Secondary and Cumulative Effects

September 1, 2020

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- Prevention
  - Avoid, Minimize, Mitigate

Cause or Contribute

Section 62-331.053(3)(a)6., F.A.C.

- (3) No permit shall be issued for the following: 6. Causes or contributes to significant degradation of wetlands or other surface waters…
- Cause or contribute…therefore both individual and cumulative impact should be considered
- Nothing in the regulatory language suggests that the threshold of significance is high
  - 404(b)1 Guidelines preamble states significant is “more than trivial” and should be considered in the conceptual rather than statistical sense

Effects

Considers individual and collective effects of dredge or fill activities on:

- **Human health and welfare**
- **Life stages of aquatic life and wildlife dependent on aquatic ecosystems**
- **Aquatic ecosystem diversity, productivity, and stability**
- **Recreation, aesthetic and economic values**

Effects – 2

- Requires consideration of direct, secondary, and cumulative effects
- Requires consideration of the short and long-term effects on the physical, chemical and biological components of aquatic ecosystems
- Based on factual determinations, evaluations, and tests
- Special emphasis on persistence or permanence of effects
- Impacts are to the aquatic environment

Effects – 3

Direct, Secondary, Cumulative

- **Direct effects:**
  - **Impacts that would occur at the project site due to dredge or fill activities**
- **Secondary effects:**
  - **Effects on an aquatic ecosystem that are associated with an activity, but do not result from the actual dredge or fill activity**
- **Cumulative effects:**
  - **Changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual dredge or fill activities**

Secondary Effects

Applicant's Handbook Volume I, section 10.2.7

AND

404 Handbook, section 8.3.6

Secondary Effects

AKA Secondary Impacts

- **Impacts that would not occur, but for the permitted activity; or in other words…**
- **Effects on an aquatic ecosystem that are associated with an activity, but do not result from the actual dredge or fill activity**

Considerations

Volume I, section 10.2.7

Secondary impacts from construction, alterations, and intended or reasonably expected use of the activity will not:

1. **Water quality standards and habitat functions of wetlands and other surface waters**
2. **Upland habitat for bald eagles and aquatic and wetland dependent listed species**
3. **Historical and archaeological resources**
4. **Future activities**

Considerations - 2

404 Handbook, section 8.3.6

Sanctuaries & Refuges

- Consist of areas designated under state and federal laws or local ordinances to be managed principally for the preservation and use of fish and wildlife resources

Considerations – 3

Sanctuaries and refuges may be affected by dredge or fill activities which will:

- **Disrupt the breeding, spawning, migratory movements or other critical life requirements of resident or transient fish and wildlife resources;**
- **Create unplanned, easy and incompatible human access to remote aquatic areas;**
- **Create the need for frequent maintenance activity;**
- **Result in the establishment of undesirable competitive species of plants and animals; or**
- **Change the balance of water and land areas needed to provide cover, food, and other fish and wildlife habitat requirements in a way that modifies sanctuary or refuge management practices.**

Considerations – 4

Human Use Characteristics, including:

