Forestry Management & Water Law

Comparing Ecuador & Arizona

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Ecuador’s Paute River Basin

Rainfall regimes in the Paute River basin spatial regions BM1, BM2, UM1, and UM2.
Arizona’s Verde River Basin

https://en.wikipedia.org/wiki/Verde_River
Relationship Between Forestry Management & Water Supply

• Potential Benefits
  – More Mature Forests
  – Limit Wildfire & Insect Infestation Risk
  – Erosion/Runoff Impacts to Water Quality
  – Increase Stream Flow

• Potential Costs
  – Limit key nesting areas
  – Expose river banks to grazing animals
  – Uncertain/Limited Return on Investment
  – Burning for fuel or use in paper production have environmental impacts
Overview of Water Law in Ecuador

• Sumak Kawsay
• SENAGUA
• Water Utilities: compare EPAMAPS, ETAPA, & INTERAGUA
• 2008 Constitution
• Water Juntas
Prior Appropriation

First-in-time, First-in-right
Beneficial Use Without Waste
Forfeiture – use it, or lose it
Diligence & “Relation-Back”
Call on the River & the Futile Call Doctrine
General Stream Adjudications
Managing Groundwater

The AZ Groundwater Management Act of 1980

Historical Background
Active Management Areas
Assured Water Supply
Groundwater Rights in Active Management Areas
Groundwater Recharge
Central Arizona Groundwater Replenishment District

courtesy: Arizona Department of Water Resources
Resolving Water Rights Uncertainties

Federally Reserved Water Rights
• McCarran Amendment

General Stream Adjudications

Major Obstacles to Resolution
• Institutional Competency
• Transaction Costs
• Subflow

Why It Matters

courtesy: Arizona Department of Water Resources
Tribal Reservations in Arizona
Pumping Groundwater

Subflow & Cone of Depression

Aquifer

Well

- Initial Water Level
- Drawdown
- Pumping level
- Well casing
- Well screen
- Impermeable material
WATERSHED MANAGEMENT IN THE PAUTE RIVER BASIN IN ECUADOR
WATERSHED MANAGEMENT IN THE VERDE RIVER BASIN IN ARIZONA
Lessons from Arizona & Ecuador’s Watershed Management Projects

• Arizona
  – Good Samaritan Permits
  – Tribal Water Settlements
  – State Water Trust
  – Verde River Exchange Program
  – De Minimis Exemptions & Grandfathering
  – Regional Water Mitigation Authorities
    • Developed vs. Salvaged Water Distinction

• Ecuador
  – Local Water Quality Ordinances
  – Stakeholder Participation
  – Municipal Government Engagement
  – Funding Public Independent Trusts