

Alluvial Fan Task Force

Presentation to the

Floodplain Management Association Conference

September 4, 2008

San Diego, CA

Panel Moderator

Susan Lien Longville, AFTF Coordinator

Panelists

Susan Carpenter, AFTF Facilitator

Doug Hamilton, AFTF Consultant

Jeremy Lancaster, AFTF Consultant

Marty Teal, AFTF Member

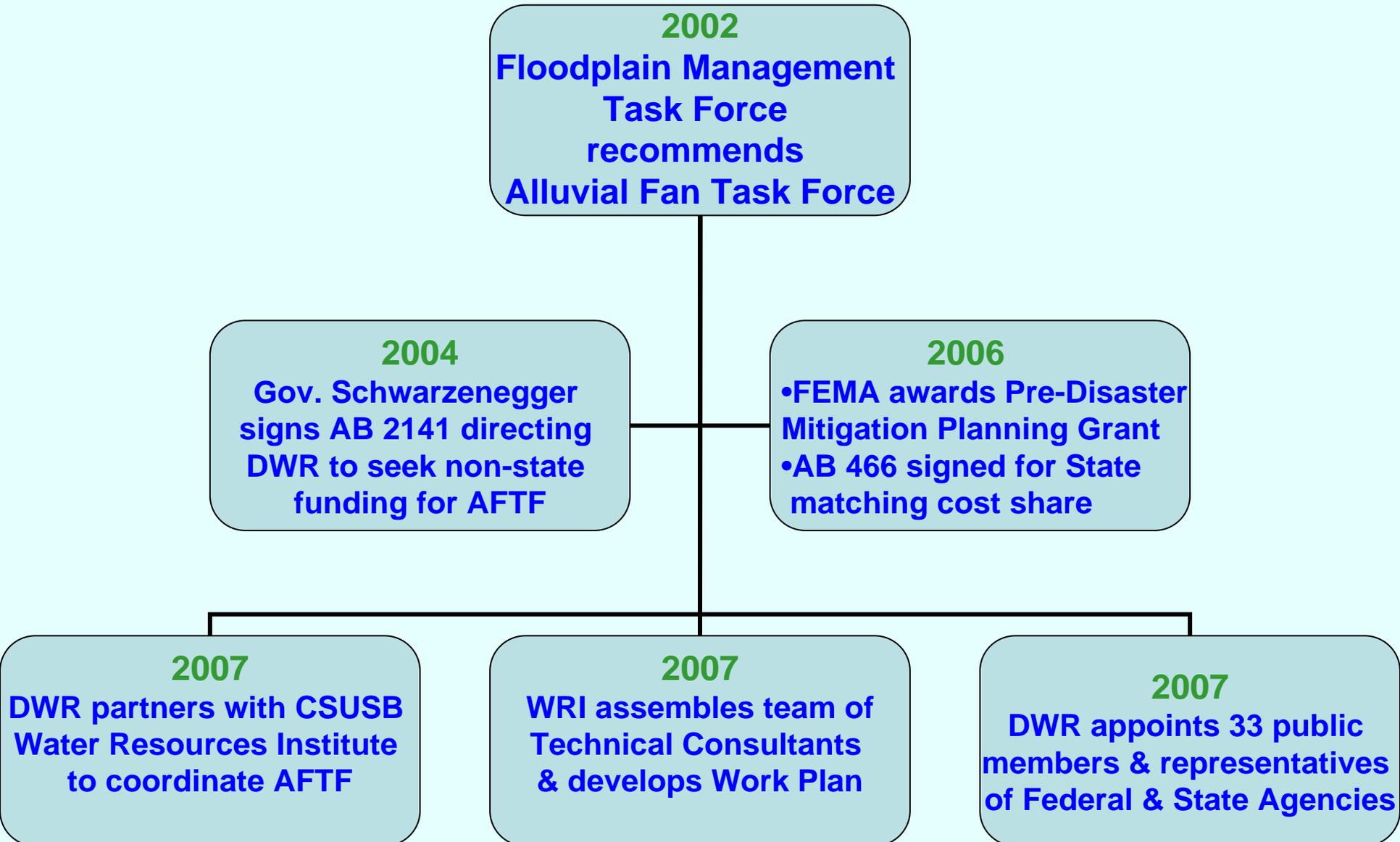
Ray Lenaburg, AFTF Member

Dusty Williams, AFTF Member

Maria Lorenzo-Lee, DWR



Origin of Alluvial Fan Task Force



33 Public Members & 11 State/Federal Agency Representatives Appointed by DWR

- **Elected Officials: 5 County Supervisors from areas projecting alluvial fan development**
- **6 Public Flood Control/Flood Management/Land Use and Planning managers**
- **5 Developers experienced in alluvial fan areas**
- **6 Land Use Advocates including planners, environmental stakeholders, conservancies and sustainable development advocates**
- **6 At Large Members: Problem Solvers/Opinion Leaders/Big Thinkers/Experts from the California Department of Fire and the Office of the Insurance Commissioner**
- **Regulatory State (DWR, OES, DFG) and Federal (FEMA, ACE, USEWS, BOR) Agency Representatives**
- **44 in all**