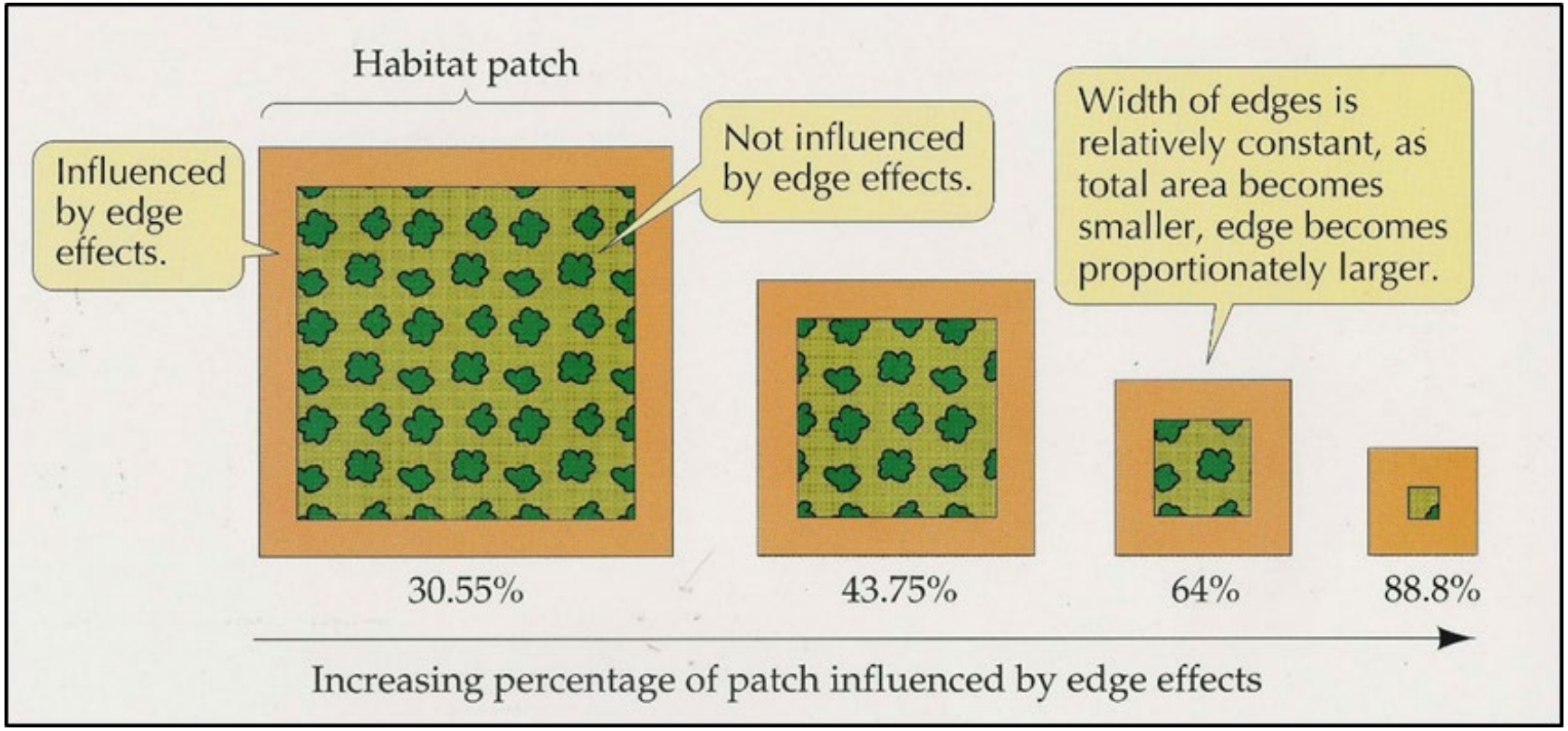
- **Municipal and private water supplies**
- **Recreational and commercial fisheries**
- **Water-related recreation**
- **Aesthetics**
- **Parks, national and historical monuments, national seashores, wilderness areas, research sites, and similar preserves**

Example 1

Development adjacent to a wetland:

- Increases “edge effects”
  - Vegetative community structure
  - Hydrology
- Increases nutrient load
  - Fertilizers
  - Pet waste
  - Septic tanks and drainfields

