UPPER GILA–MANGAS WATERSHED

(HUC 15040002)

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UPPER GILA–MANGAS (HUC 15040002)

The Gila River mainstem from the Arizona state line upstream to the confluence with Mogollon Creek, and perennial reaches of tributaries downstream of Mogollon Creek.

Designated uses by reach within HUC 15040002

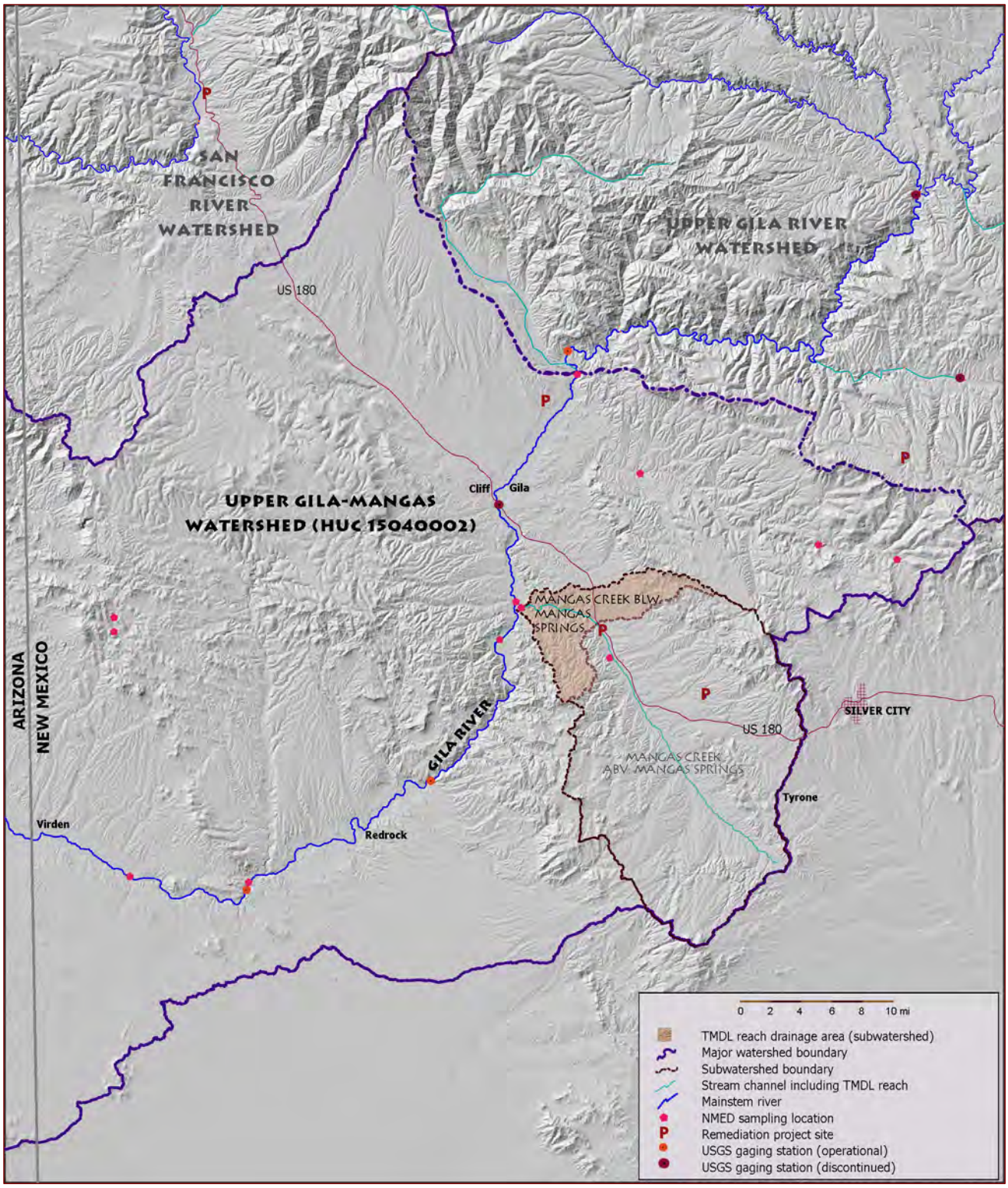
Gila mainstem, from the New Mexico–Arizona line upstream to Redrock Canyon and perennial reaches of streams in Hidalgo County: irrigation, livestock watering, wildlife habitat, marginal warmwater aquatic life, primary contact.

