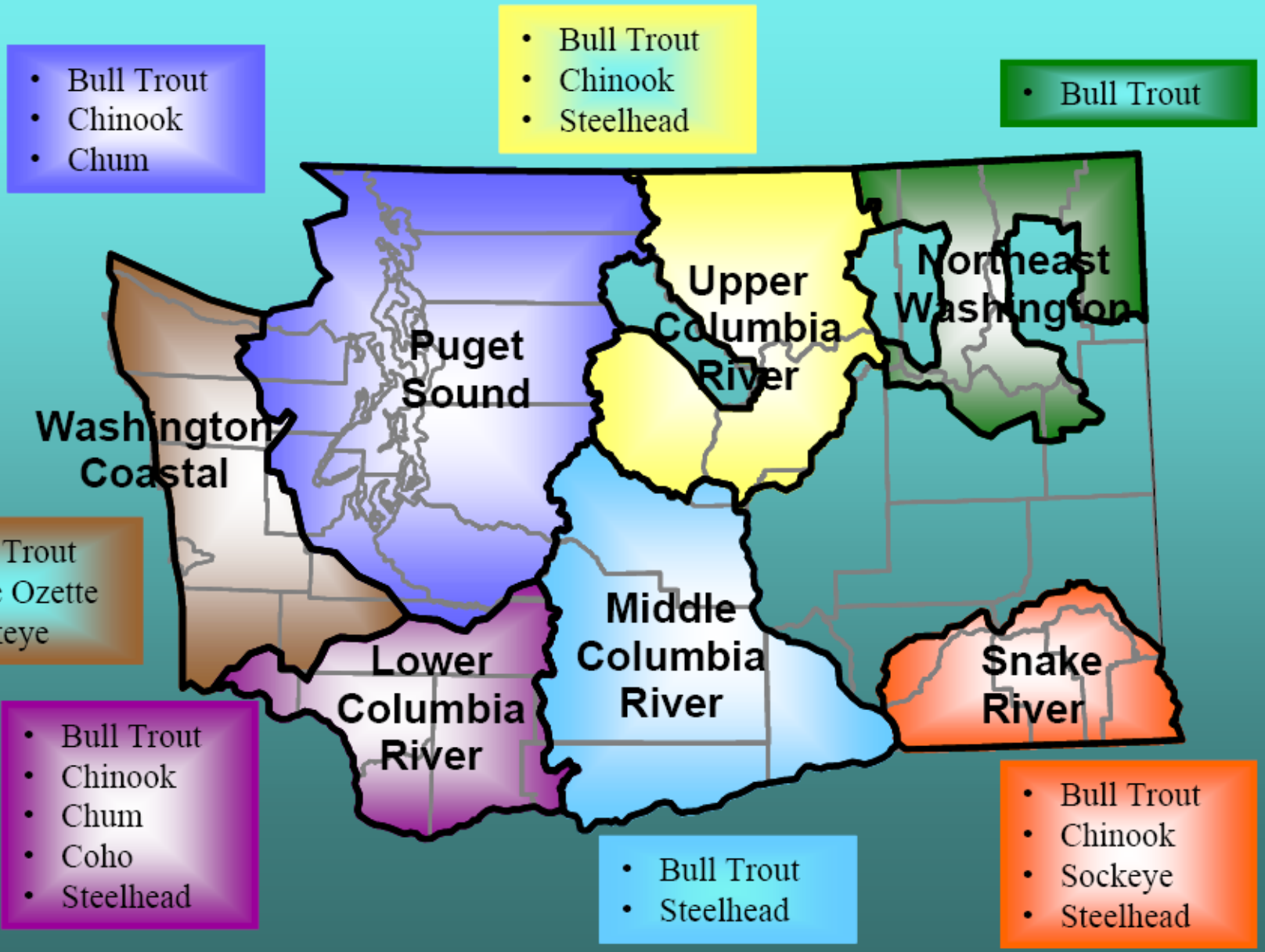
Regional Salmon Recovery Organizations, Monitoring & the Forum

Legislative Direction

Salmon Recovery Act (1998)

- "interest of citizens… to retain primary responsibility for managing the natural resources of the state…and…may best accomplish this objective by integrating local local and regional recovery activities into a statewide strategy…consistent with regional regional and watershed recovery plans."

Salmon Recovery Regions



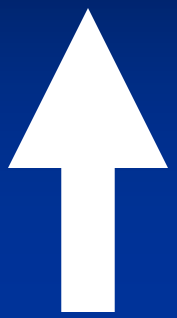
Regional Organizations:

- Local organizations made up of local governments, tribes and key stakeholders
- Have strong partnerships with state & federal agencies
- Have successfully drafted recovery plans for listed species throughout the state

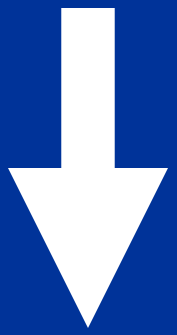
Regional Organizations:

- Are now tasked with coordinating implementation of completed recovery plans
- Work closely with Lead Entities, Watershed Planning Groups and others
- Are taking a lead role in coordinating salmon recovery monitoring efforts throughout the state

oes the legislature need? Wha



REGIONAL ORGANIZATIONS



heir irrigation project. Does

Regional organizations focus on the need to:

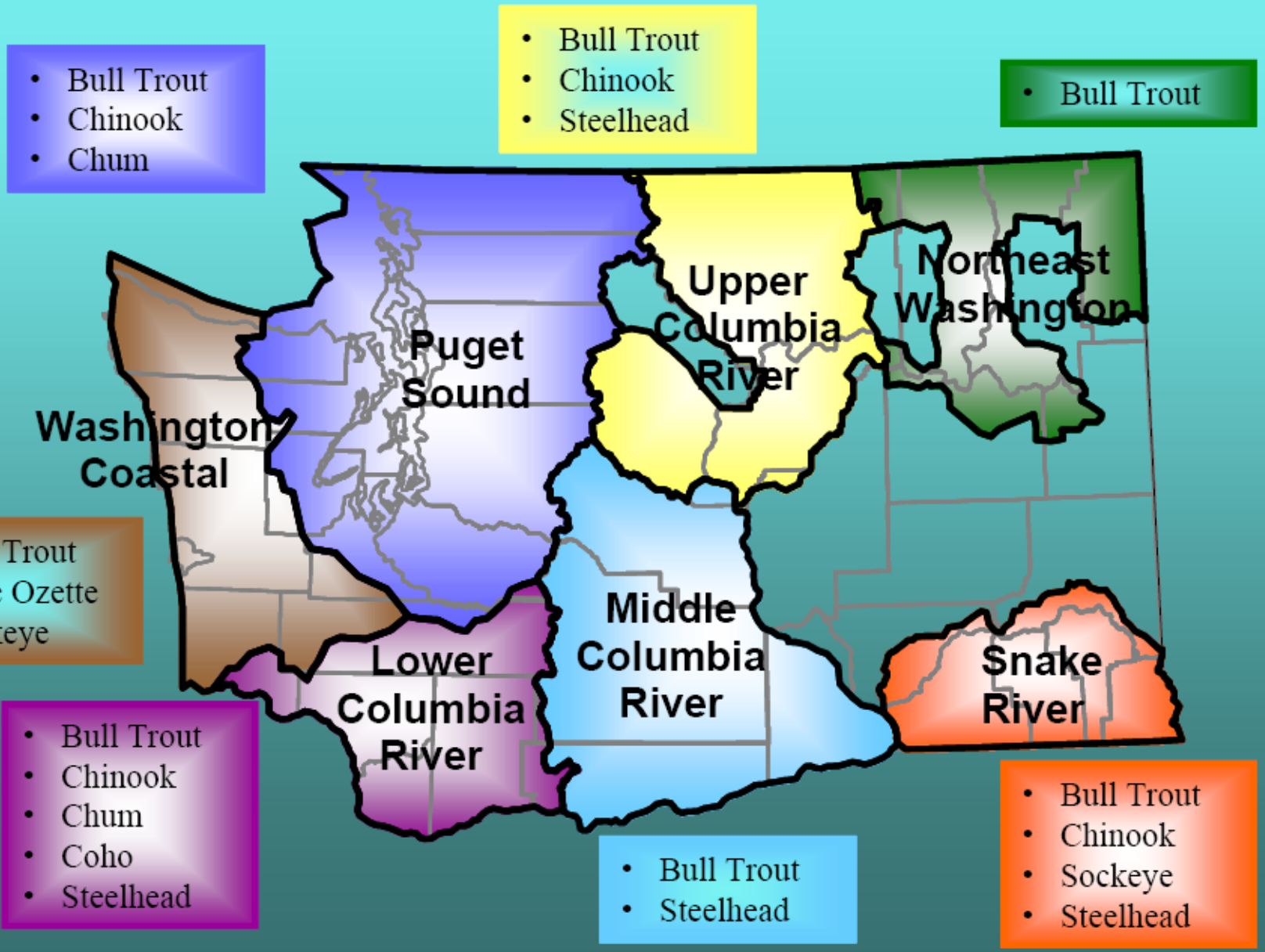
- Track status of focal species relative to biological objectives identified in regional planning processes (VSP parameters)
- Track status and trends of habitat and other key variables
- Track implementation of recovery actions proposed in regional plans
- Evaluate effectiveness of recovery actions
- Identify and answer key questions whose answers help direct how recovery efforts should proceed

Regional Organizations

- Understand local context
- Identify locally appropriate solutions
- Link local players and larger scale discussions
- Coordinate at a statewide level

- Regional organizations generally do not undertake data collection themselves

Salmon Recovery Regions



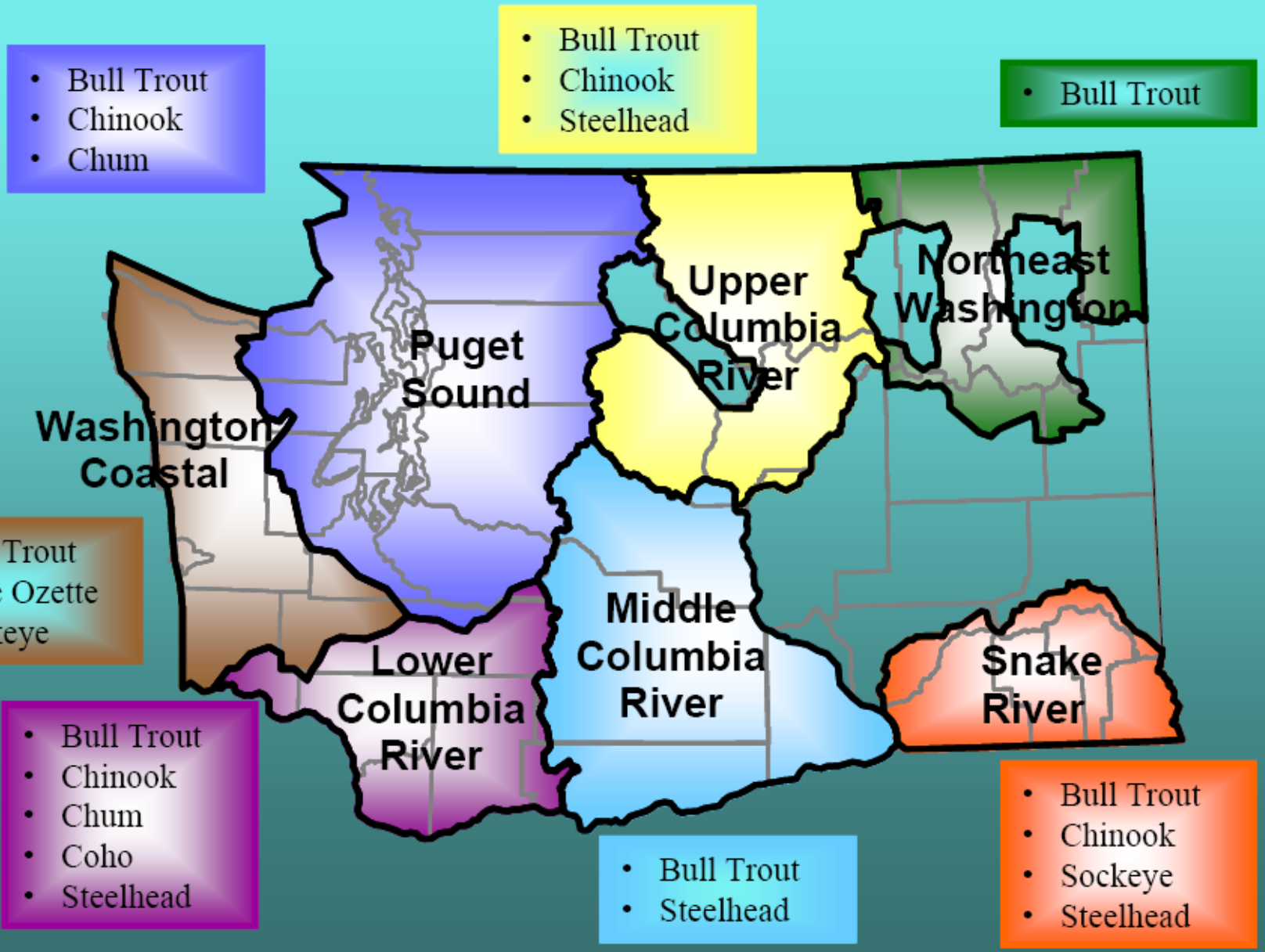
Coast & Northeast

- The Northeast does not have a regional organization
- The Washington Coast Sustainable Salmon Partnership was formed recently and has not developed a regional monitoring strategy

Coast & Northeast, cont.

- NOAA is drafting a Lake Ozette Sockeye Recovery Plan which includes RME actions
- Lead Entity strategies, WDFW, tribal & federal programs also address salmon recovery monitoring needs

Salmon Recovery Regions



Hood Canal Coordinating Council

Monitoring for Salmon Recovery and Watershed Health

Fish in Fish Out Monitoring:

- Good data on Summer Chum VSP parameters; goal is to ensure long-term commitments

- Chinook VSP monitoring needs also well covered except need for more smolt data to determine productivities

Hood Canal Coordinating Council

Monitoring for Salmon Recovery and Watershed Health

- Region is working with State IMW program in 4 West Kitsap County Watersheds
- Region is well positioned to work with DOE and the PSP to pilot the Ecology Status & Trends program
- Interest in expanding monitoring of effectiveness of specific SRFB projects

Hood Canal Coordinating Council

Monitoring for Salmon Recovery and Watershed Health

Land Use Monitoring:

- Summer Chum Recovery Plan models impacts of projected build-out on viability

- Region is working with 3 counties to maintain a database of permits to determine if actual development & land use conversion trends match modeled trends

Puget Sound

Monitoring Interests and Priorities for the Puget Sound Partnership

July 16, 2008

PugetSoundPartnership

our sound, our community, our chance

Puget Sound Partnership's Strategic Science Program addresses:

1. How is the Puget Sound ecosystem structured and how does it work? *[Not discussed today; research rather than monitoring]*

2. How has the Puget Sound ecosystem changed and what will it look like in 2020? i.e. What trajectory are we on?

3. How can we best inform management of the Puget Sound ecosystem to meet the six PSP goals and how will those actions affect social and economic systems?