AFTF Charter with Mission & Principles

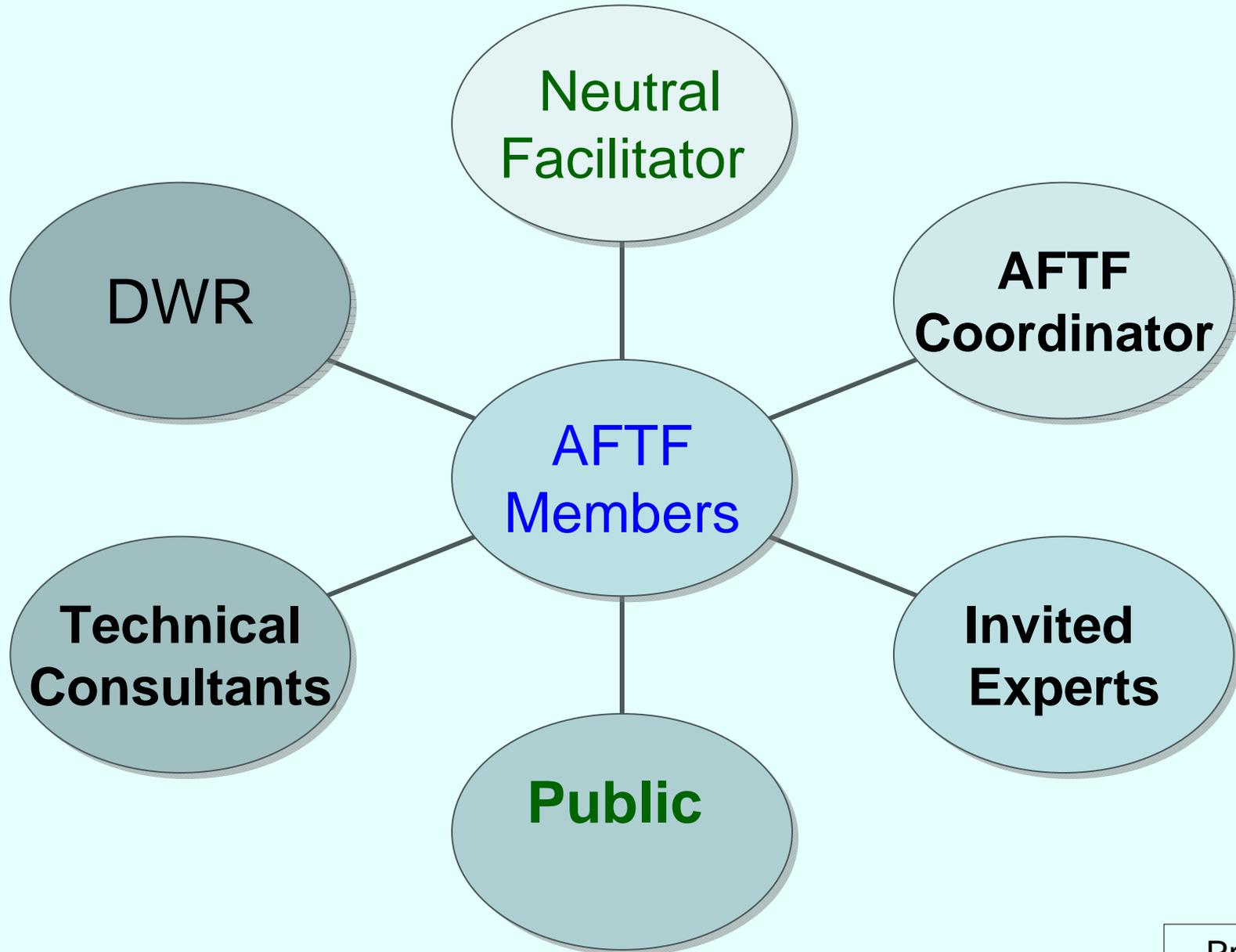
Mission

- Review state of knowledge and risks associated with alluvial fans focusing on challenges of future development that is expected
- Develop a Model Ordinance for application of strategies aimed at reducing losses to human, built and natural resources on alluvial fans. (Ordinance to be voluntarily adopted locally in areas where future development on alluvial fans is expected)

Values and Principles

- A consensus seeking, collaborative process
- Understand the interests of other parties at the table
- Negotiate satisfactory and realistic agreements that satisfy as many of the varied interests as possible

Structure of AFTF Process



AFTF Work Plan



AFTF Plenary Meeting Steps

- Full day plenary meetings were hosted by County Supervisors in Riverside County, San Diego County, Los Angeles County, San Bernardino County and Kern County
- Four plenary meetings focused on understanding the state of knowledge and the risks associated with alluvial fans focusing on special features and challenges of future development that is expected
- Three plenary meetings focused on developing local planning tools aimed on reducing losses to human, built and natural resources focusing on challenges of future development that is expected
- Next plenary meeting on 9/19/08 in Riverside County is focused on the Model Ordinance, Public Outreach Program during Public Comment Period and further refinements to tools.

Composition of the AFTF Technical Team

- Private industry flood management engineer, public services consultant, the California Geological Survey, CSU/UC experts in the facilitation, process management, biology, economics, history, GIS and land use.

Role of the AFTF Technical Team

- Review the state of knowledge and risks associated with alluvial fans focusing on special features and challenges of future development.
- Assist the AFTF with developing a range of strategies to minimize risk and protect natural resources and beneficial floodplain values.
- Assist the AFTF with developing a Model Ordinance for application of strategies aimed at reducing losses to human, built and natural resources on alluvial fans.

Key points on flood knowledge about alluvial fans

- Floods on an alluvial fan behave with more uncertainty and can cause risks that are substantially different from flooding that occurs in an area subject to traditional riverine flooding.