WQS Section **20.6.4.501**

Gila mainstem, from Redrock Canyon upstream to the confluence with Mogollon Creek and perennial reaches of tributaries downstream of Mogollon Creek: industrial water supply, irrigation, warmwater and marginal coldwater aquatic life, wildlife habitat, livestock watering, and primary contact.

WQS Section **20.6.4.502**

Link to WQS: http://www.nmcpr.state.nm.us/nmac/parts/title20/20.006.0004.pdf



Map TMDL-23. Subwatersheds for water-quality impaired (TMDL) stream segments on the Gila–Mangas watershed (HUC 15040002). All NMED water-quality sampling sites are shown; see Map 5 for stream segments not named here. Locations of USGS gaging stations for current or historic streamflow data are also shown. Water quality data indicate that contaminant loads significant enough to impair designated uses occur only on the downstream segment of Mangas Creek. The entire stream reach appears on the map, and the subbasin draining to the sampling site where impairments were identified (the TMDL drainage area) is distinguished from the remainder of the creek's watershed. The TMDL subwatershed table in this section includes information on remediation projects shown on the map.

MANGAS CREEK SUBWATERSHED FROM MANGAS SPRINGS TO THE GILA RIVER

TMDL reach length: 6.2 mi; **Subwatershed area:** 27 sq. mi. (to springs); 204 sq. mi. total
Elevation range: 4400–6300 ft.
Watershed cover: 49% rangeland; 47% forested; 2% barren; 1% agriculture; 1% water
Watershed management: 45% private; 38% USFS (Silver City RD); 13% state; 4% BLM
Wilderness: None
Counties [SWCDs]: Grant [Grant].
TMDL: http://www.nmenv.state.nm.us/swqb/Plant_Nutrients_TMDL_for_Mangus_Creek_12-18-2001.pdf
Record of Decision: http://www.nmenv.state.nm.us/wqcc/303d-305b/2004/AppendixB/2004-2006ROD.pdf
WQS reference: http://www.nmcpr.state.nm.us/nmac/parts/title20/20.006.0004.pdf (Section **20.6.4.502)**

TMDL parameter exceeded: Plant nutrients

Current exceedance: Aquatic productivity exceeds standard by 4.2 lbs/day (323%)

Unsupported use: marginal coldwater aquatic life

Possible mechanisms	Action (identification of MPs)	Possible MPs
Background sources Loss of streambank vegetation Inhibited riparian regeneration Loss of herbaceous ground cover allows excess nutrient delivery via sediments Sediment runoff from roads, ORV trailing Animal waste Fertilizers	Evaluate herbaceous cover Evaluate stream bank condition and vegetative cover Evaluate nitrate sources Evaluate gullying effects for sediment–nutrient delivery to Mangas Creek Evaluate road/trail sediment runoff (GNF and partners in travel planning)	Brush layer, filter strip: streambank filtration Streambank pole/post plantings Fencing; seasonal grazing (cattle) Prescribed thinning or burning in uplands; re-seeding (ongoing) Improved fertilizer application methods Gully remediation (ongoing) Road/trail closures, improvements

