

A RURAL REVOLUTION OF ENVIRONMENTAL COLLABORATION



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Office of Abandoned Mine Lands and Reclamation
Stream Restoration Group**

**WATER, WATER
EVERYWHERE.....**







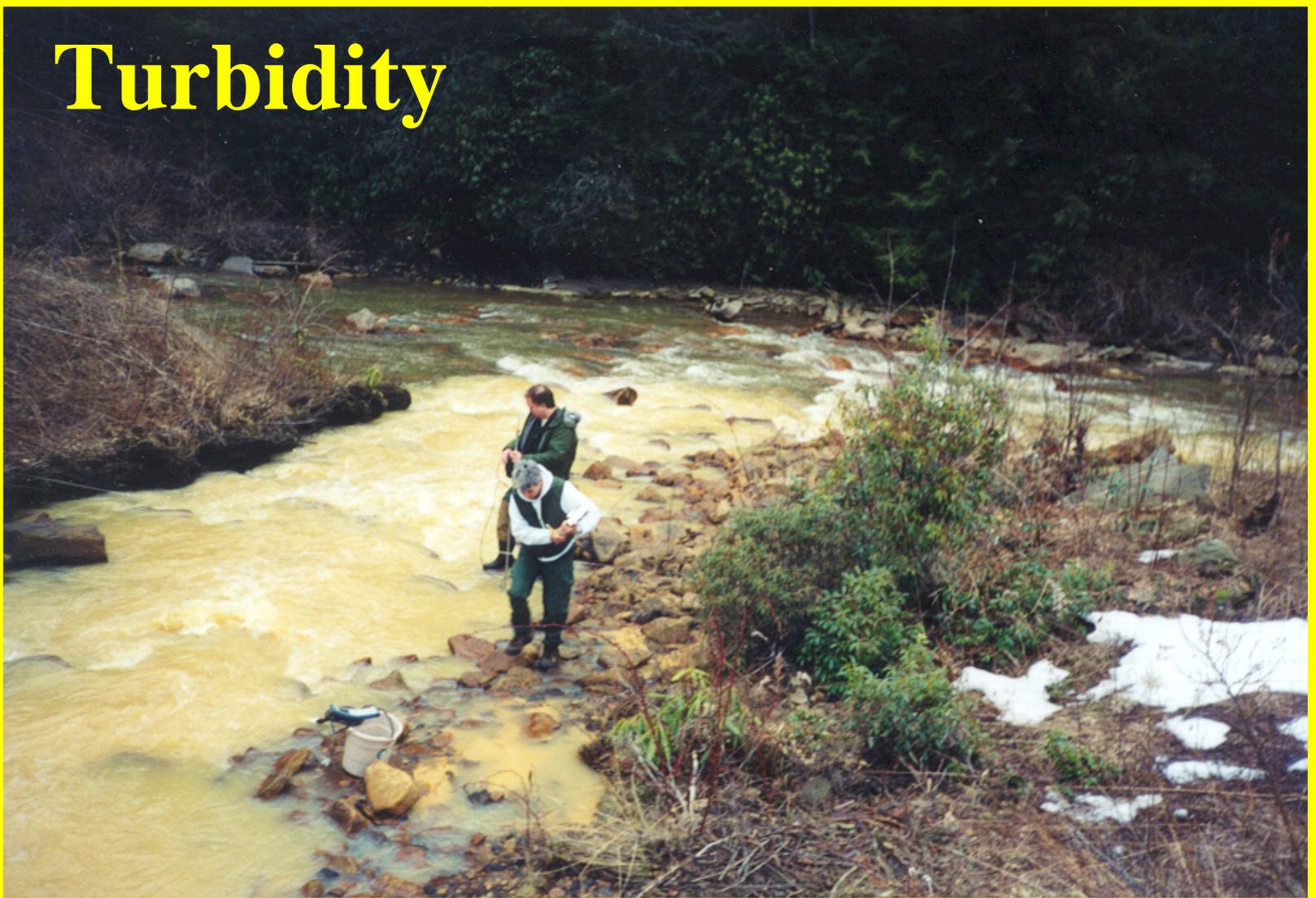
Sedimentation



Erosion



Turbidity



Embeddedness



Acid Drainage

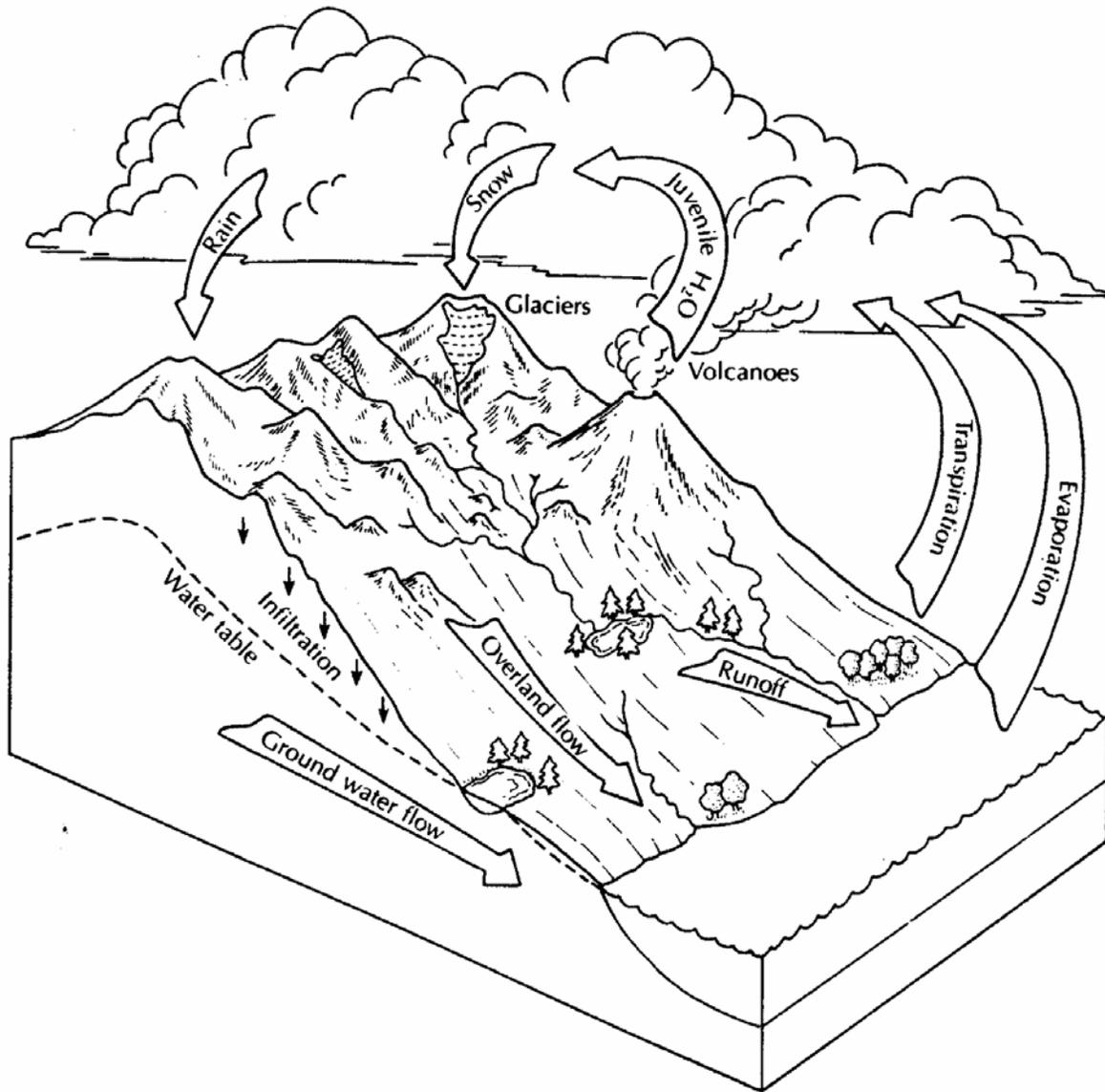


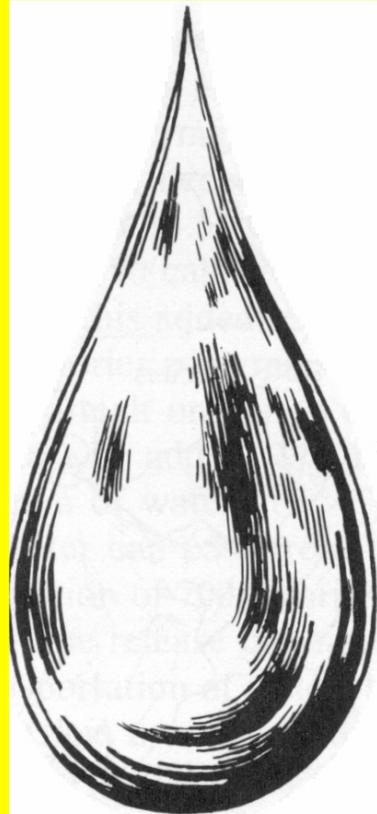
Aluminum Precipitation



Iron Precipitation







Saline water in oceans: 97.2%



Ice caps and glaciers: 2.14%



Groundwater: 0.61%



Surface water: 0.009%

Soil moisture: 0.005%

FIGURE 1.3 Distribution of world's water supply.

Governor's Stream Restoration Committee:

- **Environmental Groups;**
- **Government Agencies;**
- **Industry; and**
- **Academia.**

STREAM RESTORATION GROUP

A decorative graphic consisting of four horizontal lines. From top to bottom, the colors are yellow, blue, white, and blue.

**Staff to conduct watershed
characterizations to update
historical data**

Watershed Characterizations are assessments that:

- **Characterize physical, chemical, and biological conditions of all water bodies that flow to a given stream;**
- **Identify sources of contamination; and**
- **Evaluate effectiveness of alternative management strategies and actions.**

Stakeholder Involvement



**How do we get
stakeholders
involved?**



Address their needs!