- It is inadequate to analyze a site that would be subject to alluvial fan flooding as though it is an area subject to a traditional flooding paradigm.
- Prior to initiating an analysis of flood hazards, it is important to define whether an alluvial fan flooding  is located in the area.

Key points on geologic knowledge about alluvial fans

- Not all parts of alluvial fans are equally dangerous.
- Geologic hazards on alluvial fans can change due to fires, storms, and earthquakes.
- Geologic mapping on alluvial fans can help to identify hazardous areas and aid in developing sound land use policies.

Key points on ecologic knowledge about alluvial fans

- Alluvial fans provide critical connectivity between lowlands and uplands
- Alluvial fans provide rare habitat for sensitive, often threatened and endangered, species
- Alluvial fans provide critical processes and services on the alluvial fan and downstream watershed
 - sand delivery for dunes
 - sand delivery beaches
 - nutrient and sediment transport for riparian habitats

Failure to identify and protect the ecological values and services that alluvial fans provide can put regional conservation planning efforts in jeopardy. Regional conservation plans provide assurances to both conservation and development. Without them both are at risk.

Key points of economic knowledge about alluvial fans

- Flood damage costs are increasing, not only on alluvial fans but downstream alluvial floodplains.
- Flood damage costs in Southern California have increased commensurate with new development.
- While new developments contribute to flood management facilities, property tax revenues are the only reliable source for operations, maintenance & replacement.
- Property tax revenues are outpaced by rising construction costs for operations, maintenance & replacement

Key points on economic knowledge about alluvial fans

- There is a consistent pattern of periodic flooding on alluvial fans and downstream alluvial floodplains (developed and undeveloped).
- Large amounts of rain in a given year do not necessarily trigger flooding on alluvial fans.
- Very damaging floods have been triggered by small isolated rain events.
- High high-debris- velocity, debris laden flows on alluvial fans are more often triggered by a series of storms following wildfires at higher elevations than alluvial flooding events.
- Flooding on fans has contributed to major damage to structures not only on fans but also on downstream alluvial floodplains.