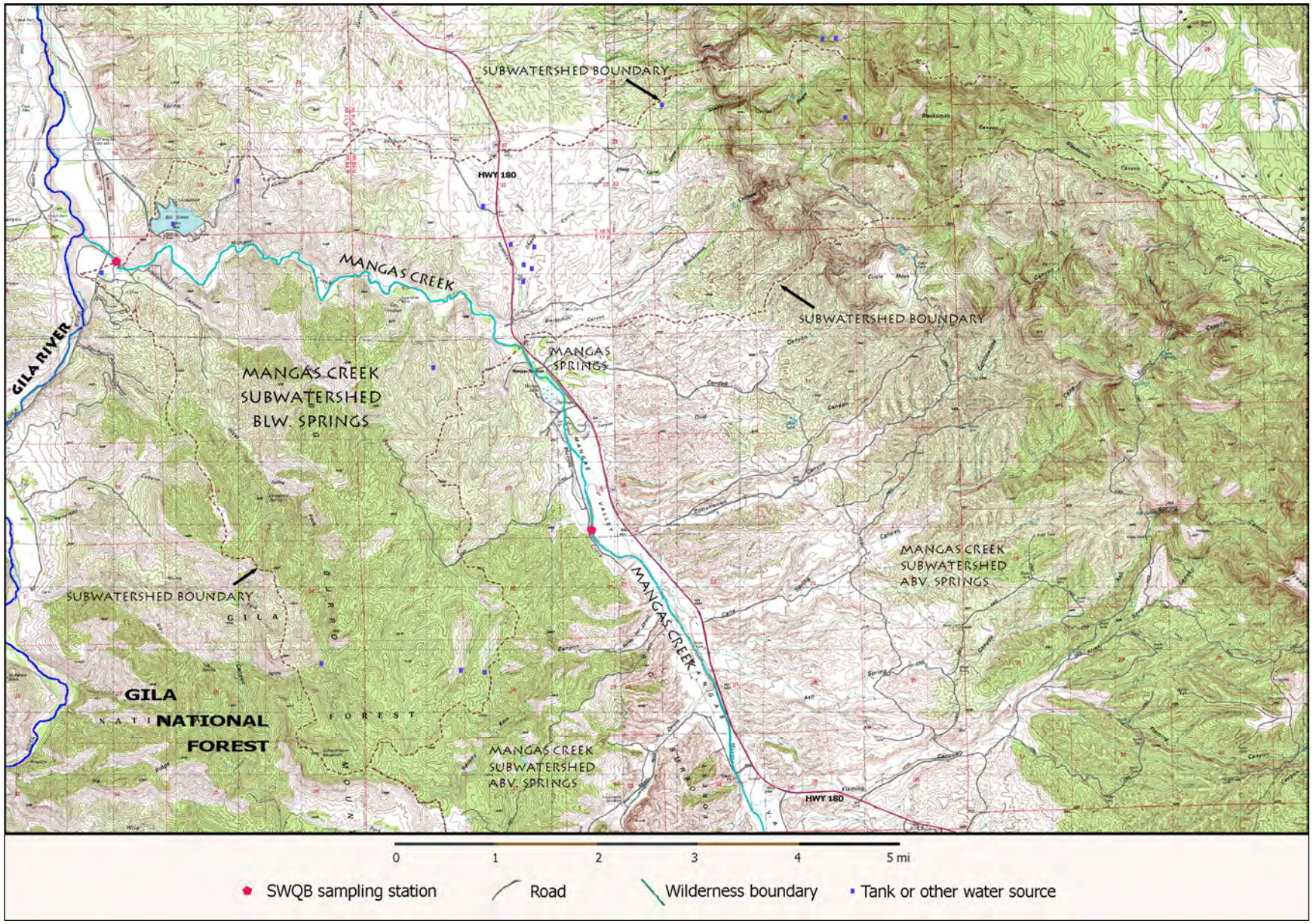
MANGAS CREEK SUBWATERSHED (MANGAS SPRINGS TO THE GILA RIVER)—continued

Milestones	**Schedule**	**Target criteria**
Streambank pole plantings	Complete	20% increase in streambank vegetation
Liaison with private landowners (Grant SWCD)	Complete	Increase of 15% in herbaceous cover at burn vs. control site
Develop prescribed burning plan	Complete	Increase of 30% in herbaceous cover at gully remediation sites
Obtain funding; conduct burns and establish monitoring sites and protocols	2001-2007	Positive trends in measured sediment output at burn vs. control sites; ~30% reduction in output
Develop and implement gully remediation plan	2004-2007	Long-term positive (downward) trends in measured aquatic vegetation productivity
Document vegetative recovery and evaluate sediment runoff response via monitoring (burn & gully remediation sites)	2006-2007	2010 target: 25% reduction in aquatic vegetation productivity, from 1.9 mg/L dry weight to 1.4 mg/L
Travel management planning finalized (GNF & partners)	2008?	
Future work plans developed: silviculture treatments; road improvements/closures	Dependent on monitoring results; GNF travel planning	
Stream bank cover evaluated for potential MPs	2008	
Costs and funding sources ID'd	Dependent on above	

