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Advancing State and Tribal Programs

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RFC 101

Idaho's Reference Condition Approach: Lessons Learned

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Idaho is Diverse

Background

- Idaho uses bioassessment approach in water quality decision making
- Bioassessment results are used in 305(b) report, 303(d) list, and TMDLs
- Bioassessment process is based on multimetric approach which requires identification of reference condition

First Try

- *A priori* approach - not well defined
- Based on best professional judgement
- No documentation of decision process
- Result: inconsistent definition of “reference” used by professionals

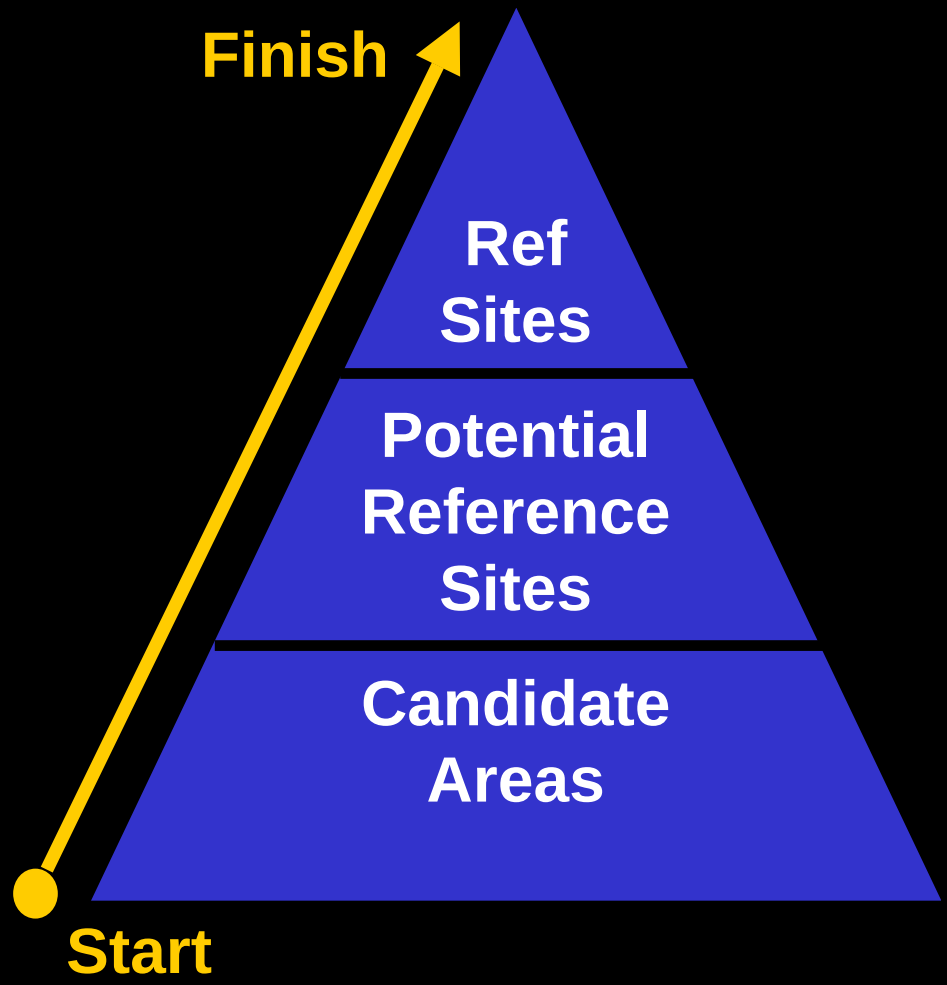
Second Try

- *A priori* approach - provided better reference definitions and guidance
- Still based on best professional judgement
- Some documentation of decision process, but not consistent
- Result: better, but still inconsistent results and interpretations

Third Try Goals

- Develop consistent guidance to define, identify, and verify reference condition
- Develop process to document site selection
- Develop reference trend monitoring network to track natural variability

Selection Approach: start with large areas and work to specific sites



Approach

1. Work within classification scheme
2. Select candidate areas
3. Select potential reference sites
4. Filter sites using desktop tools
5. Perform field verification on core group of sites
6. Rate sites based on criteria
7. Rank sites based on ratings
8. Use results according to project needs (e.g., trend network vs. development of RIVPACS model)

Step 1: Work within Classification Scheme

- Evaluated different stratifiers to determine classification scheme for each index
- Use ecoregions for habitat index
- Use bioregions for macroinvertebrate index
- Use bioregions and elevation for fish index

