

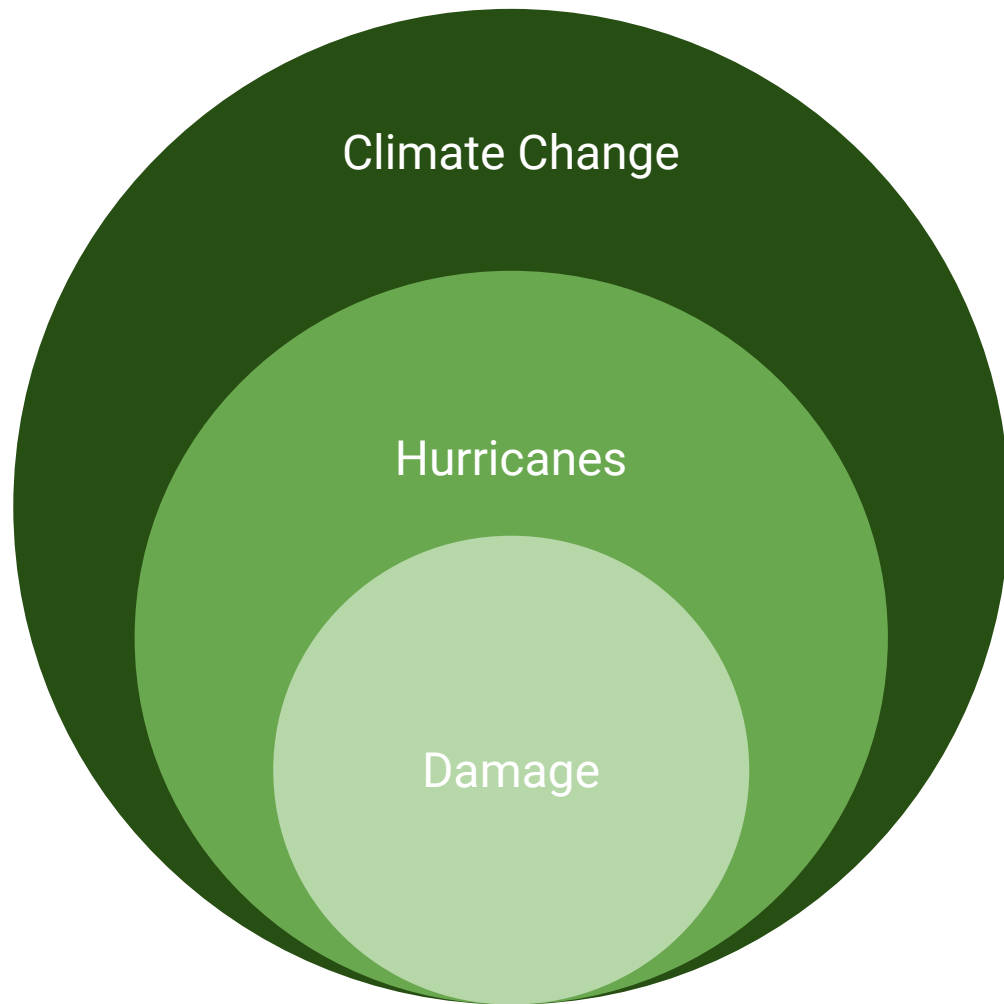
# Restoration in El Yunque National Forest: Riparian Corridor Assessment and Prioritization

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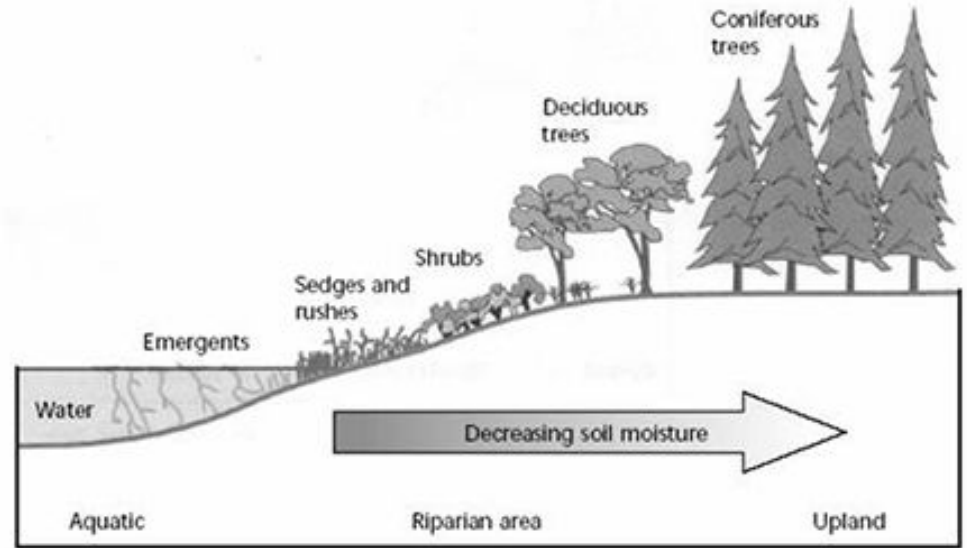
Jared DeMaio, Jason King, Matt Schmitt, Steve Wood



WPI



# Riparian Corridors



# Riparian Health vs. Hurricane Impact

- What makes them healthy?
- How exactly are they affected by hurricanes?