Current status and trends work

- PSAMP studies -- ambient marine conditions
- Salmon adult & juvenile monitoring

- Other ongoing monitoring that provides indicator and ancillary/explanatory information (indicator selection in August-Sept)

- Indicators evaluation – screen available indicators (nearing completion); identify gaps in existing indicators, evaluate correlations, develop synthetic indices/indicators (upcoming)

Current effectiveness studies

- Effects of salmon recovery projects – SRFB program to monitor nine types of projects
- Effects of nearshore & estuarine habitat restoration -- protocols and program(s) to monitor effects of projects (tidal flow restoration & shoreline armoring removal -- upcoming)
- Intensively monitored watersheds for salmon recovery
- TMDL effectiveness studies

Biennial Science Work Plan

- To implement Strategic Science Plan
- Adopted as part of Action Agenda (Fall 2008)

- Staff work underway

- Science Panel develops in August & September
  - Preliminary discussion: August 6
  - Proposal to Leadership Council: September 16-17

- Leadership Council approval as part of Action Agenda
  - Preliminary approval: Oct 22-23
  - Final approval: November meeting

Partnership staff monitoring suggestions* for biennial work plan (1 of 3)

- Express support for continuing status and trends work:
  - PSAMP studies
  - Salmon adult & juvenile monitoring
  - Other ongoing monitoring that provides indicators information – identify via indicators project documentation and/or monitoring inventory
  - Other ongoing monitoring that provides foundational information – identify via monitoring inventory
  - Indicators Phase 2 – gaps in existing indicators, correlations, synthetic indices/indicators

** Need Science Panel discussion*

Partnership staff monitoring suggestions* for biennial work plan (2 of 3)

- Requests for new status and trend monitoring:
  - River & stream habitat and water quality (Ecology)
  - Smolt monitoring (fish out) at Dosewallips (WDFW)
  - Remote sensing by LANDSAT & low-level aerial for stream, riparian, and landscape (WDFW)
  - Watershed scale densification of river & stream status and trend approach (Partnership?)
  - Develop institutional arrangements and study designs for coordinated status & trends monitoring (Partnership?)

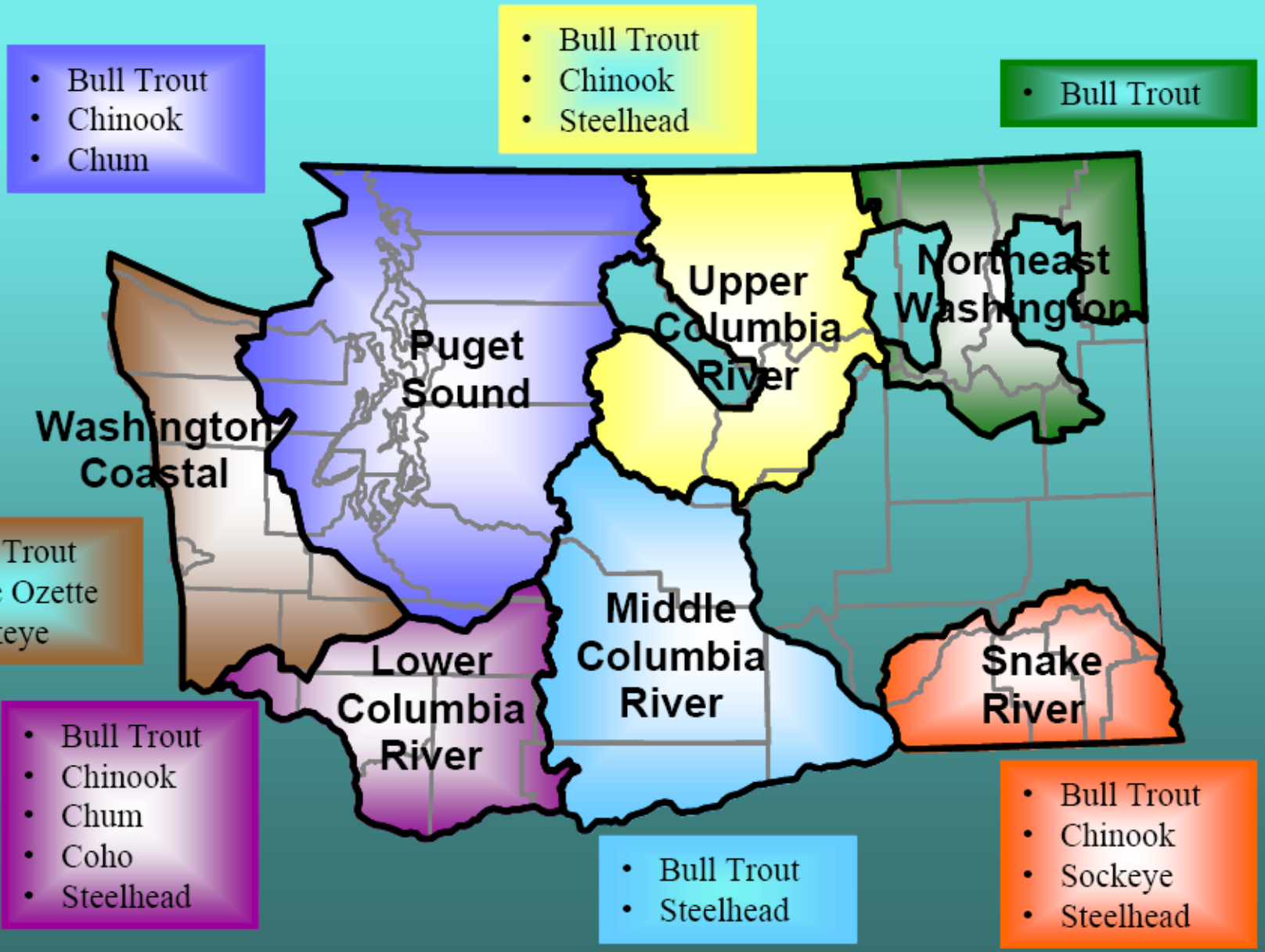
** Need Science Panel discussion*

Partnership staff monitoring suggestions* for biennial work plan (3 of 3)

- Requests for new effectiveness study:
  - Effectiveness studies funded as part of competitive Puget Sound research program (Partnership?
  - Next steps on development of protocols and program(s) to monitor effects of nearshore and estuarine habitat restoration projects (Partnership?)
  - Develop institutional arrangements and study designs for coordinated effectiveness monitoring program (Partnership?)

** Need Science Panel discussion*

Salmon Recovery Regions



Snake Region

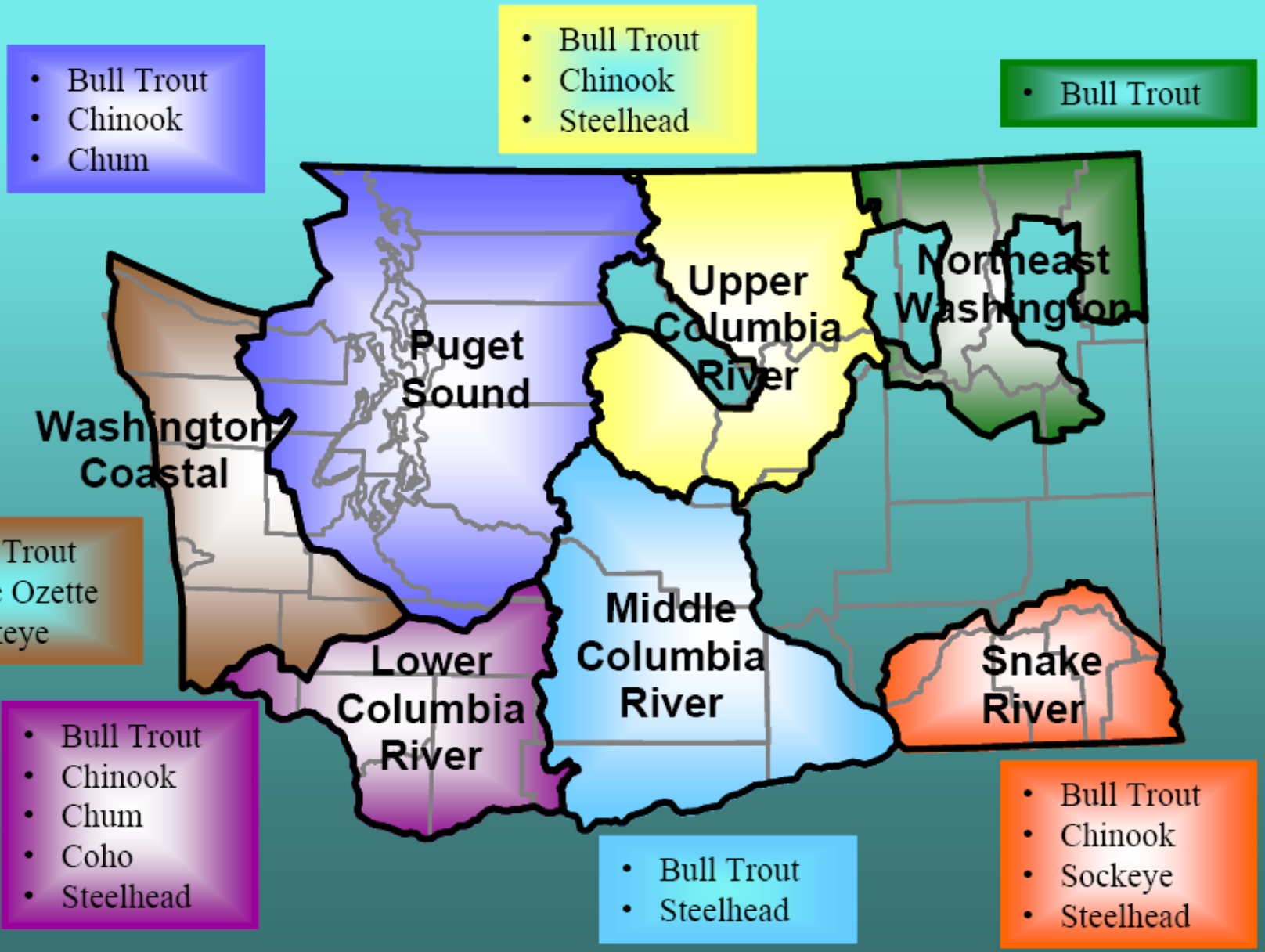
Snake Region Summary

- Existing fish monitoring focuses on evaluating performance of hatchery-supplemented populations
- Recovery Plan identifies key needs to improve monitoring of VSP parameters in wild production areas
- Filling these gaps is the main priority for the region

Snake Region Summary

- Region is developing an IMW program to assess effectiveness of restoration projects
- Region has identified key gaps in habitat status and trends

Salmon Recovery Regions



Mid-Columbia/Yakima

Initial Steps

- 2004 Yakima Sub-basin Plan & 2005 Draft Yakima Subbasin Salmon Recovery Plan identify key uncertainties

2008 Yakima Steelhead Recovery Plan

Identifies information/next steps needed to better track key VSP parameters for 4 steelhead populations

Highlights key uncertainties which need to be resolved to effectively guide on-the-ground recovery work, eg:

- Relationship between flow, temperature and turbitity and survival of outmigrating smolts
- How habitat restoration efforts affect the balance between resident and anadromous forms of *O. mykiss*

Next Steps

- Develop a detailed RME/adaptive management plan that provides the detail needed to identify specific monitoring needs and budgets
- Complete IMW feasibility study
- 2008 Bull Trout Update/Extract will also identify key Bull Trout monitoring needs

- Emphasis is on evaluating the efficacy of current efforts and identifying key gaps that the Board can coordinate responses to

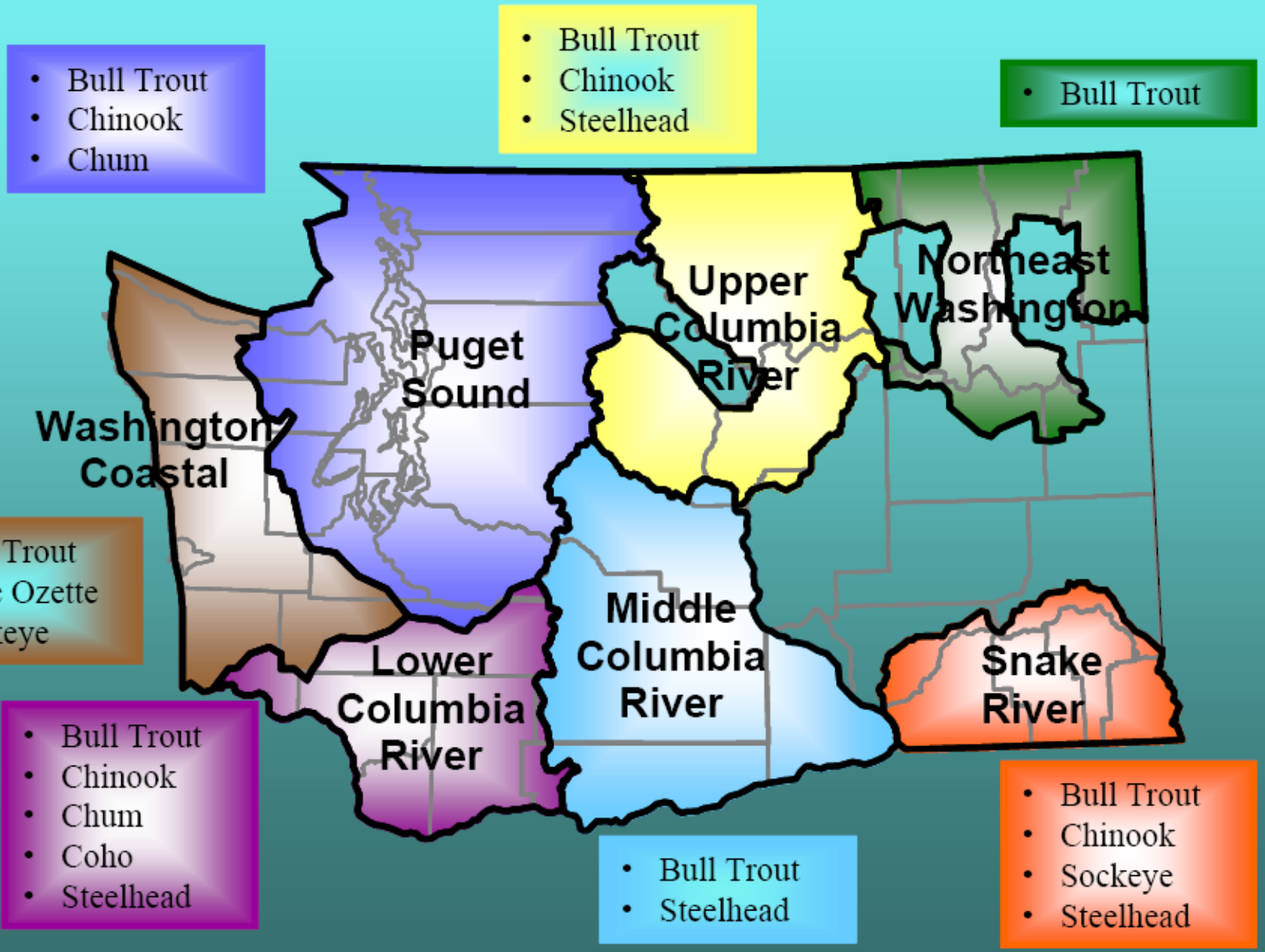
- Hope to use the existing monitoring and data management capacity in the basin to meet recovery needs wherever possible