Example 1 – 2

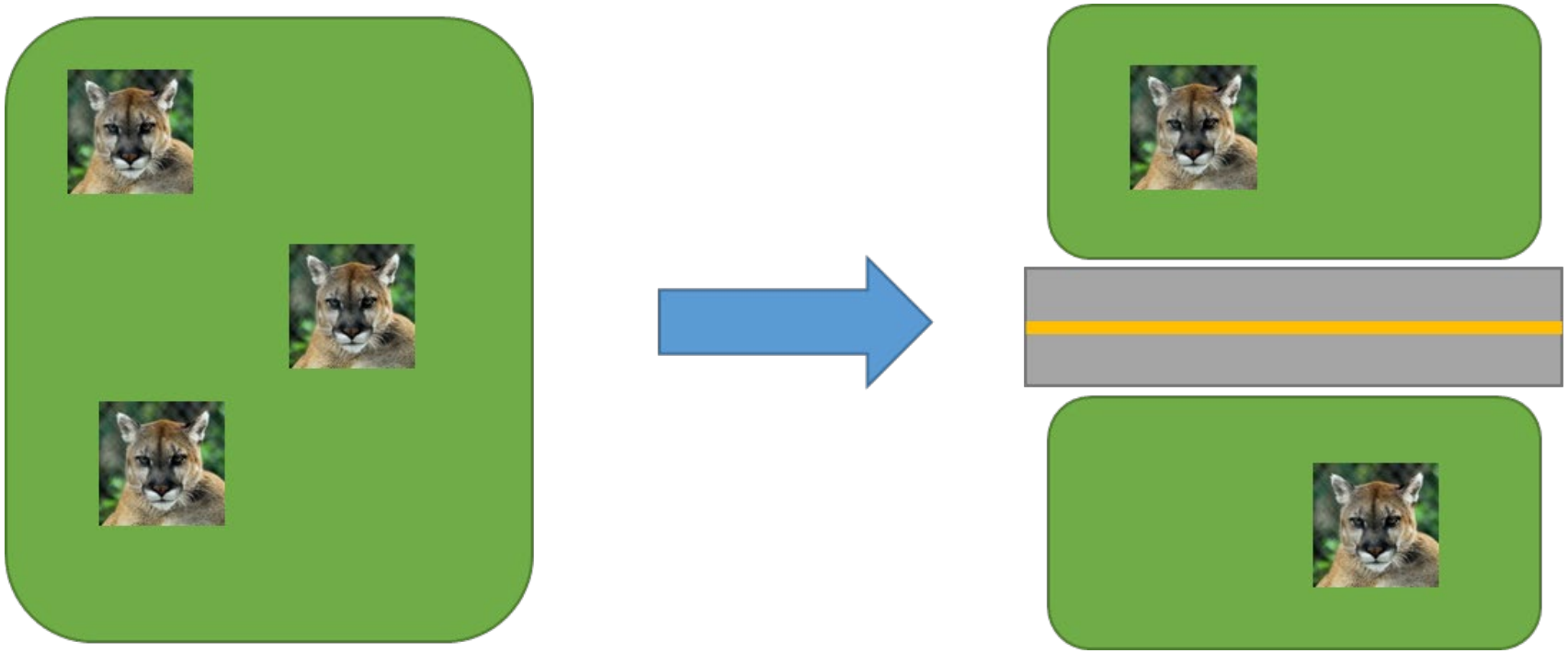

Habitat patch
Influenced by edge effects.
Not influenced by edge effects.
Width of edges is relatively constant, as total area becomes smaller, edge becomes proportionately larger.
30.55%
43.75%
64%
88.8%
Increasing percentage of patch influenced by edge effects

Example 2

A road permitted through a wetland effects wetland dependent species

- **Roadkills**
- **Barrier (genetic isolation, limiting movement)**
- **Habitat fragmentation**

Example 2 – 2



More Examples

- Turbidity from runoff and dredging
- Release of pollutants from dredged sediments
- Nutrient/surface runoff
- Pollutants from roads, driveways
- Oils and greases leaking from heavy equipment
- Septic tank leaching
- Changes to hydrology
- Fuel spills
- Increased development

Cumulative Effects

Applicant's Handbook Volume I, section 10.2.8

AND

404 Handbook, section 8.3.5

Definition

404 Handbook, section 8.3.5

Cumulative impacts are the changes in an aquatic ecosystem that are attributable to the collective effect of a number of individual dredge or fill activities. Although the impact of a particular activity may constitute a minor change in itself, the cumulative effect of numerous such piecemeal changes can result in a major impairment of the water resources and interfere with the productivity and water quality of existing aquatic ecosystems.

Review

Cumulative effects attributable to dredge or fill activities in wetlands and other surface waters should be predicted to the extent reasonable and practical. The Agency shall collect information and solicit information from other sources, such as other permitting agencies, governmental agencies, or the public, about the cumulative impacts on the aquatic ecosystem. This information shall be documented and considered during the decision-making process concerning the evaluation of individual permit applications and monitoring and enforcement of existing permits.

