# Tiered Mitigation Approach

Part I: Background Data

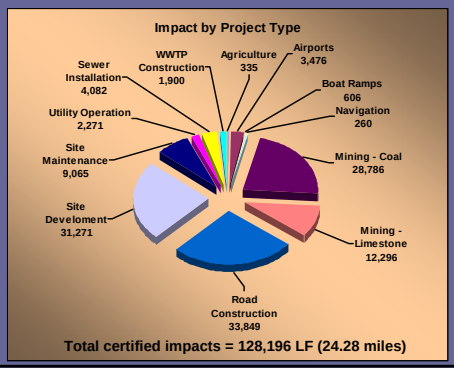
## Data Review

- Review of approved 401 WQ Certifications for 2005-2006.
- 72 Certifications involving stream impacts.
- Total of 242 impacted stream segments.
- Compared linear footage and aquatic life use information to summarize impacts and mitigation.

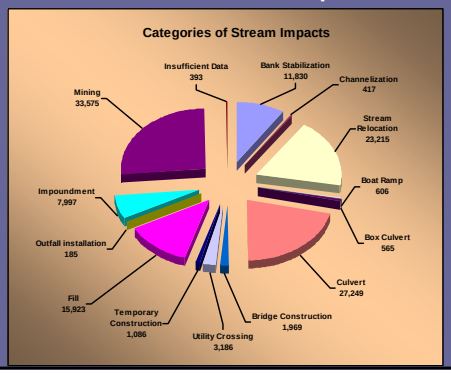
## Data Review

- Purpose: reality check for current state of program.
- Caveats:
  - Review focused upon certifications. Some data in certification letters insufficient to characterize streams, impacts, or mitigation.
  - Purpose not to assess effectiveness or success of individual projects, only what was approved.

## What Activities Impact Streams?




## How Are Streams Impacted?

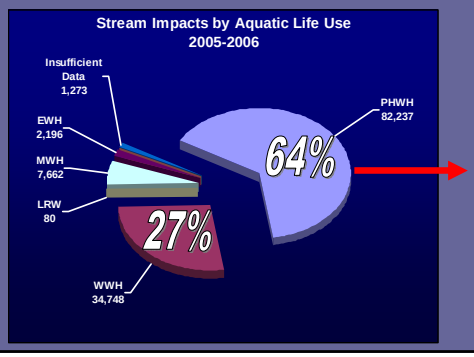



## Impacts and Mitigation

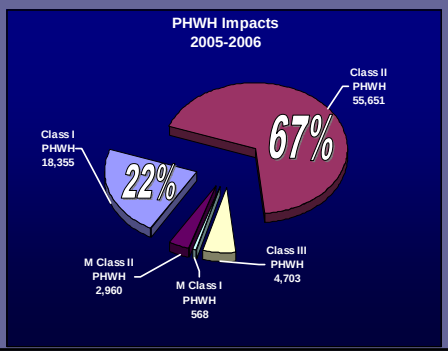
- Predominant impacts (based on LF):
  - Mining (32%)
    - Elimination, Impoundment, Relocation
  - Transportation (26%)
    - Culverts, Relocation
  - Site Development (24%)
    - Filling, Relocation

| Project Type | # of Applications |
|---|---|
| Agriculture | 1 |
| Airport | 2 |
| Boat Ramp | 4 |
| Mining - coal | 5 |
| Mining - limestone | 3 |
| Road construction | 15 |
| Sewer Installation | 7 |
| Site Development | 29 |
| Site Maintenance | 3 |
| Utility Operation | 2 |
| WWTP construction | 1 |
| **Total Projects** | **72** |