- This means ensuring that monitoring infrastructure built to answer one set of questions (impacts of Chinook supplementation) is also set up to answer key steelhead and bull trout recovery questions

Mid-Columbia/Gorge Tribs

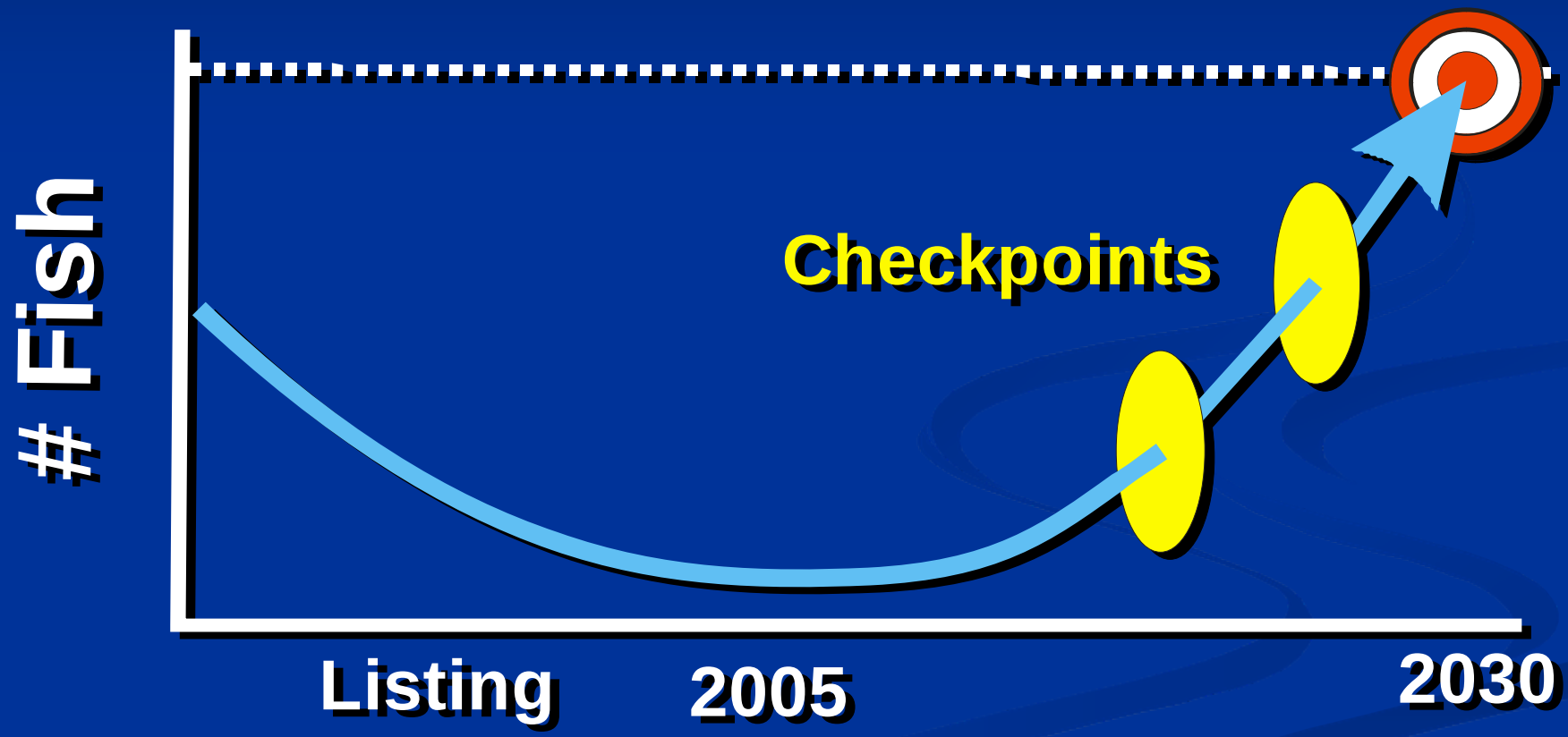
- Klickitat County not represented by a regional organization
- Have actively developed monitoring plans for White Salmon & Klickitat via the Watershed Planning process

Salmon Recovery Regions



Lower Columbia Salmon & Steelhead Recovery Research, Monitoring, & Evaluation Program

Evaluation & Adaptation

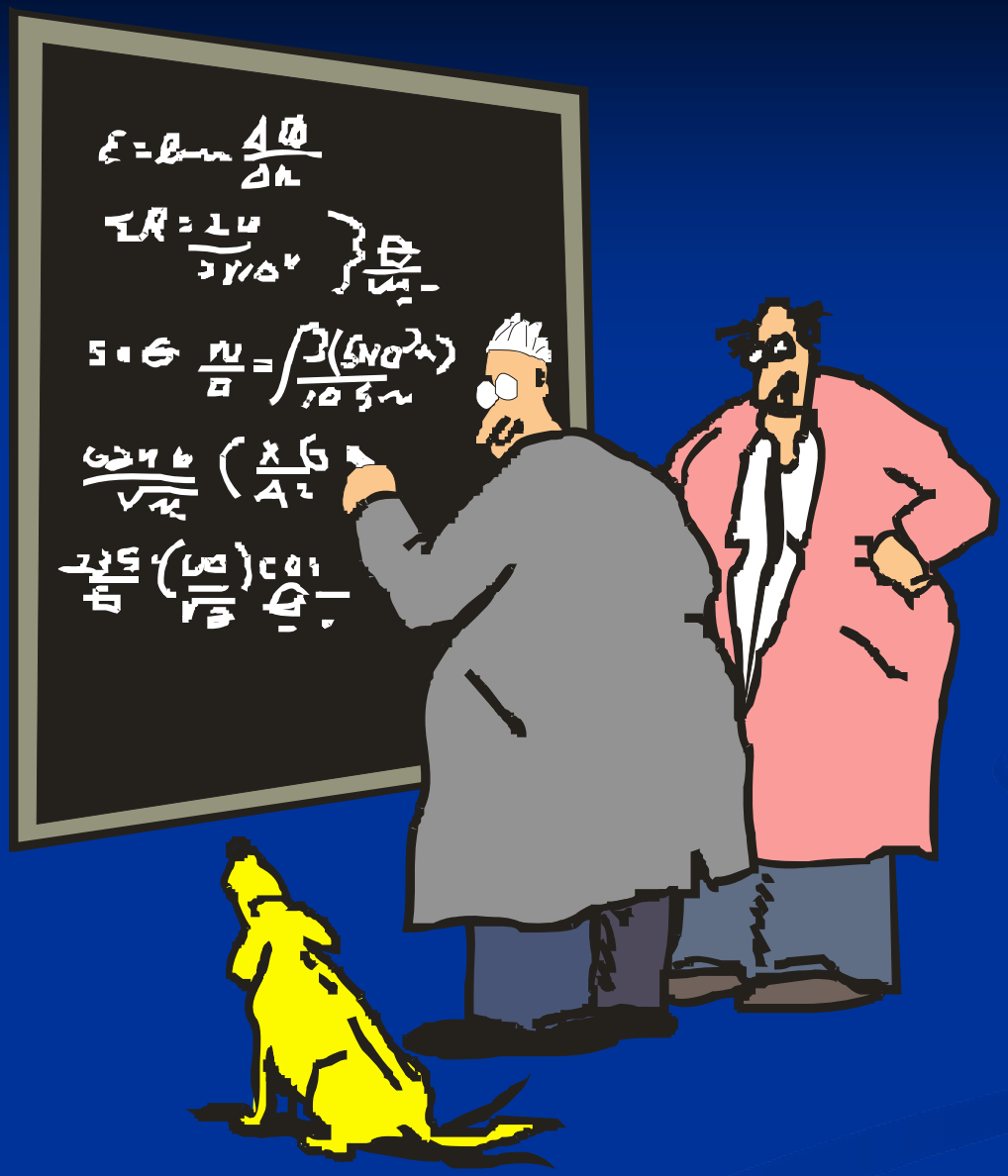


Program Elements

- Biological Status
- Habitat Status
- Implementation/Compliance
- Action Effectiveness
- Research
- Reporting & Data
- Responsibilities & Costs

