

Improving Water Resource Management Decisions through the 1-2-3 Framework

Presentation to
**California Water Quality Monitoring
Council**

November 30, 2011

Louisa Squires, Sr. Project Manager
Watershed Stewardship Division
Santa Clara Valley Water District



The Mission of the District

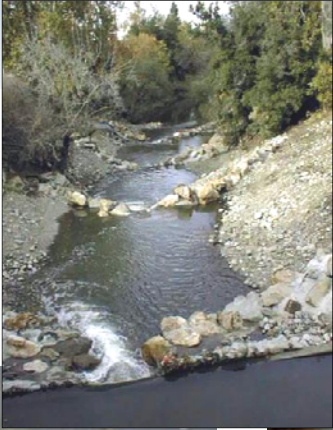
A healthy, safe, and enhanced quality of living in Santa Clara County through watershed stewardship and comprehensive management of water resources in a practical, cost-effective, and environmentally sensitive manner.

Stewardship: To entrust the careful and responsible management of the environment and natural resources to one's care for the benefit of the greater community

QMS Manual, Doc No. Q422D01

District's Ecological Monitoring & Assessment Framework

The goal is to provide cost-effective, scientifically-based, and integrated information on stream ecosystem health to inform asset management decisions



Ecological Monitoring & Assessment Framework

The Problem

Project-based Delivery Lacks Efficiency & Effectiveness

- Escalating ecological monitoring costs
- Limited ability to use ecological information
- Lack standards & integration
- Unpredictable & inconsistent regulatory outcomes

The Solution

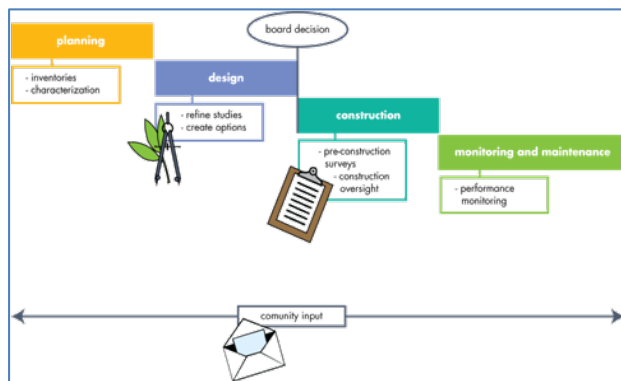
Shift from Project to Programmatic Strategy

- Ecological Monitoring and Assessment Framework
- Tailored USEPA 1-2-3 Framework