Citizens' Needs:



- **Reduce risk of flooding;**
- **Restore fishery or other recreational activity;**
- **Improve aesthetics; and**
- **Simply improve overall quality of life.**

Agencies' Needs:



- **Enforce Regulations; and**
- **Provide services to the public.**

Industries' Needs:



- **Meet regulatory requirements;**
- **Be a good neighbor; and**
- **Make a profit.**

Academia Needs:



- **Promote learning through education; and**
- **Conduct research.**

Limitations for addressing needs separately:



- **Time;**
- **Cost;**
- **Knowledge; and**
- **Skills and Abilities.**

Problems with addressing needs separately:



- **Inconsistent planning and data collection; and**
- **Quality Assurance and Quality Control.**

Solution?



Standard Operating Procedure

Holistic Watershed Approach Protocol



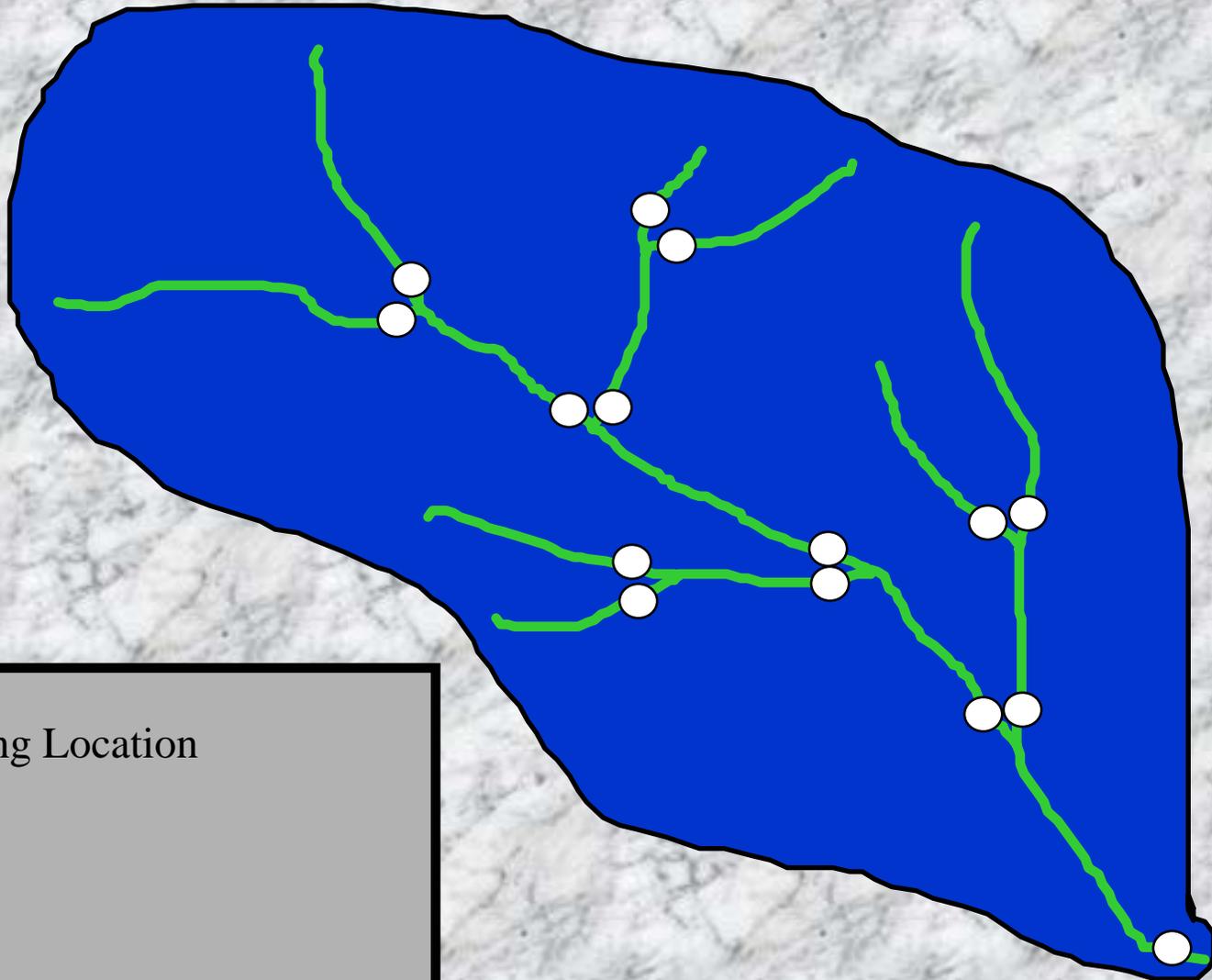
A.K.A.