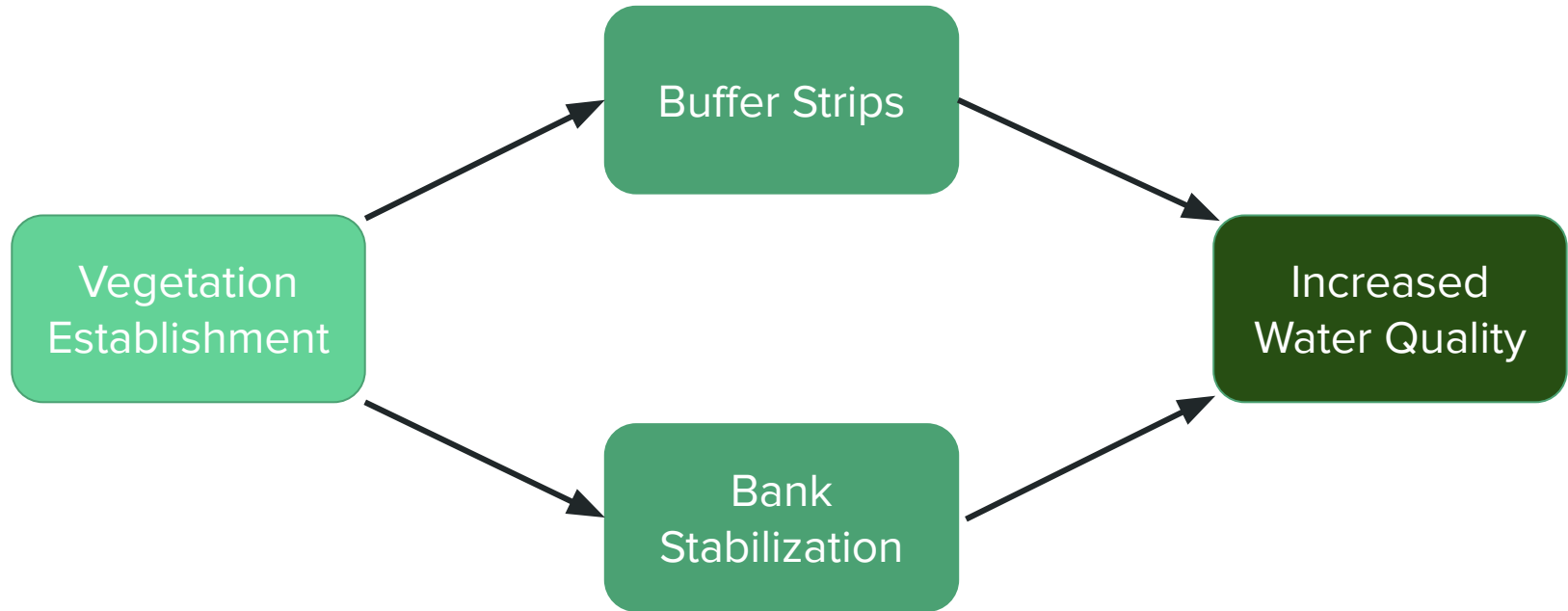


Image Source: [www.ndhealth.gov](http://www.ndhealth.gov)



Image Source: <https://www.radionz.co.nz>

# Riparian Restoration Efforts



# Assessment Protocols

Procedures used to assess primary stream and riparian functions in a particular riparian area by evaluating its physical habitat, water quality, and channel morphology.





# Community Input



Image Source: [www.landequity.com.au](http://www.landequity.com.au)

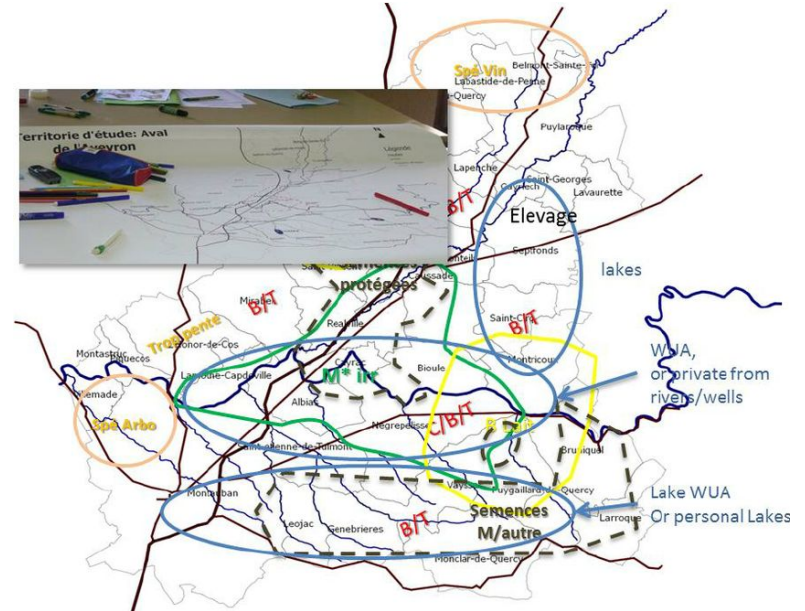
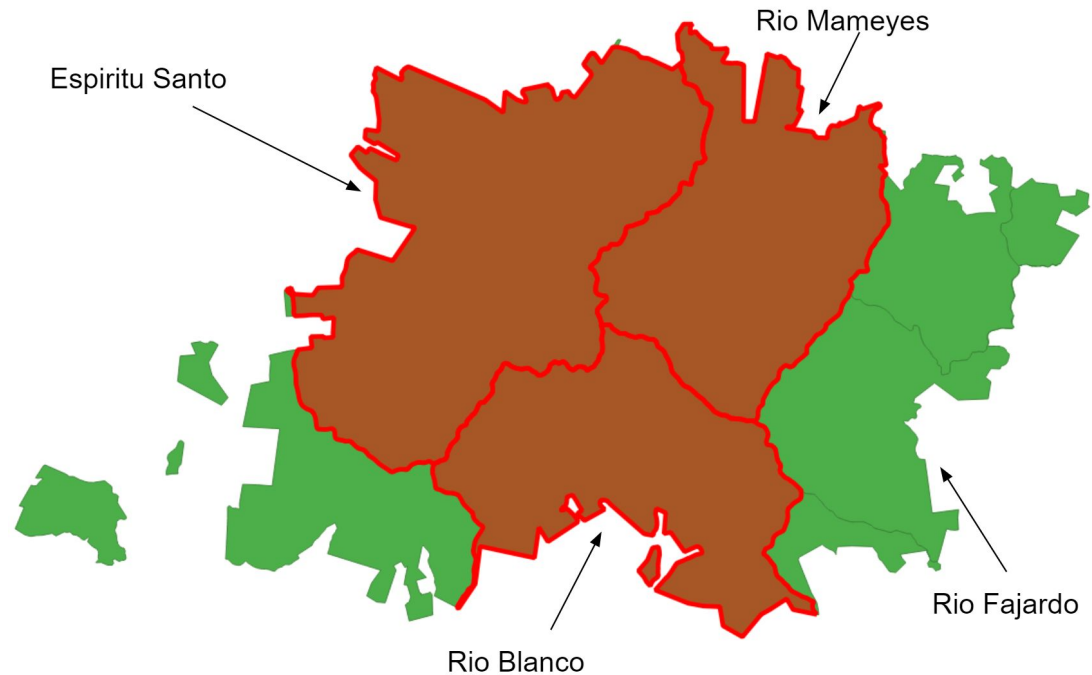


Image Source: [www.researchgate.net](http://www.researchgate.net)

# El Yunque National Forest

- Contains 2,100 acres of Riparian Zones
- Severely damaged by Hurricanes Irma and Maria