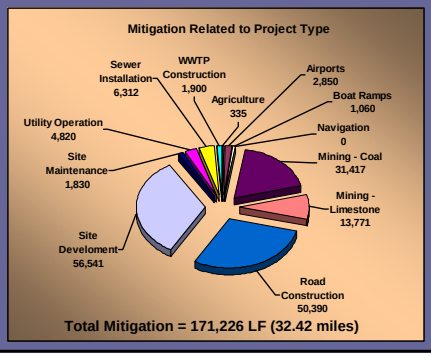
## Impacts And Aquatic Life Use



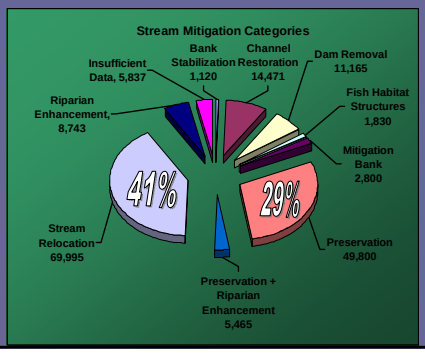

## Impacts And PHWH Uses



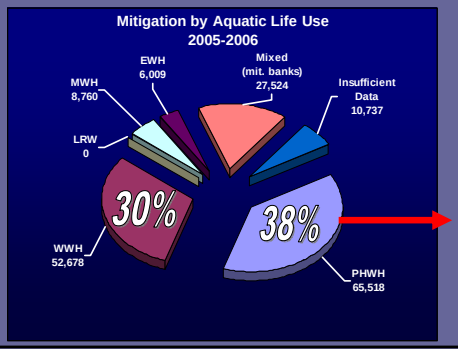

## How Much Mitigation is Being Done?



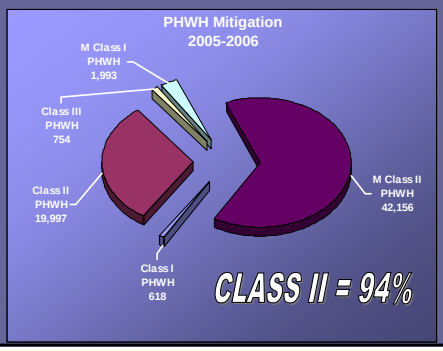

## What type of Mitigation is Being Approved?



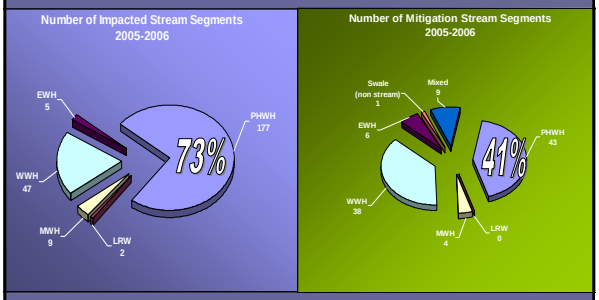

## Stream Mitigation and Aquatic Life Use




## Stream Mitigation and PHWH



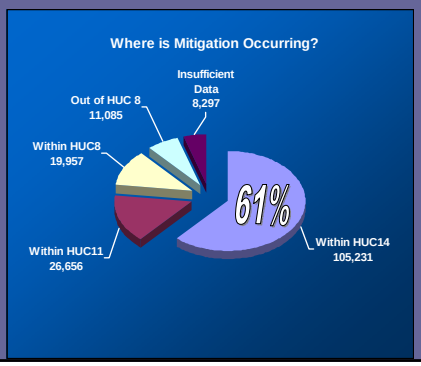
# Concentration of Mitigation




Total Segments Impacted = 242

Total Segments Used for Mitigation = 106

# Watershed Protection




# Summary: Impact vs. Mitigation

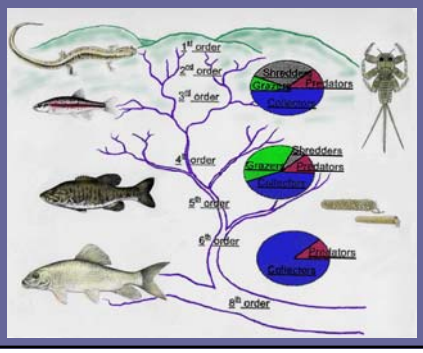
- Predominant impacts to streams regulated through the 401 process are small unnamed headwater streams (<1 mi$^2$).
- PHWH use designations clarify use attainability analyses for these streams.
- Considerable opportunity to simplify the 401 certification process for these situations.

