

## WETLAND MITIGATION AND HABITAT RESTORATION

Fundamental understanding of Wetlands and the evolving industry of water quality issues that are being driven by federal, state, town, and local agency regulations.

- A. There are two fundamental kinds of Fresh Water Wetlands — Both have high water marsh and low water areas that fluctuate with seasonal weather occurrences.
1. Tidal salt areas, bogs, shoreline
  2. Fresh Water Areas, streams, ponds, drainage lowlands.
- B. The individual wetland areas must be located and mapped out prior to finding out what you can or cannot do. In order to do this, you must find out:
- Its size
  - Its upstream-downstream flow destinations
  - The type of classifications of its streams
  - Its ecological habitat
  - Its purpose
  - Beautification flagging of its trees, plants and grasses
  - Its water quality - oxygen and pH level, etc.
  - Obligate wetland ~ occurs almost always (estimated probability >99%) under natural conditions in wetlands
  - Facultative wetland ~ usually occurs in wetlands (estimated probability 67% - 99%) but occasionally found in non-wetlands
  - Facultative ~ equally likely to occur in wetlands or non-wetlands (estimated probability 34% - 66%)
  - Facultative upland ~ usually occurs in non-wetlands (estimated probability 67% - 99%), but occasionally found in wetlands (estimated probability 1% - 3%)

### Stream Classifications

1. Class A Streams ~ Outlets ~ streams flowing into drinking or cooking water reservoirs
  2. Class B Streams ~ outlets flowing to swimming or recreation areas
  3. Class C Streams ~ outlets to trout streams
- C. These areas and others that collect and retain water are protected for water preservation and habitat revitalization. Their natural resource value and the fact that the wetlands have been established that they are suffering from negative environmental impacts have made this a prominent issue. The increased population and increased development has increased the negative effects as well as the changing weather patterns. We all have experienced the many factors

involved in **balancing** our ecology and natural resources for future generations. Therefore these areas have a federal and state law mandate of protection.

- D. If you want to **find** out if you need a permit for maintenance, an improvement project, mitigation, habitat restoration, or what is going to be your liability in performing a construction or development project, you will have to take the time to perform the survey and check out the environmental assessment forms in your Town, County, **State** and the governing agencies. These agencies also have the right to **mandate** more restrictive protection and Federal mandated laws.
- E. The cornerstone law of regulation was mandated (1972) - The National Pollutant discharge - which every state in the USA must comply with its standards. If any state wants to **impose** more restrictive measures within their governing environmental laws, they are allowed to. Therefore it's a must to survey and assess your **individual** project in order to find out the protective measures you need to perform in obtaining a permit, etc. If you represent a farm, golf course, Town municipal facility, etc, any of the local laws have variances to provide adjustments based on your proposed activities.
- F. The survey and assessment may give you the information that you need to be able to perform your proposed function with a permit, or simplify the process without making the procedure overly complicated and expensive.

The survey and assessment determines the need for a permit. If a permit is needed, you're going to have to perform maintenance functions on any project in or around water, even if your basic responsibility is erosion for protection from storm occurrences. You must follow guidelines, protective measures, and establish design criteria that are available to you and you are responsible to perform. If you don't, you are subjected to fines.

- G. Depending on the survey location, size, and (negative) narrative environmental assessment of your scope of work, this determines how extensive your permit process will become.

#### Description of Survey Assessment

1. Location map, size, narrative, survey, proposed work
2. Hydraulic design, surface water run off
3. Expected flow from storm occurrence, protection
4. Retention, erosion control phasing, if necessary
5. The classification of streams and time of year will determine if you're allowed in them at all, or pumping, etc will be allowed.

6. Long term detention, sustaining landscape
  7. Slope protection depending on grading plan
  8. The debris and quantity of materials excavated, equipment used, and dumping location approvals.
1. Depending on the severity of the environmental concerns, other laws and provisions may impose further restrictions and requirements depending on the potential discharge of negative effects such as difference categories in every location in the USA.
    - Additional Regulation Federally mandated for gas, tar, miscellaneous chemical pollutants, interference with Clean Air Act, fish habitat, etc.
  - H. The most recent engaging regulation has become the awareness of water quality pollutants from non-point sources, and the storm water thunder shower and increased rainfall yearly problems. Therefore this has forced the regulatory agencies to create more extensive regulations in these specific areas of law enforcement.
  - I. Each State has adopted similar plans that protect their environmental concerns. As of 1974 New York State regulated these areas called SPDES Phase I. Recently Phase II SPDES permit regulations have been mandated (5/1/04).
  - J. This has been a collaborating effort with EPA, DOT, DEC, DEP and the other regulatory agencies that were competing to achieve the methods and results of better control.

As it has evolved, they incorporated the effort of all the USA to combine with the soil and water conservation societies (SWCS), the international association on erosion control. An overall partnering to create a level of standards and enforcement procedure of accepted best management practices has been established. In order to introduce this educational process, a certification of this knowledge and the evolving process by instructor classification of achievement was adopted.

The CPESC, Certified Professional Erosion Control Certification was instituted. Many of the new projects, depending on the magnitude and environmental concerns, will have to appoint an independent CPESC inspector.

The duties of the on-site inspector include taking an oath of conduct besides updating the best management practices, etc, in order to evaluate the storm water activity and erosion control during the work in progress. Many of the new projects will be subjected to follow phasing based on control aspects of water quality protection.

Even if you follow all the project specifications, erosion control plans and specifications, you still may be responsible, based on your contract, to provide additional storm water protection plans if the storm occurrences or the work in progress are interfering with water quality regulation issues.

