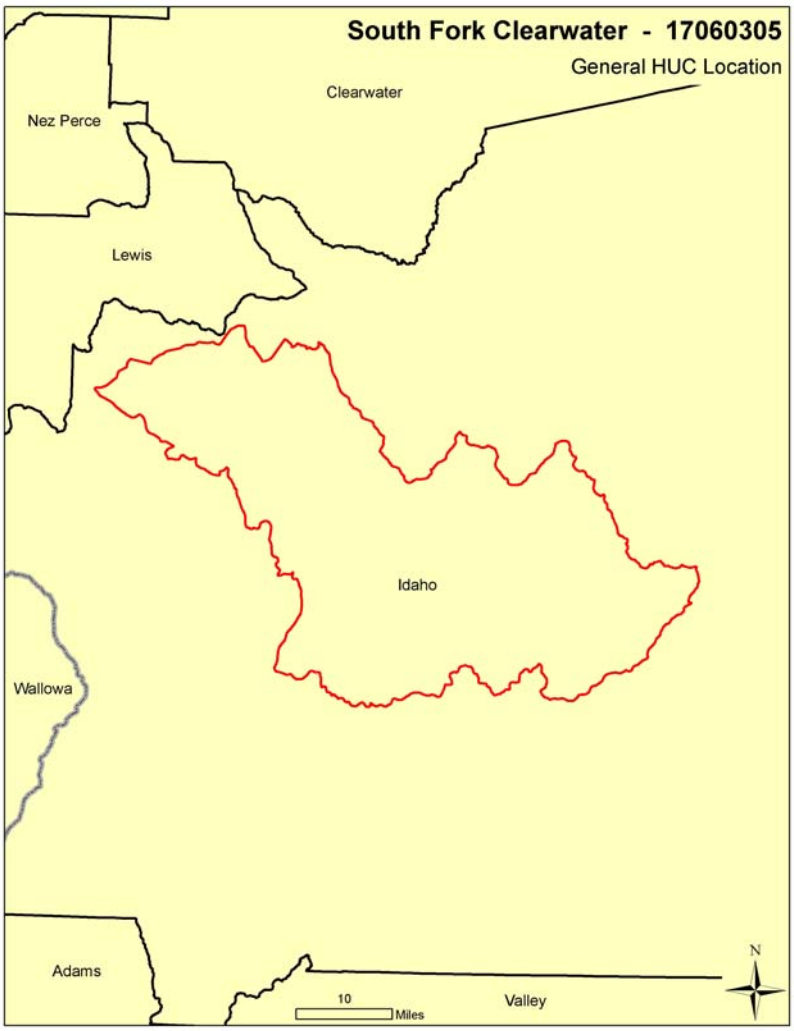
# South Fork Clearwater - 17060305

Idaho 8 Digit Hydrologic Unit Profile September 2008




## Introduction

The South Fork Clearwater 8-Digit Hydrologic Unit Code (HUC) subbasin contains 755,000 acres. The entire subbasin is within Idaho County. Twenty-eight percent of the basin is privately owned, approximately 1 percent is Tribal land and 71 percent is public land.

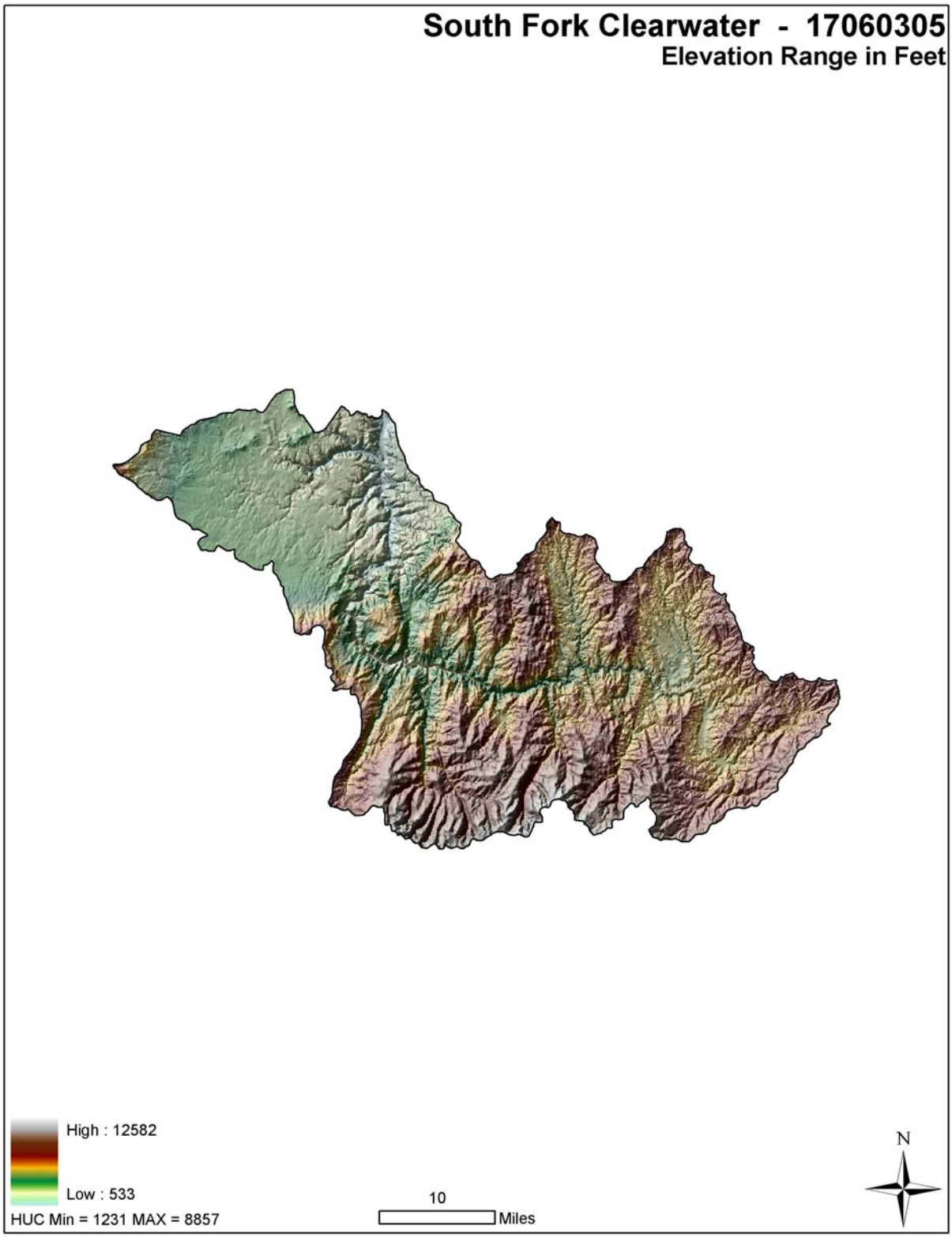
Seventy percent of the basin is in forest, 2 percent is water, wetlands, developed or barren, and 18 percent is in cropland. The remaining 10 percent is in shrubland, rangeland, grass, pasture or hayland.

Elevations range from 1,280 feet at the northern outlet to the Middle Fork of the Clearwater to over 7,000 feet in the southern headwaters of the HUC.

