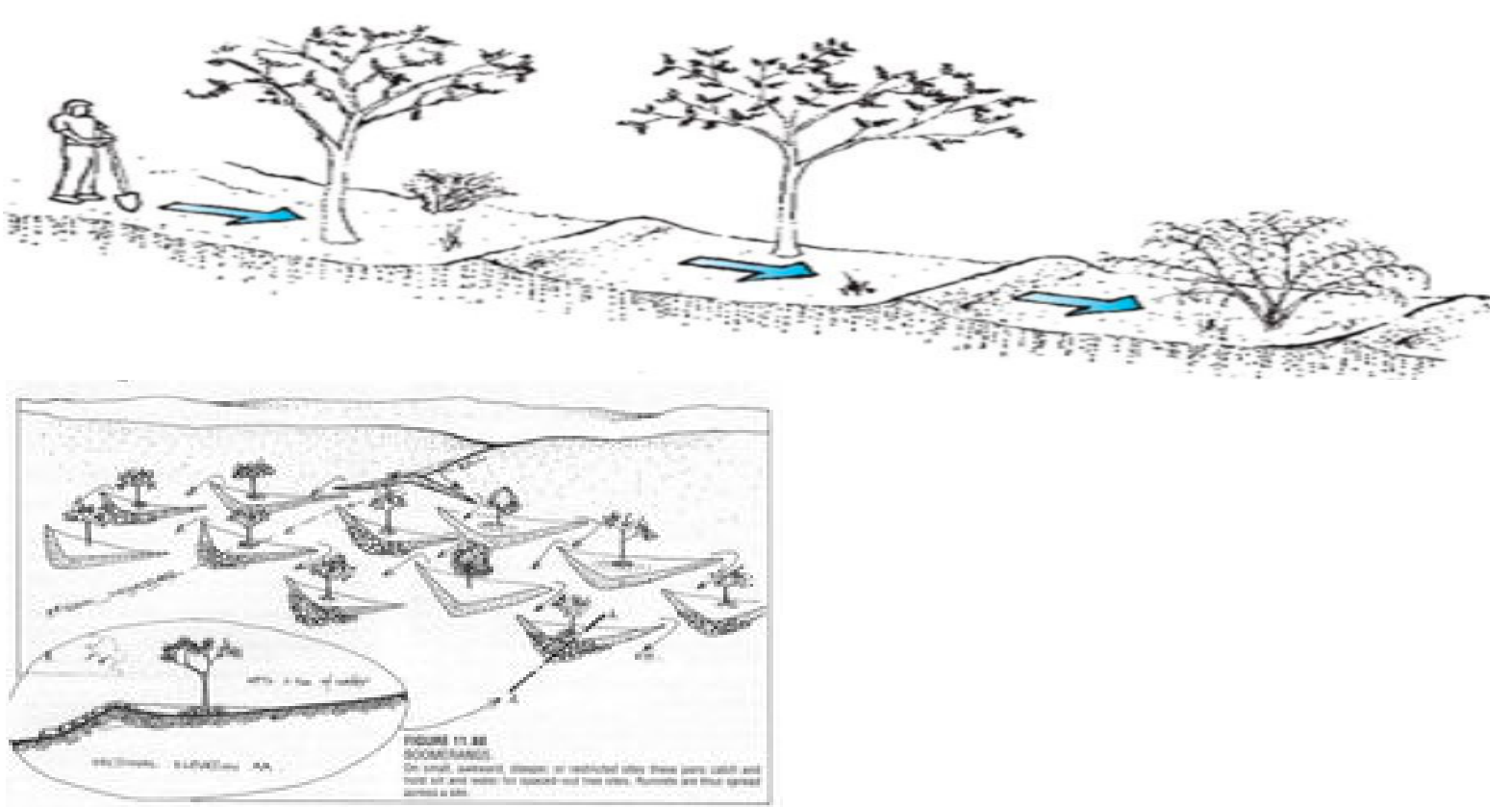
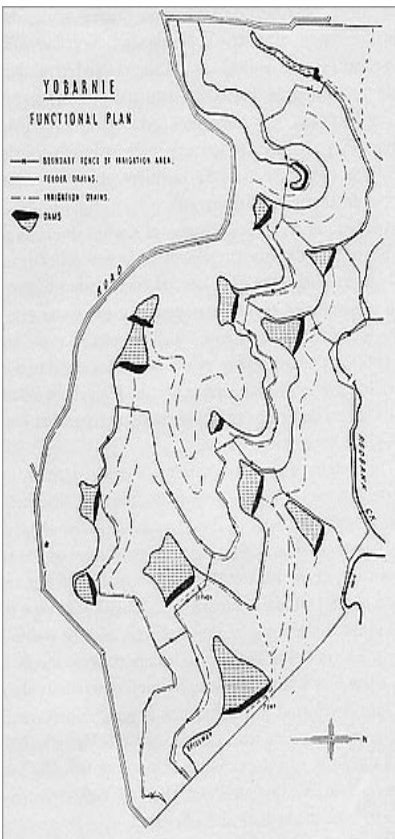
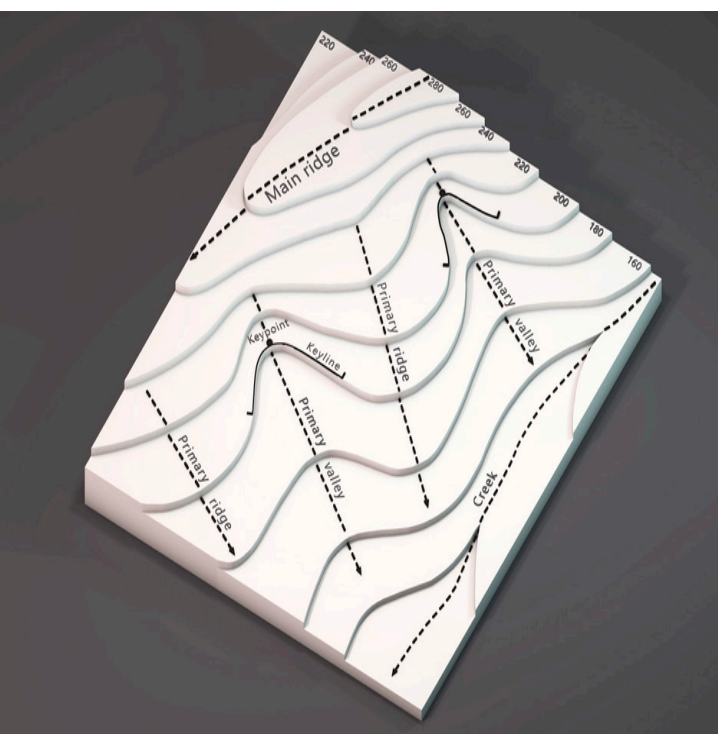