Scale

Unlike ERP reviews, the Clean Water Act does not limit analysis of cumulative effects to the resources within the impacted drainage basin. However, the drainage basin is a good starting point for review and will often be found to be the appropriate scale. Some projects will require cumulative effects reviewed on a larger or smaller scale depending on the size, project purpose, and resources proposed for impact. When reviewing cumulative effects, the Agency shall identify resources of concern and determine the potentially effected resource area(s)…

Mitigation

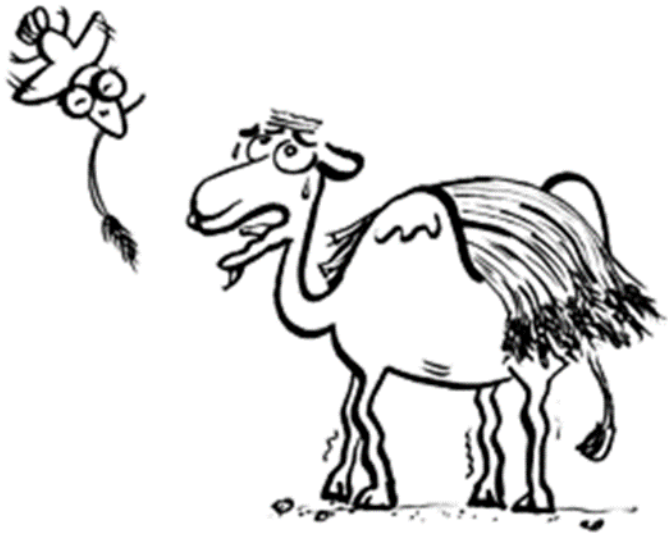
Compensatory mitigation for cumulative impacts shall comply with Volume I, section 10.2.8.

- **Within same drainage basin as impacts, or cumulative impact analysis required**

Cumulative Effects

Too many accumulated impacts can functionally "break" a water resource or ecosystem (*the "straw that broke the camels back"*):

- **Habitat and species loss**
- **Water quality violations**
- **Includes accumulated secondary impacts**



Similar Impacts

Volume I, section 10.2.8

Cumulative Impact Analysis must address:

- **Similar impacts from projects that are existing, under construction, or for which permits or determinations have been sought**
- **Similar impacts from projects reasonably expected to be conducted in the future**
  - **Project under review, approved, or vested under Section 380.06, F.S.**
  - **Comprehensive plans adopted pursuant to Chapter 163, F.S.**
  - **Applicable land use restrictions and regulations**

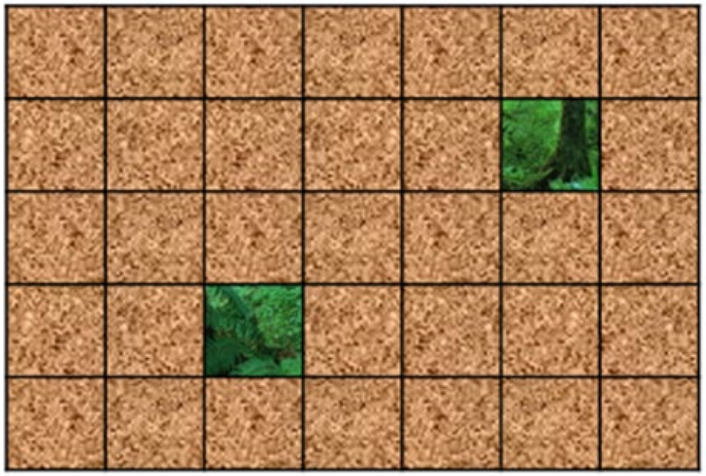
Similar Impacts – 2

“Similar Impacts” – impacts to same type of water resources and functions, not same type of activity.