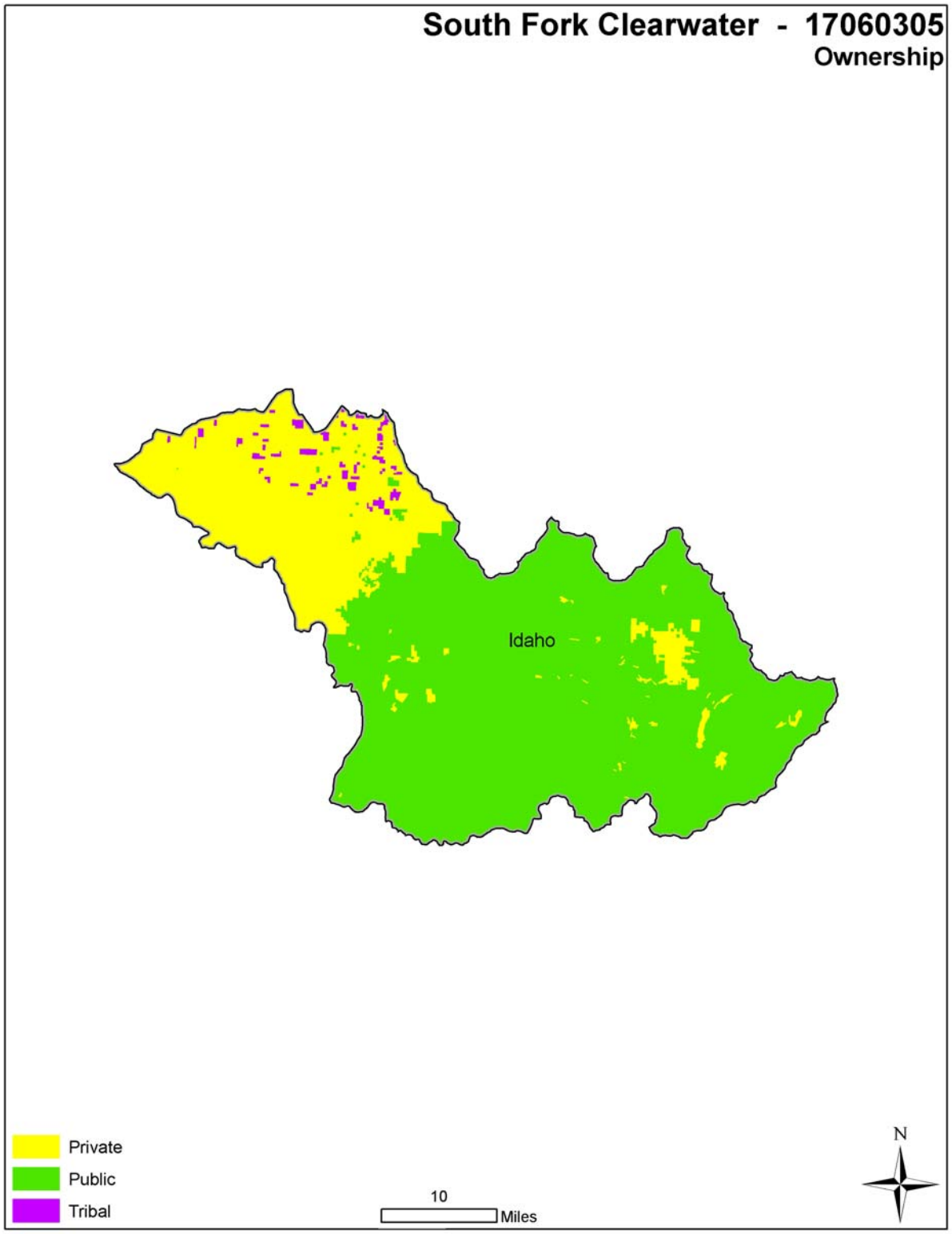
Conservation assistance is provided by the Idaho Soil and Water Conservation District, and the Clearwater Resource Conservation and Development office.

## Profile Contents

## Relief Map


South Fork Clearwater - 17060305
Elevation Range in Feet
High : 12582
Low : 533
HUC Min = 1231 MAX = 8857
10
Miles
N

## General Ownership[/1]



## Physical Description

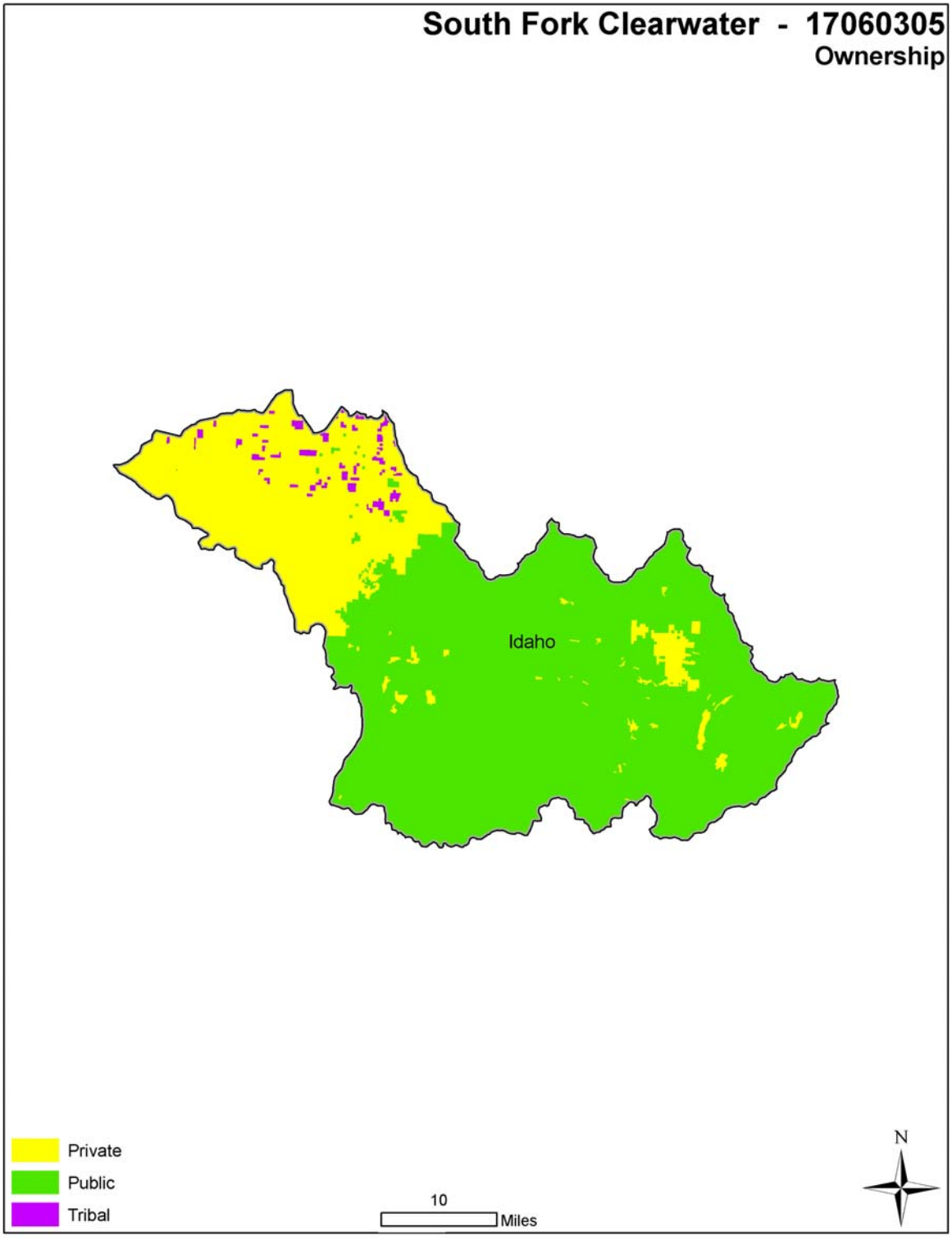
| Land Cover / Land Use (NLCD[2]) | Ownership - (2003 Draft BLM Surface Map Set[1]) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Public | | Private | | Tribal | | Totals | % of HUC |
| | Acres | % | Acres | % | Acres | % | | |
| Forest | 493,730 | 65% | 35,540 | 5% | 890 | <1% | **530,160** | **70%** |
| Grain Crops | | -- | 130,560 | 17% | 4,630 | 1% | **135,190** | **18%** |
| Conservation Reserve Program (CRP) Land[3] | | -- | (3,370) | (<1%) | (160) | (<1%) | **(3,530)** | **(<1%)** |
| Grass/Pasture/Hay Lands | 8,500 | 1% | 29,750 | 1% | 1,780 | 1% | **40,030** | **5%** |
| Orchards/Vineyards/Berries | | -- | | -- | | -- | | **0%** |
| Row Crops | | -- | 420 | 1% | 50 | 1% | **470** | **<1%** |
| Shrub/Rangelands | 16,510 | 1% | 13,750 | 1% | 510 | 1% | **30,790** | **4%** |
| Water/Wetlands/ Developed/Barren | 16,350 | 1% | 1,980 | 1% | 30 | 1% | **18,360** | **2%** |
| **Idaho HUC Totals** | **535,100** | **71%** | **212,000** | **28%** | **7,900** | **1%** | **755,000** | **100%** |