**Gathering all the information
at all the locations with all
the interested parties to
determine and evaluate all the
problems and all the
restoration efforts within a
watershed!**

Typical Watershed

Establish Monitoring Network



○ Sampling Location



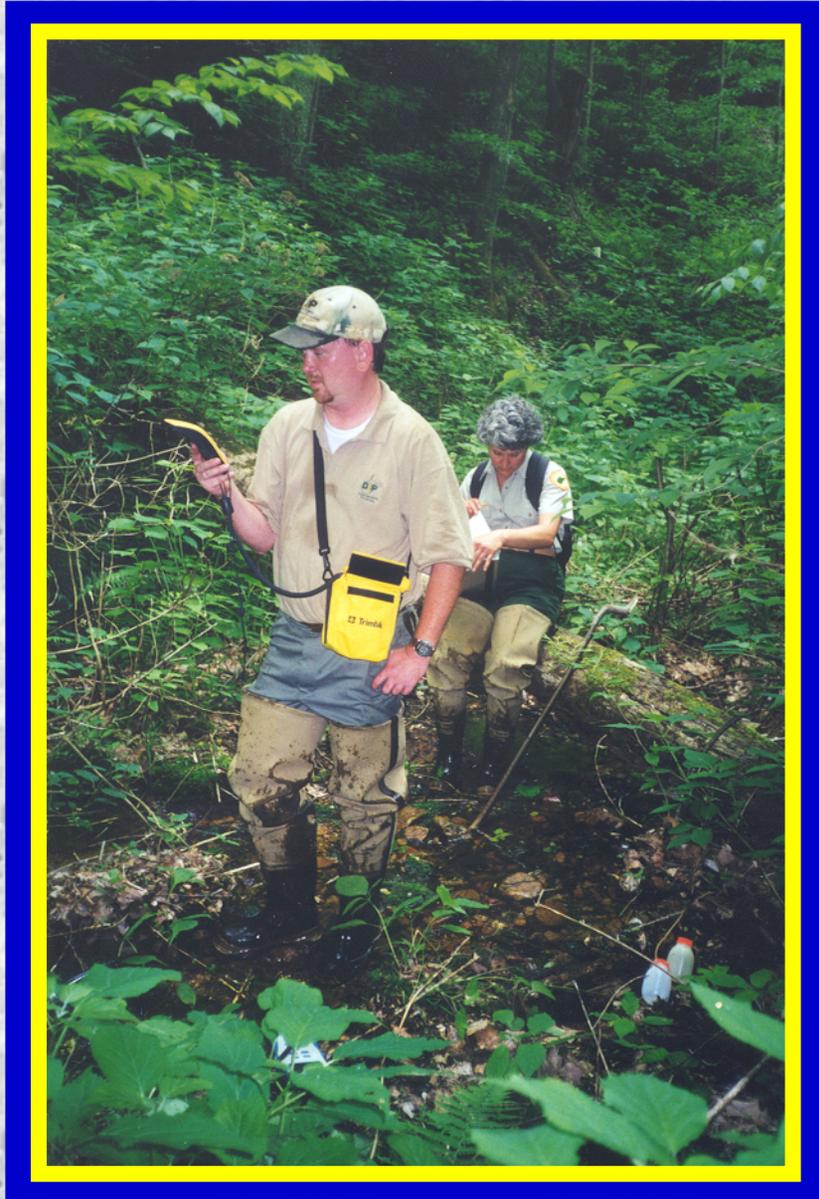


Lower Cheat River Sampling Stations

112 Sampling Sites
Selected