## El Yunque (Cont.)

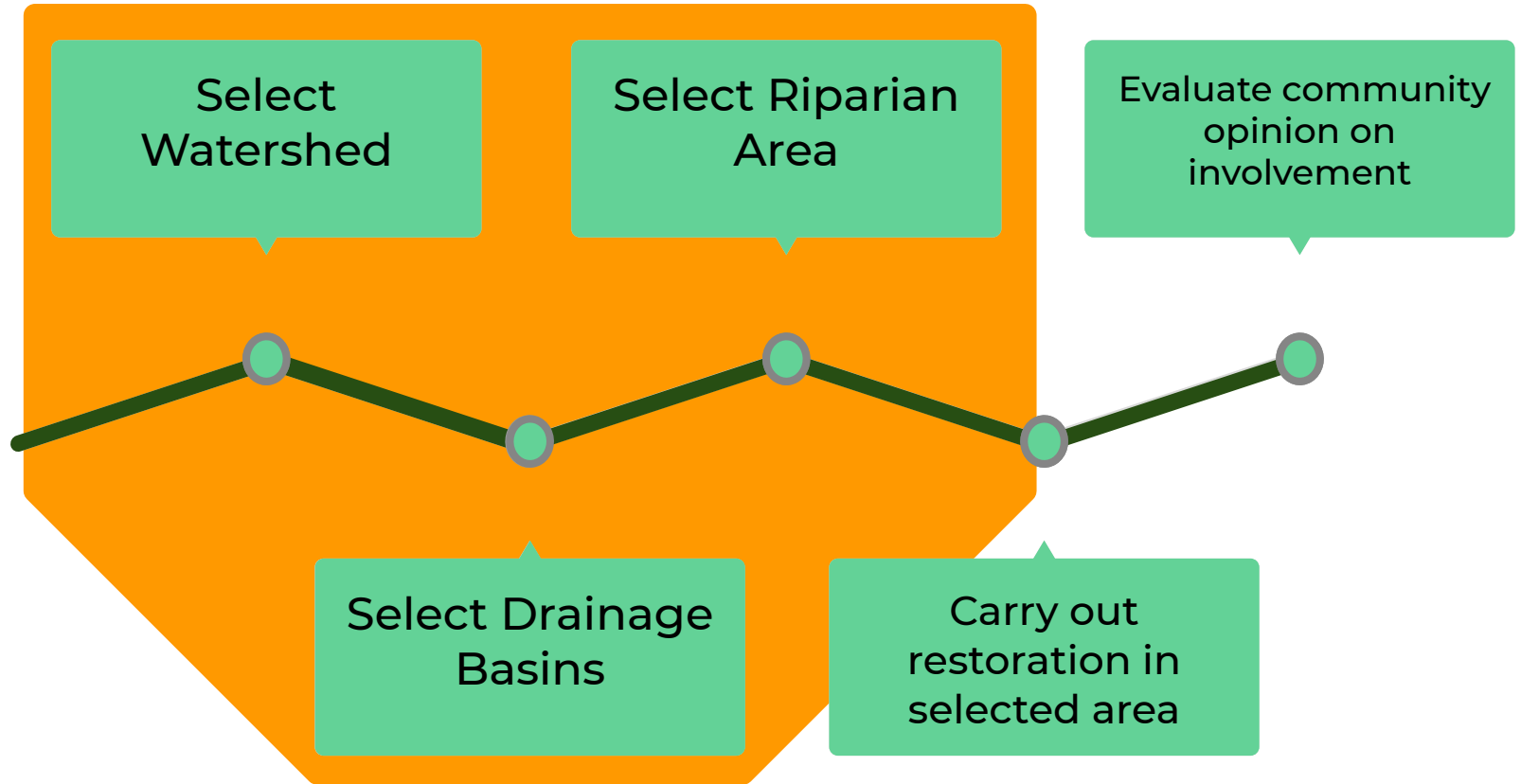
- Community Benefits
- Past Shortcomings
- New Revised Land Management Plan

# Our Goal

We plan to develop a guide that supplements the technical components of an existing assessment protocol through inclusion of community input

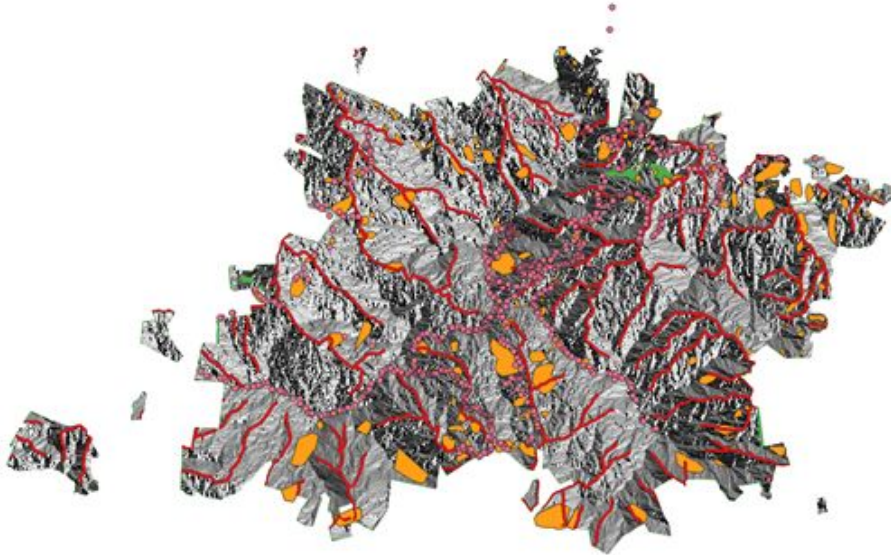
*Can be used globally in restoration of riparian areas  
in tropical environments*