| Irrigated Lands[4] | Type of Land | ACRES | % of Irrigated Lands | % of HUC |
|---|---|---|---|---|
| | Cultivated Cropland | 0 | - | - |
| | Non-Cultivated Cropland * | 0 | - | - |
| | Pastureland | 0 | - | - |
| | **Total Irrigated Lands** | **0** | **-** | **-** |

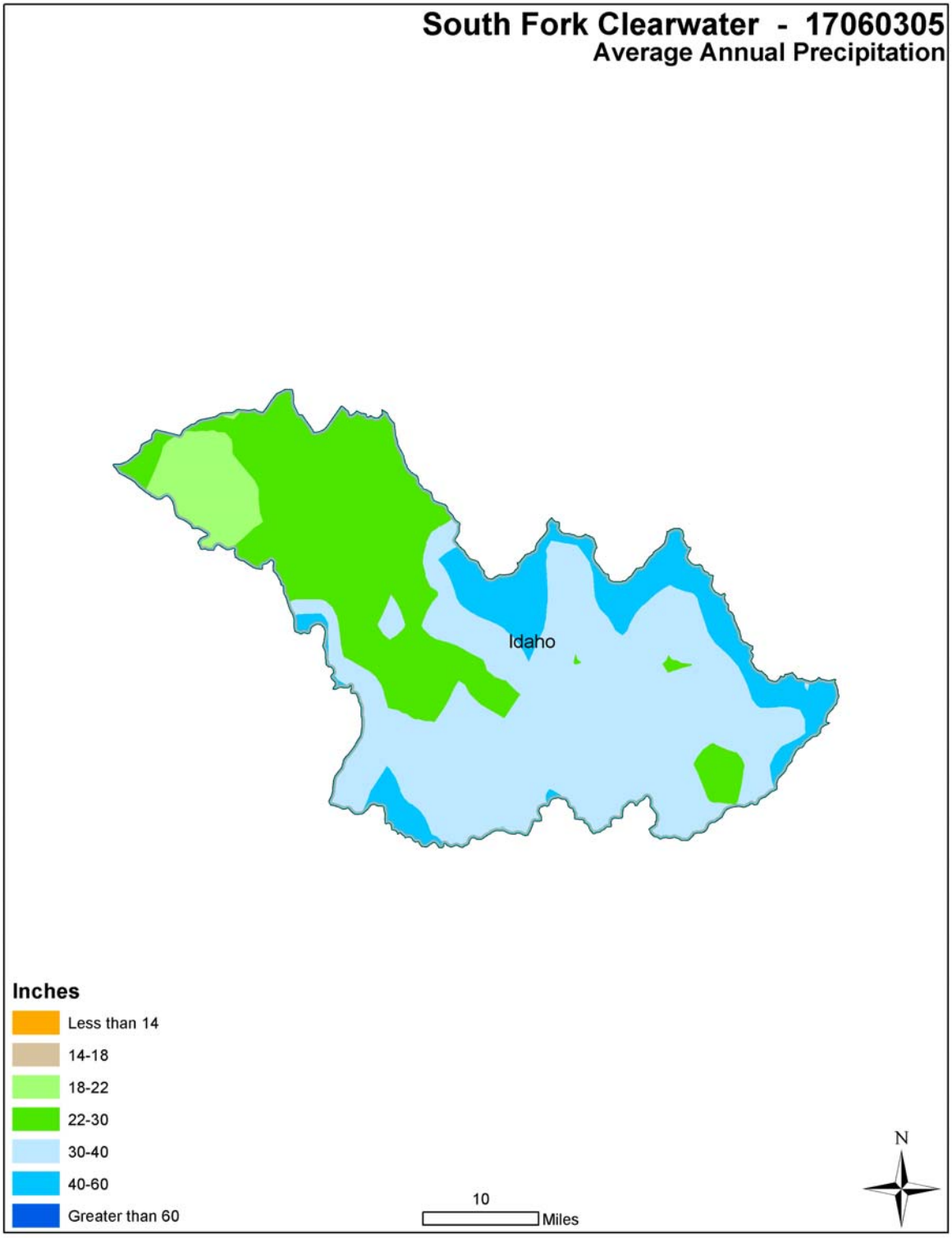
- [3] CRP acres are included in Grass/Pasture/Haylands.
- * Includes permanent hayland and horticultural cropland.

* Any differences between the acres in the above Table and the Future Conservation Needs Tables in the back of this document are due to the differences in Land Cover acres as opposed to Land Use acres. However the Total Private acres balance between the Land Use and Land Cover acres.

