

The image shows the cover of a spiral-bound notebook. The cover has a light beige, textured fabric-like appearance. On the left side, there is a silver metal spiral binding. The text is centered on the cover in a black serif font.

CWA Manzanita Erosion Control Project

ADEQ Title 319 Grant

Benson / St. David, Arizona

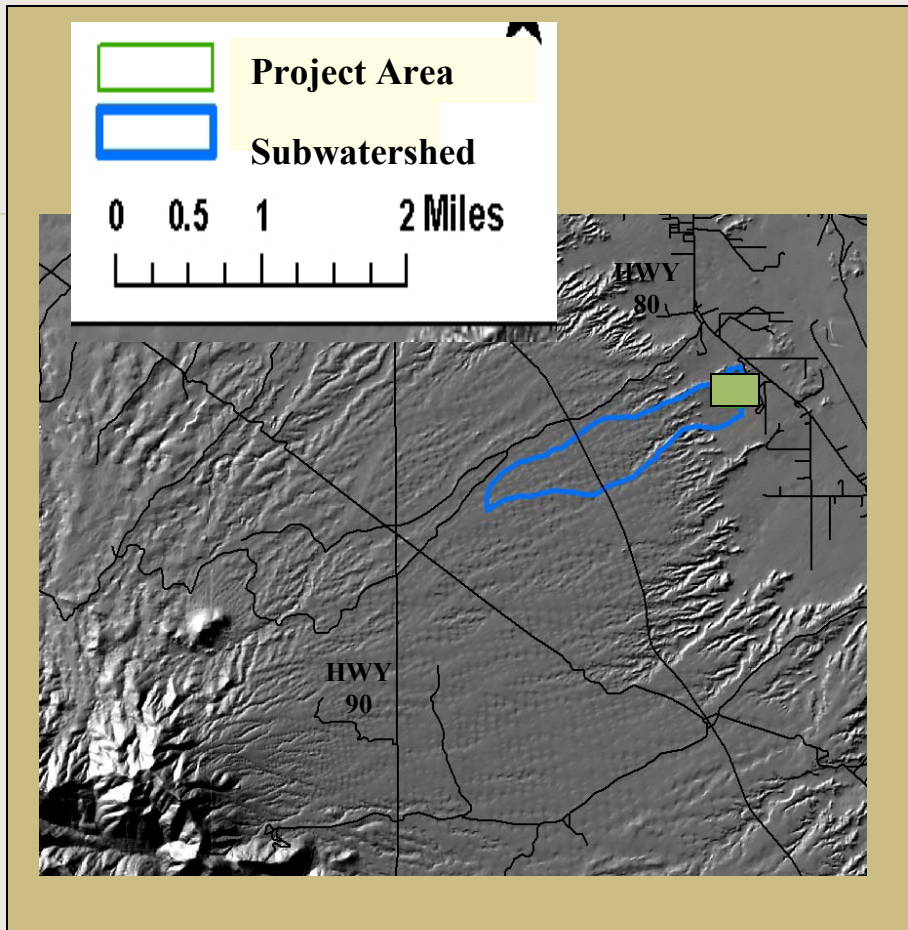
May 2006 – April 30, 2008

Problem: Increased natural and human-induced disturbances to the balance of the ecosystem

1. Growth

2. Drought

Action: Community Watershed Alliance (CWA) and partners began implementing best management practices for rehabilitation and restoration of the Manzanita Erosion Control Area to **reduce upland erosion and sediment transport to the San Pedro River.**



WATER QUALITY ISSUE

Current flow conditions are from an up slope channel system characterized by steep slopes and deep gullies. The slope breaks just west of the project area where the water is cutting down into deep channels and speeding up. Runoff entering the relatively flat project

area is forming a network of smaller braided channels and new gullies, dropping high volumes of sediment, and ultimately accelerating erosion within the sub-basin downstream to Highway 80.



Between the slope “break” and Highway 80, run off passes through the project area which covers approximately a square mile of the watershed.

The volume of flow accelerates erosion and streambed aggregation and degradation in tributaries of the San Pedro River which is less than 1 mile away.

Outcomes to include:

- Individual site restoration with erosion control and bank stabilization projects
- Reseeding where warranted with nearby water sources and soil types.
- Network of 100 plus check dams to slow runoff and capture sediment
- Public education and learning lab site to foster cooperation of the City, County, local community, land owners, regulatory agencies, and developers to achieve a larger watershed-based plan for restoration.

