



Aquatic Resource Compensation Program Development

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Background

- Historically >100,000 linear feet of waterways impacted **every year** (individual permits only)
- Wetland impacts average 60-100 acres/year
- No programmatic effort/requirement for waterway compensation 105/401/404
 - Case by case negotiated process
 - Avoidance and minimization accomplished
- Success of Wetland Protection Program
 - Achieved a 70-80% reduction in annual impacts since inception
 - Reduction has occurred in two distinct phases

True Cost of Development

- Permittee not accountable for the full affect that development has on most aquatic resources (although this is starting to change).
- Currently, citizens and future generations are paying these unaccounted costs.
- Effort will account for direct and secondary affects that a project has on aquatic resources.

Potential Compliance Workload

- Following the traditional path of project by project compensatory mitigation has a high cost
- Using historic individual permit issuance rates and five year monitoring, over **2,800** wetland and stream compensatory sites would be in an active monitoring phase in any given year!
- Plus **2,400** potential General Permits

Table 1. Individual Permit Compliance Workload

Resource Category	Annual Permit Issuance Rate	Annual Amount of Sites in Active Monitoring
Wetland Replacement	65	325
Potential Stream Compensation	500	2,500
Total	565	2,825

Now What?

- On site challenging and generally not feasible (workload alone)
 - Entrepreneurial banking
 - Has potential but currently not operational
 - Can have high cost associated
 - Can drive restoration costs higher across the board
 - Doesn't fully integrate watershed needs on a large scale
 - In lieu fee program
 - Legal framework already exists
 - 12 year track record
 - Innovative examples to build on in other states
 - Can provide unprecedented opportunity for integration to meet watershed needs

Existing Program Evaluation

- North Carolina and Tennessee program structures useful as templates.
- A literature review and program interviews have been conducted.

Table 2. Selected In Lieu of Fee Program Fee Schedules

State	Year	Category	Fees per linear foot
Tennessee	2002	Culverts	\$200
		Stream Length Loss	\$200
		Relocations (Non-FGM design)	\$100
		Stream Length Loss (all)	\$200
		Channel Modifications	\$50-\$200
		Impoundments	\$150
		Fill-loss	\$200
		Concrete lining	\$200
		Other	Discretionary
Kentucky	2000	Fee is variable based upon impact type and resource quality	>\$100
North Carolina	2007	Riparian Buffer (square foot)	\$0.96
		Stream	\$245
Virginia	2001-2006	Average program revenue generation (impact/revenue)	\$138

Note: Most programs are a result of ACOE Section 404 program permitting and fees are established by the ACOE on a project by project basis ranging from \$40-\$450 per linear foot according to various reports analyzing ILF efforts.

Framework

- To effectively offset project impacts the program must be able to compare impacts with proposed compensation (regardless of implementation method)
 - Need to establish resource value and impact
 - Need to establish value of compensation
 - Must be scalable
 - Methods can't be cost prohibitive (rapid)
 - Scientifically defensible
 - Integrate across programs

Framework

- Most, if not all programs, assess a per linear foot charge
 - Simple, but has **severe** implementation flaws
- Compensation must take into account the affect a project has on the following attributes:
 - Physical, Chemical and Biological
 - Existing/Designated Uses
 - Public Access/Recreational Value

PA Functional Areas

- Riparian Ecotone Core Functional Groups
 - Water Quality (WQ1)
 - Carrying Capacity (CC)
 - Habitat Affects (HAB1)
 - Recreation/Resource Support (RRS)

PA Functional Areas

- **Water Quality (WQ1)**
 - Riparian Vegetation Condition
 - Upland Buffers to Riparian Ecotone
- **Carrying Capacity (CC1)**
 - Storage Capacity /Attenuation
 - Hydraulic alterations

PA Functional Areas

- **Habitat Affects (HAB1)**
 - Direct Losses
 - Secondary Alterations
- **Recreation/ Biological Uses (RBU)**
 - Loss of Use
 - Loss of Accessibility

PA Functional Areas

- Wetland Core Functional Groups
 - 12 HGM Function Models used as Basis
 - Hydrologic (HYD)
 - Biogeochemical (BGC)
 - Habitat (HAB2)

Wetland HGM Functions

Group	Function	Description
HYD	F1	Energy Dissipation/Short-term Surface Water Detention
	F2	Long term surface Water Storage
	F3	Maintian Characteristic Hydrology
	F4	Reserved
BGC	F5	Removal of Imported Inorganic nitrogen
	F6	Solute Adsorption Capacity
	F7	Retention of Inorganic Particulates
	F8	Export of Organic Carbon (dissolved and particulate)
HAB2	F9	Maintain Characteristic Native Plant Community Composition
	F10	Maintian Characteristic Detrital Biomass
	F11	Vertebrate Community Structure and Composition
	F12	Maintain Landscape Scale Biodiversity

Commonwealth's Planning Investment

- Growing Greener I and II
 - Invested \$10 million in watershed planning plus \$6 million in matching funds
 - **Total investment \$1.3 billion**

Table 1. Growing Greener Watershed Planning Awards 1999-2006

DEP Region	Number of Grants	Matching Funds	Grant Amount	Total Project Funding
Others	10	\$856,101	\$1,135,078	\$1,991,179
NCRO	38	\$902,652	\$1,895,823	\$2,798,475
NERO	21	\$558,531	\$1,571,130	\$2,129,661
NWRO	13	\$743,179	\$941,743	\$1,684,922
SCRO	30	\$1,027,635	\$1,716,214	\$2,743,849
SERO	20	\$1,426,706	\$1,054,620	\$2,481,326
SWRO	33	\$714,535	\$1,632,529	\$2,347,064
Totals	165	\$6,229,339	\$9,947,137	\$16,176,476

Current Planning and Prioritization Effort

- PA Water and Lands Assessment GIS Model
 - Under Development Completion mid 2010
 - Fed/State agency and Conservation Org. effort
 - Purpose is to establish a comprehensive protection, conservation and environmental restoration planning framework for all Commonwealth agencies and conservation organizations seeking to protect and restore resources

Potential Program Partners

- PFBC Habitat Program
- NRCS
- USFWS
- USGS
- Various DEP programs
- PEMA/FEMA
- NGOs
- Philadelphia Water Department
- Consultants
- Contractors
- Universities
- Consortiums
- Mitigation Bankers

PIESCES

Pennsylvania Integrated Ecological
Services, Capacity, Enhancement
and Support Program