## Land Use / Land Cover[/2]

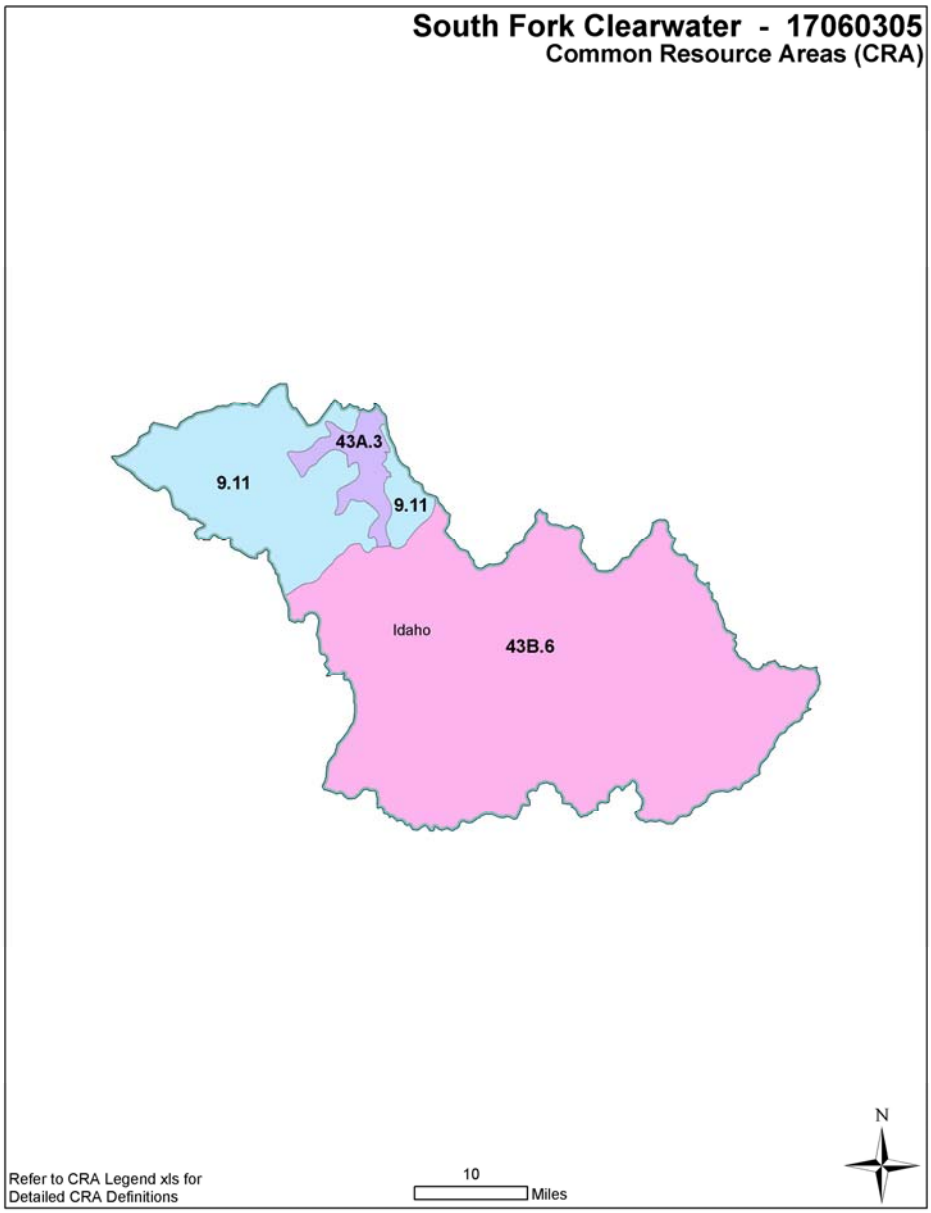


## Average Annual Precipitation[/5]



# Common Resource Area Map

The Common Resource Areas (CRA) delineated below for the South Fork Clearwater HUC are described in the next section (for additional information, see http://www.id.nrcs.usda.gov/technical/soils/common_res_areas.html). A CRA is defined as a geographical area where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource Area (General Manual Title 450 Subpart C 401.21).



## Common Resource Area Descriptions

The National Coordinated CRA Geographic Database provides:

- A consistent CRA geographic database;
- CRA geographic data compatible with other GIS data digitized from 1:250,000 scale maps, such as land use/land cover, political boundaries, Digital General Soil Map of the U.S. (updated STATSGO), and ecoregion boundaries;
- A consistent (correlated) geographic index for Conservation System Guides information and the eFOTG;
- A geographic linkage with the national MLRA framework.

**9.11 Palouse and Nez Perce Prairies - Nez Perce Prairie:** This unit is a loess-covered plateau. It is higher, cooler, less hilly, and has shallower soils than the Palouse Hills CRA. Idaho fescue and bluebunch wheatgrass are native. Cropland is now extensive and grows wheat, barley, peas, and hay. The headwaters of many perennial streams are impacted by agricultural land use, negatively impacting the water quality of downstream canyon reaches.

**43A.6 Northern Rocky Mountains--Lower Clearwater Canyons:** The deep, narrow Lower Clearwater Canyons are lower, drier, warmer, and have been more developed than the Lochsa-Selway-Clearwater Canyons. Savanna, Douglas-fir-ponderosa pine forest, and, in riparian areas, western red cedar-western white pine-grand fir forest occur. Forests are more widespread on canyon bottoms than on slopes.

**43B.6 Central Rocky Mountains--South Clearwater Forested Mountains:** The South Clearwater Forested Mountains ecoregion receives more maritime influence than ecoregions to the south but less than those to the north. Grand fir is usually the sole maritime tree species in the elevational zone between Douglas-fir and subalpine fir. Logging has caused slope instability (especially in granitic areas) and stream sedimentation. Placer gold mining has also heavily affected rivers.

## Streamflow Summary[7]

The South Fork Clearwater hydrologic unit (HUC 17060305) encompasses 1,165 square miles upstream of Kooskia, Idaho ranging in elevation from 1,230-8,860 feet. Unlike the North Fork, the South Fork Clearwater River is not regulated by a dam and supports a salmonid fishery. Over 85% of the annual precipitation occurs during the fall, winter, and spring months. In winter and spring, the basin's weather is characterized by prolonged gentle rains, fog, cloudiness, and high humidity; with deep snow accumulations at higher elevations. In contrast, warm dry weather during the summer results in only 10-15% of the annual precipitation. There are two long-term USGS gaging stations that collect streamflow data in the watershed, both are on the main stem of the South Fork Clearwater River. The South Fork Clearwater near Elk City (Station 13337500, period 1945-1974, 2003-present) is furthest upstream, gaging runoff from 261 square miles or 23% of the watershed. The South Fork Clearwater River at Stites (Station 13338500, period 1965-present) is located four miles upstream from the confluence with the Middle Fork Clearwater River near the downstream boundary of the watershed. Mean annual daily streamflow at Stites is 1,029 cfs and totals to an average annual volume of water of 744,500 acre-feet. 70% of the flow occurs between March and June. Streamflows are highest in May with an average of 3,130 cfs. Flows are lowest in September with an average of 237 cfs. The South Fork Clearwater River typically experiences annual flood peaks during late April, early May, or early June. An average spring runoff peak at Stites is about 5,000 to 7,000 cfs. The largest flood of record was on June 8, 1964, with an estimated peak of 17,500 cfs. The South Fork Clearwater Hydrologic Unit has one automated high elevation snow and climatic measuring station on its perimeter. Mountain Meadows SNOTEL is located along the watershed's southeast boundary; it reports hourly climatic data including snow water equivalent, precipitation, air temperature and snow depth. The station is part of the USDA NRCS Snow Survey Data Network operated and maintained by the NRCS.