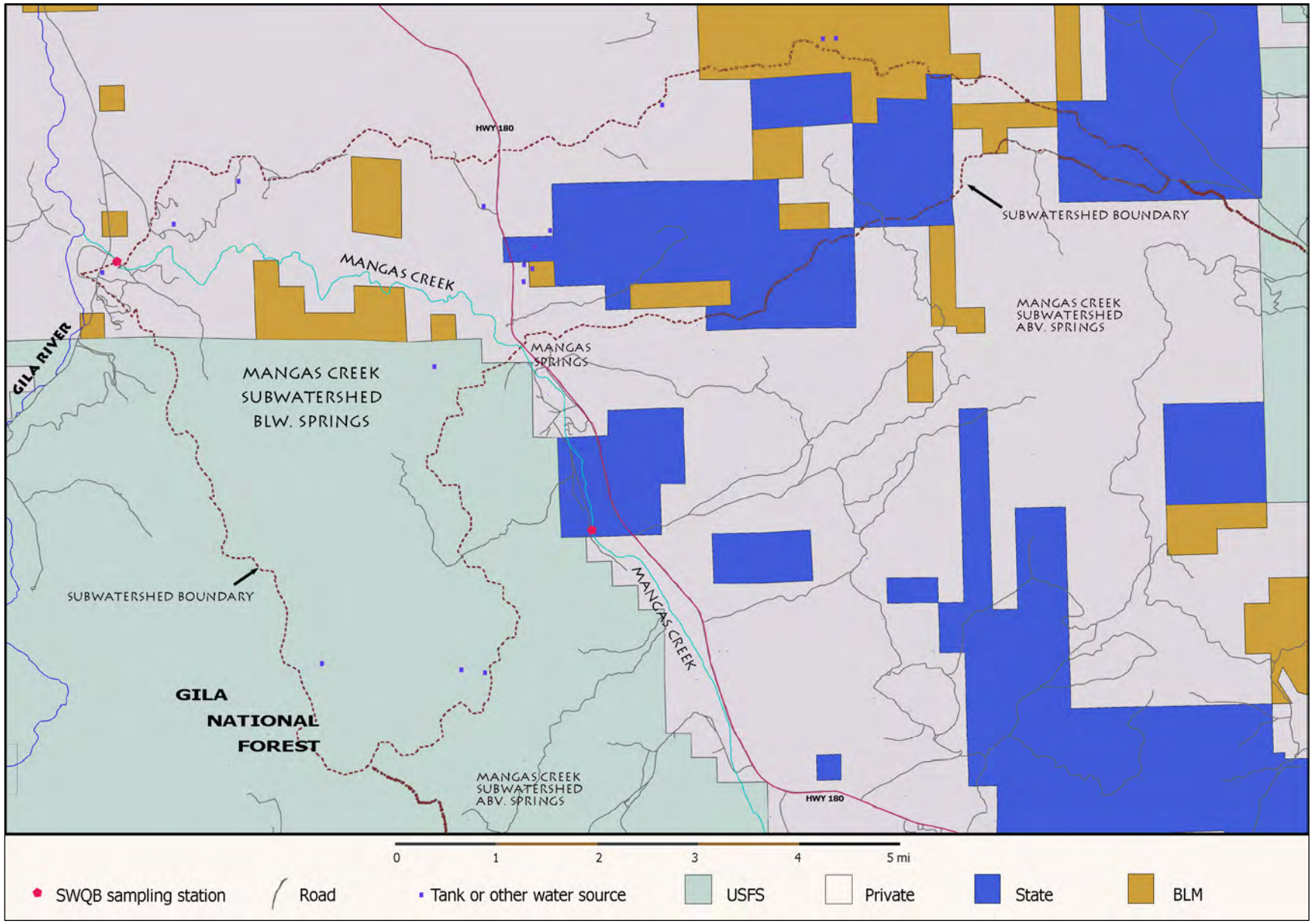
Monitoring (suggested monitoring protocols are described in Section 6):

- Regular NMED/SWQB monitoring and sampling at established stations
- Herbaceous cover: line-point intercept; sediment runoff: erosion bridge/HEM (recording rain gauge installed near site)
- Repeat photography, especially at gully sites
- Monitoring continues over 3 year period