Problems/Issues

1. Layered Objectives
2. Ideal vs. Real
3. Programmatic Holes
4. Evaluation & Reporting
5. Implementation

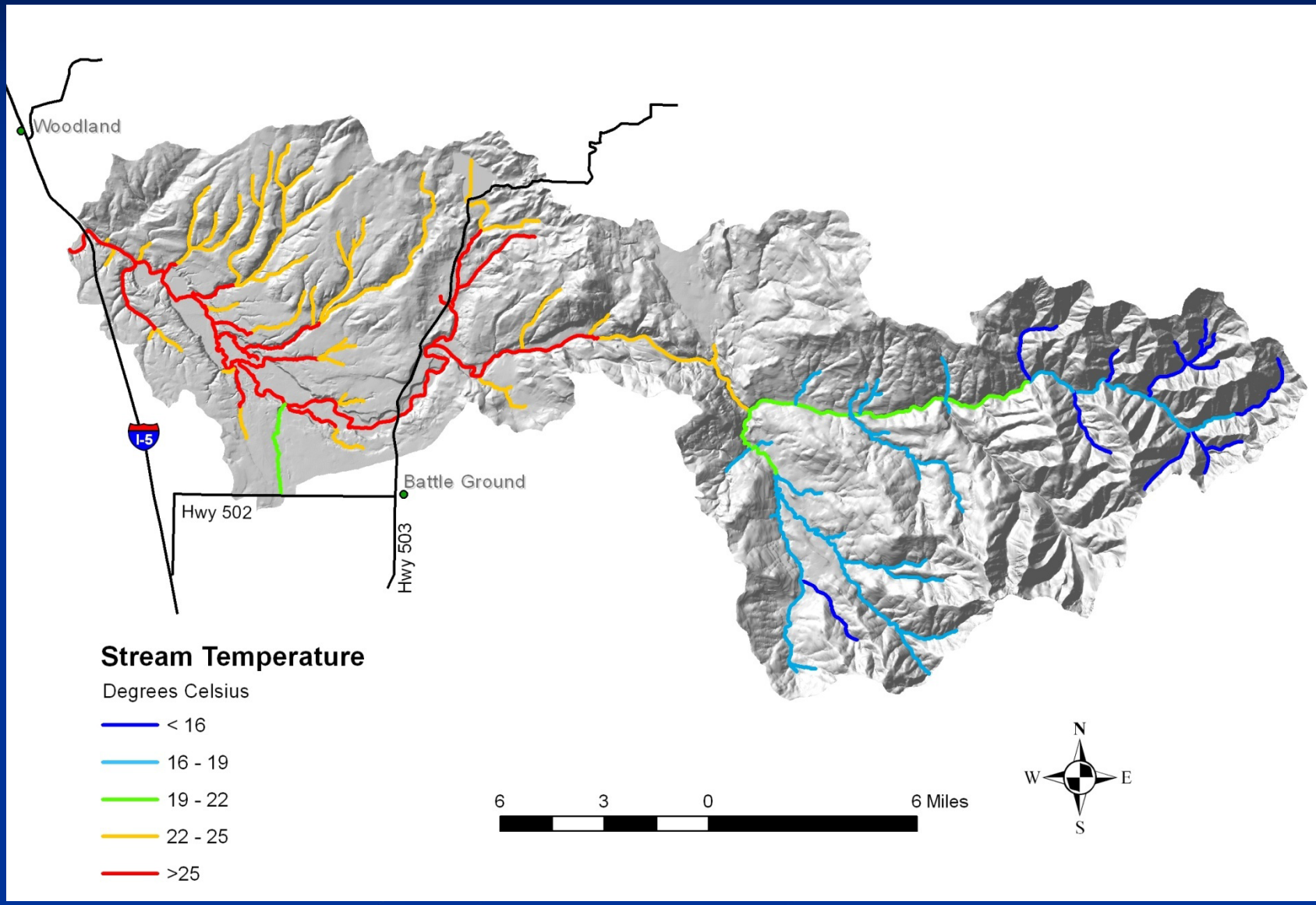


#1 Layered Needs

#2. Ideal v. Real

4 ESUs
3 Strata
19 Subbasins
2,700 reaches
68 Populations
4 VSP Parameters

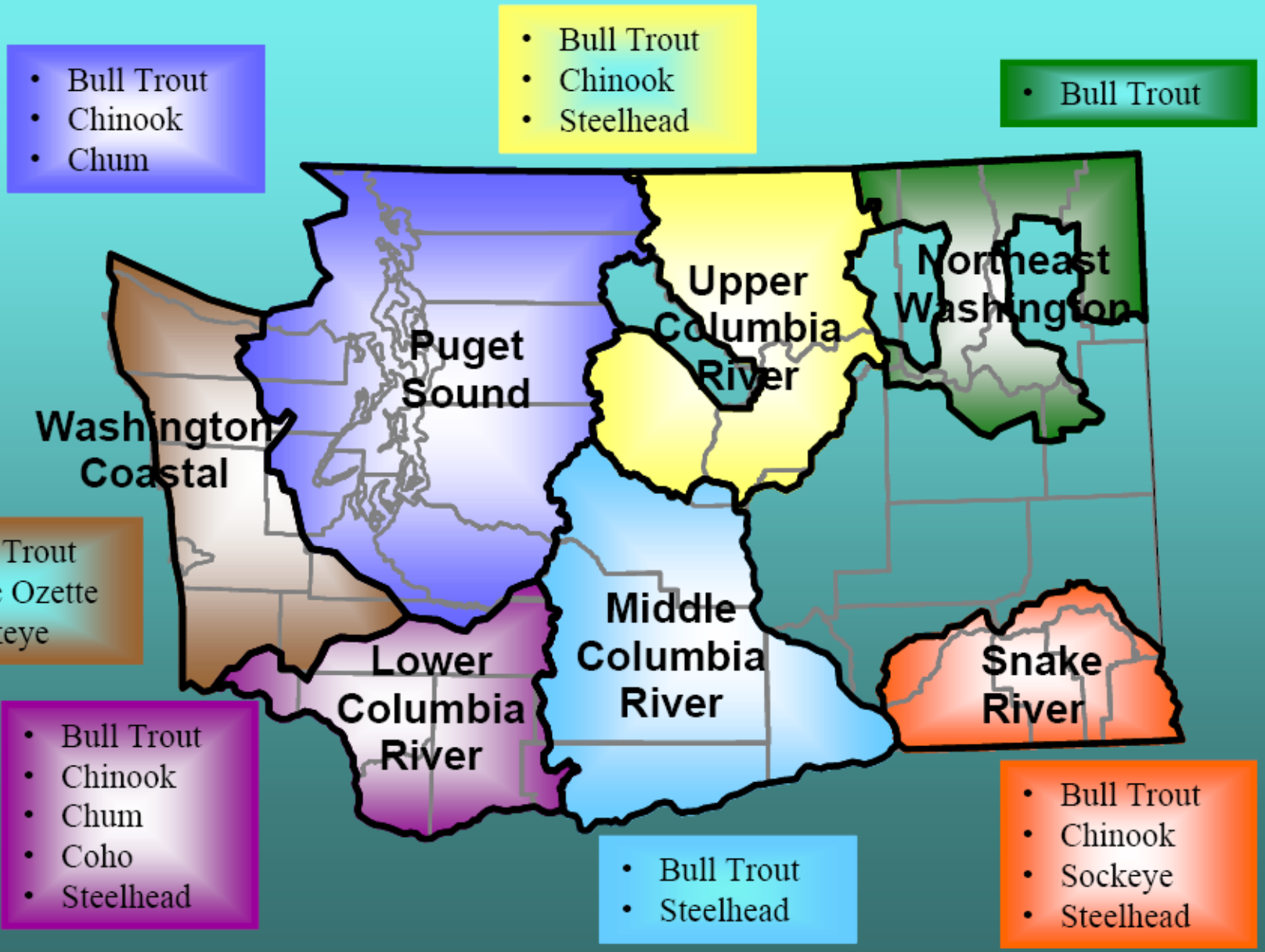
#3. Programmatic Holes



#4. Data & Reporting

#6 Implementation

Salmon Recovery Regions



Upper Columbia

The Upper Columbia Approach to Salmon Recovery Monitoring

Presentation to the Washington Forum on Monitoring

Salmon Recovery and Watershed Health

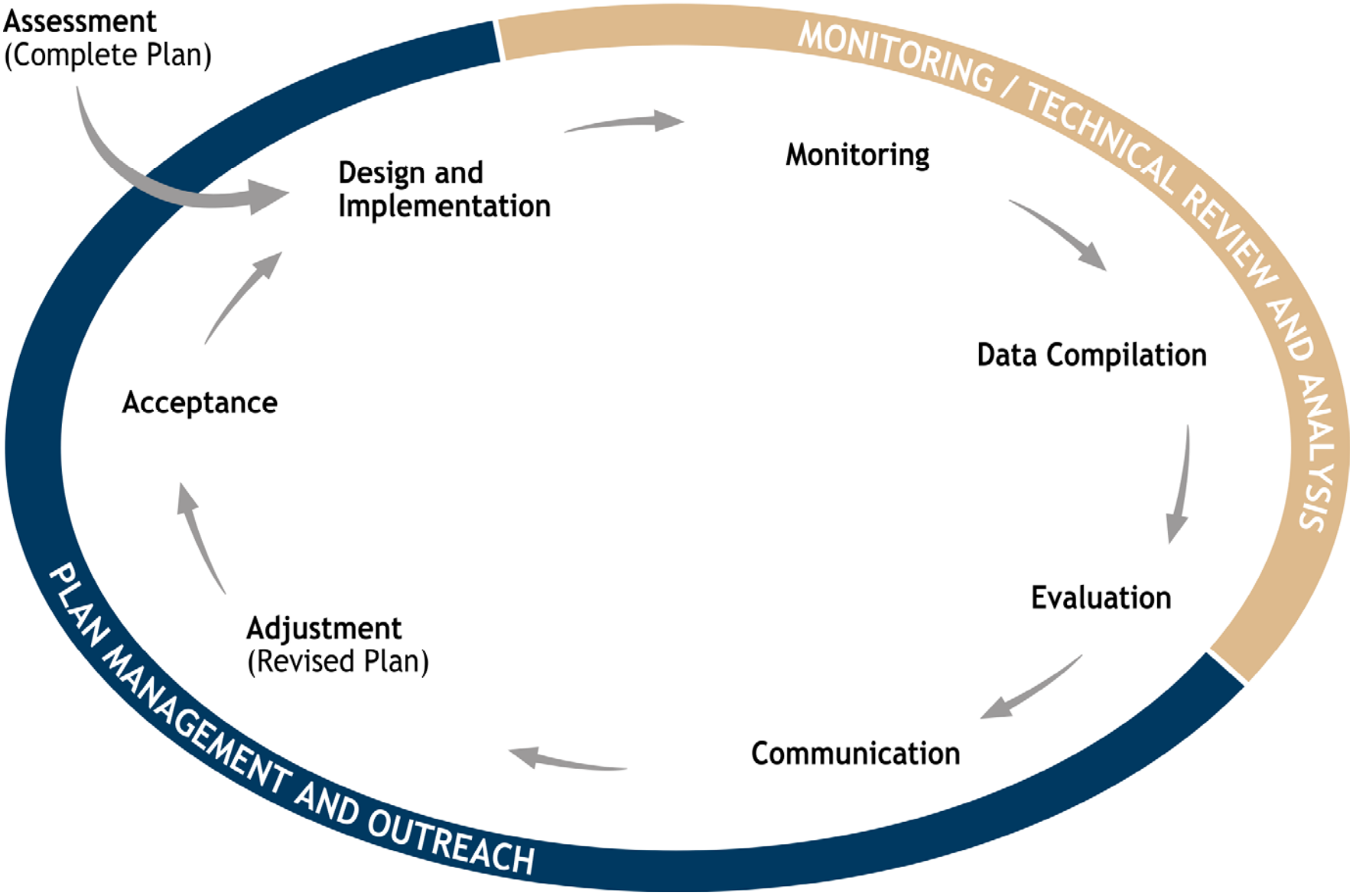
July 16, 2008 (Prepared by Julie Morgan and James White)

UCSRB Key Tasks

- Support Collaborative Decision Making
- Refine and Manage Recovery Plan
- Coordinate Implementation and Reporting
- Coordinate Monitoring and Adaptive Management
- Coordinate with Public, Tribes, and Agencies
- Develop Financing Plan for Operation and Implementation

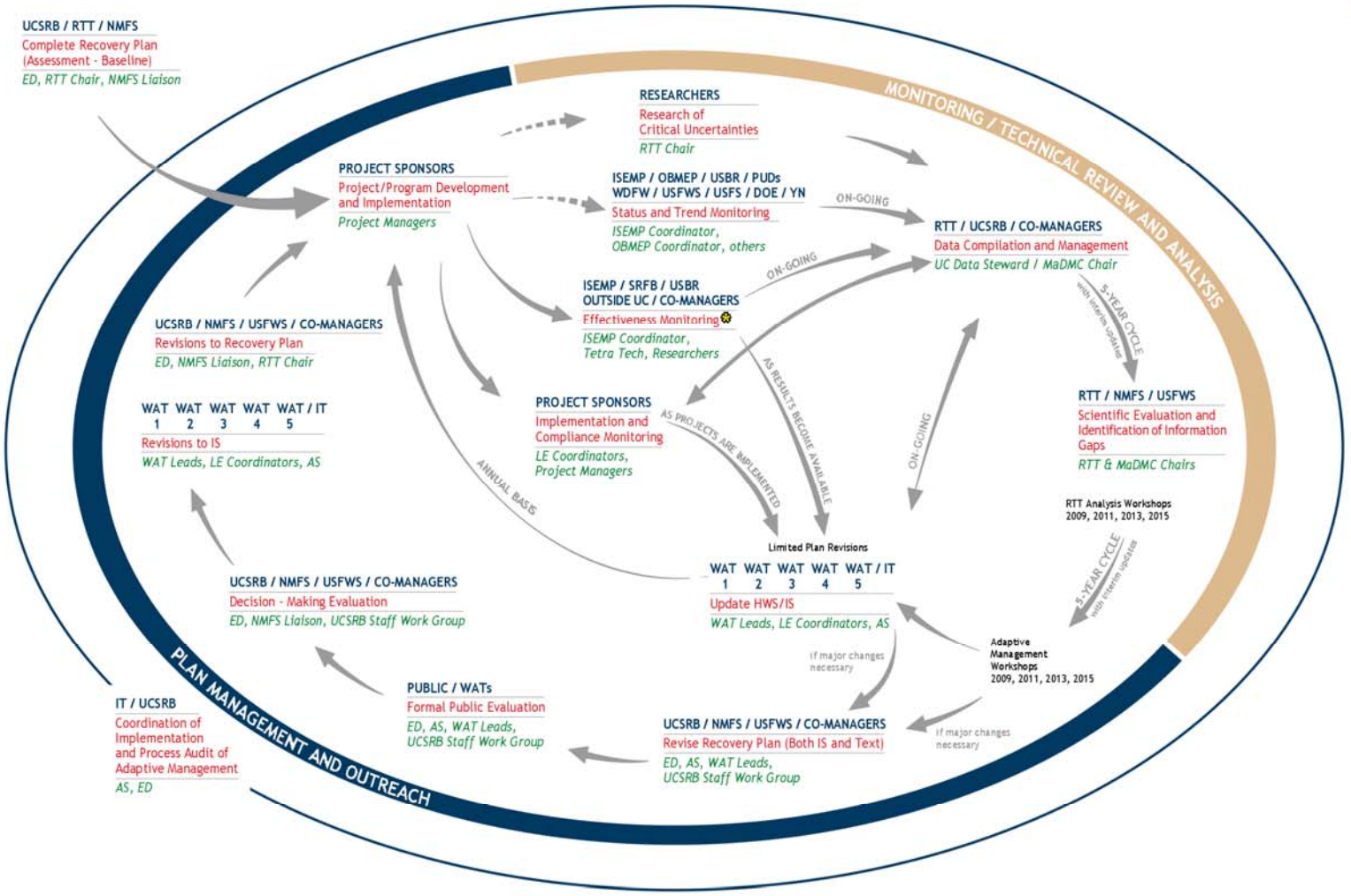
HABITAT ADAPTIVE MANAGEMENT FRAMEWORK

- FOR UPPER COLUMBIA SALMON RECOVERY -



HABITAT ADAPTIVE MANAGEMENT FRAMEWORK

- FOR UPPER COLUMBIA SALMON RECOVERY -



LEGEND

- Responsible Entities
- Activity
- Facilitator/Coordinator
- From outside UC as well

The WATs of the Upper Columbia:

Wenatchee Subbasin
Wenatchee Habitat Subcommittee of the Wenatchee Watershed Planning Unit (WWPU)

Entiat Subbasin
Entiat Habitat Subcommittee of the Entiat Watershed Planning Unit (EWPU)

Methow Subbasin
Methow Restoration Council (MRC)

Okanogan Subbasin
Okanogan Restoration Council (ORC)

Douglas County Watersheds
Douglas County Watershed Planning Unit (DCWPU)

Acronyms

AS	Associate Director
DOE	Department of Ecology
ED	Executive Director
HWS	Habitat Work Schedule
IS	Implementation Schedule
ISEMP	Integrated Status and Effectiveness Monitoring Program
IT	Implementation Team
LE	Lead Entity
MaDMC	Monitoring and Data Management Committee
NMFS	National Marine Fisheries Service
OBMEP	Okanogan Basin Monitoring and Evaluation Program
PUD	Public Utility District
RTT	Regional Technical Team
SRFB	Salmon Recovery Funding Board
TRT	Technical Review Team
UCSRB	Upper Columbia Salmon Recovery Board
USBR	United States Bureau of Reclamation
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WAT	Watershed Action Team
WDFW	Washington Department of Fish and Wildlife
YN	Yakama Nation

Key Components of UC Approach to Monitoring

- Involvement of recovery board in monitoring leadership
- Completed prioritization of data gaps
- Monitoring Strategy and Local Monitoring Plans
- RTT/MaDMC as technical advisors
- Scalable hierarchical organization
- Pay-to-Play approach to tools and coordination

UCSRB Participation in Monitoring

UC Data Gaps Prioritization

Monitoring Strategy and Guidance

Upper Columbia M&E Plan

Appendix P

Upper Columbia Monitoring and Evaluation Plan

Introduction

The desired outcome of the recovery plan is the long-term persistence of viable populations of naturally produced spring Chinook and steelhead distributed across their native range and the long-term persistence of self-sustaining, complex, interacting groups of bull trout distributed across their native range. In order to determine if the desired outcome has been achieved, monitoring is needed to assess the status of the populations and their limiting factors. In the absence of monitoring, there is no reliable method to determine if the recovery plan has been successful. Without monitoring, it will be very difficult for the federal agencies (NOAA Fisheries and the U.S. Fish and Wildlife Service) to determine if the populations/ESU/DPS have meet recovery criteria and can be removed from ESA listing.

There are two major questions that need to be answered in order for the agencies to determine if the recovery plan is working.

> ***(1) Is the status of the population/ESU/DPS improving?***
>
> ***(2) Are the primary factors limiting the status of the population/ESU/DPS increasing or decreasing?***[1]

Answers to these questions will guide decisions regarding the reclassification or delisting of the ESU, DPS, or populations. Additional questions, which are less important in guiding decisions regarding reclassification or delisting, but are nevertheless important to the Board, funding entities, and management agencies, include:

> ***(3) Are the actions identified in the recovery plan being implemented correctly and according to the implementation schedule?***
>
> ***(4) Which actions are effective and should be continued?***
>
> ***(5) How will the data be managed and curated?***

These five questions require different types of monitoring. Questions 1 and 2 require ***Status and Trend Monitoring***. This type of monitoring describes the status or condition of the

[1] The federal agencies determine if a population/ESU/DPS is no longer in danger of extinction by evaluating both the status of the population/ESU/DPS and the extent to which the threats facing the population/ESU/DPS have been addressed. This monitoring plan does not attempt to monitor "threats." Rather, this plan measures the "limiting factors" that directly or indirectly affect the status of the population/ESU/DPS. Although threats cause a factor to be limiting, it is actually the factor that limits the population. For example, forest roads and landslides (threats) may increase recruitment of fine sediments (limiting factor) to a stream channel, thereby limiting survival of juvenile steelhead. Simply monitoring threats will not tell us if the limiting factor is decreasing. Therefore, it is important to monitor changes in the limiting factor.