You may have to adjust to additional phasing of the project, incorporate additional slope protection matting to prevent turbidity entering streams, increase protection of wetland retention, stone check dams, and whatever else is necessary to maintain and control the negative disturbances of negative environmental impacts. The regulatory Agencies may require an (SWPPP) emergency new plan, which is enforced by fines.

- K. This additional regulation is being imposed selectively on sensitive projects. I have had to perform this function (SWPPP) on one of my projects. I have also represented other contractors and developers who were being fined for every major rain occurrence until they corrected the problems and the project was under regulation control standards.

Besides these new regulations, there are better management practices evolving in the water quality issues that will enable the environmental regulator to allow these factors to be integrated into your projects.

Some advice is to keep up with these regulations in order to be aware of the contingent liabilities, the environmental risks and the controls that affect the overall environmental impact and the economic values.

NOTE: There is a tremendous amount of new information available on line.

- [www.nyc.gov/watershed](http://www.nyc.gov/watershed)
- [www.epa.gov/npdes/stormwater](http://www.epa.gov/npdes/stormwater)
- [www.epa.gov/nps](http://www.epa.gov/nps)
- [www.cpesc.net](http://www.cpesc.net)
- Every State also has information online.

... and many more.

What is hands-on Wetlands/Fundamentally is as follows:

1. Step One -- To require a **stewardship** role/guardian to at least gather the basic **assessment** information characteristics: where the water is coming from and to what **degree** the **unbalances** exist. To compose a general list of concerns and **implementing** a simple **monitoring** program to review information after storm events, **neighboring** property or **upstream** developments.
2. Step Two -- A **basic** **by-hand** clean up to generally be able to see what is going on, such as removing dead or infected trees, reduce overgrown vegetation, and **stabilize** by erosion control embankments. After going through the **stewardship/guardian** role, you might be able to easily correct situations that are **obviously** destructive to the wetland environment and there are usually some **elementary** preventative measures like reseeded that can be done.
  - a. Re-route water through stone filters or erosion control fabrics.
  - b. Create buffers to stabilize slopes. The steep slopes can be re-seeded and covered with coconut rolled matting that will last approximately three years, giving the areas sustainable support for landscape. The invasive weeds can be discouraged by biological/physical means by hand or by reducing their light sources. Any chemical applications must be performed by a licensed applicator, even aquatic weeds can be brought under control by installing black plastic over the weeds or by supplying the pond with fish, such as carp.
  - c. Siltation booms to prevent construction disturbances in the majority of these balancing measures. Begin to readjust the wetland into a balance that can be maintained.
  - d. The fact is the wetland areas need to be part of your operating maintenance system, not a keep-out area.
  - e. In these phases, no heavy equipment or unfamiliar wetland maintenance contractors should be used without direction.
3. Step Three -- you can now see what's going on and have an understanding of its **personality**. Being a part of the information, you can also become connected to the entire watershed for the wetland areas. It is important to identify the most recent information related to the watershed and stay current with modern events in which your wetland is situated.
4. Step Four -- your wetlands have been encouraged to breathe again and by connecting its livable elements to them, it begins to grow. At this stage you may desire some re-engineering of the wetland, change in the topography or include

landscape architecture structures such as rock placements or pumping areas to generate oxygen sources, etc.

5. **Step Five** -- When you have arrived at the landscape planting and the characteristics have been identified, you will be surprised how many interesting plants will be available for you to choose from. The water elements can be adaptive modes and the wetland zonation areas can be exceptional habitats for individual plants chosen within these saturation periods. Many unusual colors, textures and design capabilities are available. The irregularity can be used as a focus on interest. The bordering shore line can be planted with coconut coir logs, with blue and yellow iris's in the logs and the slopes and water filtration areas can be planted and maintained if you use soil support techniques. There are also new methods and products that have recently become available.

6. **Step Six -- Wetland Plantings:** The selection of plants for specific characteristics or purposes:

If you are attending the course, then you know that there is a great selection of wetland nurseries. They have detailed information included in their brochures relating to the plant-scaping varieties in the climatic zone of your region.

As a grower of nursery stock and a landscape sub-contractor for 25 years, all the detailed information you can get will help you make the site specific decision of what to plant where.

However, the real decision in the preparation for the planting, placement and maintenance of the plants is done by the laborer hired. They actually have the greatest responsibility in assisting the plants survival. They ultimately place the plant at the proper height and depth in the proper soil location. Of course the biologist, hydrologist, landscape architect or designer had the fundamental knowledge of the zonation and soil composition, not to mention the boilerplate specifications that go along with the project.

I have chosen not to repeat all that information, there are easily obtained sources for that such as Southern Tier, Ecoscience, J&J Transplant Cooperative Extension, the internet, etc.

My topic of landscape planting is mainly on the fundamental basics of survival:

- a. Prior to planning, test the pH of the soil and observe the soil composition to meet the plant type.
- b. What is the pruning schedule depending on the type of maintenance program, it may be more or less severe.
- c. Fertilizer, soil amendments?
- d. Protection from predators?

- e. Remember, depending on where they are planted and how and by whom, they will survive providing the little experienced details are taken into effect.

The lost knowledge of an industry, every industry, due to the extreme accelerated technology – we lose the old hands-on professional workers. So make it part of today to find out what they are supposed to do in the site-specific locations. Feel free to change the boilerplate language of specifications, do what is best for the plants in their new micro-environment placement.

In conclusion, we are a society that has progressed so far in this modern time. We are on a collision course with the environment, and wetlands have become a human health issue. They need to be engineered, collaborating with the other sciences and new regulations. They must be monitored and maintained in a natural ecological process. Water quality is the challenge of the 21<sup>st</sup> Century.