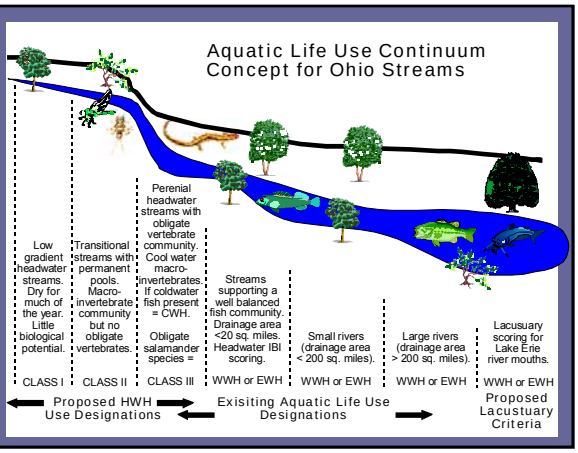
# Tiered Mitigation Approach

## Part II: Integration of Use Categorization and Mitigation

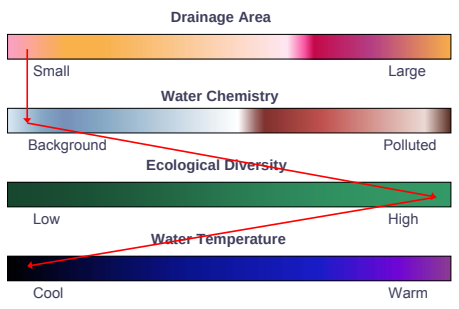
- Antidegradation rule defines tiered approach to beneficial uses.
- Mitigation model designed to reflect this tiered approach.

# River Continuum Concept

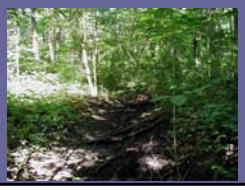


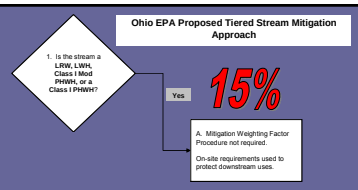
## Streams – a Series of Continuums



## Ephemeral Channels

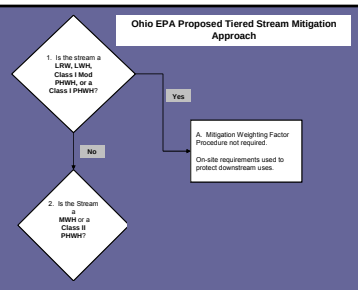


- At the very top of the watershed.
- Often dry
- Existing Uses
  - Moderates flow
  - Nutrient dynamics
  - Sediment transport
  - CPOM – stream energy
  - Aquatic life - Very limited




## BMP Approach

- Goal is to insure that existing stream <u>functions</u> are not lost from the watershed.
- Extreme caution needed – design must be constructed with the <u>downstream</u> use in mind.
- Protection of groundwater recharge and discharge paramount where downstream use is Class III PHWH or CWH
- How can the toolbox be made better?