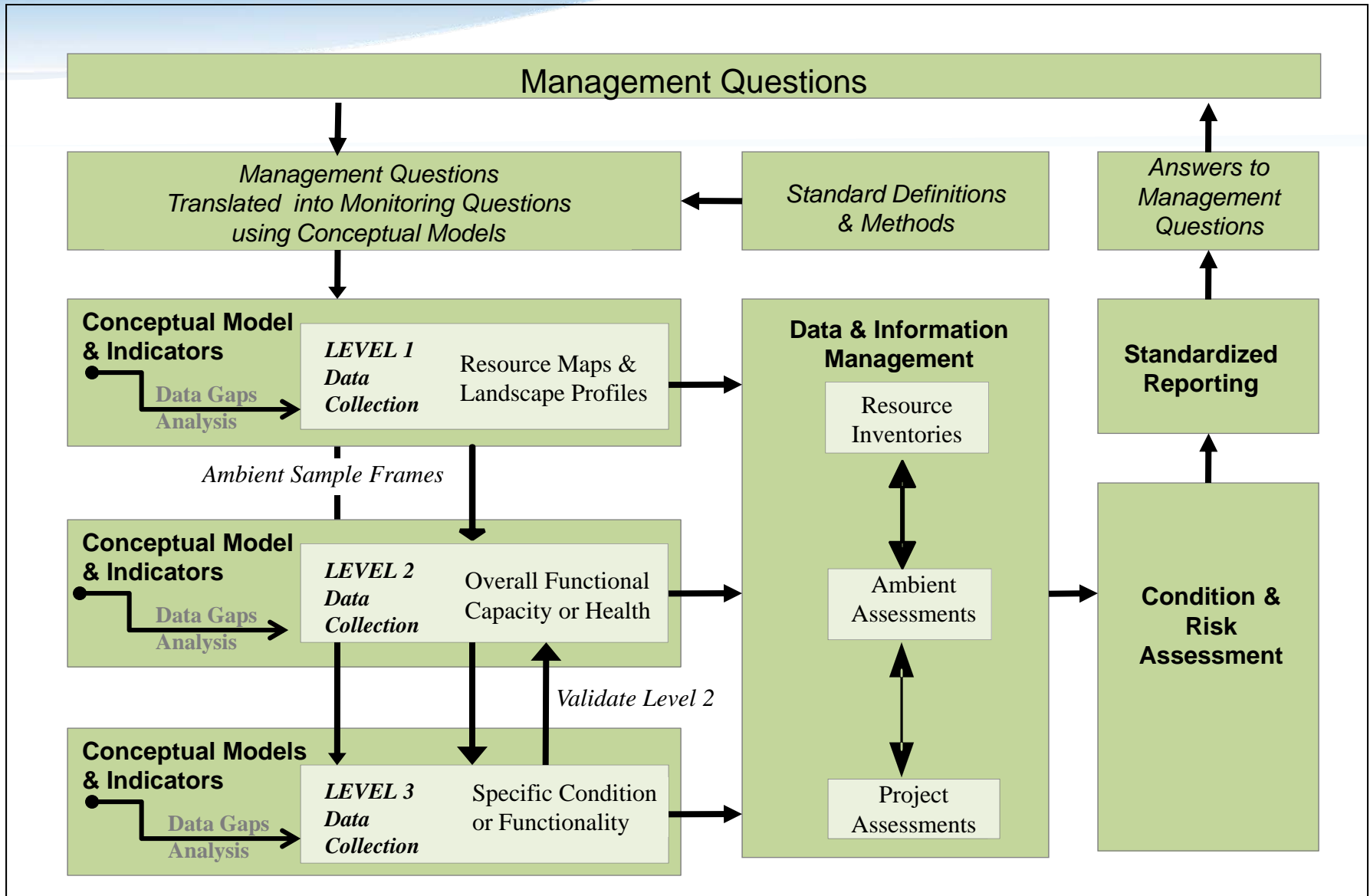
The Result

Informed & Cost-effective Asset Management Decisions

- Standardized toolkit
- Contained & relevant monitoring costs
- Synthesized stream condition information
- Stewardship Performance Monitoring
- Informed investment decisions
- Common communication framework



1-2-3 Framework Overview



Resource Management Questions

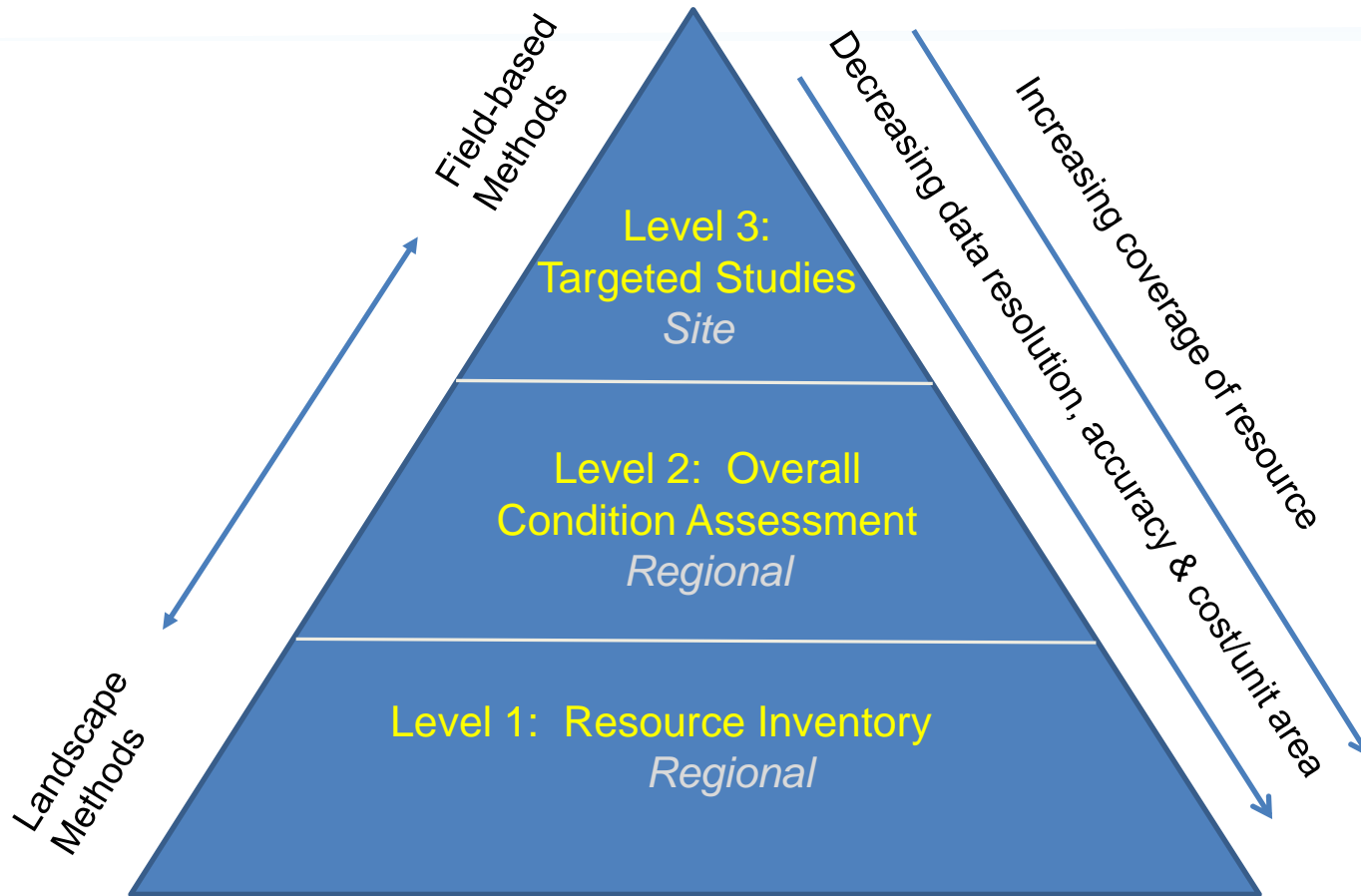
Standardized Core MQ's

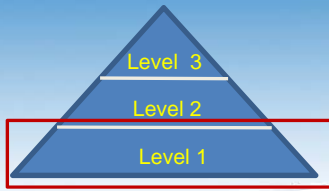
- What is the extent and distribution of stream ecosystem resources?
- What are the conditions of stream ecosystem resources?
- What are the risk to stream ecosystem resources?
- What are the monitoring and management actions could improve stream ecosystem conditions and reduce risk?