# Objectives

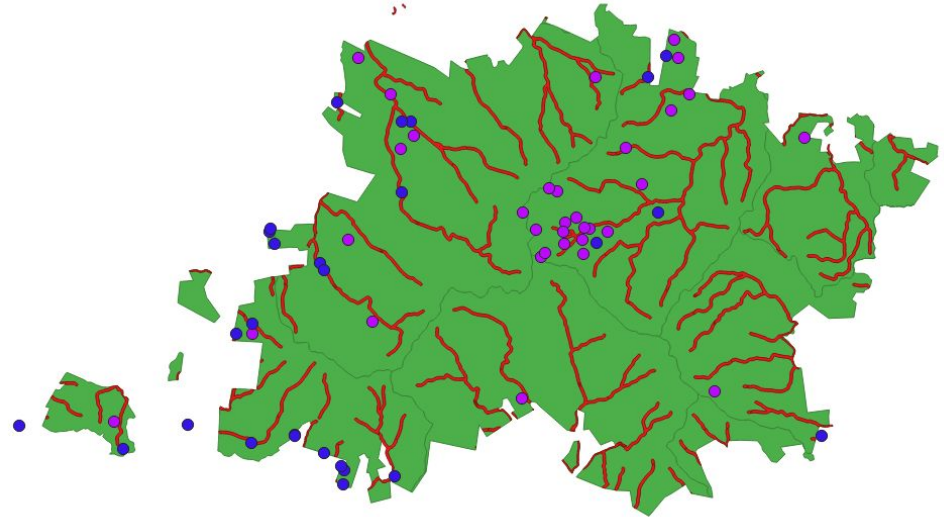


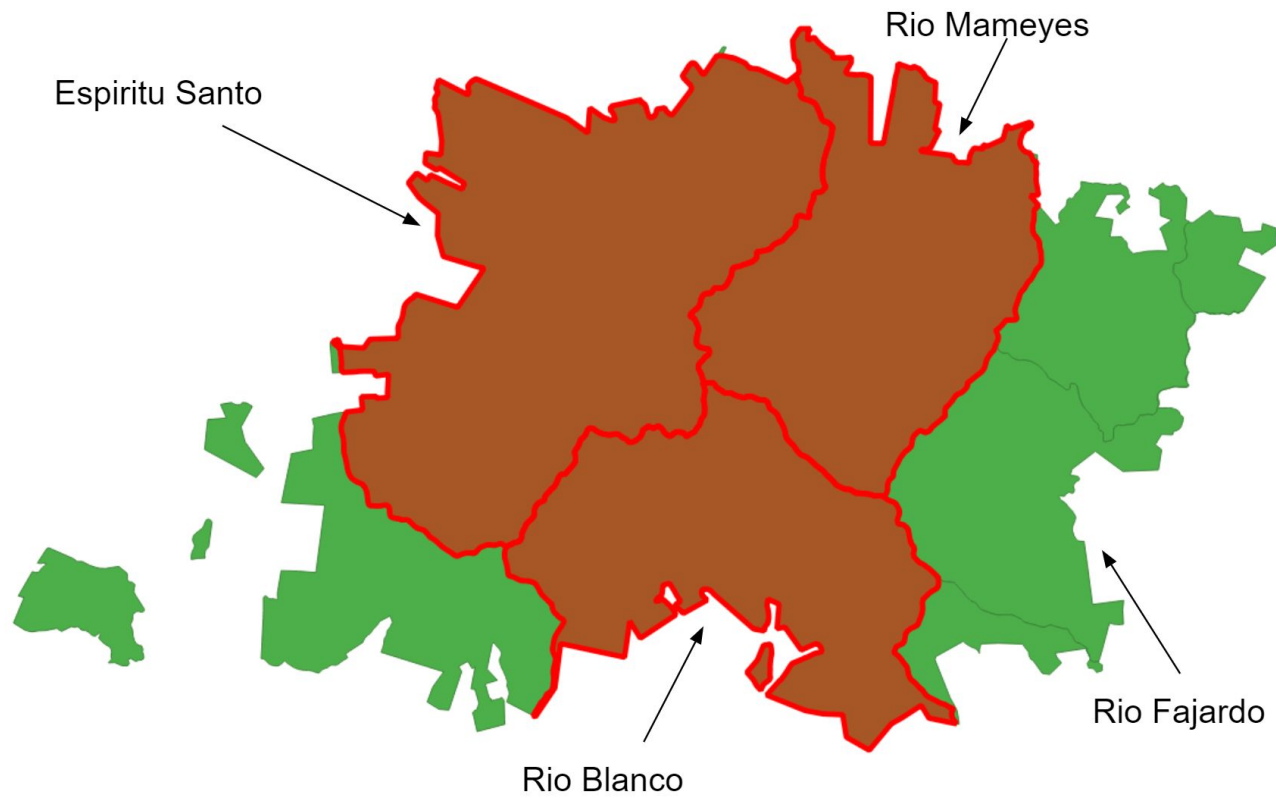
# Watershed - GIS Mapping

Ecological Data

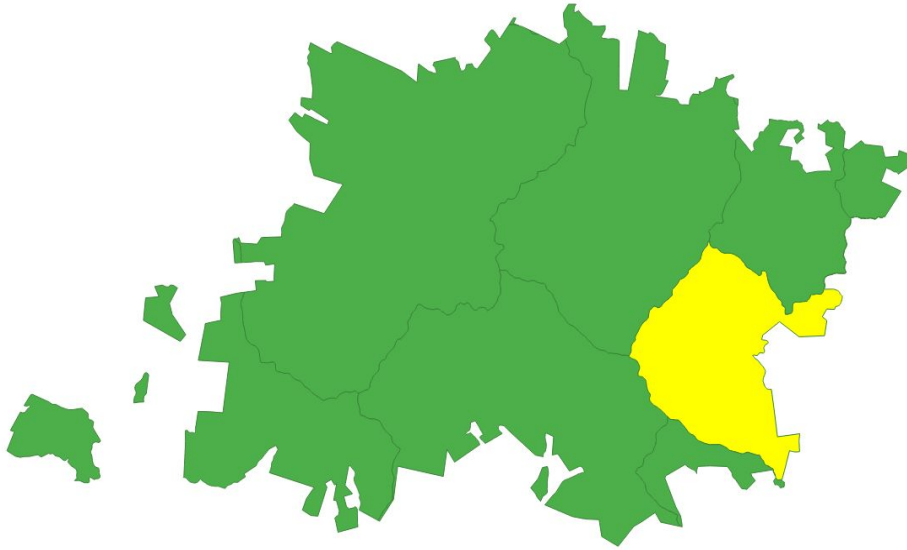


Socio-economic Data





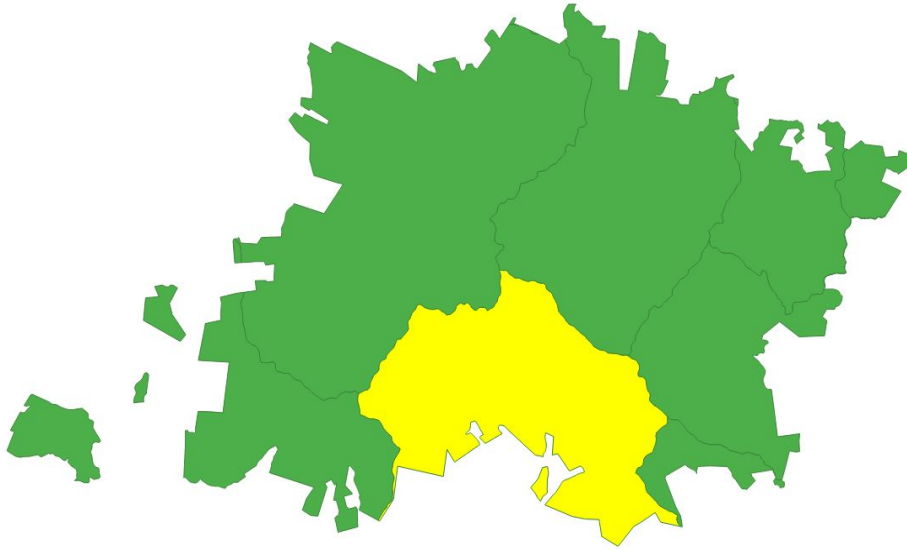
# Rio Fajardo



- + PLN's favored watershed
- Not "Functioning at Risk"
- 17% of watershed is under Forest Service jurisdiction