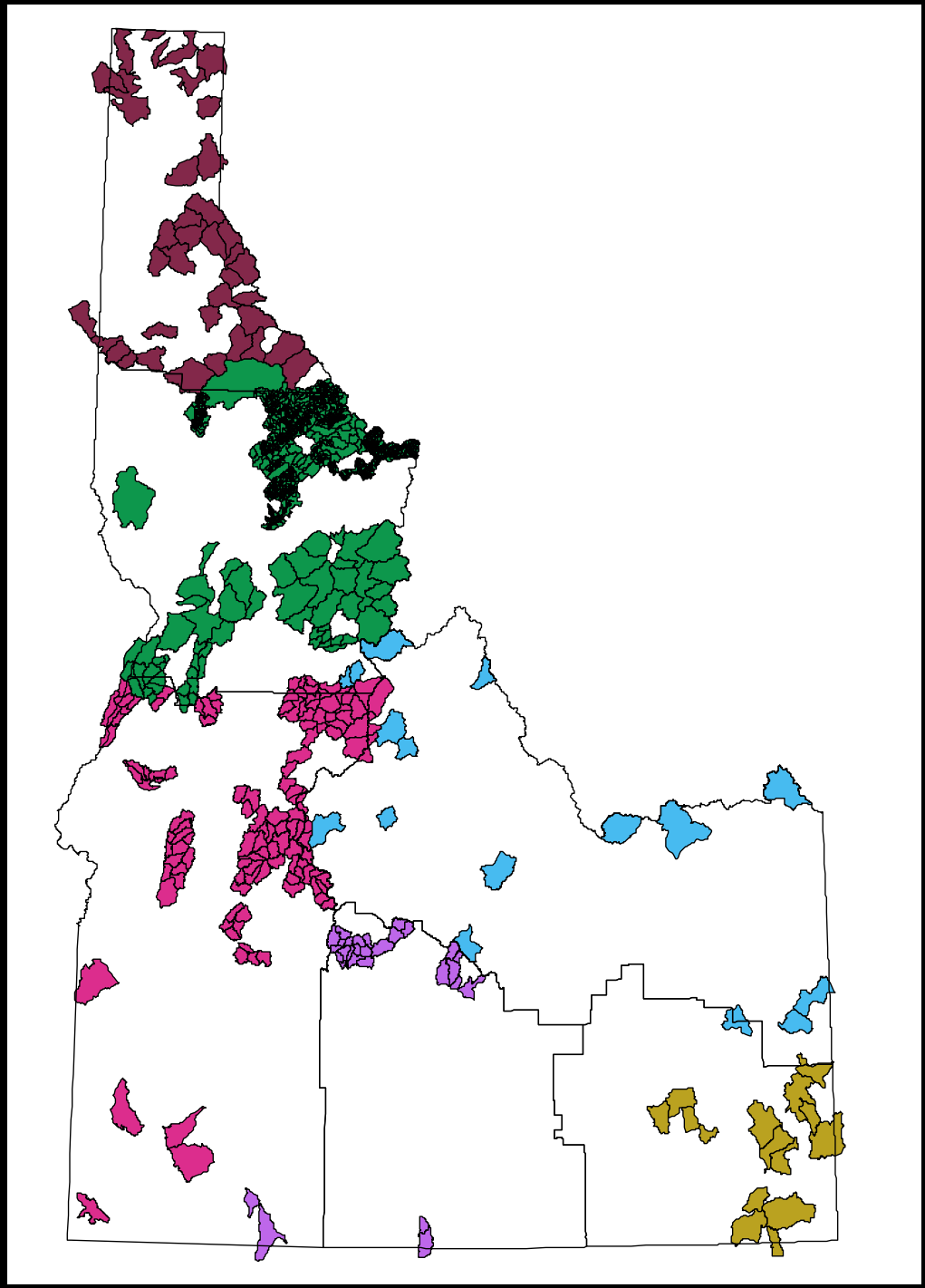
Step 2: Select Candidate Areas 3 Methods

- High quality area identified in literature
- Recommendations from outside experts (requires documentation of rationale)
- Candidate area criteria evaluation (requires documentation)

Candidate Area Criteria Evaluation

Scale: 5th and 6th field HUCs

- No known NPDES discharges or contaminants in place
- No known spills or other pollution incidents
- Low human population density
- Low agricultural activities
- Low road and highway density
- Minimal nonpoint source problems