Upper Columbia Monitoring Strategy

MONITORING STRATEGY FOR THE UPPER COLUMBIA BASIN

Second Draft Report

August 1, 2006

Prepared by:
Tracy W. Hillman
BioAnalysts, Inc.
Boise, Idaho

Prepared for:
Upper Columbia Salmon Recovery Board,
Bonneville Power Administration, and
National Marine Fisheries Service

Sub-basin Specific Monitoring Plan

MONITORING STRATEGY FOR THE UPPER COLUMBIA BASIN

Appendix A: An Implementation Strategy for Wenatchee Subbasin Monitoring

DRAFT

January 15, 2005

Prepared by:
Michael Ward

Terraqua, Inc.
Wauconda, WA

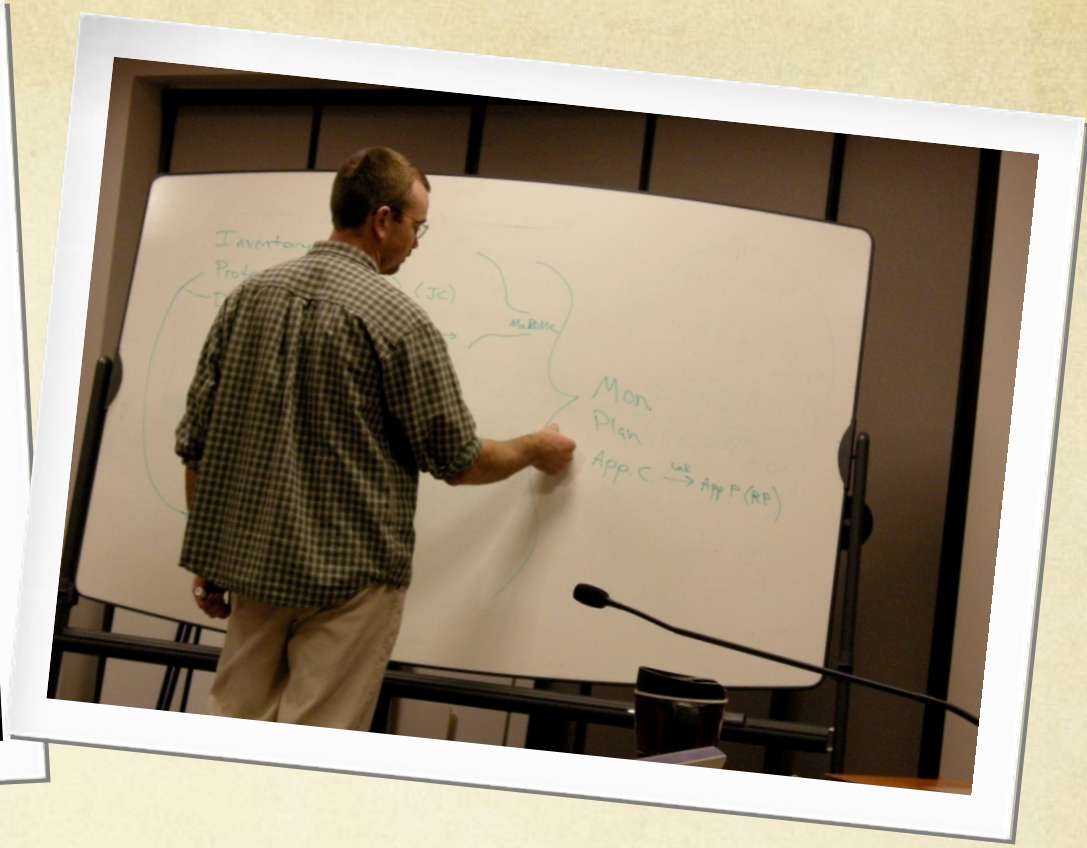
Prepared for:
Upper Columbia Regional Technical Team
NOAA Fisheries

Prepared for and funded by:
Bonneville Power Administration

RTT/MaDMC as Technical Advisors

Regional Technical Team

(March 2008 Meeting)

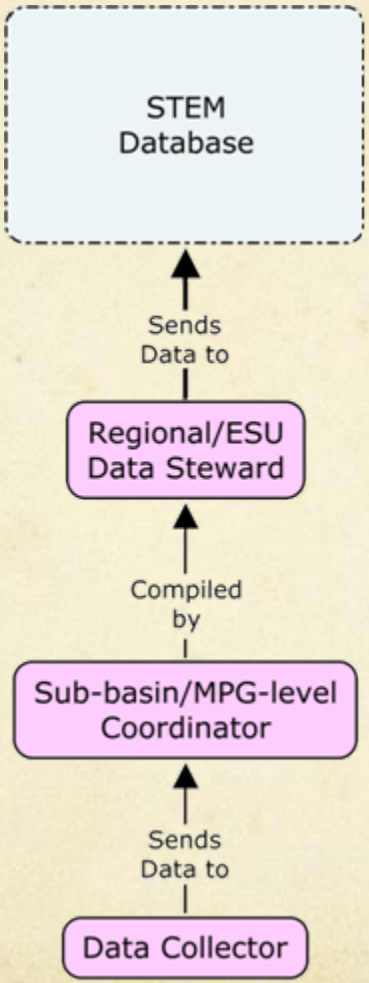


RTT's Monitoring and Data Management Committee

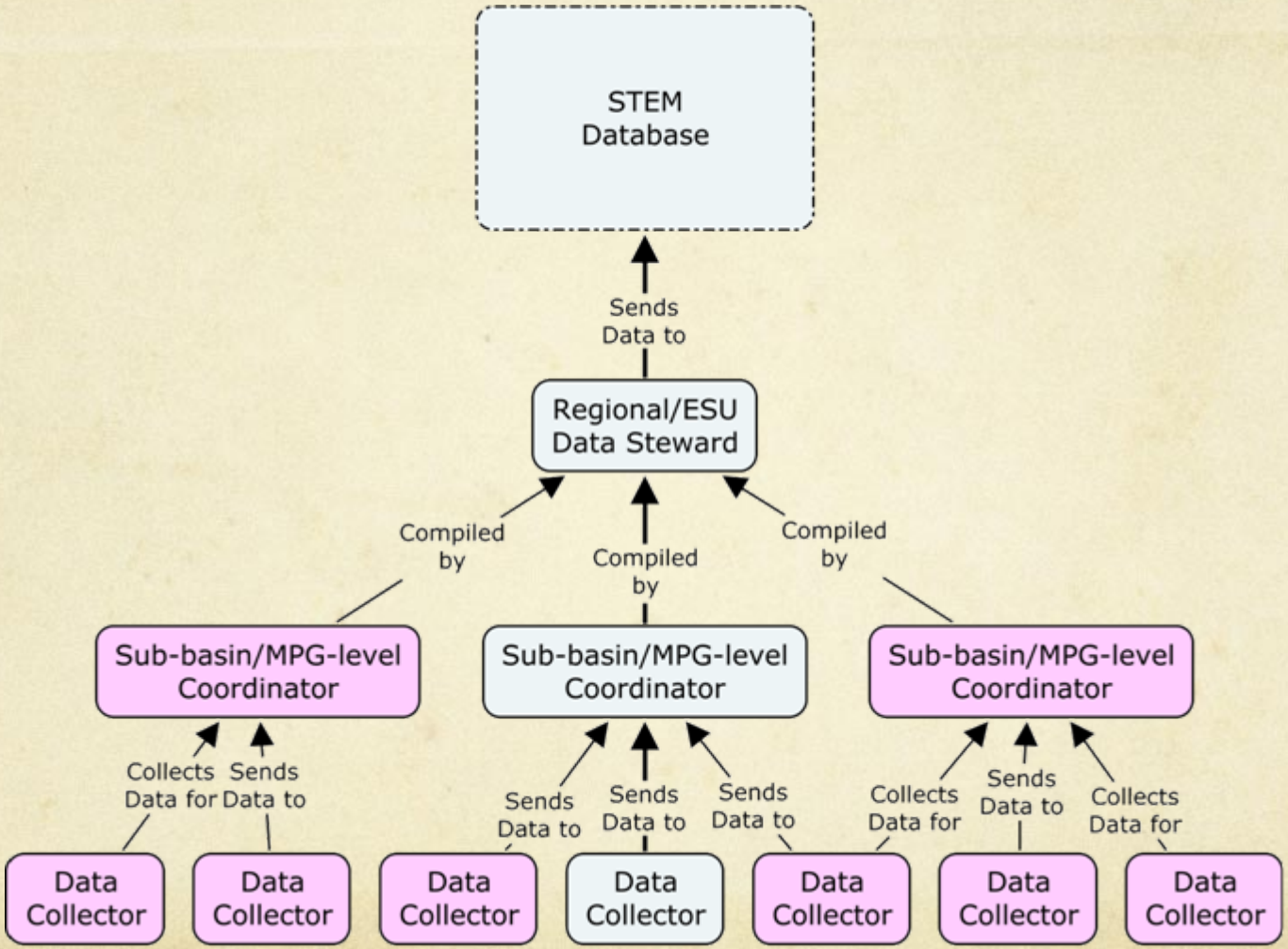
(January 2008 Meeting)