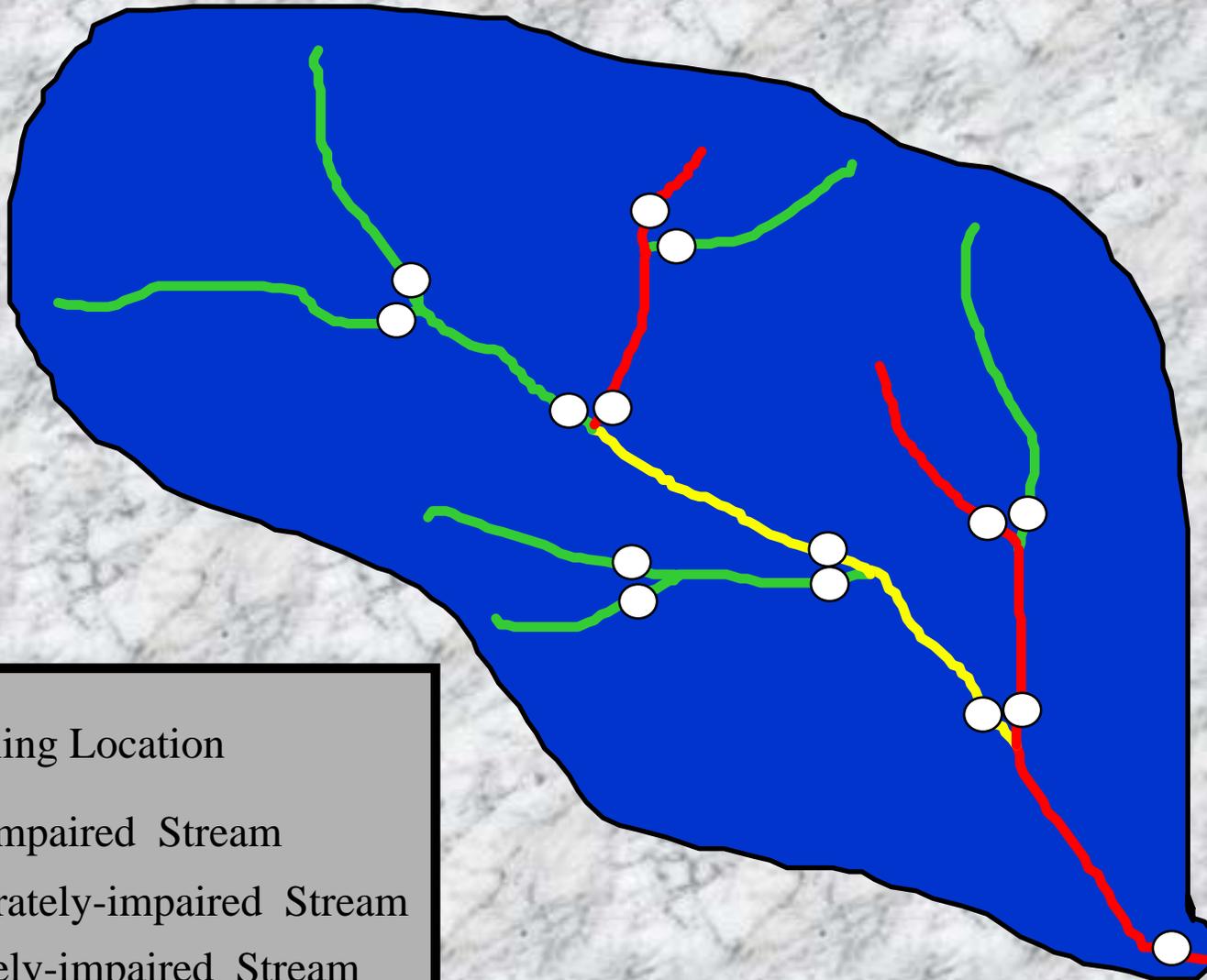






Typical Watershed

Determine Impact to Streams



○ Sampling Location

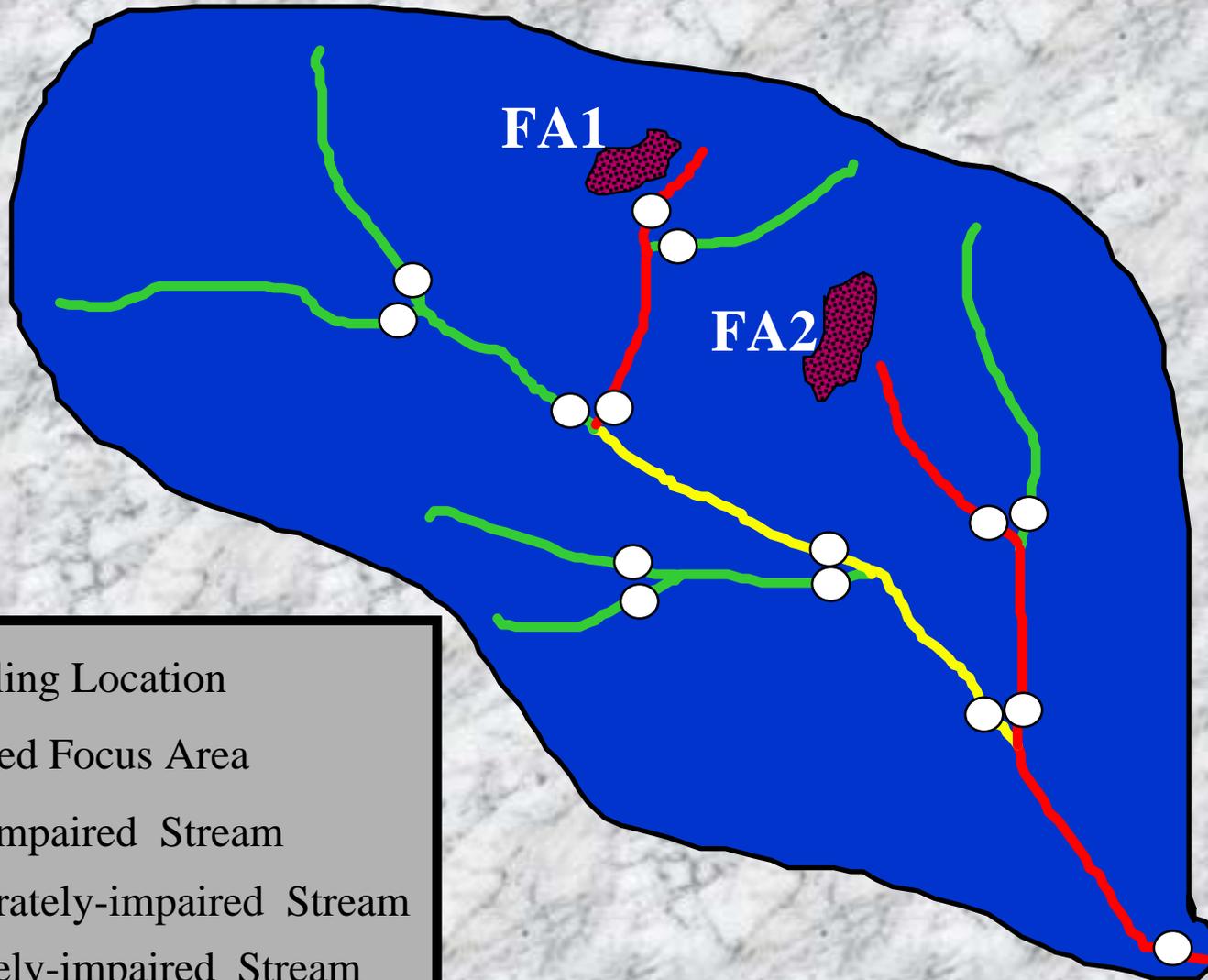
■ Non-impaired Stream

■ Moderately-impaired Stream

■ Severely-impaired Stream

Typical Watershed

Select Focus Areas



- Sampling Location
- Selected Focus Area
- Non-impaired Stream
- Moderately-impaired Stream
- Severely-impaired Stream