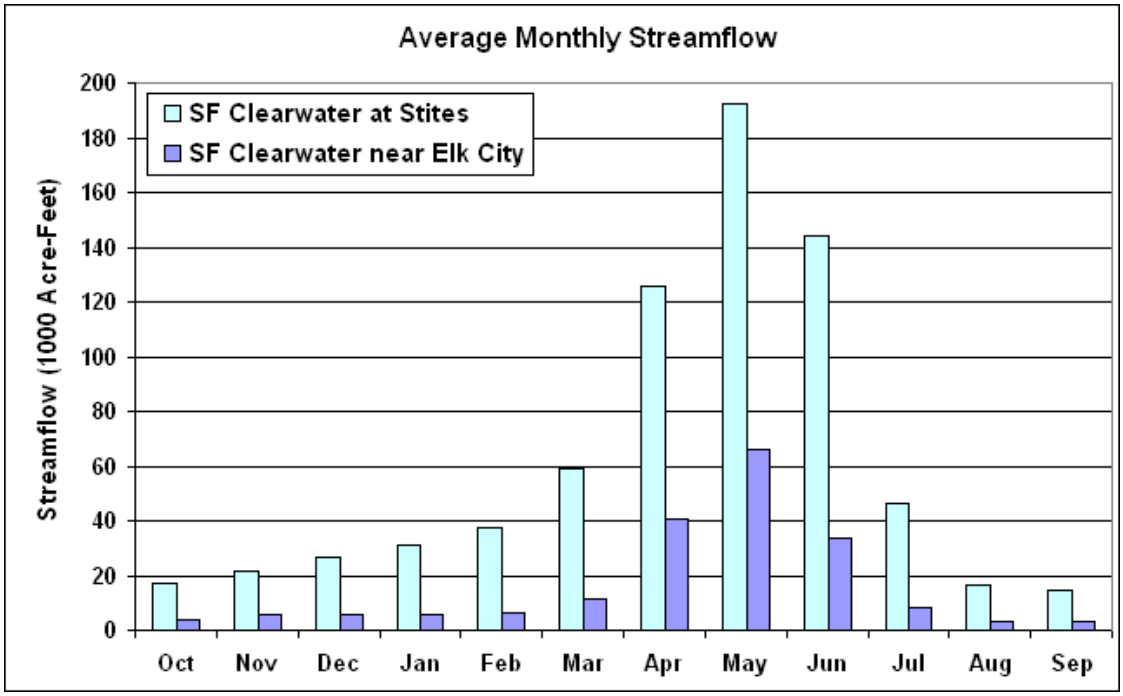



Figure 2: Average Monthly Streamflow for South Fork Clearwater River

## Streamflow Summary[7] – Continued

| | | | |
|---|---|---|---|
| **Irrigated Adjudicated Water Rights**[6]*)* | | **CFS** | |
| | Surface Water | 39.6 | |
| | Groundwater | 5.2 | |
| | Total Irrigated Adjudicated Water Rights | 44.8 | |
| **Stream Flow Data**[7] | South Fork Clearwater River at Stites (Station 13338500) | | **ACRE-FEET** |
| | | Average Annual | 744,473 |
| | | April - July Average | 499,450 |
| | | Percent of Average Annual | 67% |
| **Stream Data**<br>**Percent of Total Miles of streams in HUC* | | **MILES** | |
| | Total Stream Miles[8] | 2701.2 | |
| | Water quality impaired streams[9,10] | 1635.0 | 61% |
| | Anadromous Fish Presence (Streamnet)[11] | 645.2 | |
| | Bull Trout Presence (Streamnet)[11] | 875.8 | |
| | | | |
| **Land Cover/Use**[2] based on a 100 ft. stretch on both sides of all streams in the 100K Hydro Layer | | **ACRES** | **PERCENT** |
| | Forest | 68,820 | 71.2% |
| | Grain Crops | 15,450 | 16% |
| | Grass/Pasture/Hay Lands | 6,130 | 6.3% |
| | Row Crops | 60 | <1% |
| | Shrub/Rangelands – Includes CRP Lands | 4,120 | 4.3% |
| | Water/Wetlands/Developed/Barren | 2,170 | 2.2% |
| | **Total Acres of 100 ft stream buffers** | **96,750** | 100% |
| **Land Capability Class**[4] | **I** – slight limitations | 0 | 0% |
| | **II** – moderate limitations | 40,400 | 27% |
| | **III** – severe limitations | 91,000 | 62% |
| | **IV** – very severe limitations | 12,800 | 9% |
| | **V** – no erosion hazard, but other limitations | 0 | 0 |
| | **VI** – severe limitations, unsuited for cultivation, limited to pasture, range, forest | 3,300 | 2% |
| | **VII** – very severe limitations, unsuited for cultivation, limited to grazing, forest, wildlife | 0 | 0 |
| | **VIII** – misc areas have limitations, limited to recreation, wildlife, and water supply | 0 | 0 |
| | **Total Crop, Pasture Lands & CRP** | **147,500** | 100% |

## Streamflow Summary[7] – Continued

**Confined Animal Feeding Operations – Dairies/Feedlots**[12,13, 26]

| | Number | <200 | 200-500 | 500-750 | 750-1000 | >1000 |
|---|---|---|---|---|---|---|
| **Dairy** | 3 | 3 | | | | |
| | **Number** | **<300** | **300-999** | **1,000-4,999** | **5,000-9,000** | **>10,000** |
| **Feedlots** | 208 | 207 | 1 | | | |

## Resource Settings

**Pasture:** Non-irrigated riparian pastures with a growing season of 120 to 185 days. Livestock utilization is from late spring through fall, and big game species are present in winter and early spring. Fencing is generally an existing practice. Soils are deep with variable textures and wetland inclusions with slopes from zero to two percent. Annual precipitation is greater than 18 inches with very dry summers. Typically these pastures are adjacent to perennial or intermittent streams. Vegetation ranges from native grass/sedge/rush complexes to improved forage species such as timothy, smooth bromegrass, creeping meadow foxtail, orchard grass and clover.

Upland pastures are located above floodplains on steeper, dissected hillsides or mountain sides. Average annual precipitation is 18 to 40 inches per year. The majority of the precipitation is rain and snow from mid-November to mid-May. Summer months are hot and dry. Soil type is silt loam to gravel. Vegetation is typically introduced species, such as orchard grass and smooth brome. Native species such as bluebunch wheatgrass, Idaho fescue, pine grass, elk sedge, and native shrubs and trees may be found at higher elevations along mountain-sides. The majority of grazing animals are cattle, sheep and horses. Big game utilize pasture for early spring and winter grazing. Wildlife includes elk, black bear, whitetail and mule deer, and moose.

**Dry Cropland:** Dry cropland with conventional tillage, which may include a moldboard plow, chisel plow, disk and field cultivator. Typical rotations are two to three years and consist of winter wheat/summer fallow, winter wheat/lentils or peas. Precipitation is 18 to 24 inches per year. Fertilizers and pesticides are applied. Soils are typically silt loam cut over timber with slopes ranging from less than five to 25 percent. Wildlife includes deer, elk, moose, small game and nongame birds.

**Hayland:** Non-irrigated riparian hayland on zero to two percent slopes. Growing season is 120 to 185 days. Soils are deep with variable textures and wetland inclusions. Annual precipitation is greater than 20 inches with very dry summer months. Typically this hayland is adjacent to perennial or intermittent streams. Fertilizers and/or pesticides are periodically applied. Vegetation ranges from grass/sedge/rush complexes to improved species like timothy, smooth bromegrass, creeping meadow foxtail, orchard grass and clover. Big game species are present in winter and early spring. Forage harvest management is usually an existing practice.