Advisory Map prepared for AFTF by PBS&J

Alluvial Fan Task Force 10 County Alluvial Fan Study Area Areas potentially containing Alluvial Fans



 Counties
 Alluvial Fan Areas



Important Notice:

The Alluvial Fan GIS Dataset is an approximated delineation based on criteria established to support the Alluvial Fan Task Force.

It is not a set of regulatory floodplains. These delineations are intended to provide approximate boundaries for Alluvial Fans and are not intended to be used as floodplain maps unless supported by further study and analysis. Its sole purpose is for advisory/awareness information only.



Data Sources:
 Alluvial Fan Dataset -PBS&J
 WRI, DWR & SAWPA, USGS.SRA



Local Planning Tools

To help local governments, developers, nonprofit public interest groups and the public better understand public safety and land use constraints on alluvial fans, as well as the opportunities for more sustainable development, the AFTF developed a suite of Local Planning Tools.

The tools highlight opportunities for multiple-benefit outcomes, capturing and blending many values that effect life in alluvial fan communities.

The tools provide a catalogue of the possible considerations that may play a role when considering development on a particular alluvial fan.

Local Planning Tools

The tools are not intended to duplicate, expand or replace legal requirements or applicable state and federal regulations such as CEQA, the Endangered Species Act, Clean Water Act or California Fish and Game Act.

Rather, the tools have been designed to integrate with existing regulation and are offered as a menu of methods, not a prescriptive program.

For example, providing open space in a new development that is capable of conveying the natural flow of large amounts of floodwaters and materials not only provides risk reduction but also an opportunity to transport sediment to sustain critical habitat necessary for threatened and endangered species. This same method can protect groundwater recharge.

That is not to say that narrow, hardened flood channels and debris basins do not provide reduce the risk of flooding, but that single purpose practices do nothing more. As such, the tools will help balance the desire for future development with preserving the vital, multiple benefits that alluvial fans offer.

Alluvial Fan Tools

The Alluvial Fan Tools are a comprehensive set of step-by-step methods (complying with FEMA regulations)

1. To identify the presence of an alluvial fan
2. To identify the hazards present in alluvial fan area
3. To  active and inactive fan surfaces
4. To establish the appropriate level of hazard protection
5. To demonstrate protection from design flood
6. To incorporate multiple objectives into the mitigation measures should the development process moves forward.

Multiple-Hazard-Benefits Tools

The Multiple-Hazard-Benefits Tools provide information about other hazards common to the alluvial fan environment, as well as and the best available methods to identify and evaluate risks relevant to a proposed development environment. Appropriate preventative measures are included.

Included in these tools is a process to identify and map **watershed values** geospatially early in the development process to maintain the beneficial functions of alluvial fans that includes the integrated regional management of local water resources.

The beneficial values of alluvial fans have long term benefits that can't always be captured in short term land use decision-making. If development of an alluvial fan is transformed by a development in a way that these values are compromised, the alluvial fan will never be available for those values again.

Economic Tools

The Economic Tools provide methods to weigh the benefits of alluvial fan development reflected in increased housing and the attendant benefits of new residents against the costs that may be incurred in new alluvial fan developments.

Common alluvial fan development costs include flood management infrastructure operation and maintenance, decreased groundwater recharge, increased fire protection, loss of ecosystem function affecting the watershed and open space in the close proximity to the already built environment.

Because these costs are usually incurred several years after development, they may not be immediately obvious at the time of the decision-making over development on alluvial fans.

The tools also identify a variety of sustainable economic strategies.