Watershed-Specific MQ's Examples (Level 3)

- How are the mitigation sites performing in relation to the streams in the watershed?
- What are the optimal locations for steelhead enhancements to promote juvenile rearing?
- Do partnership efforts appear to have improved physical stream structure?

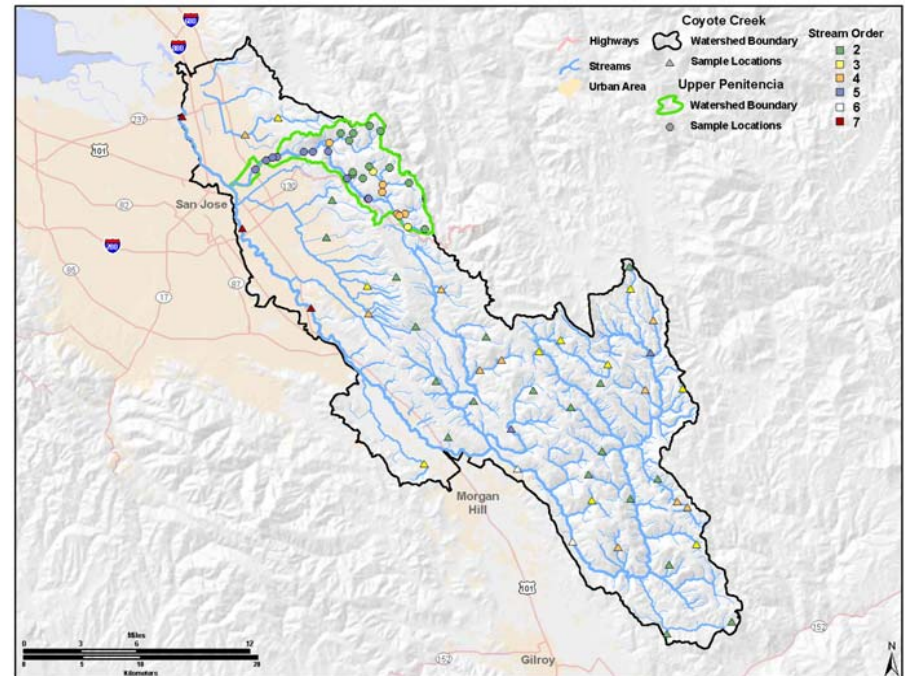
1-2-3 Framework

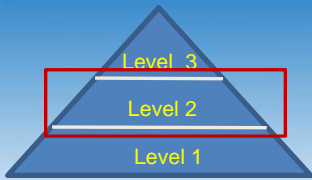




Level 1 Inventory of Riverine Wetlands

- Distribution and extent of riparian ecosystem in Santa Clara County
- Defines District Primary Area of Interest
- Base map for selecting representative assessment sites for Level 2



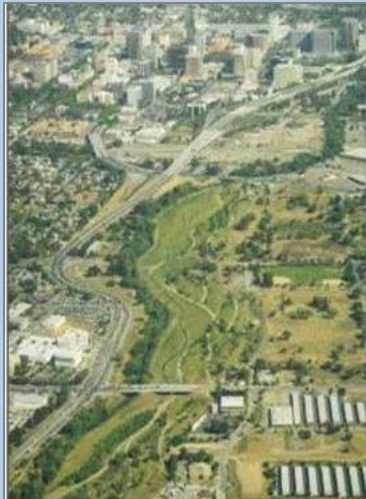


Measuring Overall Stream Condition

California Rapid Assessment Method (CRAM)