PHOTO GALLERY

**AREAS THAT EITHER NEED
ATTENTION OR ILLUSTRATE
OPPORTUNITIES FOR IMPROVEMENT
BY PROVISIONS WITHIN GRANT.**

Add network of
check dams to
slow water and
capture sediment.



Hands-on Training

Three front end loaders, 34
people, 24 tons of rock





Restore ground cover by
reseeding where
appropriate



Size culvert to prevent undermining of structure and bank destabilization.

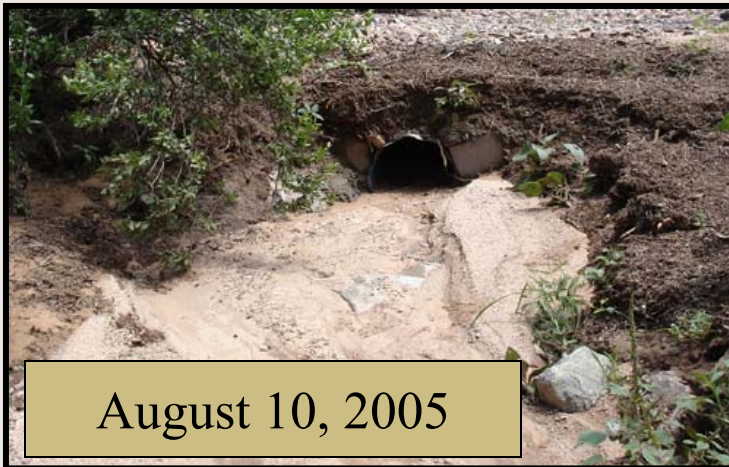
July 22, 2005



July 25, 2005