Non-irrigated upland hay is found on slopes ranging from three to 30 percent. Vegetation consists of introduced perennial grasses and legumes. Soils vary from loam to silt loams.

## Resource Settings – Continued

Renovations occur every six to ten years. Precipitation is 18 inches or greater. One cutting is common.

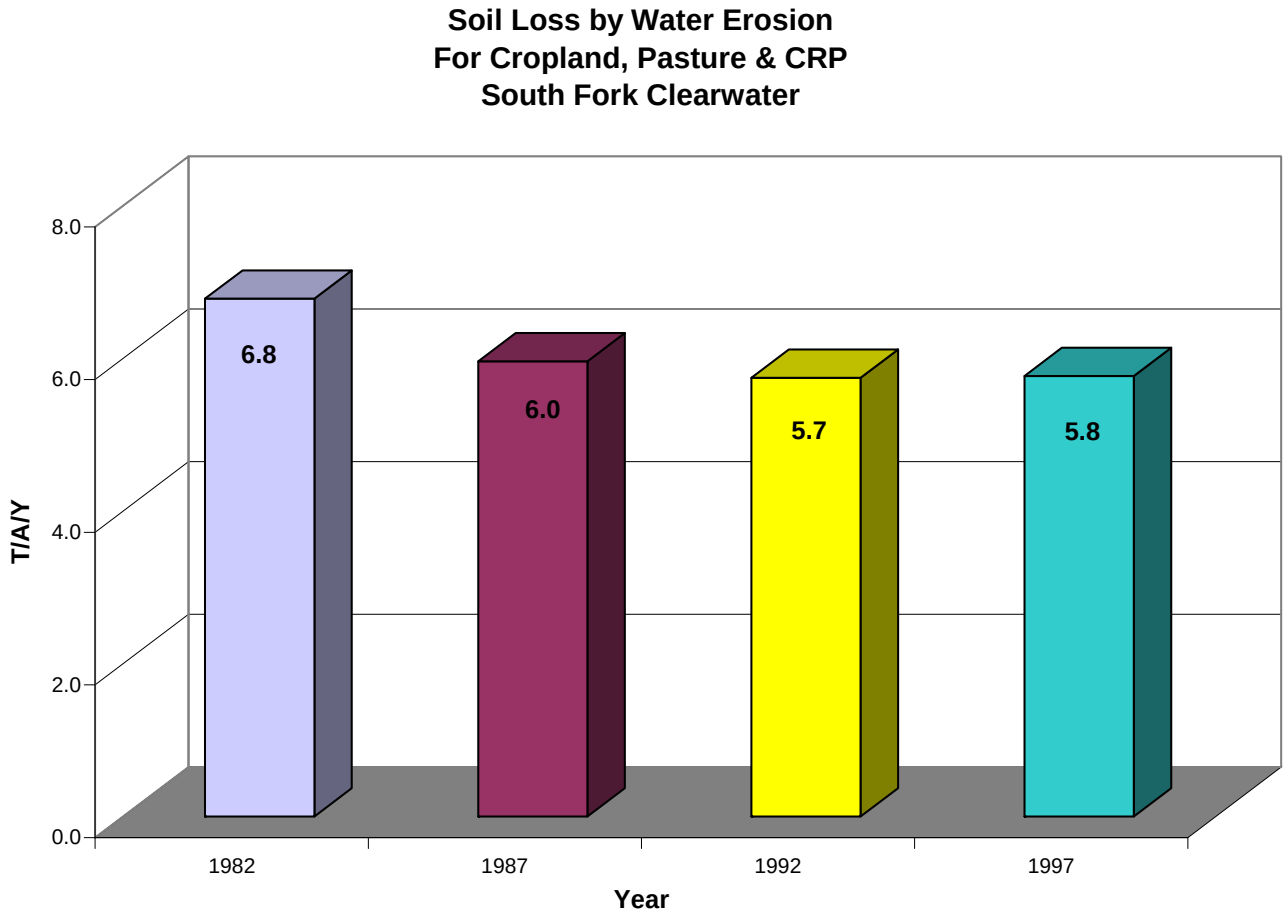
Conventionally tilled, surface irrigated hayland on zero to seven percent slopes. Precipitation is 16 inches or less per year and the growing season is approximately 100 to 160 days long. Small grains and alfalfa hay are grown in rotation, with alfalfa typically maintained for four to six years. Grazing of crop aftermath may occur. Nutrient and pest management may be less than desirable.

**Forests and Grazed Forests:** The riparian forest consists of mixed conifers and deciduous trees. The associated understory is comprised of grasses and brush species with inclusions of wetter areas. Soils are silt loams and clay loams that are shallow to deep, and can have low to high rock fragment content. They range from somewhat poorly to well-drained. Average annual precipitation ranges from 22 to 40 inches. The forest landscape is characterized by level to nearly level landforms. Riparian grazing units typically exhibit impacts to riparian vegetation and a loss of woody species. Important wildlife species include elk, deer, moose, bear, raptors and songbirds.

Ponderosa pine and dryer Douglas fir habitat types are found at elevation ranges from 1,800 to 4,000 feet on a variety of soil types. Annual precipitation is less than 25 inches with hot, dry summers. Slopes are less than 35 percent. The forest understory is dominated by ninebark/oceanspray and associated brush species. Grass and forb species are common. Livestock grazing occurs during the summer and early fall period, and overgrazing is common. Important wildlife species include elk, deer, moose, bear, raptors and songbirds.

Douglas fir, grand fir, and wetter habitat types are found at elevations greater than 4,000 feet on a variety of soil types. Slopes are greater than 35 percent. Annual precipitation is greater than 25 inches, most of which falls in the winter and spring. Summers are warm and relatively dry. The forest understory is dominated by forbs and scattered grass species, with associated brush species such as snowberry, willow and alder. Livestock grazing occurs during the mid-summer and early fall period, and overgrazing is common. Livestock tend to concentrate along the road corridors and riparian areas. Important wildlife species include elk, deer, moose, bear, raptors and songbirds.

## Resource Concerns




Water erosion in the South Fork Clearwater watershed decreased slightly between 1982 and 1987 and has remained essentially static since 1987. A slight decrease in cultivated cropland between 1982 and 1987 probably explains the decrease in water erosion during that period of time.