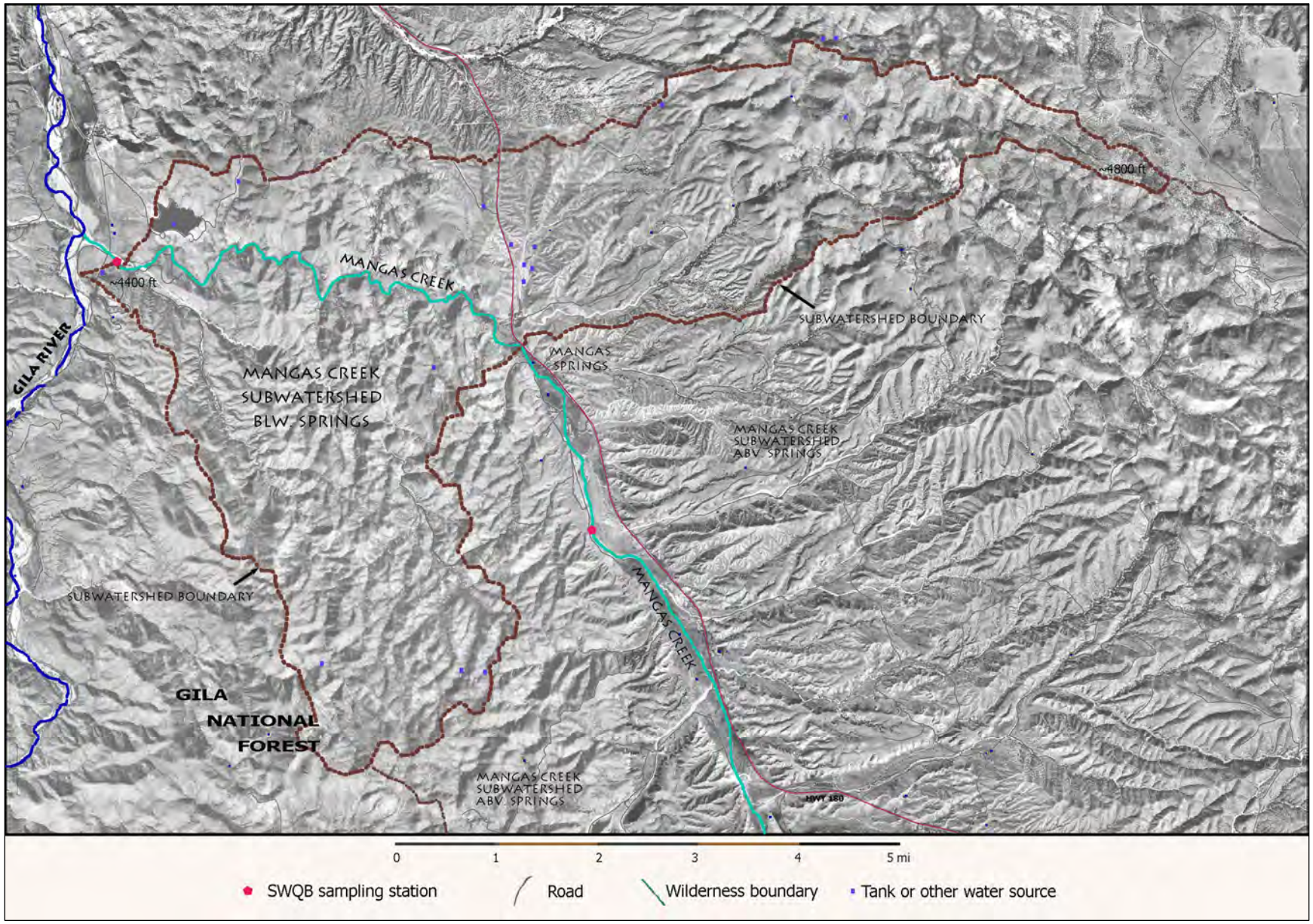
Note. Loach minnow were present in Mangas Creek in 1999.



Map TMDL-24. Topographic map, Mangas Creek subwatershed below Mangas Springs. Base image from USGS 1: 24000 quads. All data from USGS, NMED, and USFS Gila National Forest.



Map TMDL-25. Land management status map, Mangas Creek subwatershed below springs. All data from NMED, USGS and USFS Gila National Forest.



Map TMDL-26. Aerial photography relief map, Mangas Creek subwatershed below springs. Base image: 1996-2002 USGS digital orthophotoquads. All data from NMED, USGS and USFS Gila National Forest.

MANGAS CREEK—continued

Mangas Creek photos (all photos courtesy NMED, Silver City).

NMED sampling site near confluence with Gila River, April 2001.

Mangas Creek approximately 1 mile above confluence with Gila River, below Bill Evans Lake, June 2001.

Fifteen-foot entrenchment of the Mangas Creek channel above the springs dates back to ~1900. June 2001.

Mangas Creek near springs, June 2001.

Floodplain vegetation re-establishment within incised cutbanks near springs, June 2001.