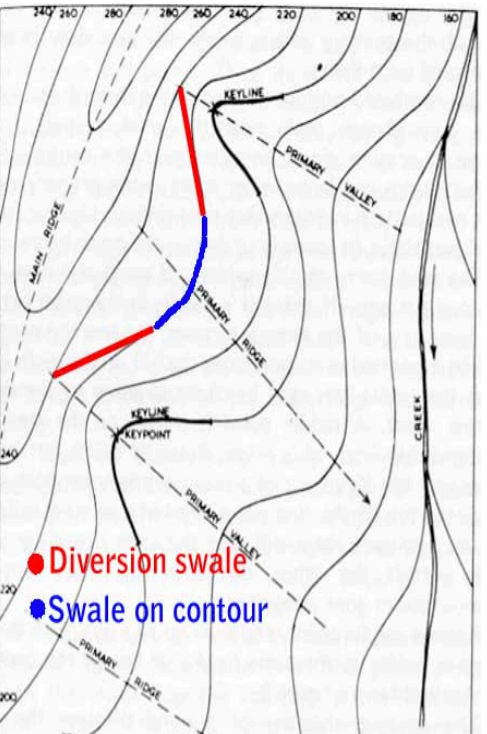
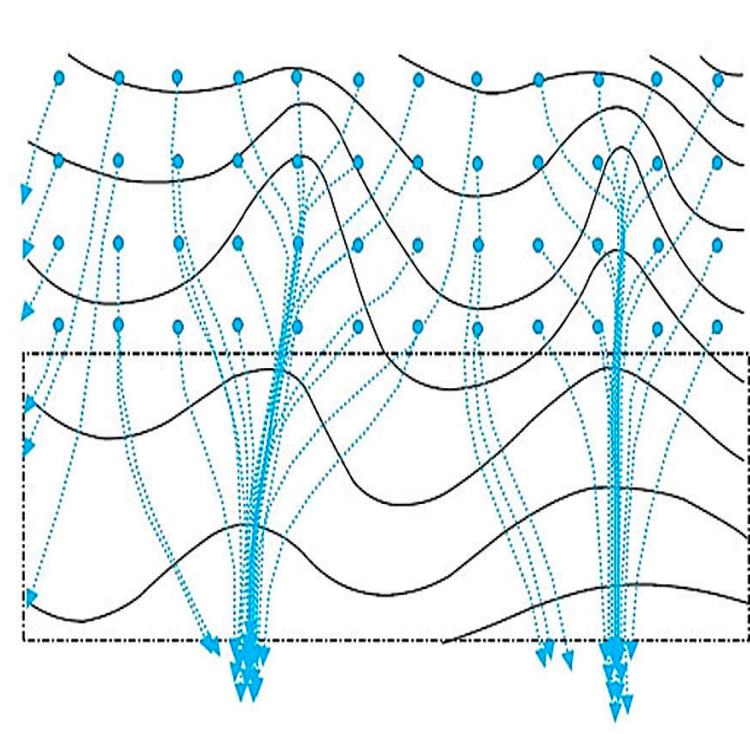
Keyline design was developed in Australia by farmer and engineer P. A. Yeomans, and described and explained in his books The Keyline Plan, The Challenge of Landscape, Water For Every Farm, and The City Forest.