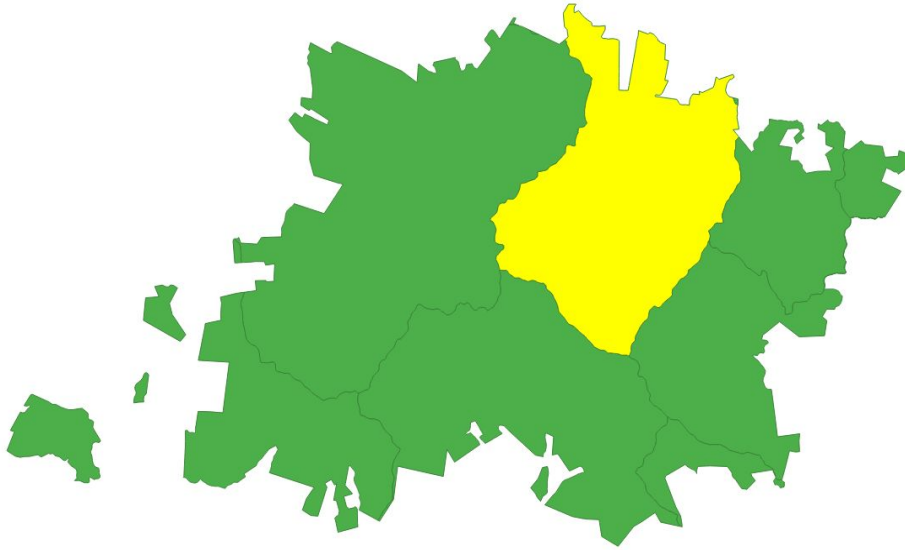


# Rio Blanco



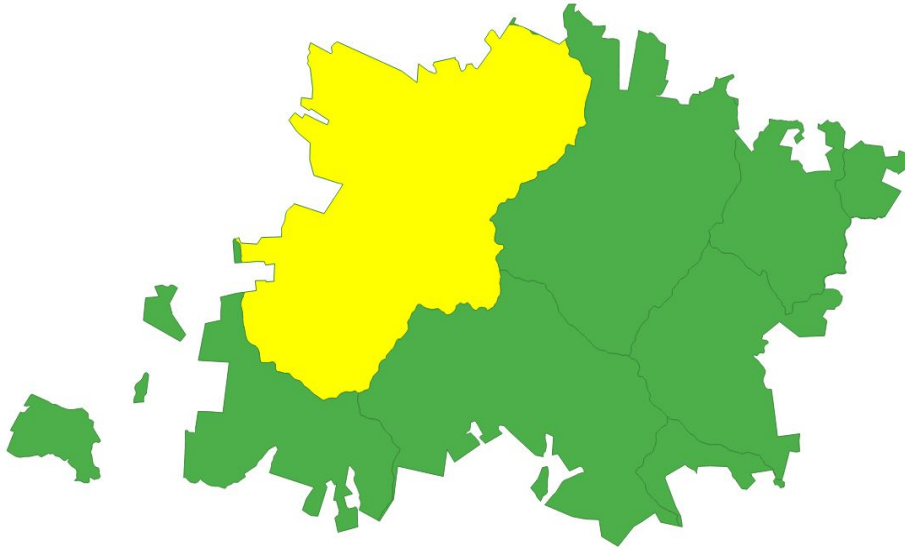
- + Most seriously damaged
- Road access blocked by landslide
- Quartz Diorite

# Rio Mameyes



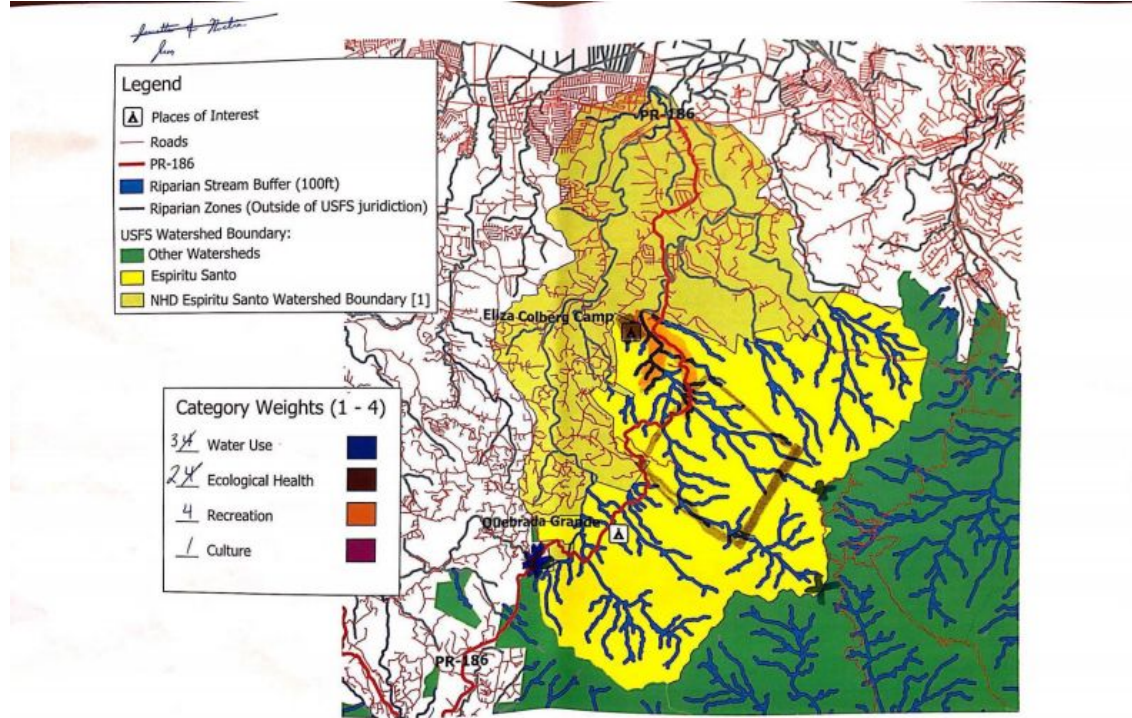
- + Highest tourism significance
- + Access via PR 191
- Will see restoration attention due to high tourism