Pre-Construction

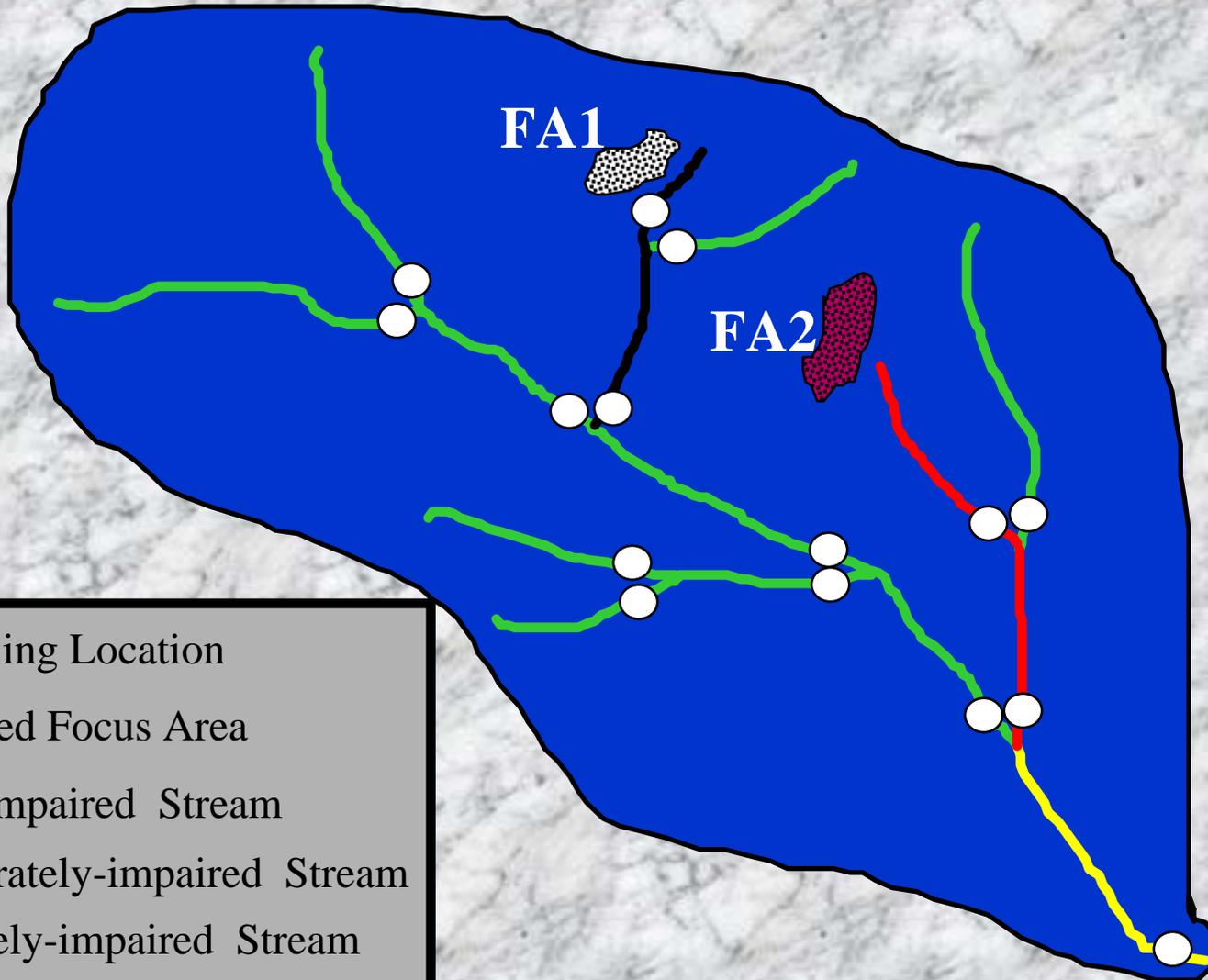




Post-Construction

Typical Watershed

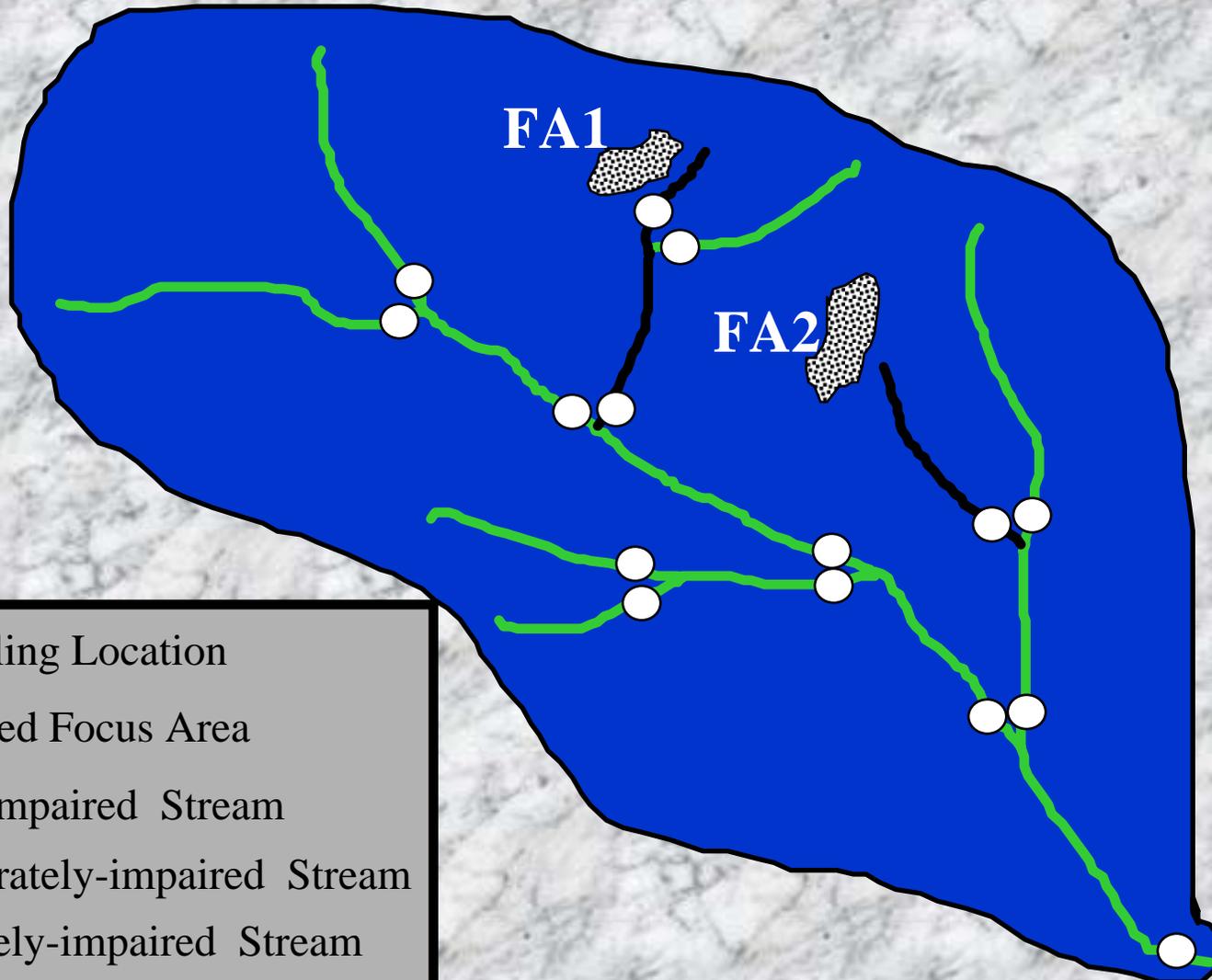
Select New Focus Area



- Sampling Location
- Selected Focus Area
- Non-impaired Stream
- Moderately-impaired Stream
- Severely-impaired Stream
- Remediated Stream Segment

Typical Watershed

Select New Watershed



- Sampling Location
- Selected Focus Area
- Non-impaired Stream
- Moderately-impaired Stream
- Severely-impaired Stream
- Remediated Stream Segment

Integrated Application of Holistic Watershed Approach Protocol



These are the Partners:

WV Division of Natural Resources; WV Division of Tourism; WV Division of Transportation; WV Division of Highways; WV Turnpike Commission; WV Soil Conservation Agency; WV Bureau of Public Health; County Health Departments and Sanitarians; WV Division of Environmental Protection, Office of Abandoned Mine Lands and Reclamation, Office of Mining and Reclamation, Office of Waste Management, and Office of Water Resources; U. S. Environmental Protection Agency Region III; USACE; USGS; USDA NRCS; Canaan Valley Institute; The Hummer Club; the River of Promise Task Force; Upper Paint Creek Watershed Association; Lower Paint Creek Association; West Fork River Watershed Association; Kellys Creek Watershed Association; Cabin Creek Watershed Association; Marsh Fork Watershed Association; and the Clear Fork Watershed Association