KeyLine Grading Explained:

In a smooth grassy valley, a location called the keypoint can be found where the lower and flatter portion of a primary valley floor suddenly steepens. The keyline of this primary valley is revealed by pegging a contour line through the keypoint, within the valley shape. All the points on the line are at the same elevation as the keypoint. Contour plowing parallel to the Keyline, both above and below will automatically become “off-contour” but the developing pattern will tend to drift rainwater runoff away from the valley centre and incidentally, prevent erosion.

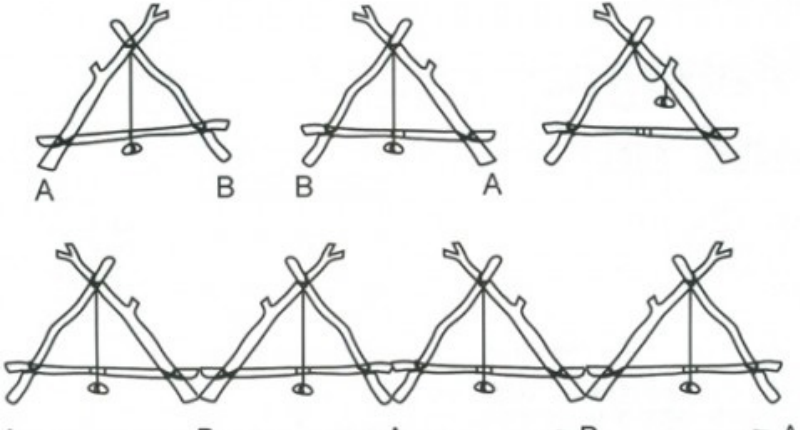
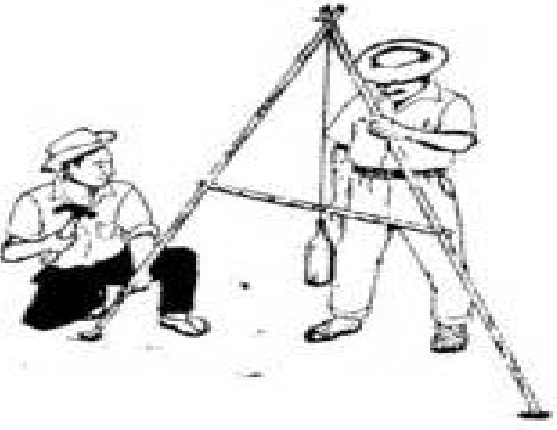
Keyline pattern cultivation on ridge shapes is done parallel to any suitable contour but only working on the upper side of the contour guide line. This automatically develops a pattern of off-contour cultivation in which all the rip marks left in the soil will slope down towards the centre of the ridge shape. This pattern of cultivation allows more time for water to soak in. Keyline pattern cultivation also enables controlled flood irrigation of undulating land, which further assists in the fast development of deep biologically fertile soil, which results in improving soil nutrition and health.

In many countries, including Australia, it is important to get optimum absorption of rain-fall and keyline cultivation does this as well as delaying the potentially damaging concentration of runoff. Yeomans’ technique differs from traditional contour plowing in several important respects. Random contour plowing also becomes off contour but usually with the opposite effect on runoff water causing it to quickly shed off ridge shapes and be concentrated in valleys. The limitations of the traditional system of soil conservation, with its “safe disposal” approach to farm water was an important motivational factor in the development of the keyline system.



Images above from Yeoman’s Water for Every Farm and internet sources that show keyline and key-point identification and how “check-dams” at Key-points create pocket wetlands that can divert water on-contour to crops. **FLOW** replaces check-dams in these illustrations with **Biodynamic Flowforms**, allowing Yeoman’s Keyline Drainage System to be super-charged with “structured water.” Additionally, **HugelKulture** berms planted in native riparian plantings allow indigenous plant material to be identified easily for on-site native plant education .

In honoring the indigenous peoples of this landscape, **FLOW** integrates several landscape technologies from indigenous farming with the intent to develop collaboration with the local tribal councils to integrate traditional crops and means of agriculture production that would include hands-on development of the prototype with local tribal peoples. In exchange, **the project would offer permaculture and green infrastructure training to tribal communities involved as a means of community-building between FlyRANCH and tribal leaders.** FlyRANCH could also offer educational training public to the greater public.