Example

Small impacts add up (cumulate) to larger impacts over time

- **½ acre fill in large wetland system vs. ½ acre fill for every lot in a large subdivision**



Prevention

Avoidance, Minimization, Mitigation

Prevention Measures
Volume I, Section 10.2.7

- **Applicants may propose measures…to prevent secondary impacts**
  - **Project modifications**
  - **Preservation (Must comply with 10.3.8)**
  - **Buffers**
  - **Best Management Practices (BMPs)**
  - **Technical solutions**
- **If applicant can't prevent, then minimize, then mitigate**
- **If applicant can't (or won't) prevent or mitigate - deny**

Prevention
Secondary Effects

Upland buffers (avg. 25 ft, min. 15 ft)

- No filling for upland buffers
- Intended to incentivize staying out of wetland areas
- Not applicable to impacts in wetlands
  - i.e., can't use 25-ft buffer as limit for consideration of secondary effects

Prevention – 2

Secondary Effects

Bridges or wildlife crossings

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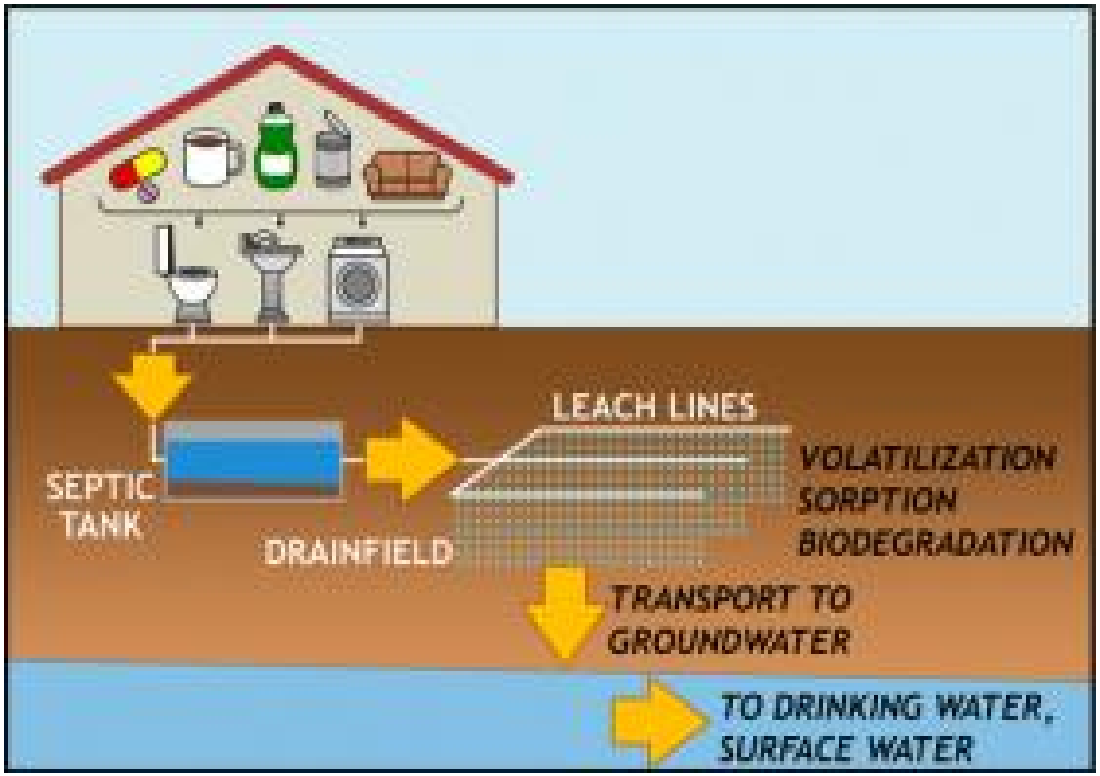
Prevention – 3

Secondary Effects

Sewer instead of septic



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Prevention – 4

Secondary Effects

Use Best Management Practices (BMPs)