Riparian Wetland
Condition

Landscape Context



Hydrology



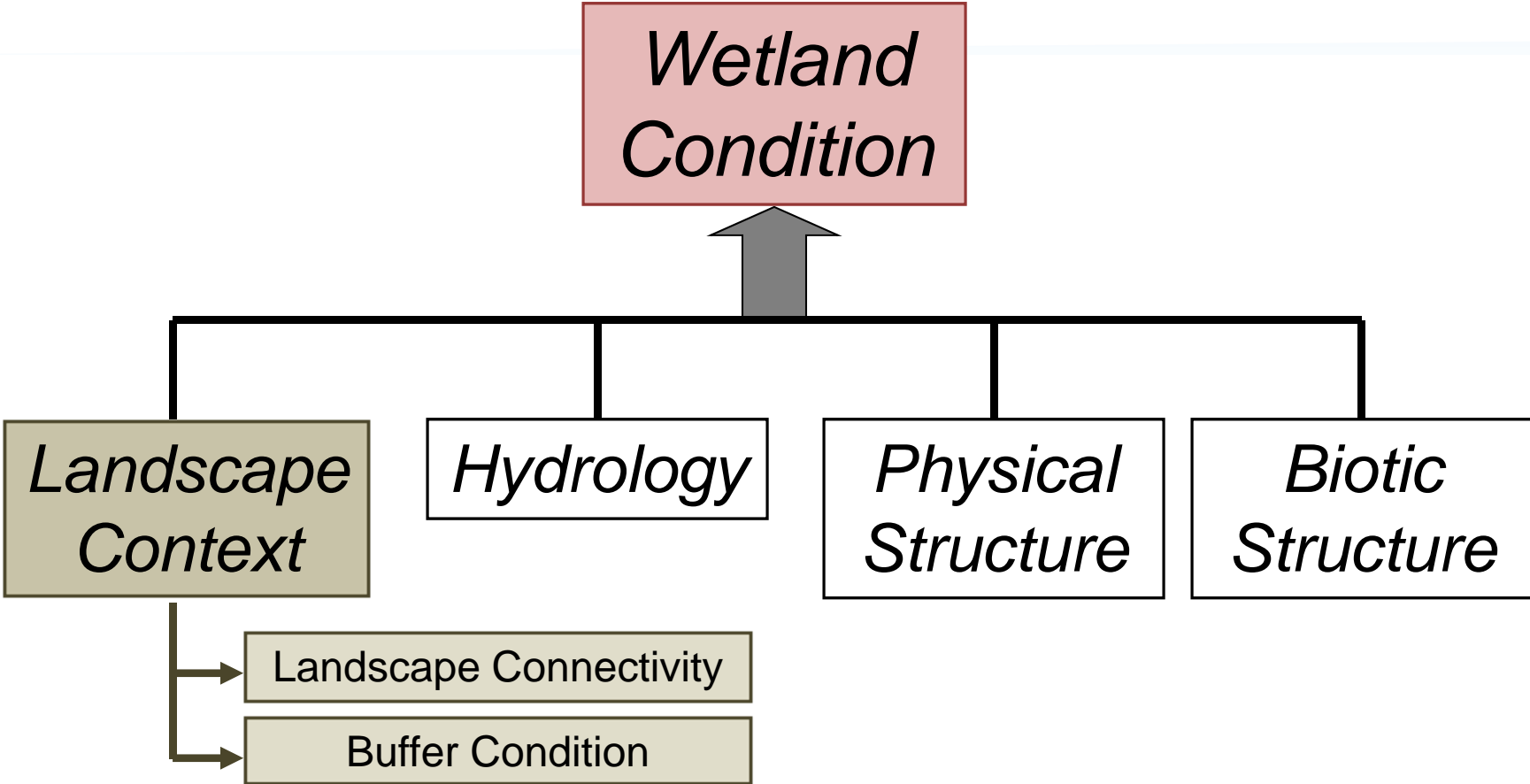
Physical Structure



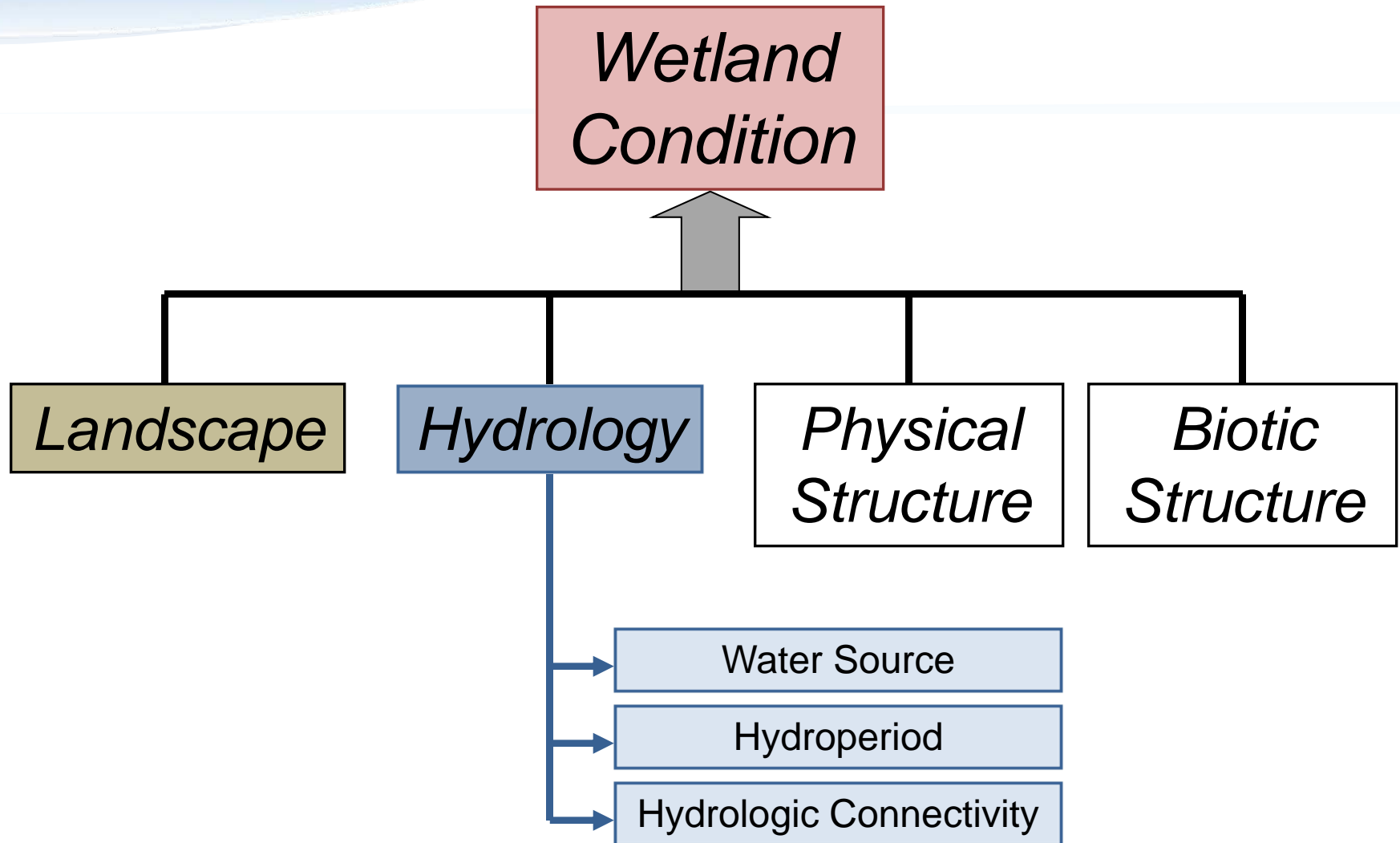
Biotic Structure



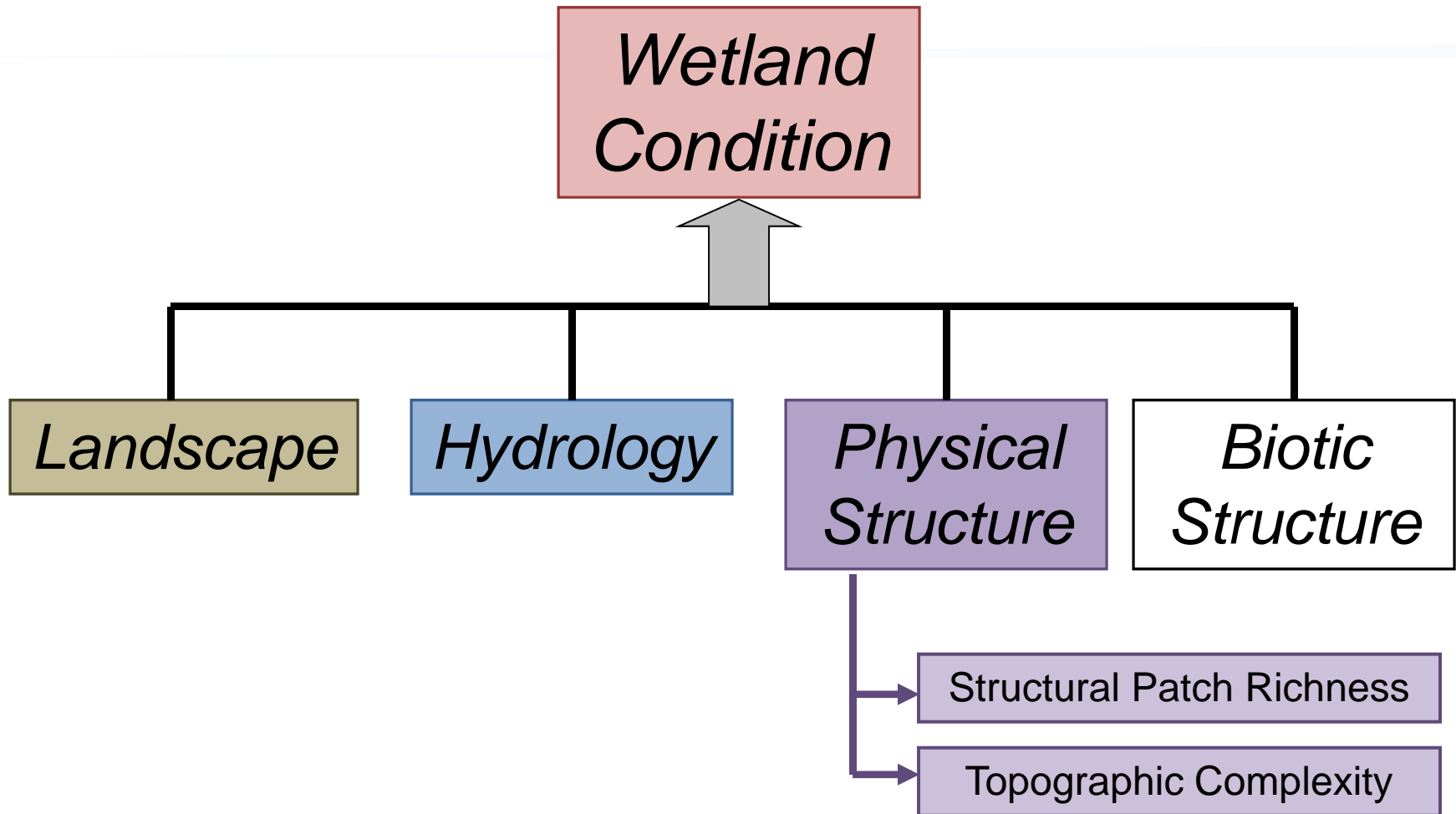
CRAM Attributes & Metrics



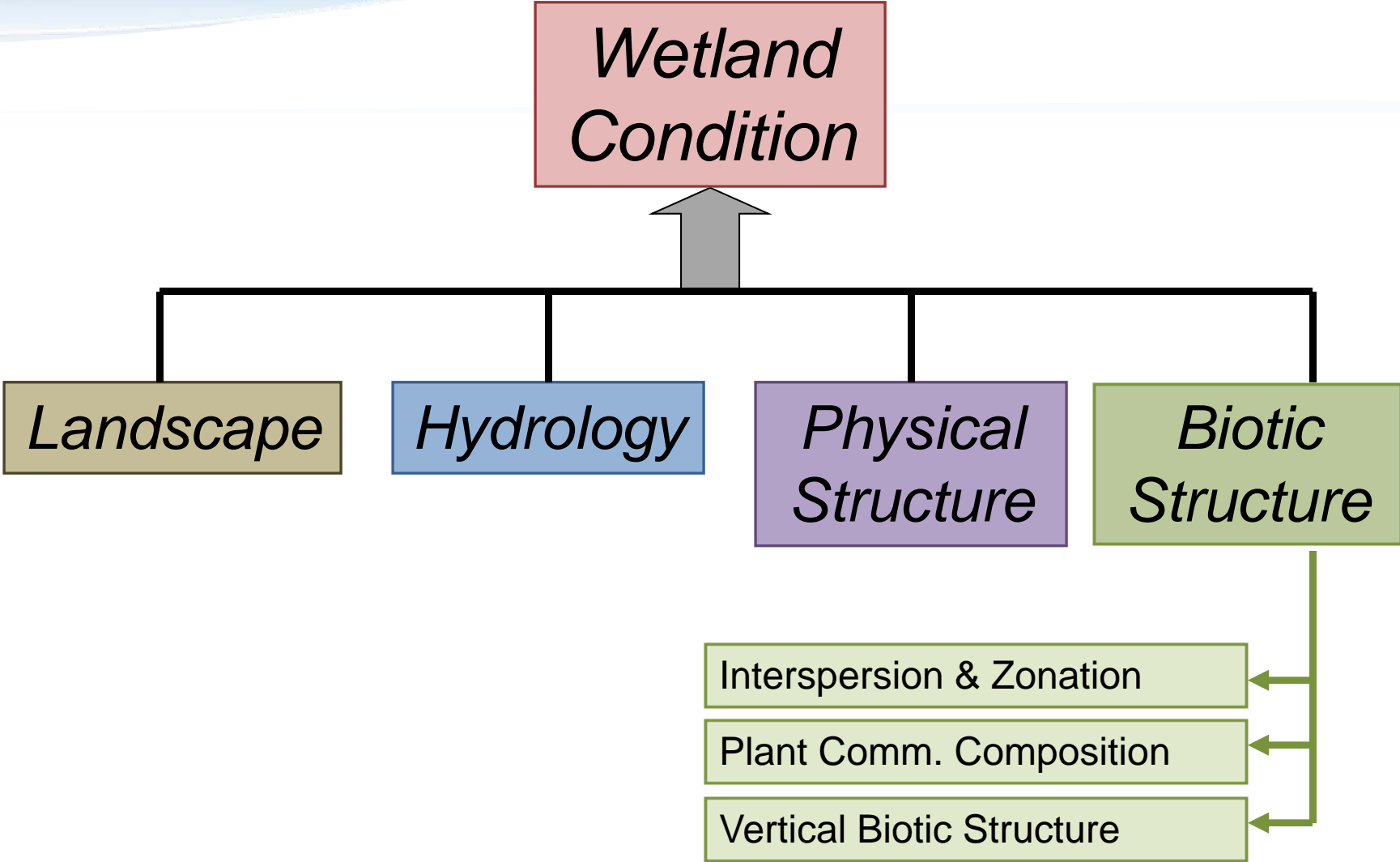