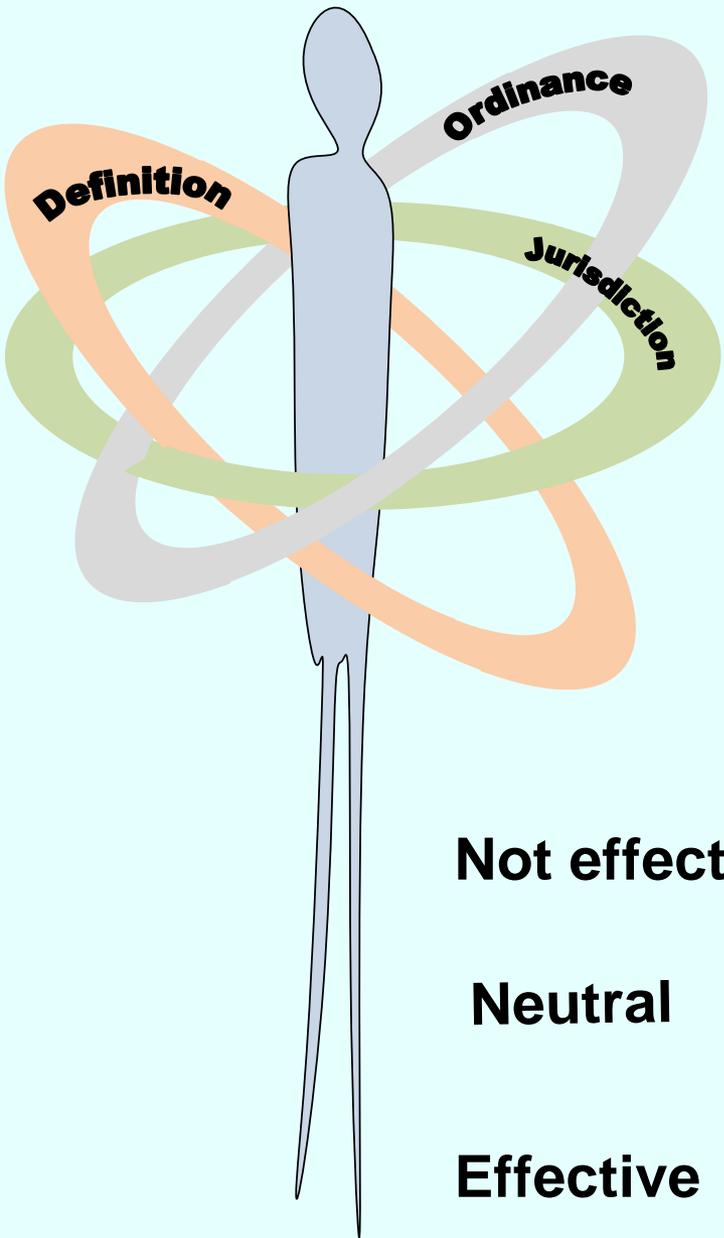
Geologic Hazard Assessment Districts (GHAD's)

Transferable Development Rights (TDRs)

Purchase of Development Rights (PDRs)

Transferable Development Rights Policy Choices

Choice of sending and receiving areas.



Existing Ordinances do meet federal and state regulations for reducing the risk of loss of life and property on alluvial fans.

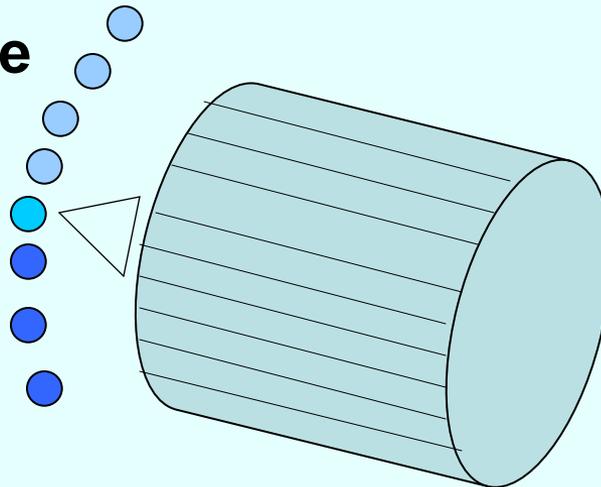
But there are methods that are effective for meeting multiple objectives, like habitat conservation, aquifer recharge and preserving hydrologic connectivity **AND REDUCING RISK.**

The AFTF has developed a suite of local planning tools that highlight opportunities for multiple-benefit outcomes, capturing and blending beneficial values.