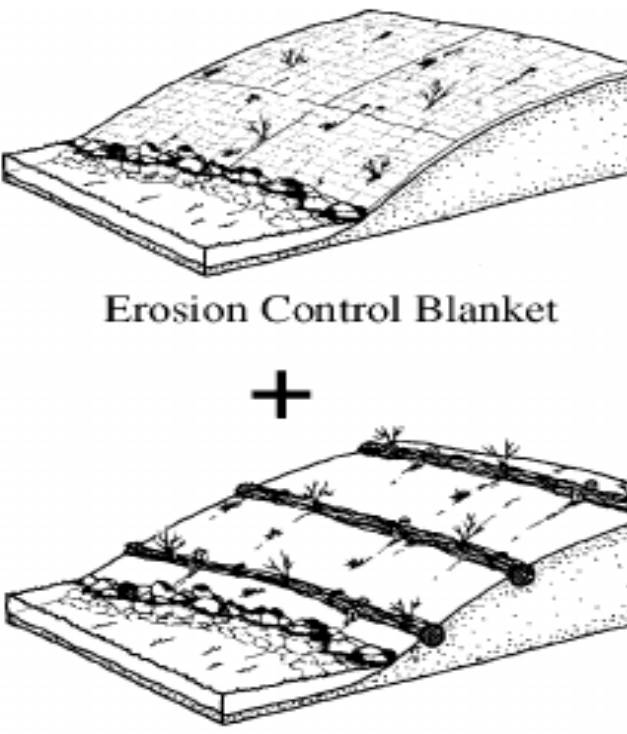
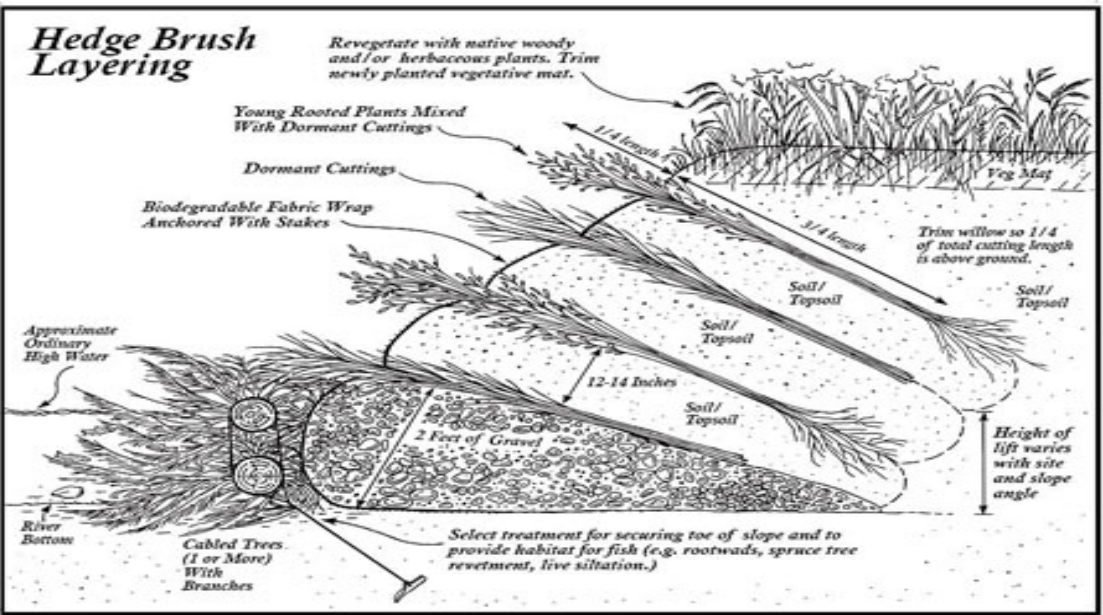


Images below are from Yeoman’s Water for Every Farm and internet sources that show use of an “A-Frame” to identify contour lines by volunteers. This low-tech method allows teams of un-trained individuals to correctly define contours more accurately than digital technology and as ancient as the oldest civilizations. is

Landscape System SIX

Army Corps Bio-Engineering Methods:

The images to the left and below illustrate Bio-Engineering Methods used in the US and abroad for over thirty years to stabilize soils and control and prevent erosion along stream banks. These low-tech, environmentally concious systems are usually comprised of live cuttings of native riparian zone vegetation set into the bank in bundles. The vegetation is chosen due to its ability to root easily and establish vegetation on the bank. Check-dams at key-points create “pocket” wetlands to promote water cycling and feed agricultural crops.



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Case Study built by **FLOW** Designer:

The image below is a case study of a bidynamic/bioengineering environemntal art project completed with landscape architecture students in Iowa. This project demonstratbd how building these landsacpe systems can be a method for hands-on education and creation of sustainable public art simultaneously. Works can be created by deadwood from site-harvested non-native invasives interplanted with natives, adding a layer of conservation to bioengineering by removing problematic plants and using them for building material. This is another example of full-circle design used in this proposal.