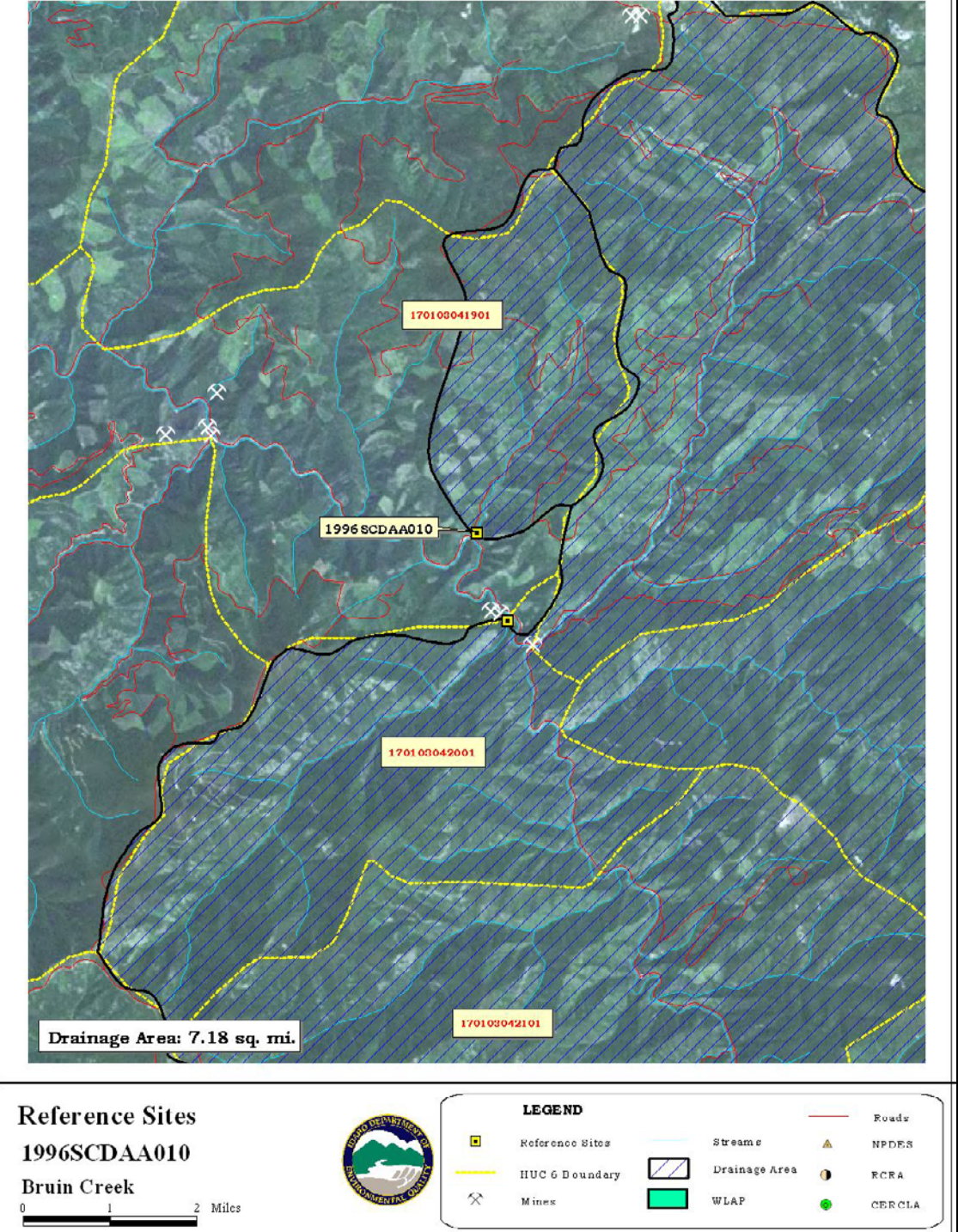
Map of Idaho Candidate Areas

Step 3: Select Potential Sites

- Select from candidate areas
- Ensure adequate distribution within classification (stream order, Rosgen)
- In areas with greater land use activities, consider least impacted streams

Step 4: Filter Potential Sites

- **Use GIS tools to evaluate:**
  - **Road density**
  - **Mines**
  - **RCRA sites**
  - **CERCLA sites**
  - **NPDES dischargers**
  - **Landfills**
  - **Diversions, dams**
  - **Etc.**



Example of GIS Exercise to Filter Potential Reference Sites

Step 5: Perform Field Verification

- Use reconnaissance protocol to collect habitat and biological data
- Obtain extensive human disturbance and land use activity information
- Take lots of photos (site, stream, watershed)
- Investigate watershed


Potential reference site

Watershed above site.
Considerable land use activity.