Not effective

Neutral

Effective



**Multi-Objective
Dial**

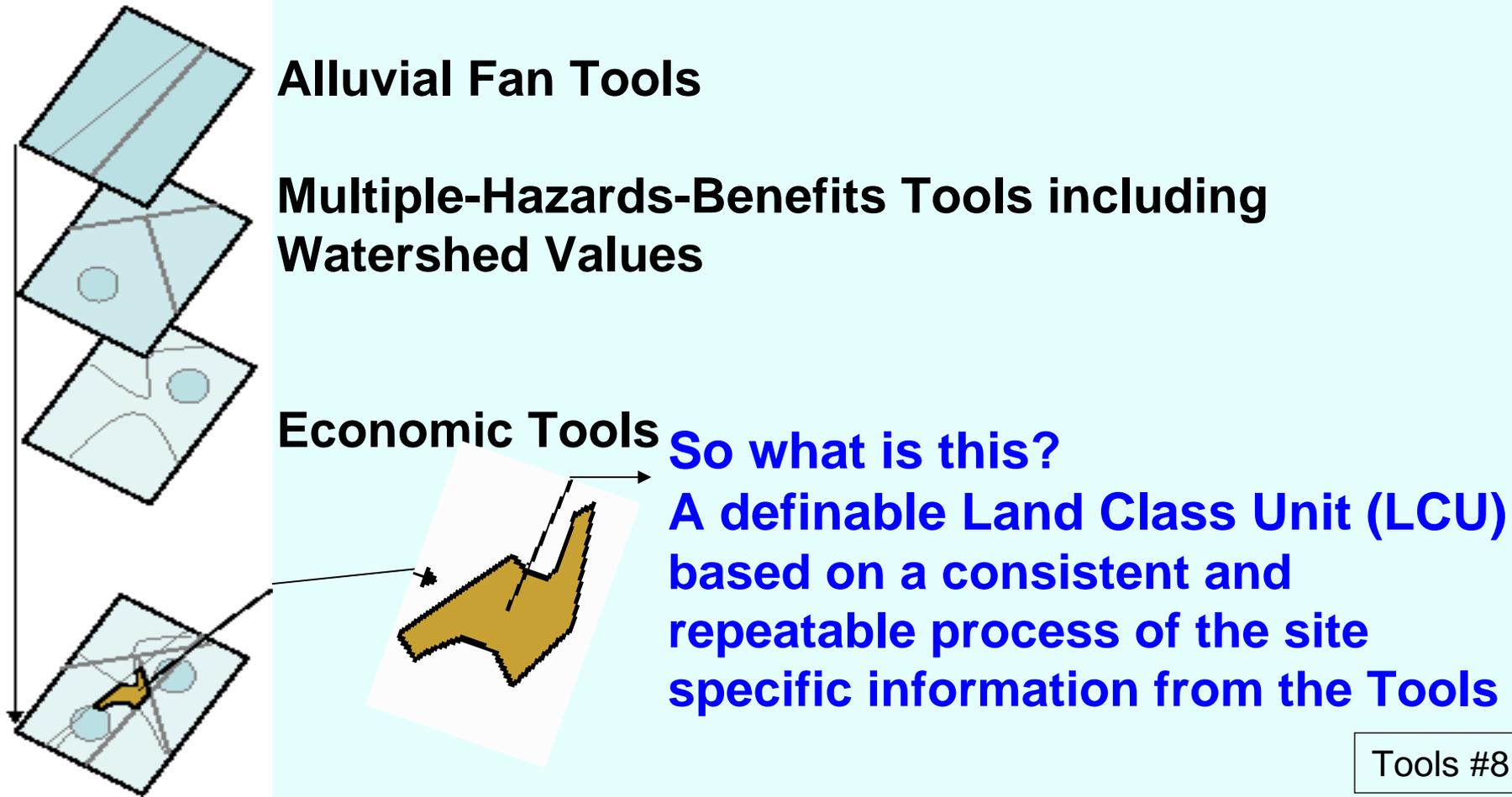
Sustainable Development Tool

- An Internet web application designed specifically for the AFTF that allows for the discovery of and downloading of methods that may be effective for meeting multiple objectives in a particular alluvial fan area.
- The database compiled for this Tool includes regulations, policies, plans, projects and Best Management Practices (BMP's) employed in the 10-county AFTF Study Area and a variety of sustainable development practices that attempt to link the beneficial values of alluvial fans to the built environment.