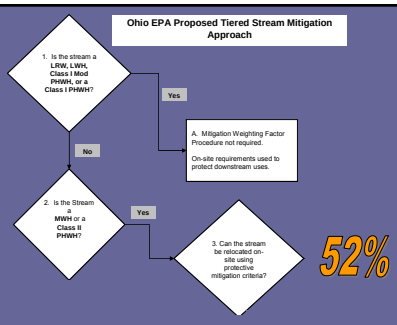


# Class II PHWH

- Stream may be intermittent or perennial
- Aquatic life present (warm water – native fauna)
- Cannot support well balanced fish communities meeting WWH
- Have significant water quality functions (nutrients, sediment, water quantity)

# MWH / M Class II

- Existing Uses:
  - Simplified community of warmwater adapted organisms
  - Degraded Habitat
  - Water chemistry – defective or effective?
    - Nutrients: assimilation and sedimentation (+ and -)
    - Dissolved oxygen – diurnal swings
    - High temperatures
  - Sediment transport – High % fines
  - Flow moderation – defective or effective?
    - Plusses → drainage
    - Negatives → downstream impacts
  - MWH may include water supply uses

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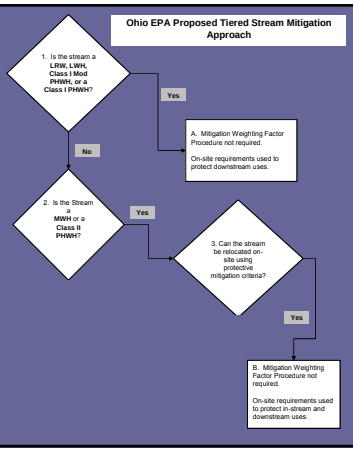
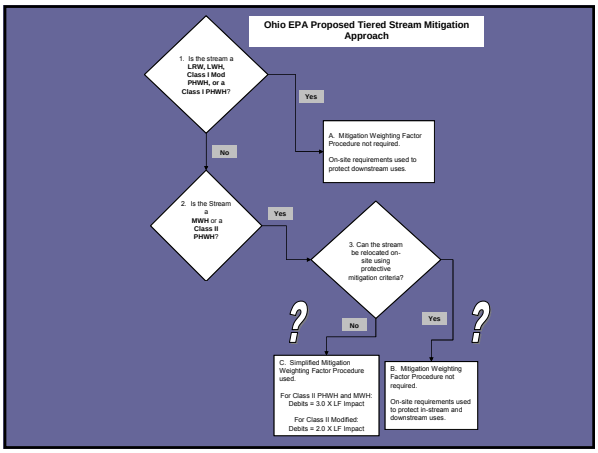


SELF-FORMING CHANNELS

"NATURAL CHANNEL DESIGN"



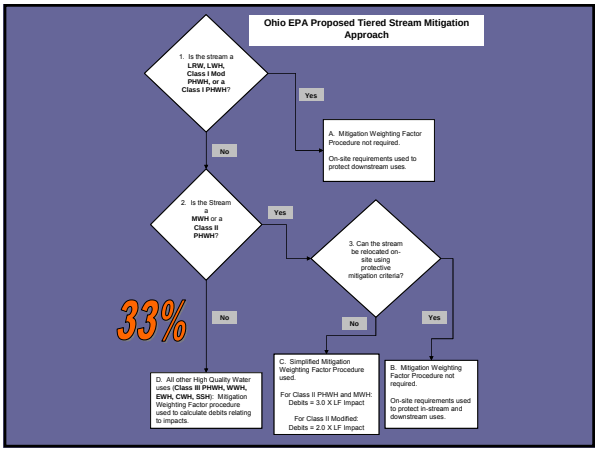

# "Higher" Aquatic Life Uses

Olentangy R. Tribuary
Class III PHWH

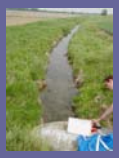
Bronson Creek Tributary WWH

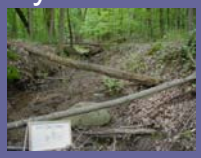
East Branch Chagrin R. CWH

Grand River – WWH, State Scenic River




# Summary





- Tiered approach towards 401 process is <u>not</u> optional – it is grounded in the CWA and state law.
- Tiered approach toward mitigation is a logical and workable solution.
- Where warranted, simplification of the process can address roughly two thirds of the regulated impacts.