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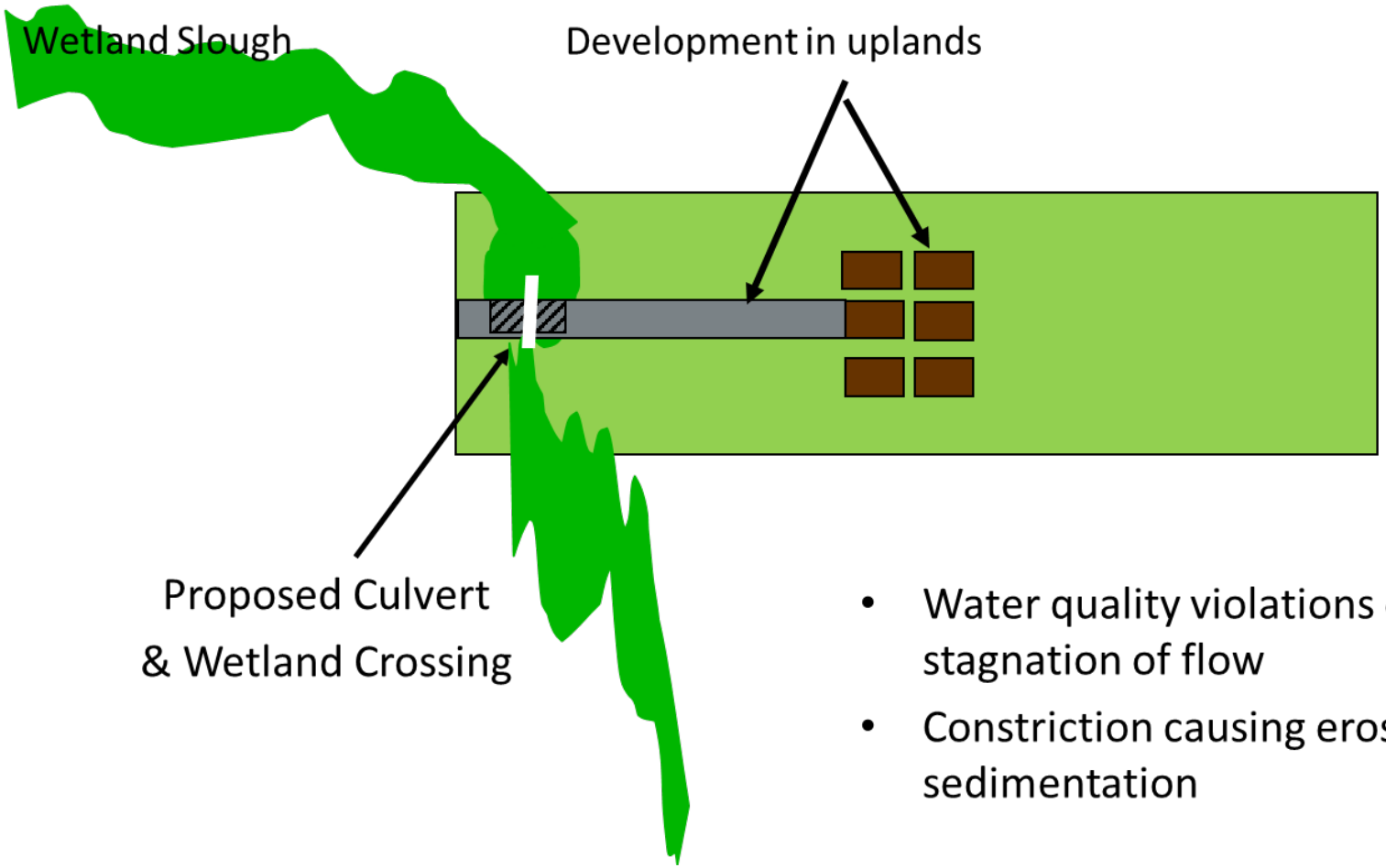
Prevention – 5

Secondary Effects



- Water quality violations due to stagnation of flow
- Constriction causing erosion & sedimentation

Prevention

Cumulative Effects

- **Preservation of remaining wetlands and other surface waters onsite**
  - **Prevents further impacts**
- **Mitigate close to impact area**
  - **Within same ecosystem, habitat, drainage basin – as appropriate**
  - **Prevents "breaking" the resource**

Remember…

- As with any impact…
  - First, Avoid
  - Then, Minimize
  - Last, Mitigate
- Cumulative effects include both cumulative individual and secondary effects

Additional Resources

Previous Webinars

DEP/WMD/Local Government staff:

- **Review two previously recorded webinars**
  - **Cumulative Impacts**
  - **Secondary Impacts**

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