# Rio Espiritu Santo

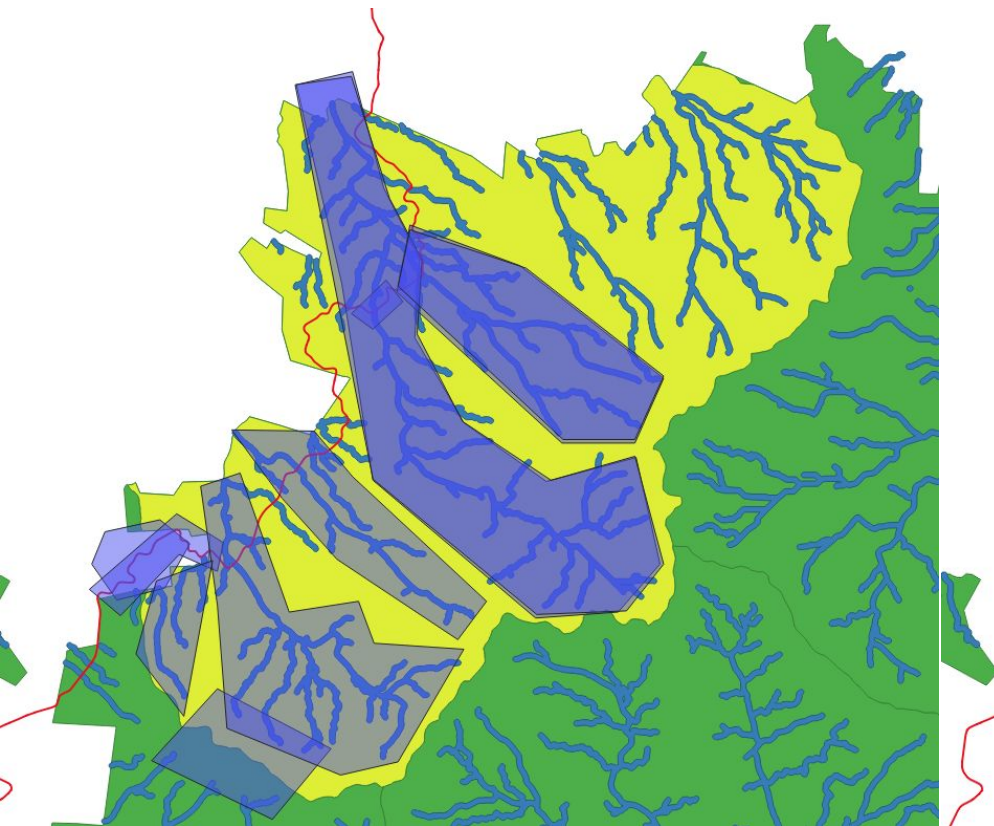


- + Close proximity to communities
- + 9 water intakes
- + Access via PR 186
- Not in NEPA