CRAM Attributes & Metrics



CRAM Attributes & Metrics

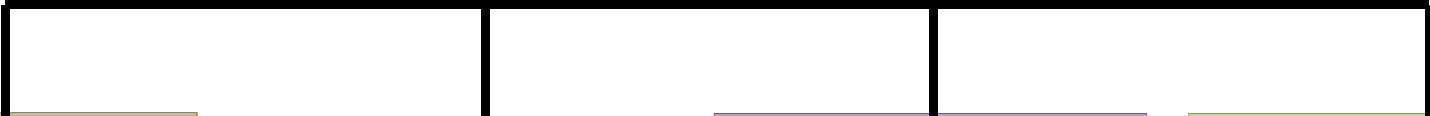
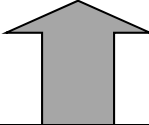


CRAM Attributes & Metrics



CRAM Attributes & Metrics

Wetland
Condition



Landscape

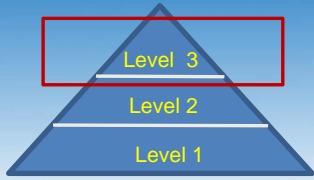
Hydrology

Physical
Structure

Biotic
Structure



Stressors



Level 3: Targeted-site Monitoring

- Intensive, quantitative, site-specific ecological data
- Pertain to specific aspects of ecological processes and functions
- Project-specific performance monitoring (e.g., mitigation monitoring) and special studies
- Leverage external data (e.g., SCVURPPP)