## Resource Concerns – Continued

| Impacted Water Bodies[9,10] (ID17060305) | Stream Miles | Sediment, Siltation or TSS | Nutrients | Bacteria | Temperature | Dissolved Oxygen | Flow/Habitat Alteration[1] | Other or Unknown |
|---|---|---|---|---|---|---|---|---|
| American River (CL052_02, 04; CL055_02, 03) | 59.4 | | | | x[2] | | | |
| Baldy Creek (CL070_02) | 8.0 | | | | x[2] | | | |
| Bear Creek (CL063_02) | 8.0 | | | | x[2] | | | |
| Beaver Creek (CL065_02) | 6.7 | x[3] | | | x[2] | | | |
| Big Elk Creek (CL058_02, 03) | 19.7 | | | | x | | | |
| Bridge Creek (CL047_02) | 7.2 | | | | x[2] | | | |
| Buffalo Gulch (CL059_02 | 6.5 | x[3] | | | x[2] | | | |
| Butcher Creek (CL011_02) | 18.9 | x | | x[3] | x | x[3] | x | |
| Cottonwood Creek (CL002_02, 04; CL003_02, 03, 04) | 80.4 | x | x | x | x | x | x | x |
| Cougar Creek (CL079_02) | 17.1 | x[3] | | | x[2] | | | |
| Crooked River (CL031_02, 03; CL032_02, 03) | 50.9 | | | | x[2] | | | |
| EF American River (CL054_02, 03) | 32.1 | | | | x[2] | | | |
| EF Crooked River (CL034_02) | 12.0 | | | | x[2] | | | |
| Elk Creek (CL056_02, 03) | 4.4 | | | | x[2] | | | |
| Fall Creek (CL076_02) | 7.8 | | | | x[2] | | | |
| Gospel Creek (CL015_02, 03) | 6.7 | | | | x[2] | | | |
| Hagen Creek (CL021_02) | 4.4 | | | | x[2] | | | |
| Haysfork Creek (CL069_02) | 9.5 | | | | x[2] | | | |
| Huddleson Creek (CL022_02, 02a) | 37.9 | | | | | | x | |
| Johns Creek (CL014_02, 04; CL017_02, 03; CL018_02, 03) | 70.9 | | | | x[2] | | | |
| Kirks Fork (CL053_02, 03) | 15.9 | | | | x[2] | | | |
| Leggett Creek (CL075_02) | 11.9 | | | | x[2] | | | |
| Little Elk Creek (CL057_02) | 12.7 | | | | x | | | |
| Long Haul Creek (CL009_02) | 15.0 | x | x | x | x | x | | x |
| Lucas Lake (CL052L_00) | 0 | x[3] | | | | | | |
| Maurice Creek (CL061_02) | 2.6 | | | | x[2] | | | |
| Meadow Creek (CL080_02, 03) | 47.8 | | | | x[2] | | | |
| Mill Creek (CL013_02, 03) | 44.7 | | | | x[2] | | | |
| Moores Creek (CL019_02) | 6.4 | | | | x[2] | | | |
| Moose Butte Creek (CL039_02, 03) | 15.2 | | | | x[2] | | | |
| Mule Creek (CL067_02, 03) | 13.8 | | | | x[2] | | | |
| Newsome Creek (CL062_02, 04) | 12.4 | x[3] | | | x[2] | | | |
| Newsome Creek (CL066_04; CL068_02, 03) | 18.0 | | | | x[2] | | | |
| Nugget Creek (CL064_02) | 4.6 | x[3] | | | x[2] | | | |
| Otterson Creek (CL048_02) | 6.2 | | | | x[2] | | | |
| Peasley Creek (CL078_02) | 22.3 | | | | x[2] | | | |
| Pilot Creek (CL071_02, 03) | 10.4 | | | | x[2] | | | |
| Rabbit Creek (CL082_02) | 11.2 | | | | x[2] | | | |
| Red Horse Creek (CL051_02) | 14.0 | | | | x[2] | | | |

## Resource Concerns – Continued

| Impacted Water Bodies[7,9,10] (ID17060305) *Continued* | Stream Miles | Sediment, Siltation or TSS | Nutrients | Bacteria | Temperature | Dissolved Oxygen | Flow/Habitat Alteration[1] | Other or Unknown |
|---|---|---|---|---|---|---|---|---|
| Red River (CL037_02, 04; CL038_02, 02a, 04; CL045_02, 03) | 125.9 | | | | x[2] | | | |
| Red Rock Creek (CL004_02, 03; CL005_02) | 55.3 | x | | | | | | |
| Red Rock Creek (CL005_03) | 3.5 | x | | | | | | |
| Relief Creek (CL035_02) | 13.5 | | | | x[2] | | | |
| Sally Ann Creek (CL081_02, 03) | 18.3 | | | | x[2] | | | |
| Sawmill Creek (CL072_02) | 6.0 | | | | x[2] | | | |
| Schwartz Creek (CL012_12a) | 44.5 | | | | | | x | |
| Shebang Creek (CL007_02, 03) | 42.0 | x | x | x | x | x | | |
| Siegel Creek (CL050_02) | 13.6 | | | | x[2] | | | |
| Silver Creek (CL077_02, 02a, 03) | 41.0 | | | | x[2] | | | |
| Sing Lee Creek (CL073_02) | 4.5 | x[3] | | | x[2] | | | |
| Sixmile Creek (CL029_02, 03) | 13.8 | | | | x[2] | | | |
| Soda Creek (CL046_02) | 8.0 | | | | x[2] | | | |
| South Fork Clearwater River (CL001_02, 05; CL036_02, 05; CL030_02, 05, CL012_02, 05; CL022_05) | 169.5 | x | | | x | | x | |
| SF Cottonwood Creek (CL008_02, 03) | 30.0 | x | x | x | x | x | x | |
| SF Red River (CL040_02, 03; CL041_02, 03; CL043_02) | 22.1 | | | | x[2] | | | |
| Square Mountain Creek (CL020_02) | 5.0 | | | | x[2] | | | |
| Stockney Creek (CL006_02, 03) | 52.9 | x | x | x | x | x | | |
| Tenmile Creek (CL025_02, 04; CL026_02, 03; CL027_ 02) | 43.2 | | | | x[2] | | | |
| Trail Creek (CL049_02) | 9.4 | | | | x[2] | | | |
| Threemile Creek (CL010_02, 03) | 49.9 | x | x | x | x | x | x | |
| Trapper Creek (CL044_02) | 13.8 | | | | x[2] | | | |
| Twentymile Creek (CL024_02, 03) | 28.0 | | | | x[2] | | | |
| WF Crooked River (CL033_02) | 13.5 | | | | x[2] | | | |
| WF Gospel Creek (CL016_02) | 5.1 | | | | x[2] | | | |
| WF Newsome Creek (CL074_02, 02a) | 7.3 | | | | X[2] | | | |
| WF Red River (CL042_02, 03) | 14.9 | | | | x[2] | | | |
| Whiskey Creek (CL060_02) | 4.2 | | | | x[2] | | | |
| Williams Creek (CL028_02) | 11.7 | | | | x[2] | | | |
| Wing Creek (CL023_02, 03) | 11.0 | | | | x[2] | | | |
| | | | | | | | | |
| **TOTAL STREAM MILES:** | **1635.0** | | | | | | | |

[1] Flow and habitat alteration are not considered pollutants by the Idaho Department of Environmental Quality, and are not addressed by the TMDL.
[2] Assessment documented concerns, and recommends listing for the specified pollutant on the next Integrated Report.
[3] Assessment recommends delisting on the next Integrated Report.
Shading indicates TMDL in place.

## Resource Concerns – Continued

The watershed has a long history of cultivation, grazing, and hydraulic and dredge mining. Timber harvest began in association with mining activities. Glory holes left after hydraulic mining have drastically altered the landscape and continue to contribute significantly to accelerated erosion and sediment loads to streams within the Nez Perce National Forest. Pollutant sources in the basin include wastewater treatment plants, suction dredge mining, AFOs, stormwater runoff, forestry, grazing, agriculture, mining, and roads. Subbasin assessments for the watershed have been completed, and TMDLs developed to restore beneficial uses. It is expected that these TMDLs will improve conditions throughout the subbasin for all aquatic species, including threatened and endangered fish species such as bull trout, spring chinook salmon, and steelhead.