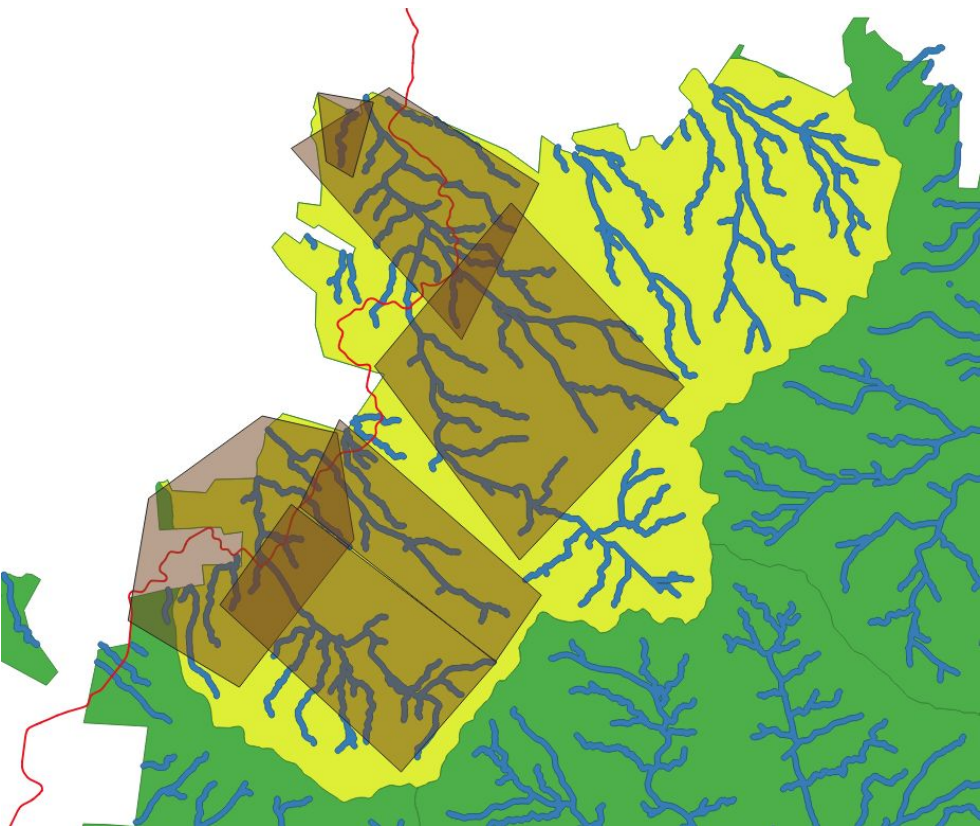
# Interviews & Participatory Mapping



## Water Usage

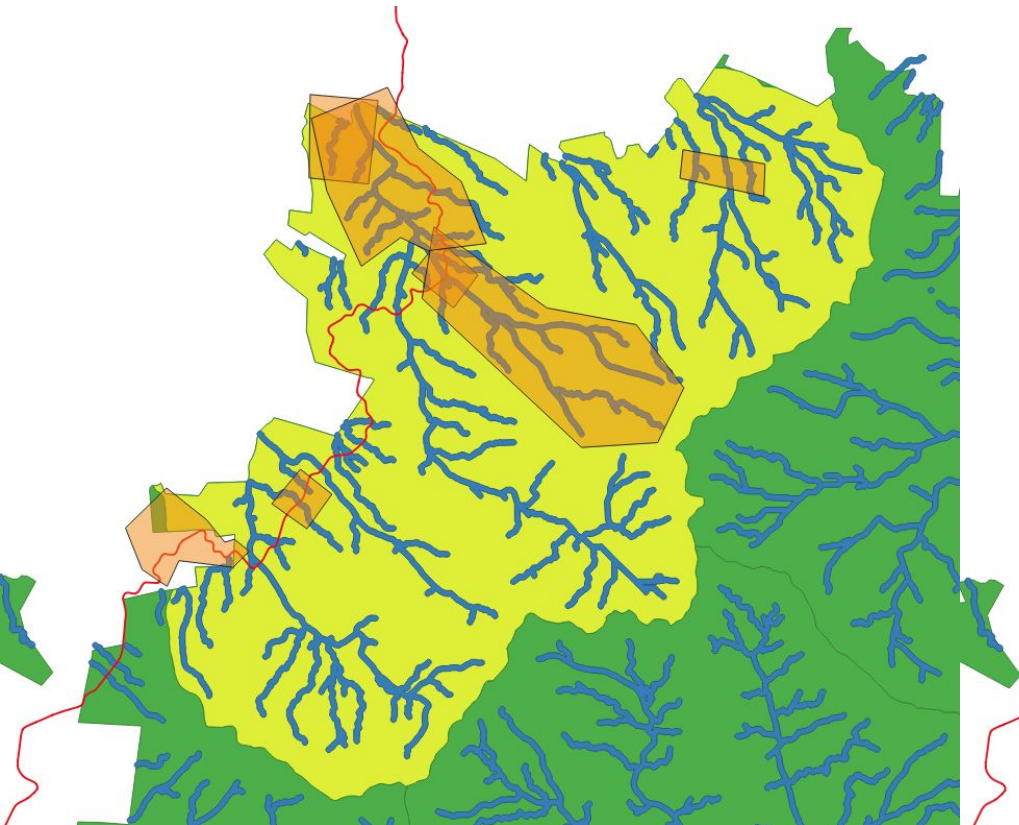


## Ecological Health

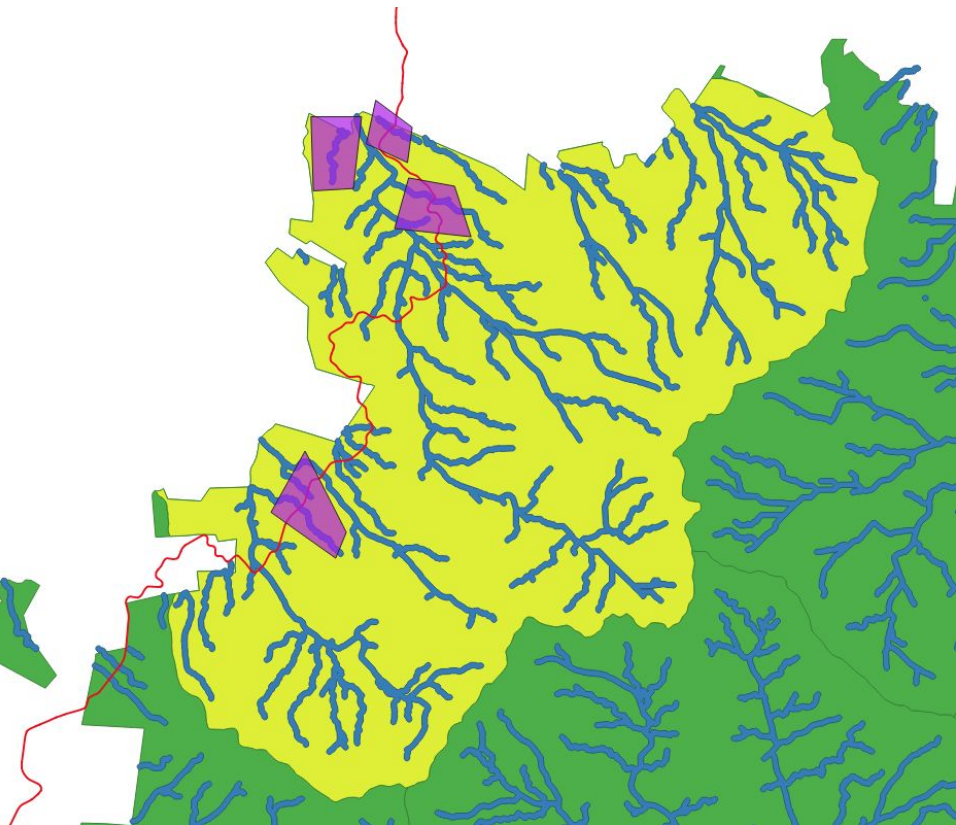




## Recreation

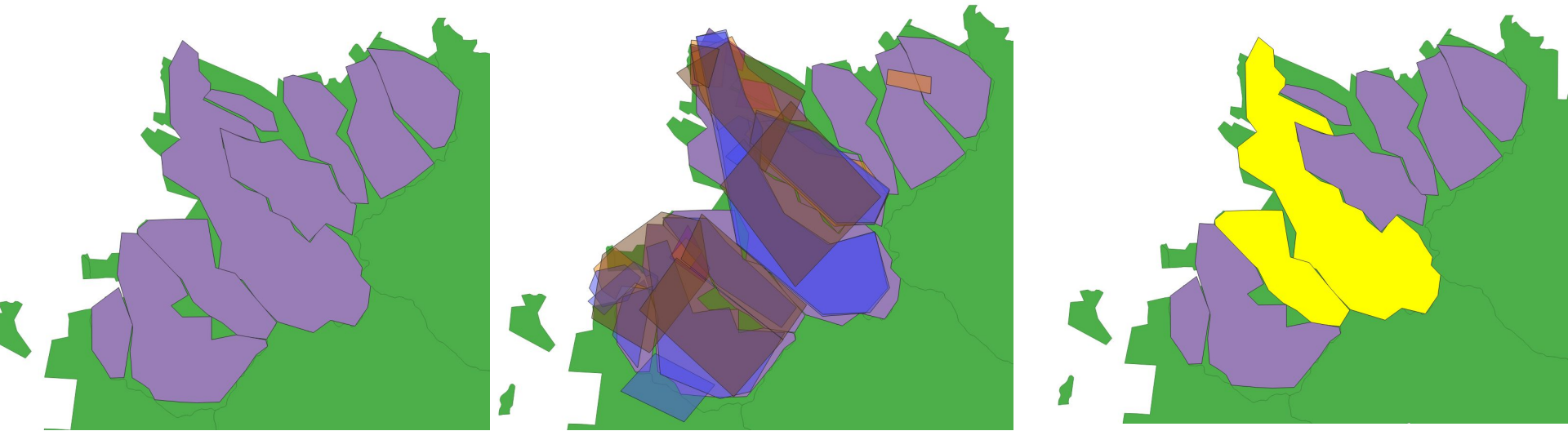


## Culture

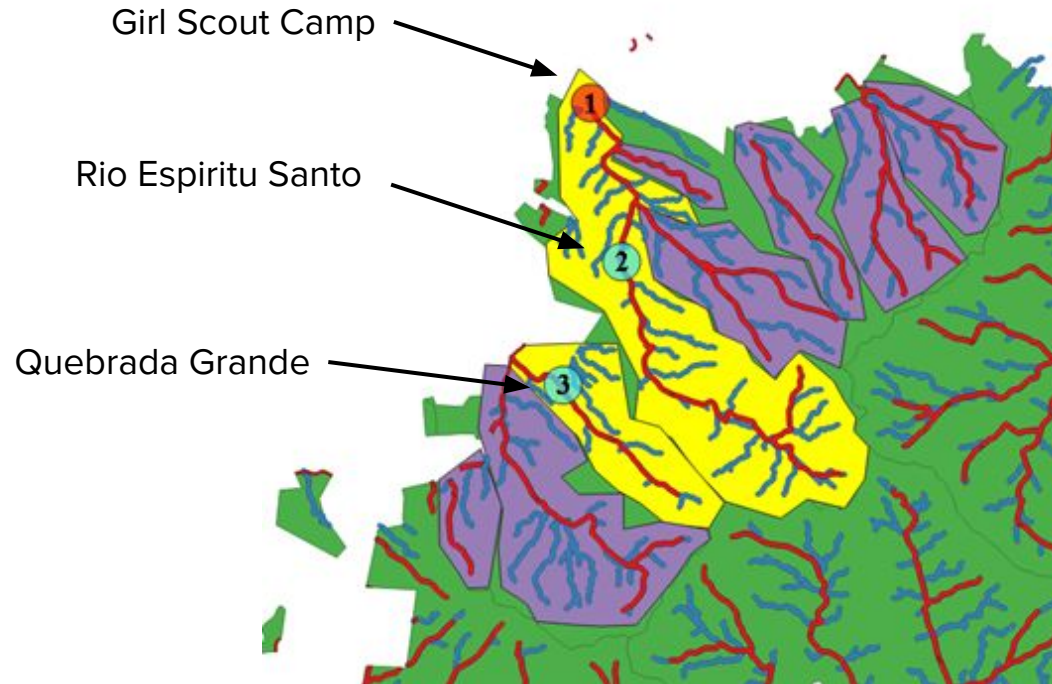




# Basin Selection



# Riparian Assessment Sites



# Riparian Area Assessment

- Generated protocol with expert help
- Implemented at three locations



Girl Scout Camp



Rio Espiritu Santo



Quebrada Grande

2:36 PM Wed Apr 17 My Survey

vegetation diversity

☐ yes

☐ no

dominant\_type

☐ Tree dominated

☐ Shrub dominated

☐ Herbaceous dominated

☐ No dominant vegetation type

% shrubs

% forbs

% grasses

% trees

% canopy cover

canopy cover levels dominant

☐ <3 ft