Step 6: Characterize or Rate Potential Sites

Scale: stream and immediate watershed

- Roads, distant
- Riparian vegetation extensive, varied, mature
- Riparian structure complex
- Natural channel morphology, minimal shoreline modifications

Step 6: Characterize or Rate Potential Sites

- Channel complex
- Habitat structure complex
- Chemical stressor minimal
- Channel/flow manipulation minimal

Step 7: Rate and Rank Selected Reference Sites

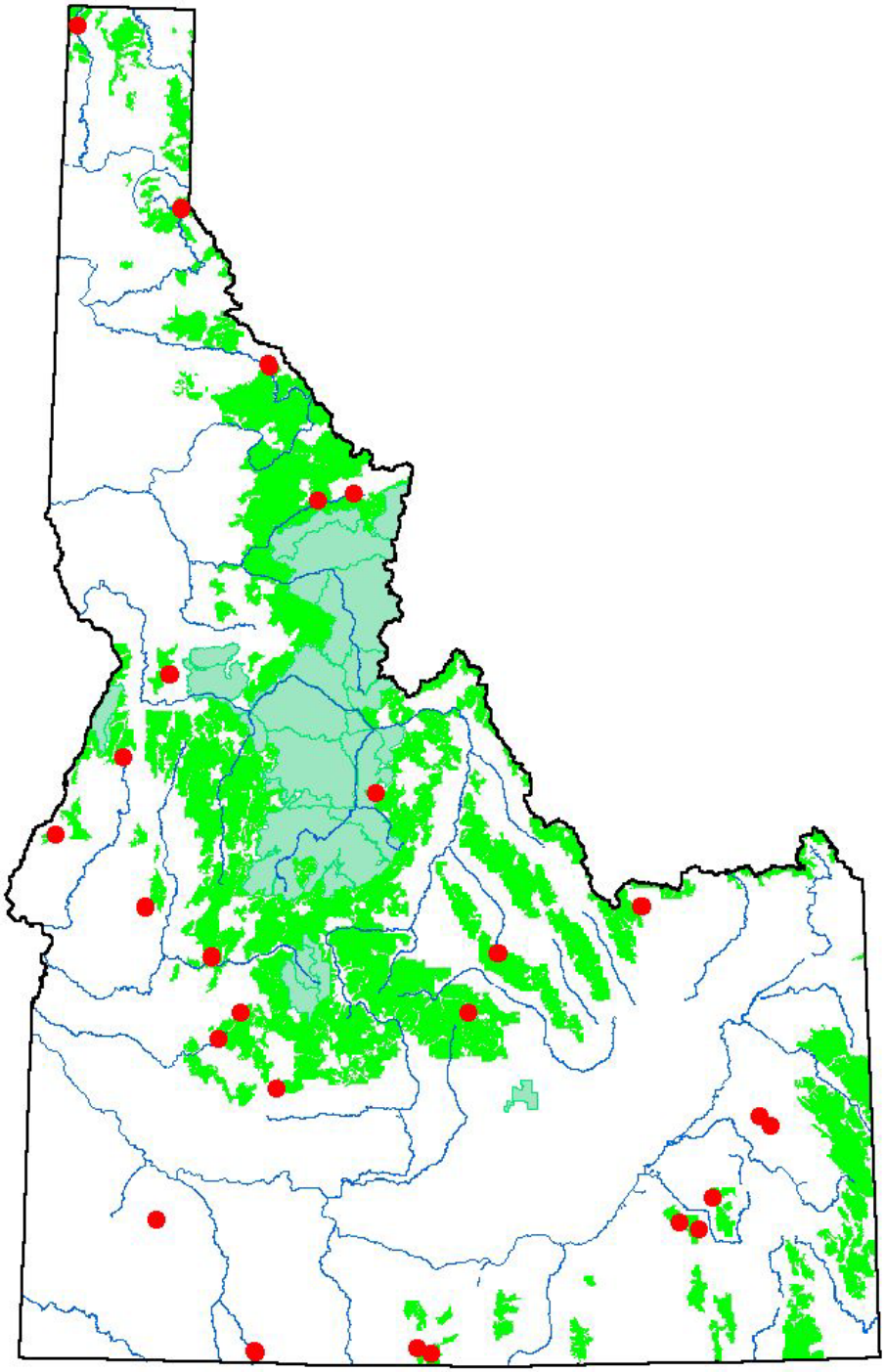
- Rate each criterion (1 - 5 points)
- Meet and discuss ratings. Raters may revise for consistency, if necessary
- Total ratings and calculate % of total possible points

Step 8: Use Results According to Project Needs

- Select upper tier for reference trend monitoring network and refinement of multimetric indices
- Use broader reference condition to evaluate RIVPACS model

Status of Project

- Identified, rated, and ranked about 150 sites
- Sites used in recent index revisions
- Sites being used in RIVPACS model development
- Presently, 22 sites used in trend network
- Sites used in variability study of BURP monitoring protocols



Present Reference Trend Monitoring Network

Lessons Learned

- Use a systematic approach Provide guidance and structure
- Define terms:
  - What is reference?
  - Does definition change depending on area?
- Document process, particularly if using BPJ approach

Lessons Learned

- If using BPJ, then should discuss thought process to improve consistency
- Continue to verify sites as conditions can change quickly (e.g., development, floods, etc.)
- Decide how to handle natural disturbance (e.g., floods, fires, etc.)
- Understand its an iterative process

Selway River
Selway Bitterroot Wilderness