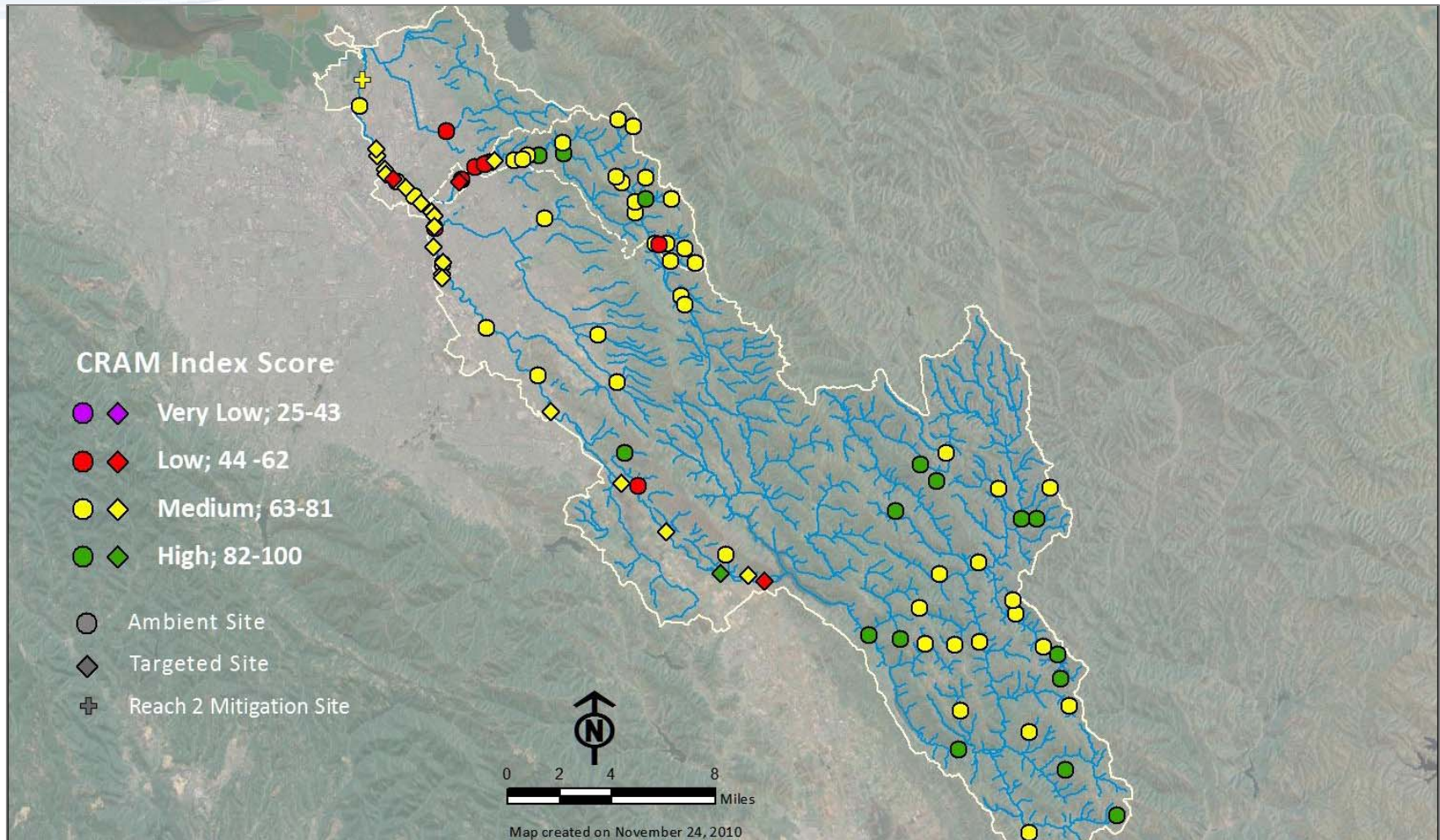
Reporting on Stream Condition

Coyote Creek Watershed Pilot



- 2011: First assessment in the Coyote Creek Watershed using the Framework
- Demonstration of Framework & lessons learned
- Emphasis on Levels 1 and 2
- Ambient condition of streams:
 - Coyote Creek Watershed
 - Upper Penitencia Creek Subwatershed
- Stream Ecosystem Condition Profile

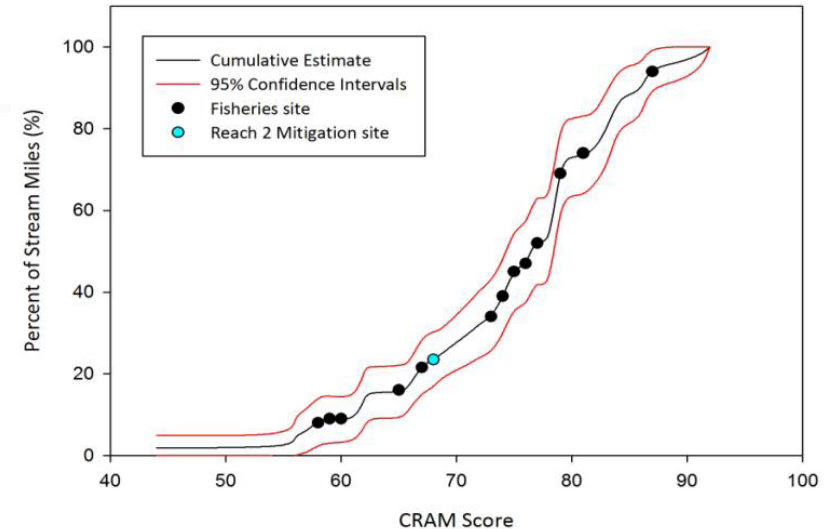
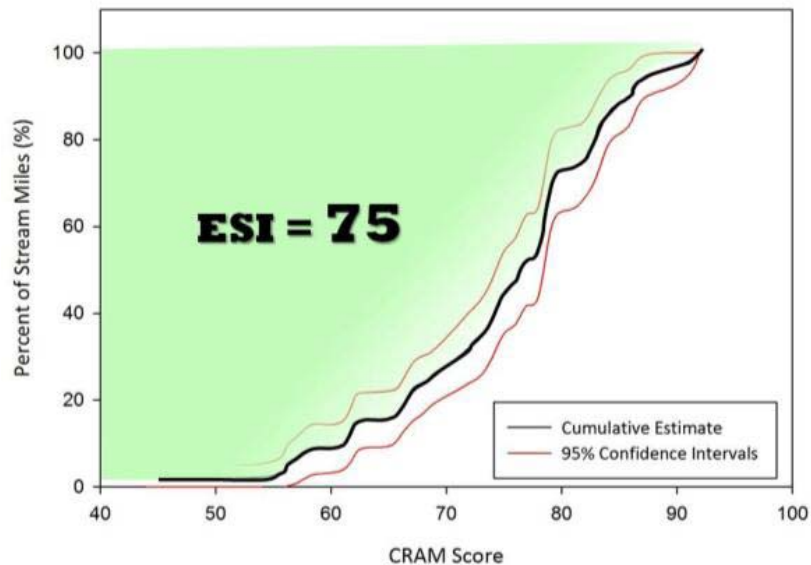
Coyote Creek Watershed Pilot Assessment Site Distribution