August 10, 2005



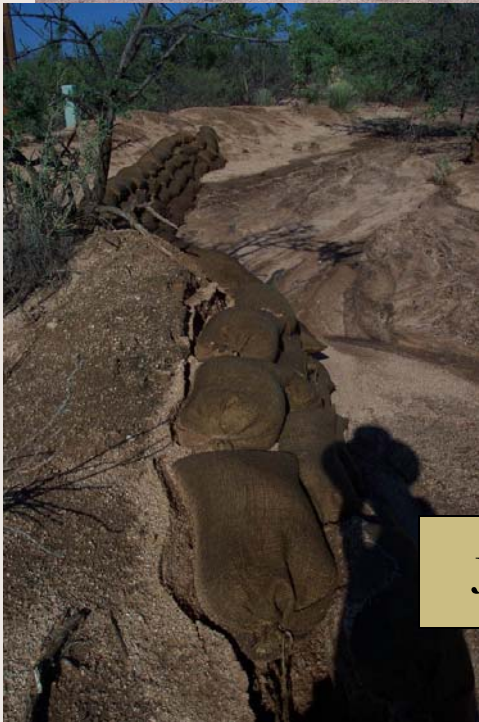
Replaced Feb. '07



**Add permanent
bank stabilization**



July 22, 2005



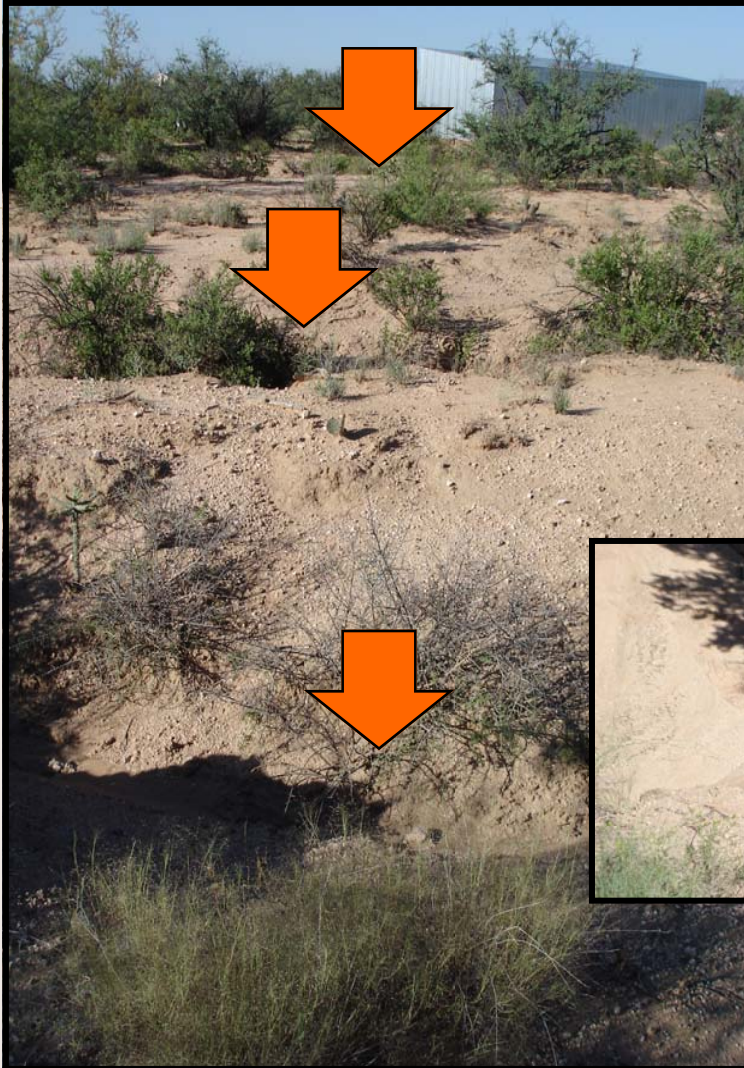
July 25, 2005



February 2007

**Photo
Monitoring:
412 feet
Dec. '07**

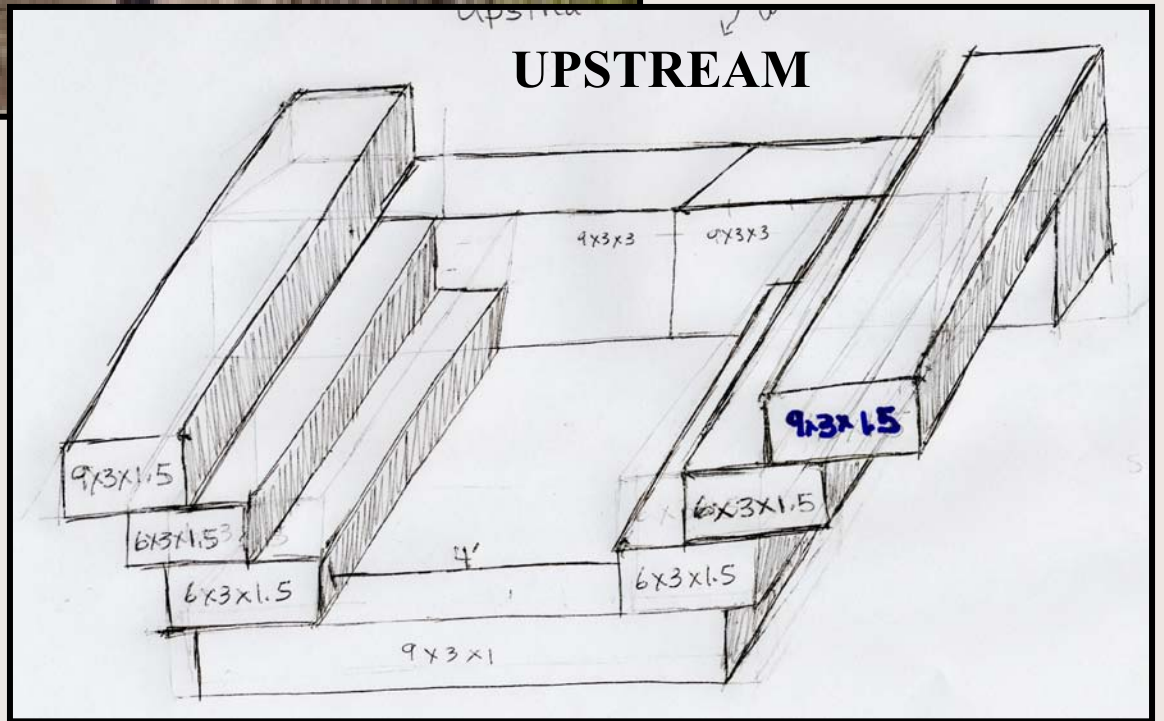


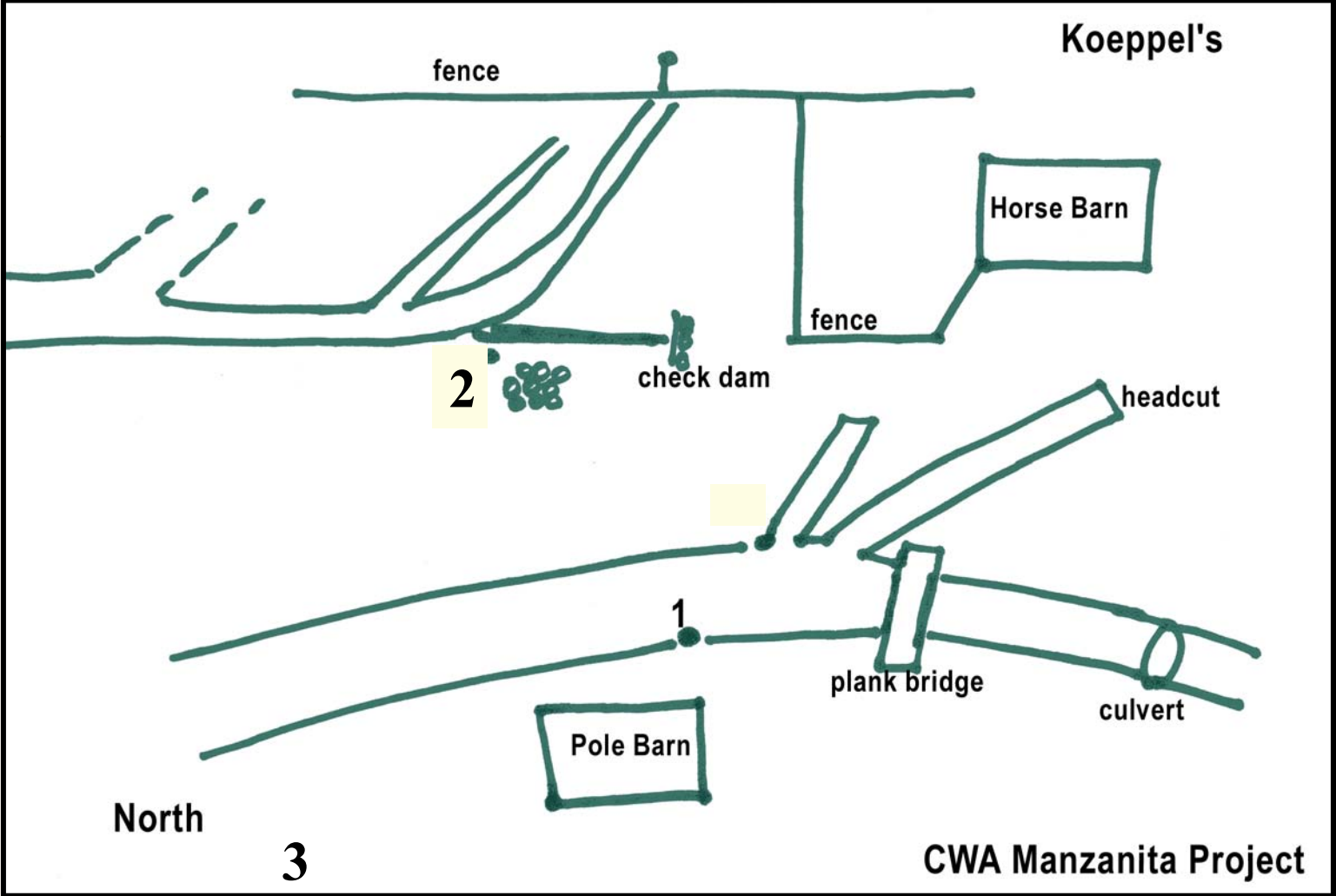


**CONSTRUCT
GULLY PLUGS**
to arrest headcutting

Aug. 2005







Provide education so that upstream efforts do not cause down stream consequences.

**Being
Developed**



IN SUMMARY:

- bank stabilization and soil treatments,
- culvert sizing to prevent undermining banks and channel scour
- gully plugs to prevent head cutting
- reseeding where appropriate
- addition of 100 plus small check dams slowing runoff and capturing sediment up drainage

ADEQ GRANT

Funds Requested	\$ 27,033.00
Match	18,376.50
Total Project	45, 409.50

PARTNERS

NRCS
Maccaferri Gabions
Water Wise
Rocking R
Lil' Dons Digging