Mitigation:
On the Ground issues

(Fill 'em in – we'll make more!)

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Introduction

- Those who intend to impact wetlands or other waters of the U.S. must obtain a permit from the Corps under the Clean Water Act.
- Consistent with the program's goal of no net loss, these permits require mitigation.

Mitigation is a 3-step Process

- Avoiding impacts
- Minimizing impacts
- Compensating for impacts

Wetlands and other water resources play an important role in the landscape.

Wetland Impacts

- Filling in and paving over a portion of a wetland?
- Lengthening an existing culvert (wetland or stream crossing)?
- Discharging storm sewer into wetland or waters of the U.S.?
- Diverting all drainage away from a wetland?

What constitutes wetland impacts???

Direct vs. indirect impacts???

Step 1: Avoidance

- Can the project be modified so that wetlands are not impacted?
- Have alternative road alignments, site plans, etc. been considered?
- Be prepared to explain why you can't avoid wetland impacts

Step 2: Minimization

- Can the project be modified to minimize wetland impacts?
- Alternative road alignments, site plans, etc.?
- Wetland buffers
- Stormwater best management practices (BMPs)

Step 3: Compensation

- Construct wetlands on-site
- Construct wetlands off-site
- Enhance on-site or off-site existing wetlands
- Purchase credits from a wetland mitigation bank (preferred)
- Fee-in-lieu programs

Avoidance: Buffers

- check regulations for width
- native vegetation (prairie)
- restrictions on what can be within a buffer

Avoidance: BMPs

- bioswales, rain gardens, naturalized detention
- native vegetation
- level spreaders

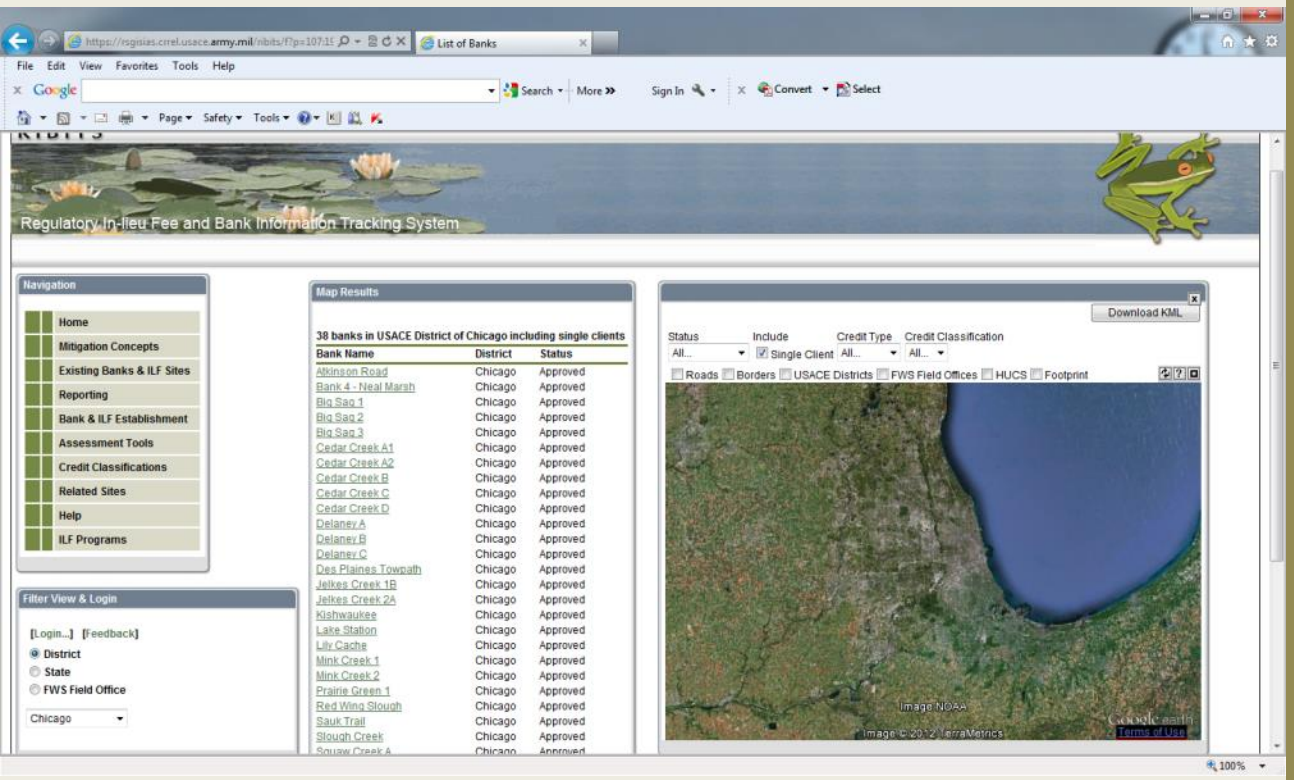
Compensation: Creation

- Restore drained (historic) wetlands
- Create new wetlands
- Separate from detention

Compensation: Enhancement

- Improve quality of existing wetlands
- Often get partial credit

Compensation: Banking



Wetland Mitigation Bank:

- Same watershed as project
- Purchase “credits”
- Avoid and minimize

Building Wetlands

Hydrology:

- Disable drain tiles
- Earthwork
- Post detention stormwater

Building Wetlands

Soils:

- Re-using hydric (wetland) soils
- Using soil from uplands
- Topsoil vs. clay

Building Wetlands

Planting prep:

- Weed control
- Disking
- Soil amendments (e.g. fertilizer)

Building Wetlands

Seeding:

- Native plant species
- Local source
- Specialized equipment

Building Wetlands

Planting:

- Native plant species
- Local source
- Protect from wildlife

Building Wetlands

Erosion control:

- Mulch
- Erosion control blanket and turf reinforcement mat
- Riprap

Monitoring & Management

- Post-construction Monitoring and Management (M & M) is often a permit requirement
- 3 years to 15 years
- Monitor mitigation efforts and compare to performance criteria included in permit
- Natural areas (adaptive) management

Applies to:

- Created, restored, enhanced, or preserved wetlands
- Buffers
- BMPs

i.e. everything!

Management

Weed control:

- Mowing
- Burning
- Selective herbicide application (spot spray)
- Hand pulling

Management

Desirable vegetation:

- Weed control
- Additional seeding or planting
- Irrigation
- Water level control

In Conclusion…

- Avoid impacts
- Minimize impacts
- Compensate for impacts
- …and don't forget M & M!