☐ 3-5 ft

☐ >5 ft

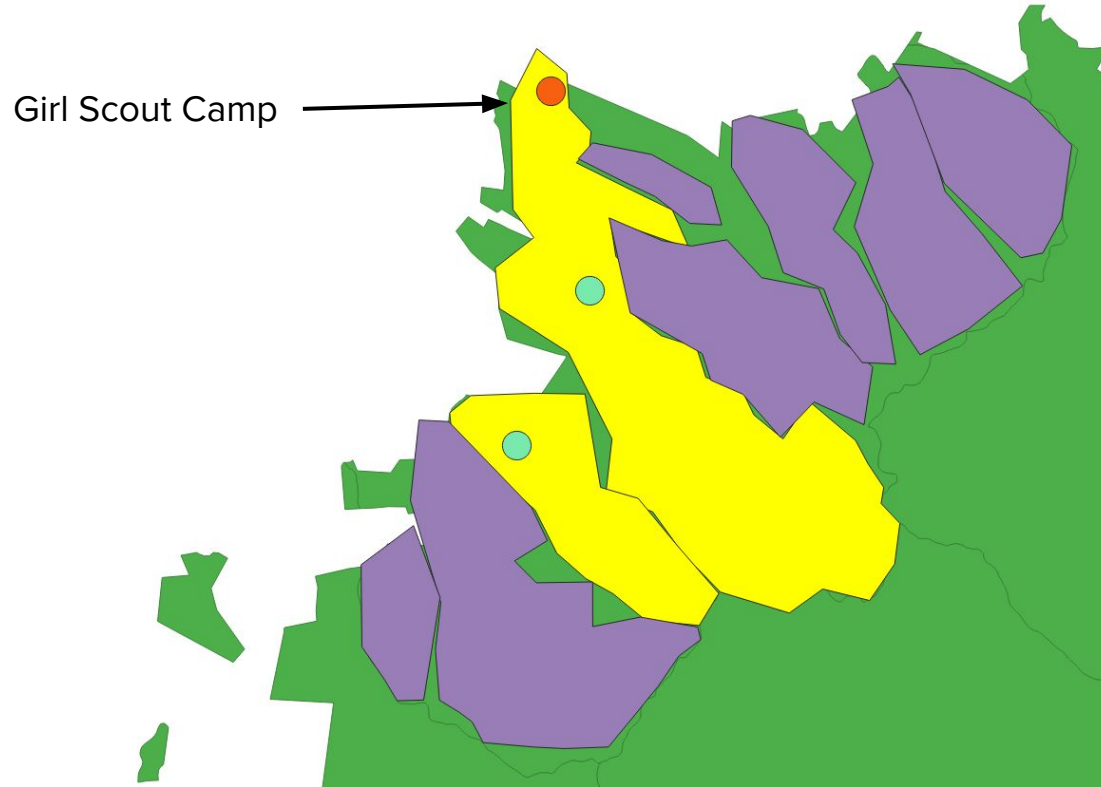
canopy\_condition

☐ stressed

☐ vigor

revegetation signs

# Riparian Area Selection





# Restoration Project



# Keeping Community in the Loop

- Community members wanted to know how their input ended up being used
- Sent out briefing to all those interviewed
- Input will be used to improve our recommendations and guide



# Recommendations

- Introduce a preliminary info session
- Broaden scope of information gathered to entire watershed
- Partner with outside organizations
- Gather feedback and keep community updated after project

# Acknowledgements

Pedro Rios

Dr. Lizandra Nieves-Rivera

Dr. Ricardo Santiago

Robertito

Bobby

Victor

Baby

Dr. Nick Williams

Questions?

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