Sustainable Development Tool

By entering site-specific information about a particular alluvial fan area from the application of Local Planning Tools as facts or mapped using GIS, the Sustainable Development Tool identifies a consistent and repeatable *Land Class Unit*.

Here's how the site-specific information looks geospatially



Alluvial Fan Land Use Challenges of Flood Managers, Property Owners and Elected Officials

- Land use issues in areas potentially containing alluvial fans are complex.
- While federal and state regulations regarding flood risk management for new development are identical, the local land use process varies significantly from county-to-county or city-to-city.

Alluvial Fan Land Use Challenges of Flood Managers, Property Owners and Elected Officials

- Every alluvial fan surface is unique.
- Areas potentially containing alluvial fans need to be evaluated individually– what works in one location may be entirely inappropriate in another location.
 - Some alluvial fan surfaces are active and subject to alluvial flooding
 - Some alluvial fan surfaces are inactive however geologic hazards can change due to fires, storms, and earthquakes
 - Other hazards may be present of the fan surface including debris flows, wildfires, erosion, collapsible soils and seismic issues.

Alluvial Fan Land Use Challenges of Flood Managers, Property Owners and Elected Officials

- Property owners in areas potentially containing alluvial fans need clear direction from local jurisdictions from the beginning
- The pre-approval costs of development are significant and changes in direction place an unfair burden upon the private sector.
- For that reason, local flood managers and elected officials must work together from the beginning to avoid sending mixed messages to property owners.

To better understand how flood managers cope with land use on alluvial tours in various regions, the AFTF members took “Virtual Tours”

Virtual tours were provided by:

- **Riverside County Flood Control & Water Conservation District**
- **San Diego County Department of Public Works**
- **Los Angeles County Department of Public Works**
- **San Bernardino County Flood Control District**
- **Coachella Valley Water District**
- **Kern County Engineering & Survey Services Department**

FEMA Pre-Disaster Mitigation (PDM) Planning Grant

The Pre-Disaster Mitigation (PDM) program provides funds to states, territories, Indian tribal governments, communities and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event.

Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations.

PDM grants are awarded on a competitive basis and without reference to state allocations, quotas, or other formula-based allocation of funds.

FEMA Pre-Disaster Mitigation (PDM) Planning Grant

The Alluvial Fan Task Force planning grant application was focused on the new development that is projected on alluvial fans in the Southern California region.

Whereas flood managers understand the issues related to alluvial fans, the authority to approve new development rests with the elected officials in California's local governments— Board of Supervisors or City Councils.

Governor Schwarzenegger signed AB 2141 to establish the AFTF charged with developing a Model Ordinance for local adoption focused on the challenges of future development on alluvial fans.

FEMA awarded 75% of the funding required for the AFTF.

Floodplain Management Branch

The California Department of Water Resources Floodplain Management Branch administers programs aimed at reducing the threat of loss of life and damage to property through the encouragement and use of nonstructural alternatives and practices.

The Branch coordinates with Federal, State and local agencies and provides planning assistance to State agencies on the placement of their facilities and conducting their programs to minimize the risk of flood loss and damage.

The Branch coordinates all activities related to the State's participation in the National Flood Insurance Program; and facilitates problem resolution of California communities' compliance with the National Flood Insurance Program. The Branch Chief is designated as State Coordinator for National Flood Insurance Program.

DWR provided the state match of 25% required by FEMA.

Floodplain Management Branch

Ricardo Pineda serves as the AFTF Project Manager

Maria Lorenzo-Lee serves as the AFTF Task Order Manager.

Stefan Lorenzato, Chris Adams, Dave Rolph, Alan Otto and Brian Walker from have also provided support to the AFTF.

The AFTF is first DWR project directed specifically at alluvial fan flooding and the beneficial management of alluvial fan floodplains.

Local adoption of the AFTF Model Ordinance rests on an effective Outreach, Education and Implementation Program in communities facing the land use decisions on alluvial fans.