Scalable Organization

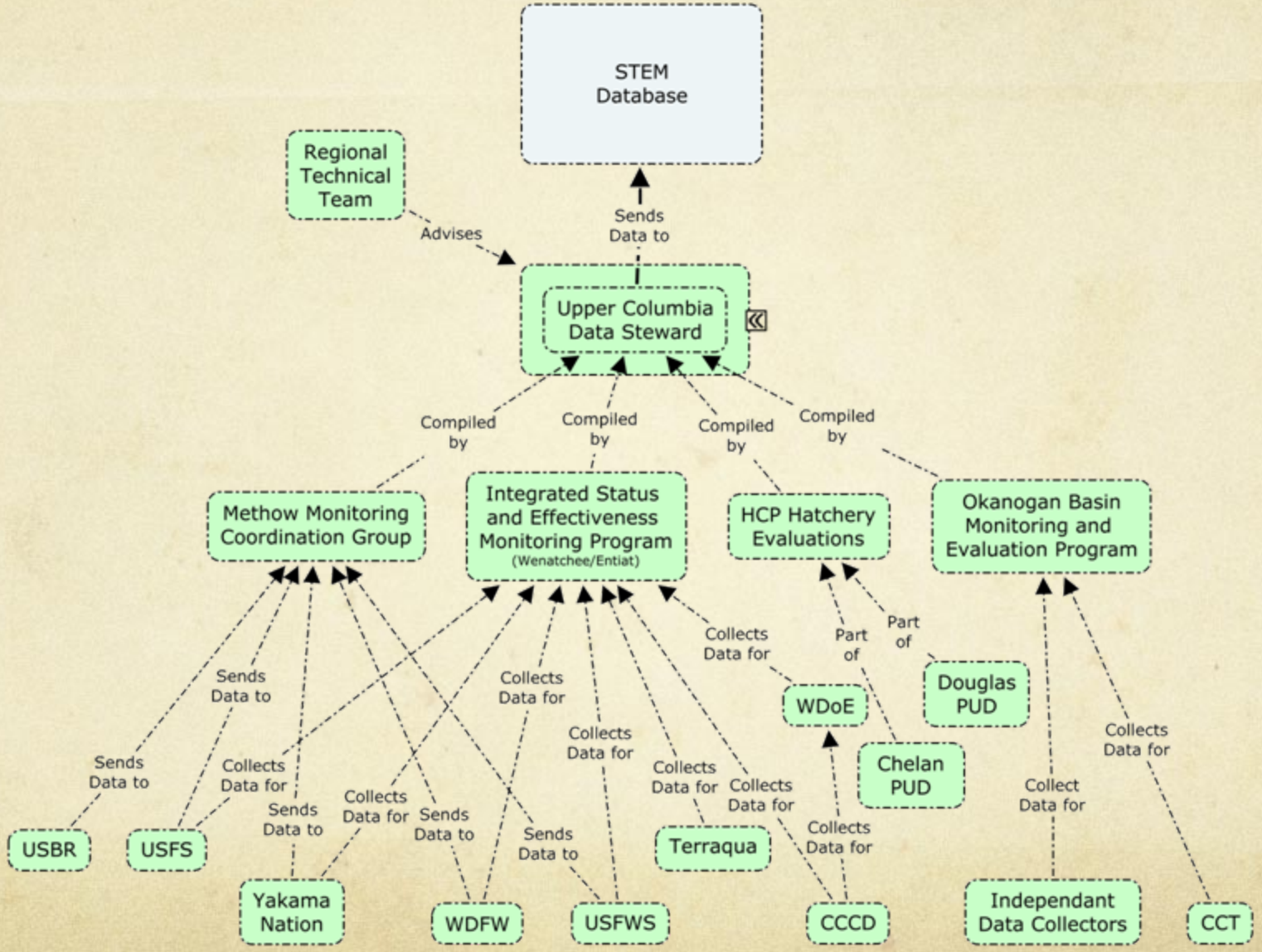
Vertical Monitoring Data Flow



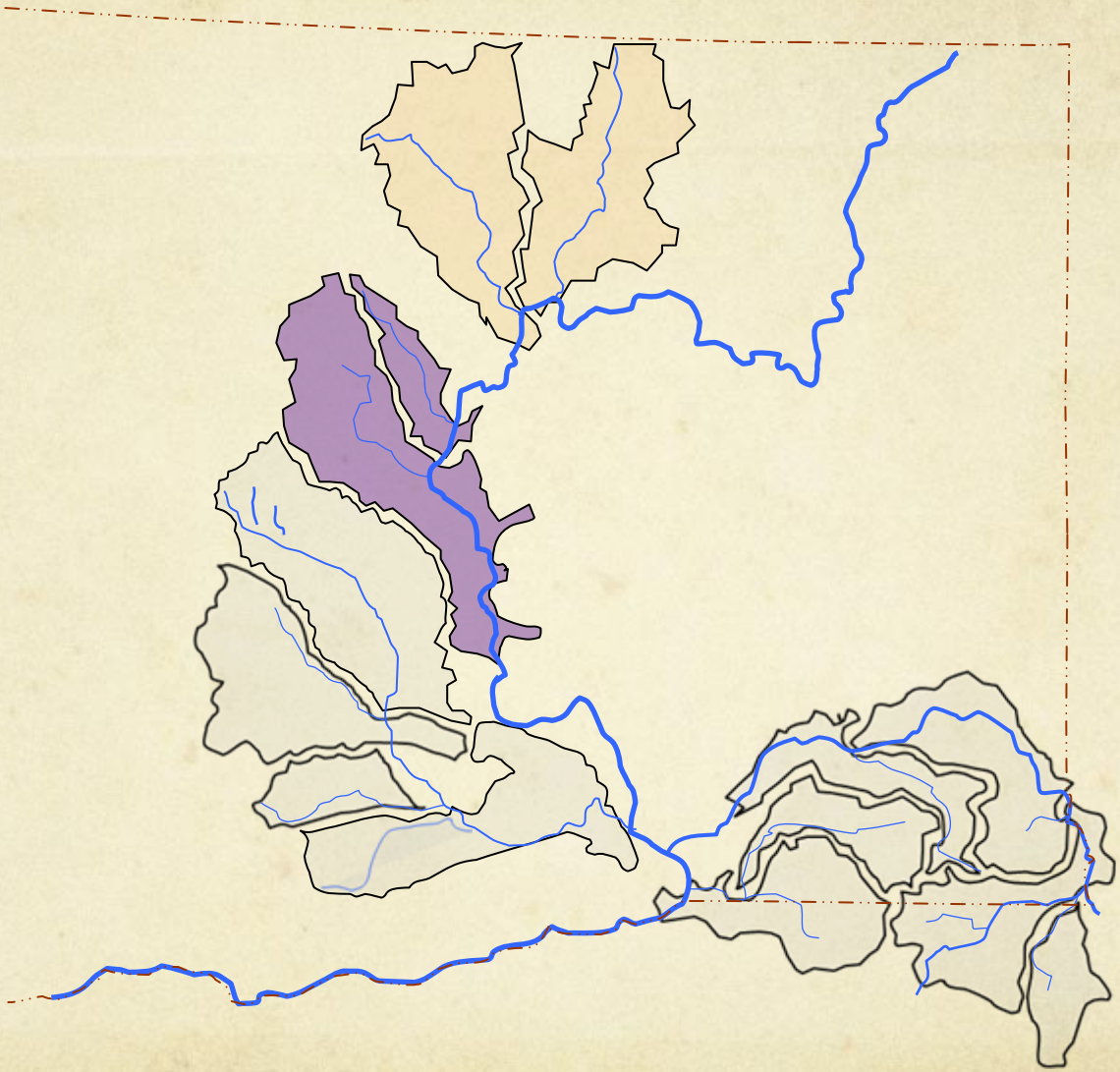
Horizontal Monitoring Data Flow



Upper Columbia Monitoring Data Flow

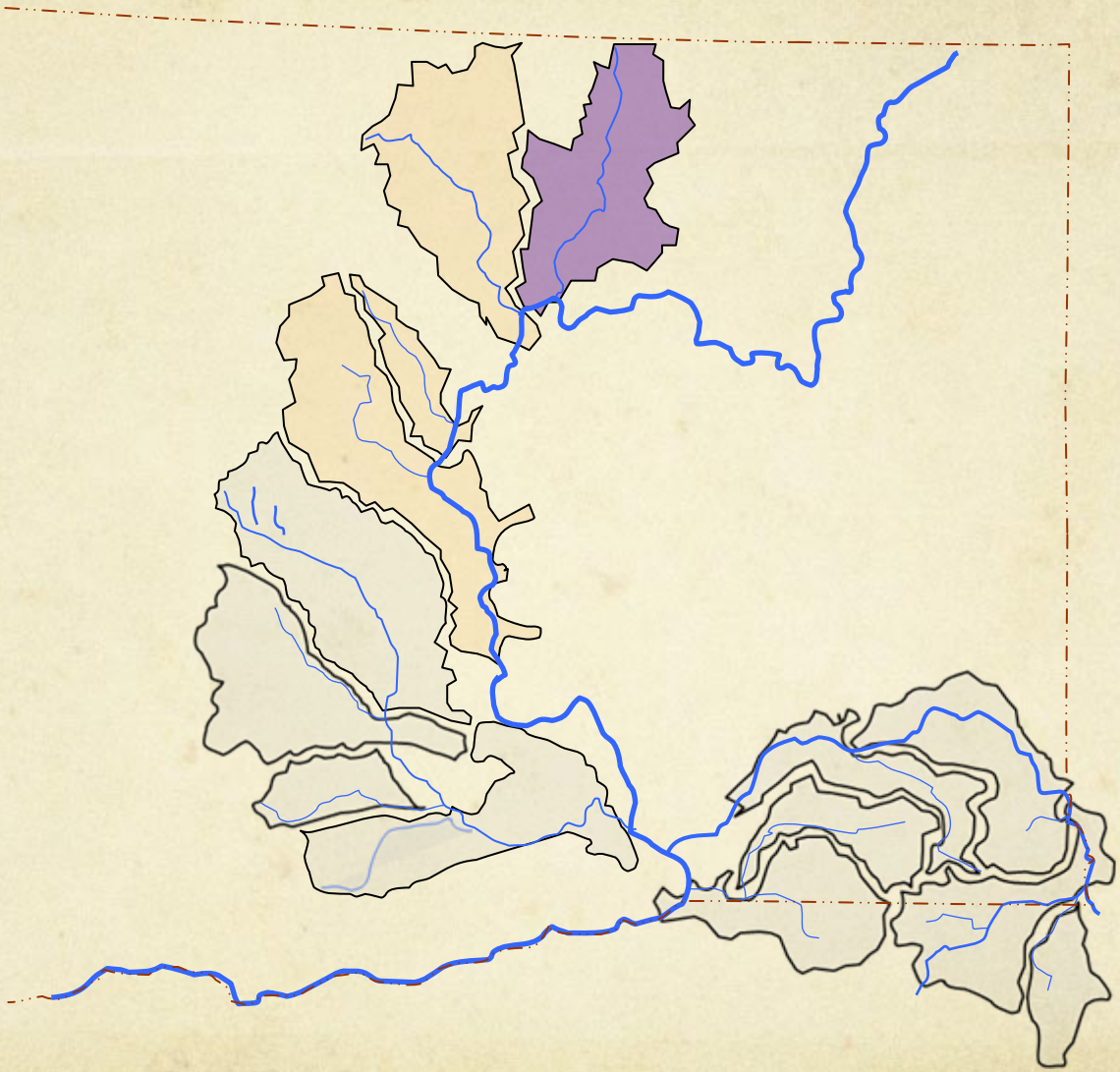


Integrated Status and Effectiveness Monitoring Project

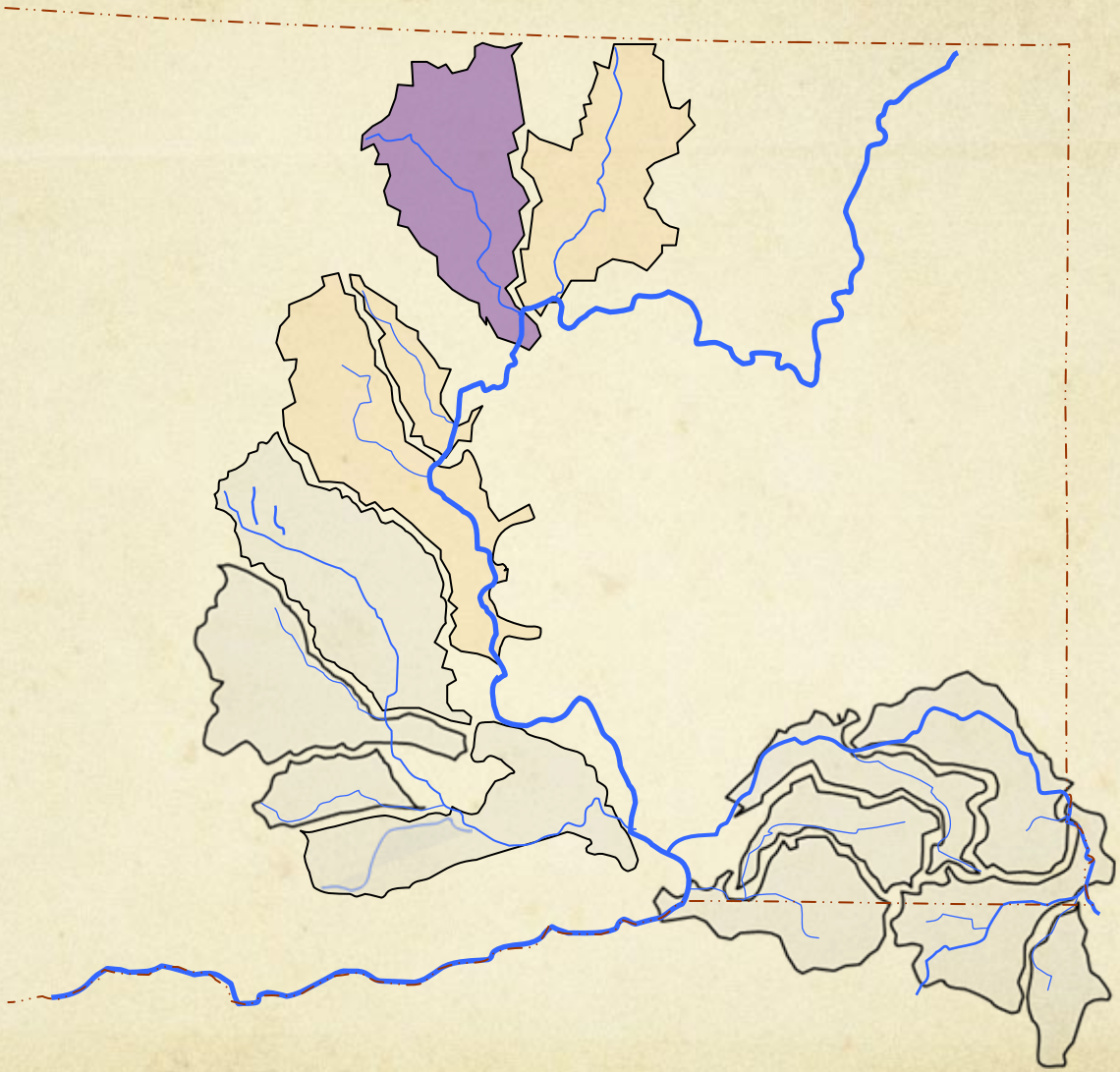


SurveyType	Year	Contractor	TaskDescription
habitat	2005	Terraqua	habitat at status/trend sites
habitat	2005	Terraqua	habitat at B2B sites
habitat	2006	Terraqua	habitat at B2B sites
habitat	2006	Terraqua	habitat at status/trend sites
habitat	2007	Terraqua	habitat at status/trend sites
sediment	2006	USFS-Entiat Ranger District	McNeil core sample/fine sediment
sediment	2007	USFS Entiat	McNeil core sample/fine sediment
smolt	2004	USFWS	smolt trap at RM 6
smolt	2005	USFWS	smolt trap at RM 6
smolt	2006	USFWS	smolt trap at Entiat Mouth
smolt	2006	USFWS	smolt trap at Entiat Mouth and steelhead redd surveys (existing contracts)
smolt	2007	USFWS	smolt trap at RM 6 on Entiat
smolt	2007	USFWS	smolt trap at Entiat Mouth
snorkel	2005	USFWS	snorkel survey 11 sites over 3 seasonal periods during 2005 to 2006
snorkel	2006	USFWS	snorkel survey 11 sites over 3 seasonal periods during 2005 to 2006
snorkel	2006	Yakama Nation	snorkel at Entiat monitoring sites
snorkel	2007	USFS	snorkel at Entiat effectiveness monitoring sites
snorkel	2007	USFWS	snorkel at effectiveness sites
snorkel	2007	USFWS	snorkel at B2B
snorkel	2007	Yakama Nation	snorkel at Entiat status and trend monitoring sites
snorkel	2007	Yakama Nation	snorkel at Entiat effectiveness monitoring sites
spawning survey	2004	USFWS	steelhead redd counts in Entiat
spawning survey	2005	USFWS	steelhead redd counts in Entiat
spawning survey	2006	USFS-Entiat Ranger District	steelhead redd surveys in madd river
spawning survey	2006	USFWS	steelhead redd counts in Entiat
water quality	2006	USFS PNW	water quality/pH monitoring
water quality	2006	USFS-Entiat Ranger District	water temperature
water quality	2007	USFS PNW	water quality/pH monitoring