Coyote Creek Watershed Pilot Assessment & Reporting Tools

Cumulative Distribution Function (CDF)

- Summarize CRAM data using CDF's
- CRAM scores as proportion of stream miles
- Better stream condition—CDF shifts to right
- Compare targeted sites to watershed scores

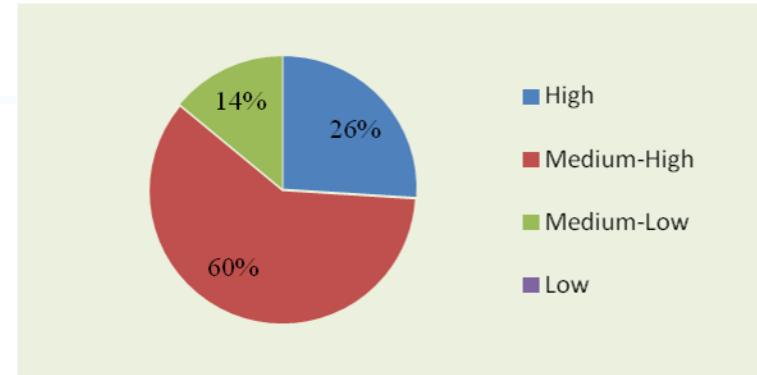
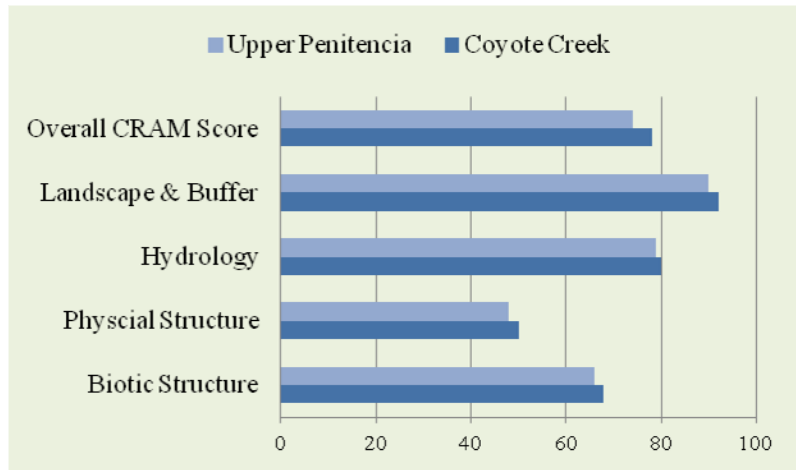


Ecological Services Index (ESI)

- Establish targets for stream condition
- ESI: area weighted average of all CRAM scores in the CDF
- Tool to track stream ecosystem condition over time

Coyote Creek Watershed Pilot

- Of 2,830 miles of stream, District owns 76 miles (<3%)
- Ecological Services Index: 75
- 86% of stream miles in high or medium-high condition
- No stream miles in lowest condition category



- Attributes of stream condition scored moderately high, except physical structure
- Lowest scores: Middle reaches Mid-Coyote, adjacent development, poor hydrology condition, invasive plant species.
- Highest scores: urban transition zone, development risk

Framework Implementation Profile Recommends Actions

ACTIONS NEEDED	WHO NEEDS TO DO IT?		
	SCVWD	Municipal	Other
Alter management of impoundments -- flushing of aggraded sediment	✓		
Flood Protection Projects: Mid-Coyote -- increasing gradient and floodplain connectivity. Upper Penitencia Creek -- enhance physical structure. Lower Silver--address high turbidity Lake Cunningham-- restore riparian and wetland areas	✓		
Maintain existing urban growth boundaries.		✓	
Implement and enforce riparian and wetland protection policies and ordinances		✓	
Urban development plans and land management actions: provide opportunities to enhance wetland and riparian areas and achieve flood control and water supply objectives.		✓	
Ranchland best management practices to prevent livestock over grazing			✓

Framework Implementation

Putting the Profile to Use

- Establish targets for stream condition
- Evaluate the Boards ends policy to protect creek & bay ecosystems
- Guide investment decisions on actions to maintain and improve stream condition
- Provide basis for public input on stream goals, priority projects, and funding
- Guide decisions to fill priority data gaps
- Guide design, management and assessment of projects
- To share stream ecosystem condition information with public, land use agencies and the environmental resource agencies.



Questions?

Contact:

Lsquires@valleywater.org

(408) 439-8639

Acknowledgements

Project done under contract
with EOA, Inc. & San
Francisco Estuary Institute

EMAF Technical Plan:

<http://www.valleywater.org/Services/HealthyCreeksandEcoSystems.aspx>

Coyote Creek Watershed Streams Assessment Pilot Report:

<http://www.valleywater.org/Services/Coyote.aspx>