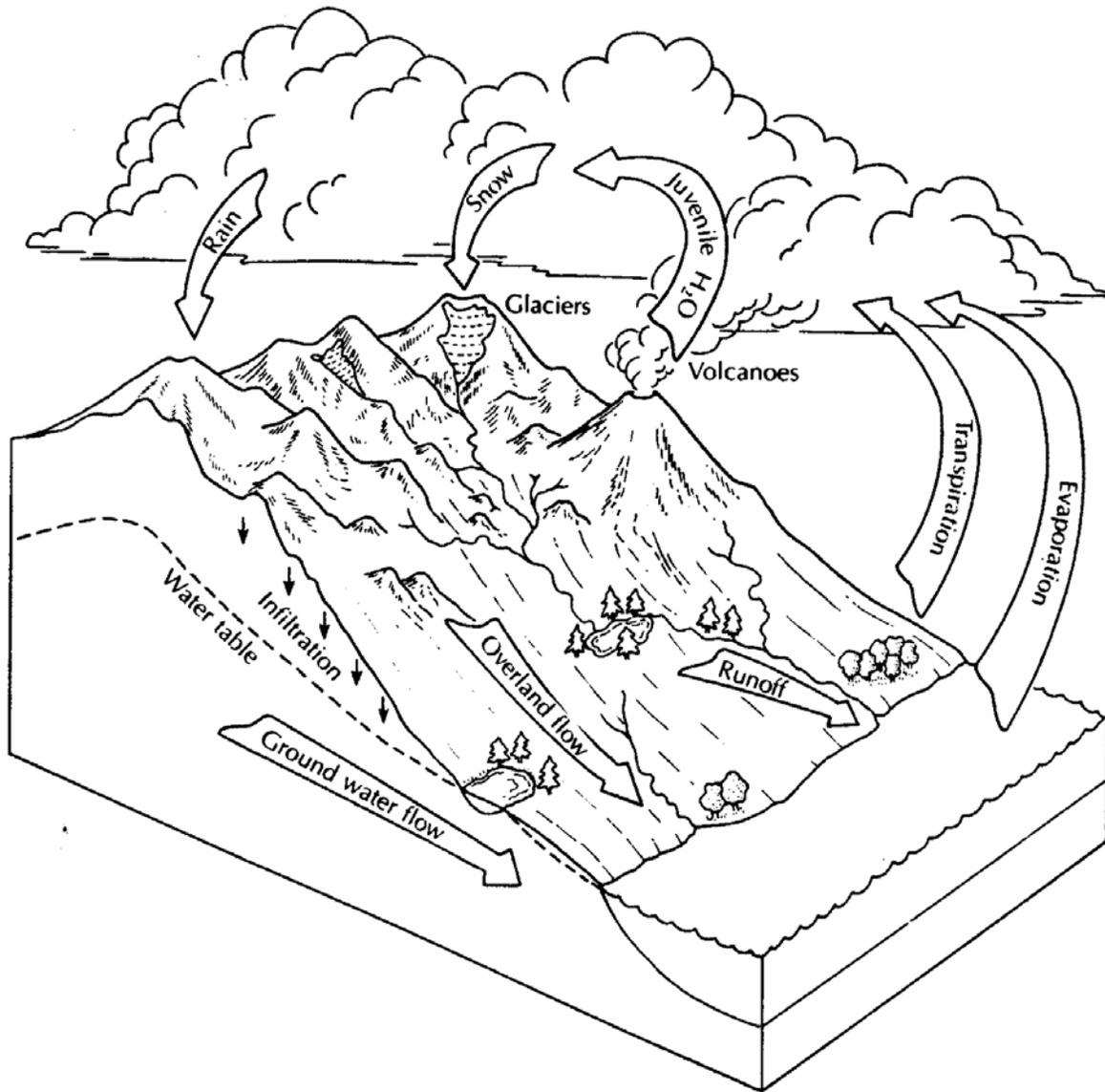


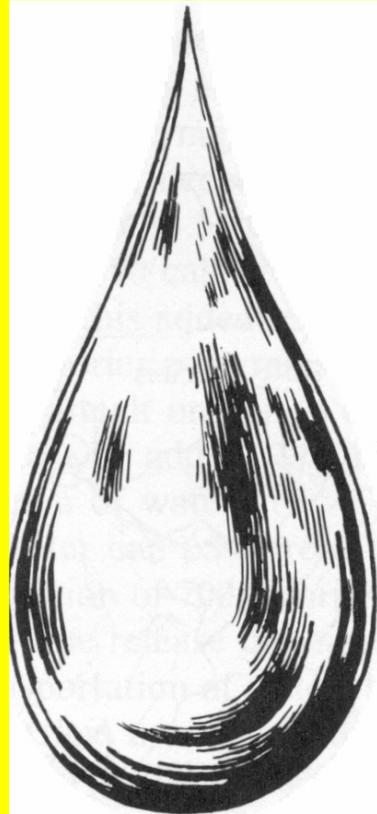






Conclusions





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