Okanogan Basin Monitoring and Effectiveness Project

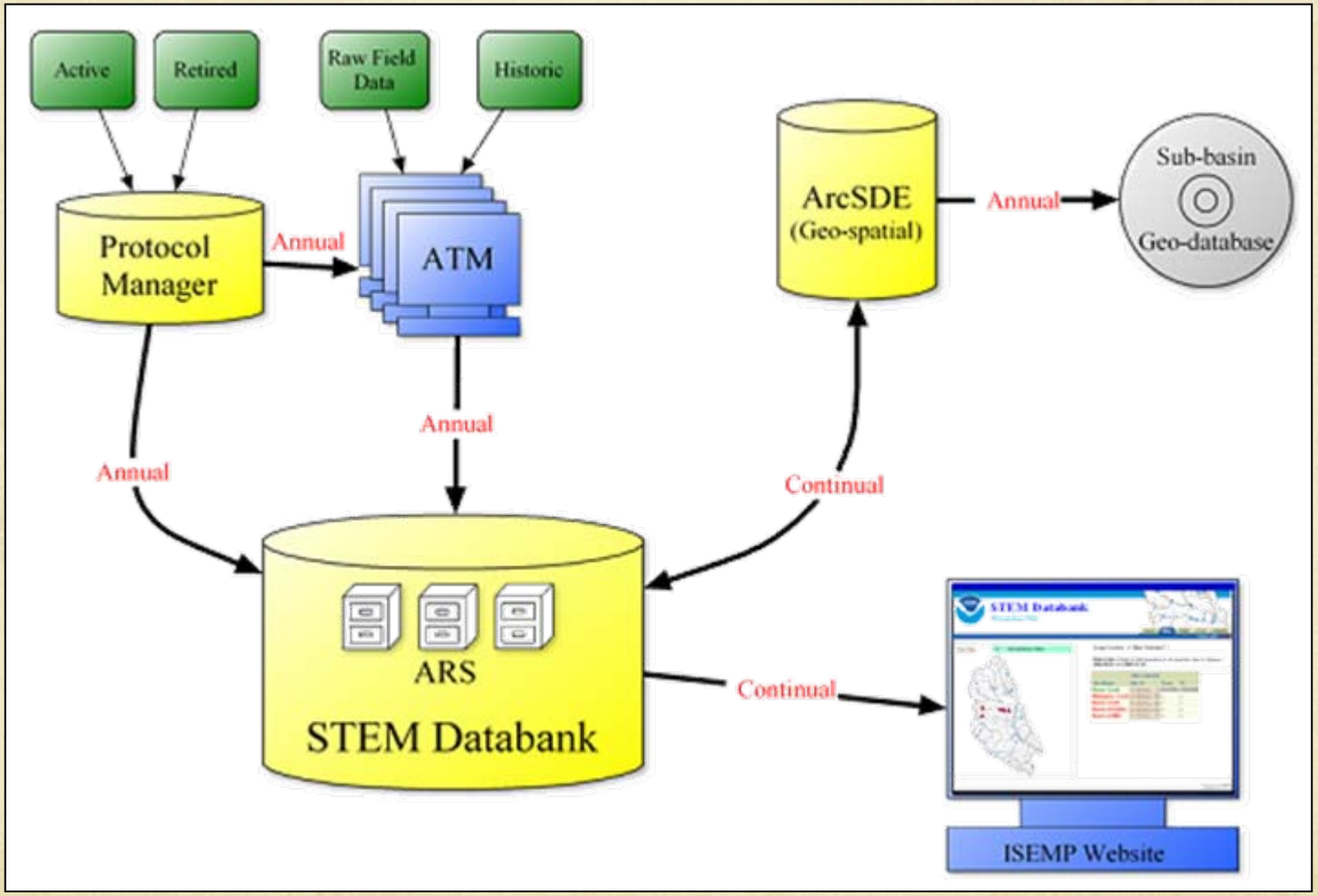


Methow Monitoring Coordination Group

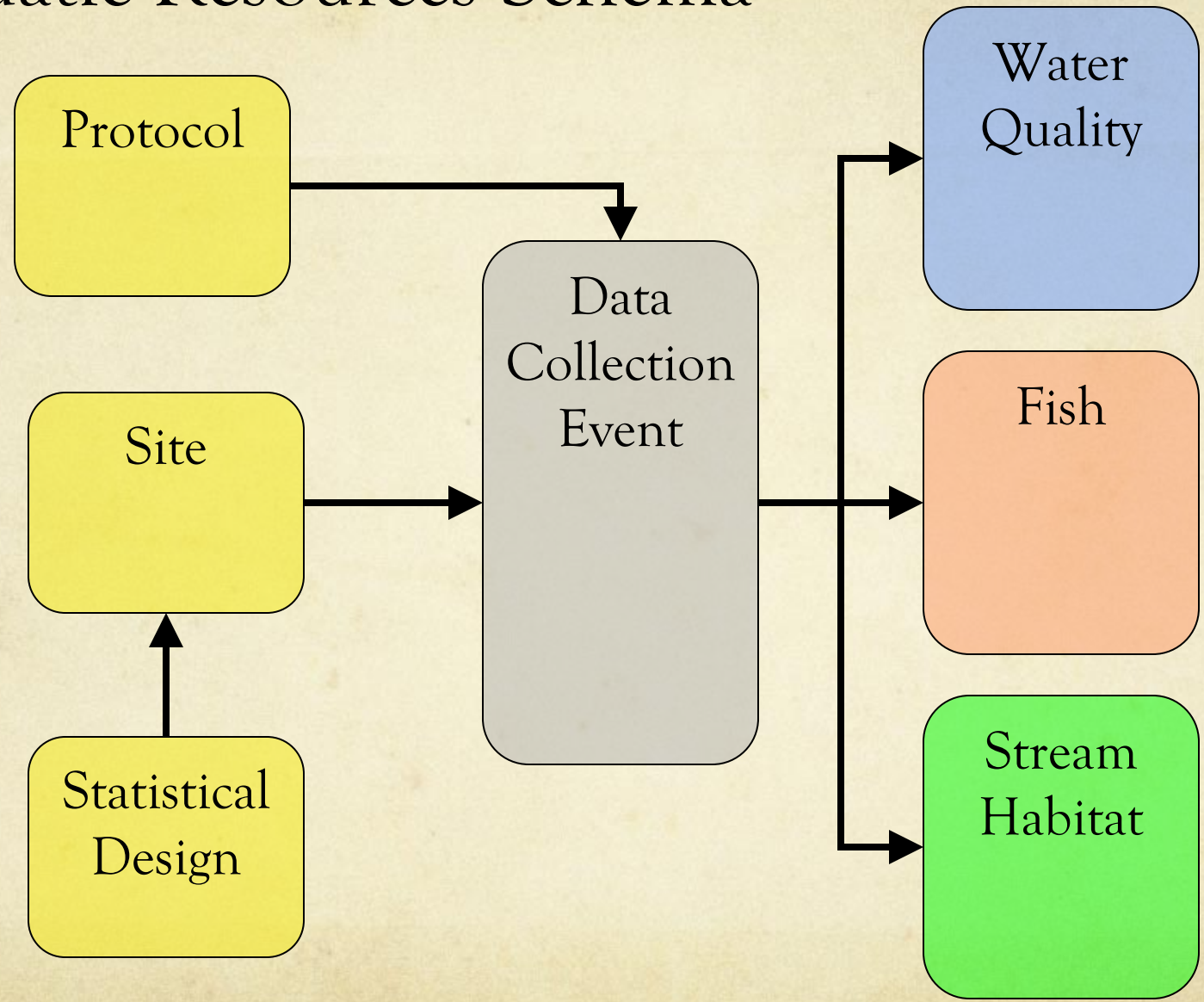


Pay-to-Play Approach to Data Management Tools

ISEMP Data Management System

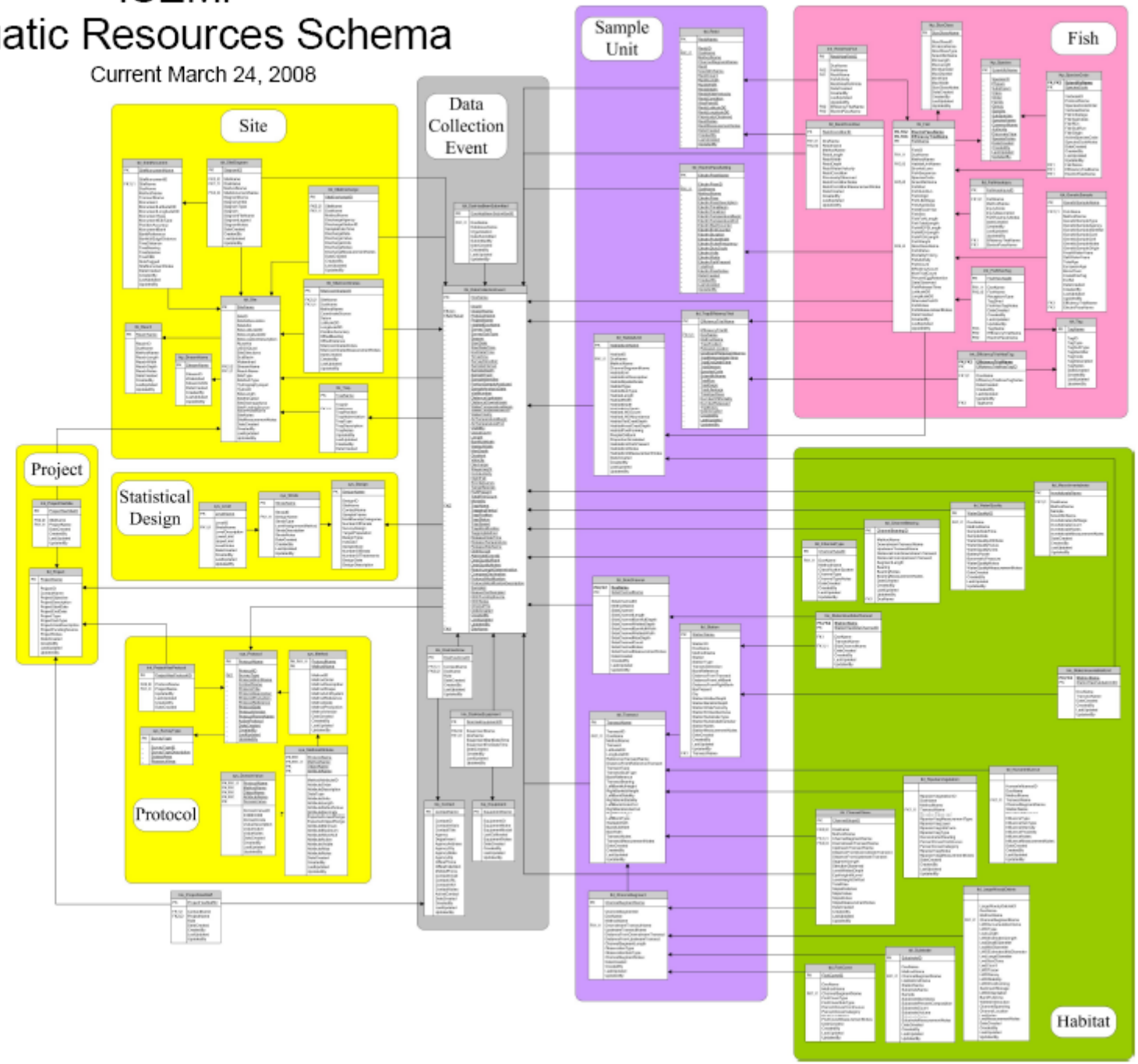


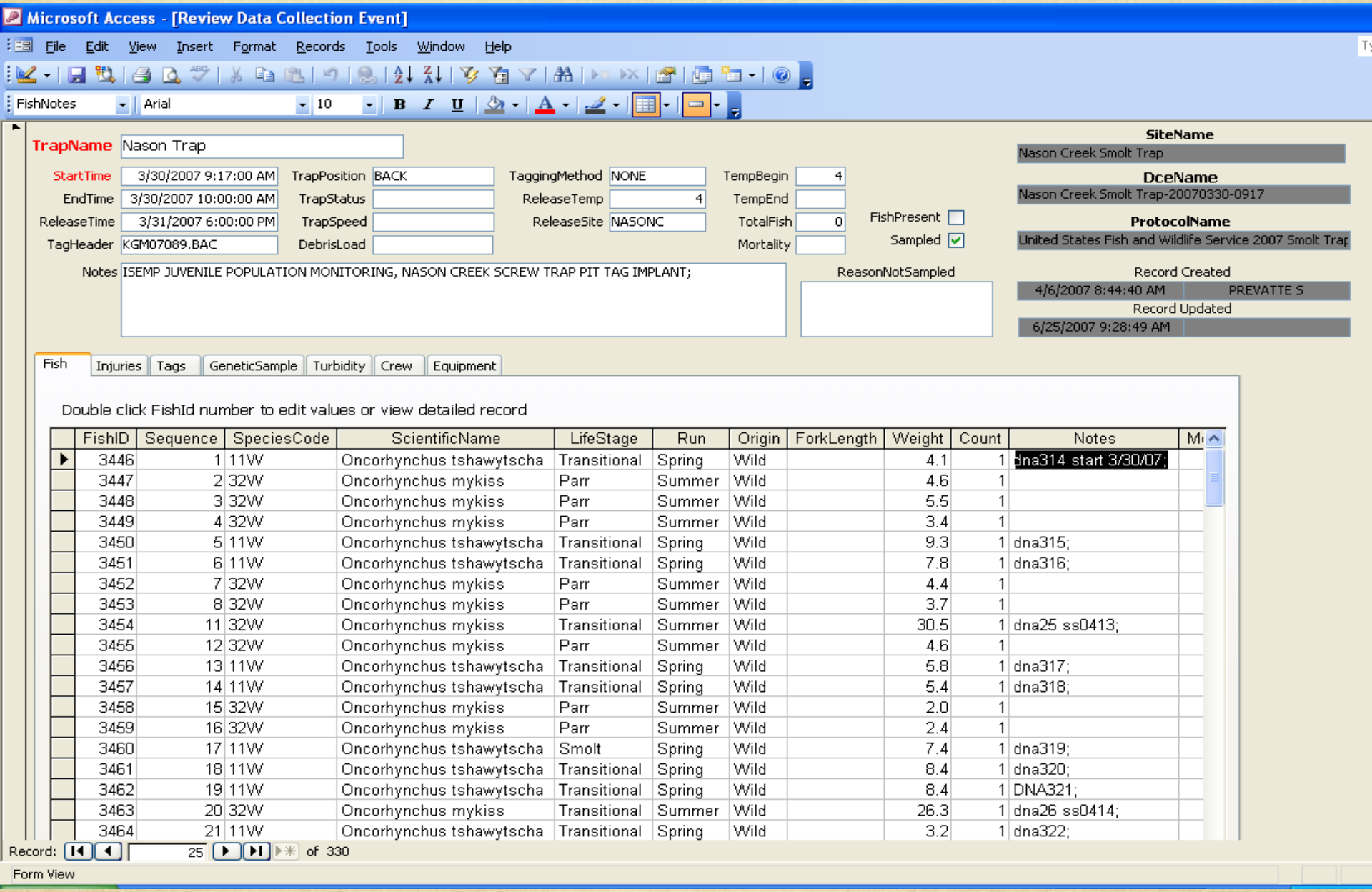
Aquatic Resources Schema



ISEMP
Aquatic Resources Schema

Current March 24, 2008

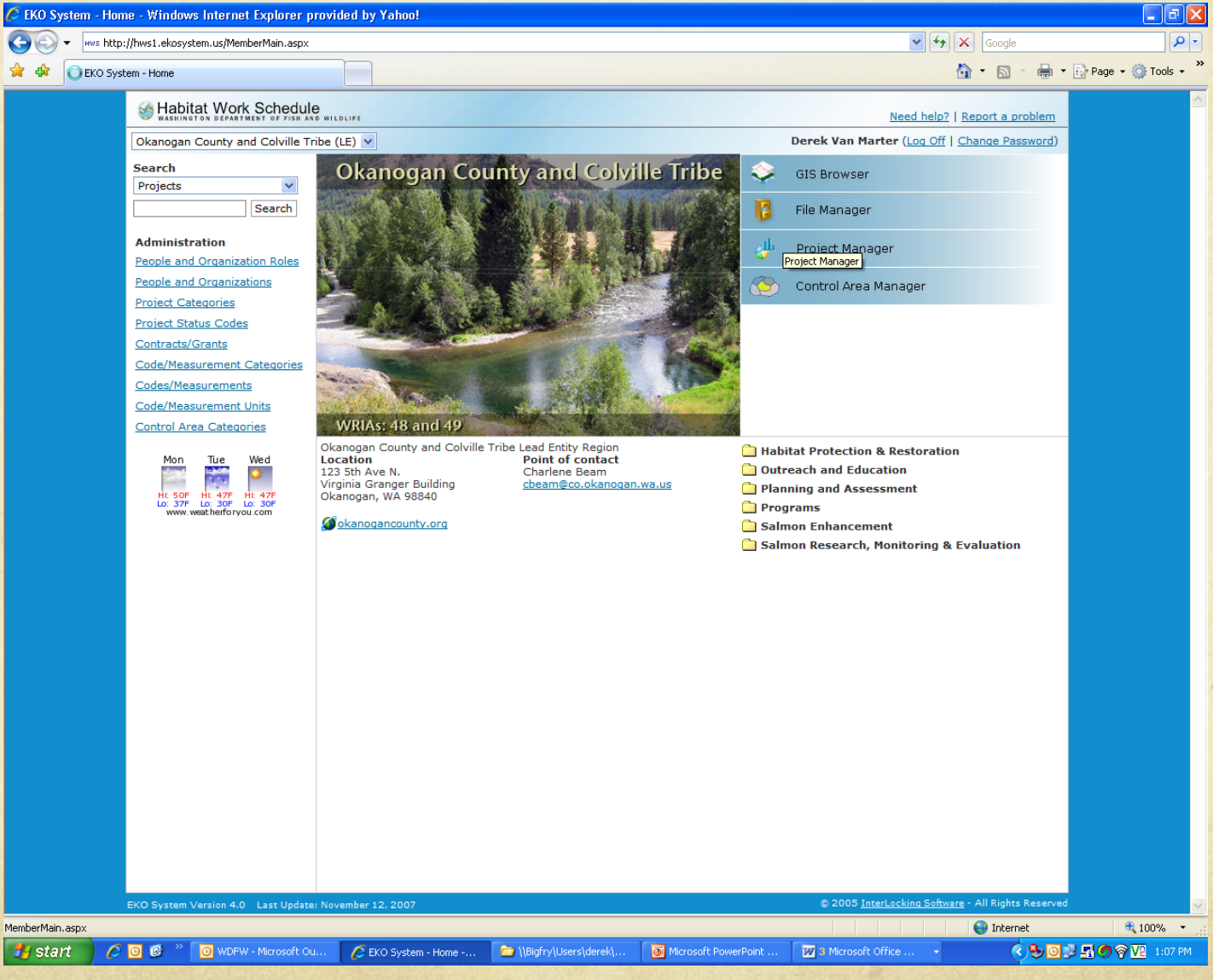




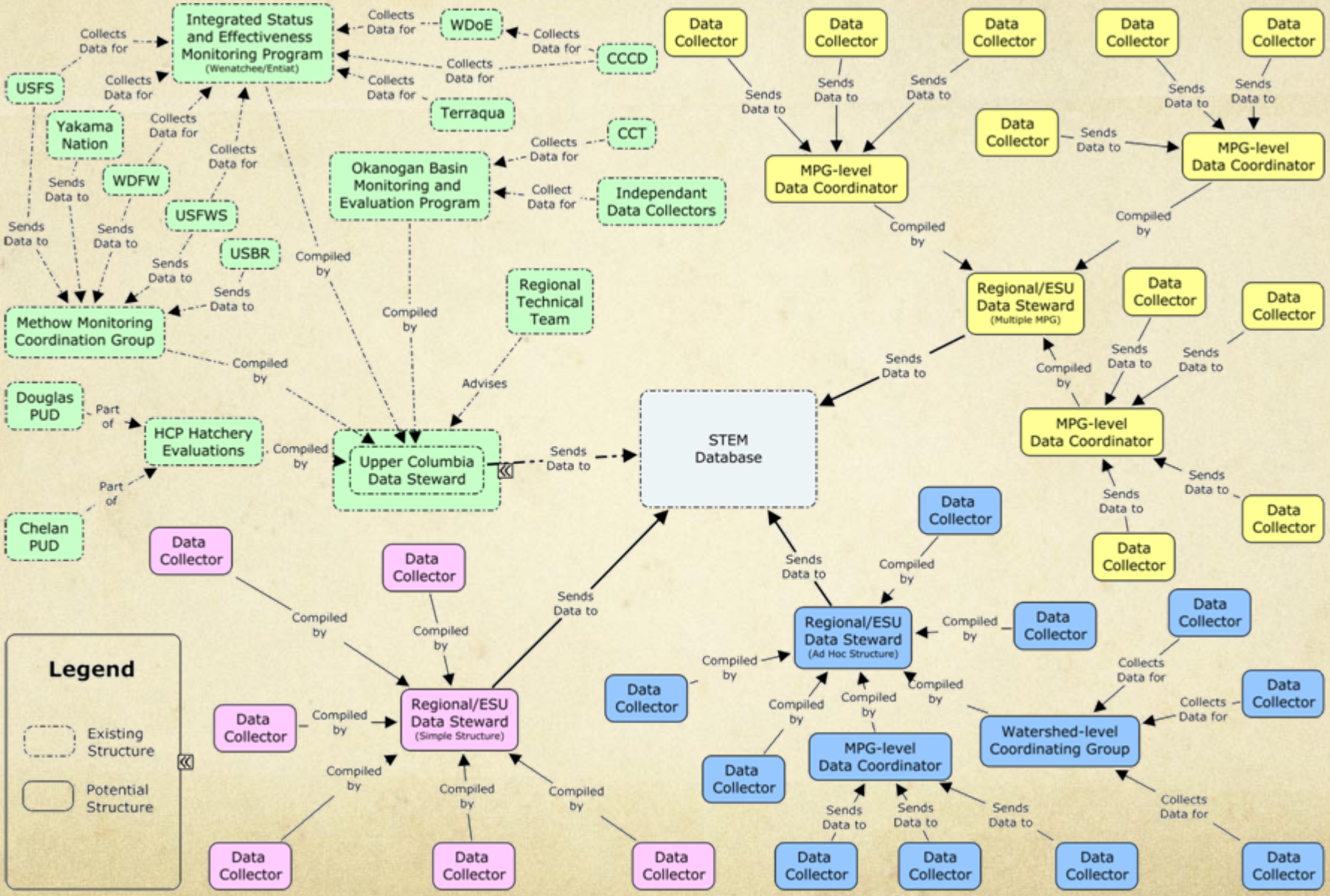
FishID	Sequence	SpeciesCode	ScientificName	LifeStage	Run	Origin	ForkLength	Weight	Count	Notes
3446	1	11W	Oncorhynchus tshawytscha	Transitional	Spring	Wild		4.1	1	dna314 start 3/30/07;
3447	2	32W	Oncorhynchus mykiss	Parr	Summer	Wild		4.6	1	
3448	3	32W	Oncorhynchus mykiss	Parr	Summer	Wild		5.5	1	
3449	4	32W	Oncorhynchus mykiss	Parr	Summer	Wild		3.4	1	
3450	5	11W	Oncorhynchus tshawytscha	Transitional	Spring	Wild		9.3	1	dna315;
3451	6	11W	Oncorhynchus tshawytscha	Transitional	Spring	Wild		7.8	1	dna316;
3452	7	32W	Oncorhynchus mykiss	Parr	Summer	Wild		4.4	1	
3453	8	32W	Oncorhynchus mykiss	Parr	Summer	Wild		3.7	1	
3454	11	32W	Oncorhynchus mykiss	Transitional	Summer	Wild		30.5	1	dna25 ss0413;
3455	12	32W	Oncorhynchus mykiss	Parr	Summer	Wild		4.6	1	
3456	13	11W	Oncorhynchus tshawytscha	Transitional	Spring	Wild		5.8	1	dna317;
3457	14	11W	Oncorhynchus tshawytscha	Transitional	Spring	Wild		5.4	1	dna318;
3458	15	32W	Oncorhynchus mykiss	Parr	Summer	Wild		2.0	1	
3459	16	32W	Oncorhynchus mykiss	Parr	Summer	Wild		2.4	1	
3460	17	11W	Oncorhynchus tshawytscha	Smolt	Spring	Wild		7.4	1	dna319;
3461	18	11W	Oncorhynchus tshawytscha	Transitional	Spring	Wild		8.4	1	dna320;
3462	19	11W	Oncorhynchus tshawytscha	Transitional	Spring	Wild		8.4	1	DNA321;
3463	20	32W	Oncorhynchus mykiss	Transitional	Summer	Wild		26.3	1	dna26 ss0414;
3464	21	11W	Oncorhynchus tshawytscha	Transitional	Spring	Wild		3.2	1	dna322;

Habitat Work Schedule (public portal)

Habitat Work Schedule (user database)



Potential Salmon Recovery Monitoring Data Flow



RTT Monitoring and Data Management Committee Update

Presentation to the Washington Forum on Monitoring Salmon Recovery and Watershed Health

Keely Murdoch, MaDMC Chair

July 16, 2008

UCRTT
UPPER COLUMBIA REGIONAL TECHNICAL TEAM

Upper Columbia Data Gap Prioritization

Sources

- Upper Columbia Salmon Recovery Plan
- Upper Columbia Biological Strategy
- UCRTT comments to Appendix P of the Recovery Plan
- Additional UCRTT input pending review

How to prioritize what is not known?

- Develop rating criteria
  - Flexible
  - Repeatable
  - Minimize subjectivity

Rating Criteria

- VSP Abundance and Productivity
- VSP Spatial Structure and Diversity
- Scale of Applicability
- Use of Information

Benefit to VSP Abundance and/or Productivity

- Does the data gap or uncertainty decrease our ability to assess abundance and/or productivity?
- Could the data gap directly result in action which will increase abundance and/or productivity?

High	25 to 35
Moderate	15 to 24
Low	1 to 14
None	0

Benefit to VSP Spatial Structure and/or Diversity

- Does the data gap or uncertainty decrease our ability to assess spatial structure and/or diversity?
- Could the data gap directly result in action which will increase spatial structure and/or diversity?

High	25 to 35
Moderate	15 to 24
Low	1 to 14
None	0

Scale of Applicability

- Local
- Population
- ESU

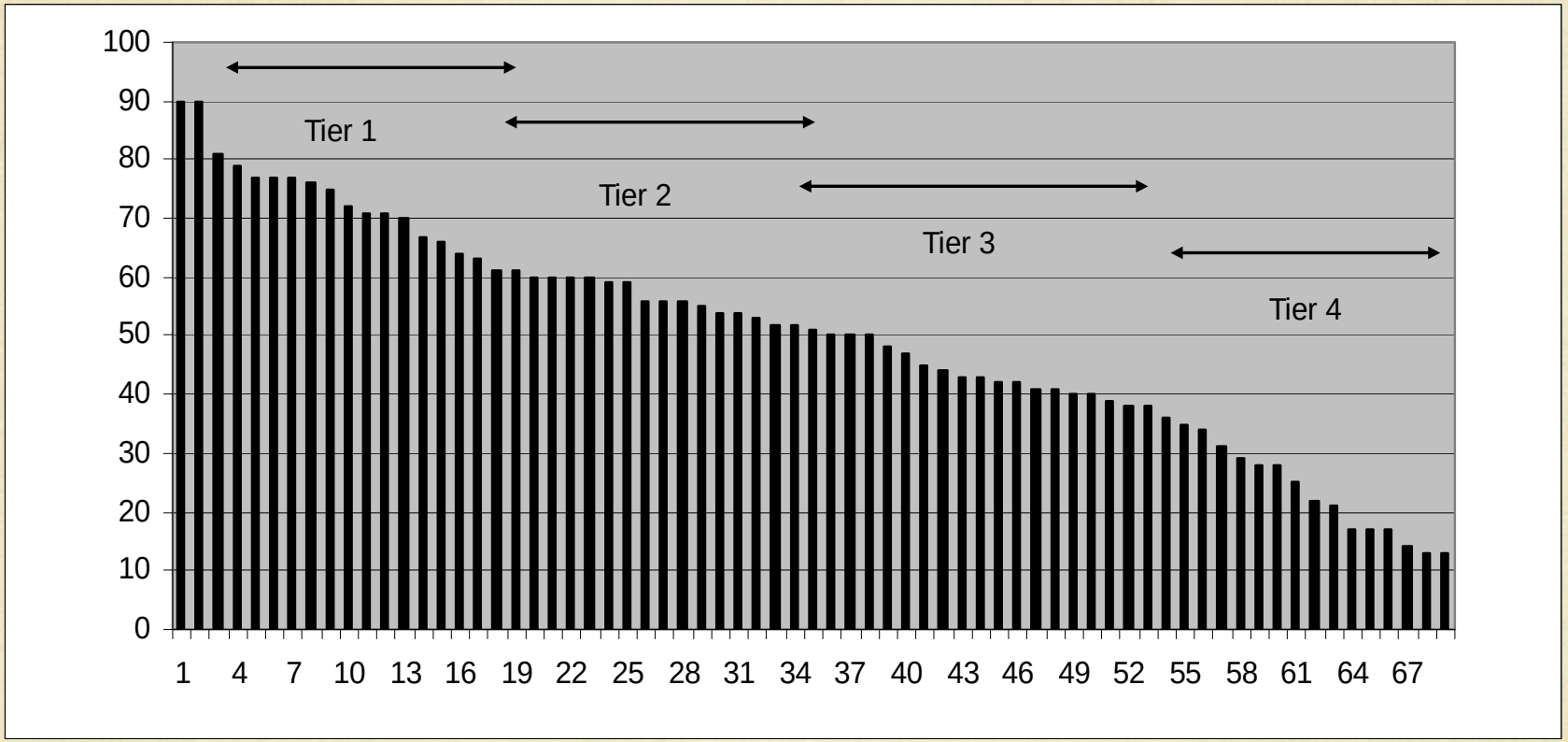
Local	2
Sub-basin (population)	5
Regional (ESU)	10

Use of Information

- Is the question answerable (i.e. does the technology exist?)
- Are there foreseeable management actions that may use the information?
- Will filling the data gap improve a fundamental scientific uncertainty?
- Has the information specifically been requested by management and/or policy makers?

High	10 to 20
Moderate	6 to 13
Low	0 to 5

Priority Tiers



Conclusions

- Each Region's approach to monitoring is unique and matched to local needs
- Regions play a key role identifying and supporting monitoring needs
- Regions generally do not do monitoring themselves
- Regions connect detailed local discussions with high-level state and NW-wide approaches

Regions & the Forum

- Regions can provide valuable input to the Forum on how agency monitoring proposals correspond with specific salmon recovery priorities across the state

- Regions can benefit from forum products that save us reinventing the wheel

Regions & the Forum

- Regions are focused on salmon recovery; there are important watershed health monitoring needs in the state that may not show up in regional organization priorities

- We are relatively small organizations that excel in our coordinating role; we do not have large staffs and our participation at the statewide level must be strategic