Sediment is a major concern in the watershed, with loadings from agricultural and grazing areas as the primary pollutant sources. Coarse sediment, which effects salmonid spawning, has degraded water quality throughout the basin. Sediment sources in the South Fork Clearwater River are agricultural and grazing areas (10 – 30 times natural background) and forested areas (2 times natural background). Sediment TMDLs were developed for the primary agricultural areas in the watershed (Threemile and Butcher Creeks, and the Cottonwood Creek drainage). Additionally, a sediment TMDL was developed for the SF Clearwater River, with four control points from Harpster to above Crooked River to reduce sediment at appropriate locations in the upper basin. To meet these TMDLs, sediment load reductions from 50% to 95% are needed for streams within the agricultural areas, and at Stites on the South Fork Clearwater (with dilution from the forested part of the watershed) TSS loading needs to be reduced by 25%.

Temperature in the subbasin is also a concern, and the majority of water bodies will be included in the temperature TMDL. It was concluded that many unlisted stream segments throughout the subbasin needed heat load reductions to meet water quality standards. Effective shade and canopy closure will be surrogate targets for temperature improvements associated with the TMDL targets. Bacteria, nutrient, dissolved oxygen, and ammonia TMDLs were also developed for some watershed streams to address impacts from both point and nonpoint sources.

Although not addressed by the TMDLs, flow and habitat alteration impact many watershed streams. A number of studies have been conducted over the last 40 years, looking at impacts to water quality and fish and wildlife. Low flows and high stream temperatures were identified as problems for the Cottonwood Creek drainage as early as 1962. A 1984 assessment by BLM showed poor condition in this drainage due to lack of riparian vegetation and degraded streambanks. Land vegetative cover and subsequent management have resulted in dramatic changes to runoff and peak discharge from the watershed during storm events in the lower basin. Flow changes include higher and greater volume peaks due to land use. Peak flows are estimated to be 60% greater than under historic conditions in the lower basin. Higher peak flows impact stream channels transport large substrate downstream. Less infiltration and higher runoff also reduces summer flows. In the upper basin, forest practices such as harvesting and fire suppression, have altered the disturbance cycle and therefore the resulting hydrology as well. Land managers have identified improved practices for both forestry and agriculture that can address flow and habitat alterations to watershed streams.

Groundwater within the watershed has also been impacted. The Camas Prairie region has been designated a nitrate priority area (fifth priority in the state) by IDEQ, and a portion of this is located in the northwest portion of the watershed. More than half of the wells in the Camas Prairie have nitrate levels exceeding 5 mg/L, and several wells within the watershed exceed the drinking

## Resource Concerns – Continued

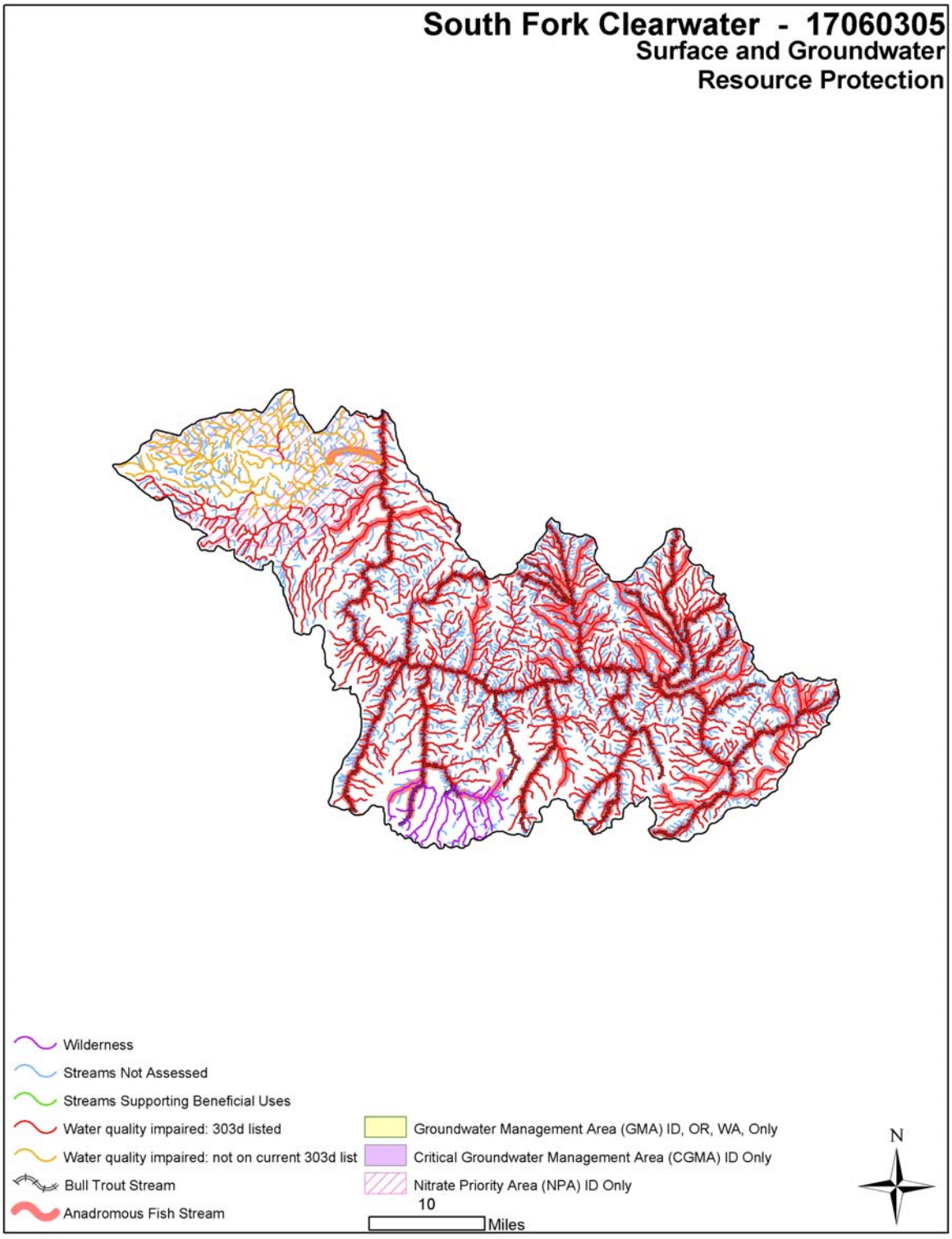
water standard (10 mg/L). Malfunctioning or poorly maintained septic systems, area livestock, and agricultural activities contribute to groundwater degradation. Sampled wells with the highest nitrate levels tended to be those adjacent to cultivated lands with shallow depth to groundwater. The long-term trends are unclear, but short-term trends in nitrate levels appear to be increasing in the Camas Prairie region. Recent pesticide testing has also shown various pesticide detections in the Cottonwood Creek subwatershed.

Conservation practices that can be used to address these water quality issues include erosion control measures, nutrient and pest management, improved forestry practices, residue management, and riparian buffers.

| Watershed Projects, Plans, Studies, and Assessments* | |
|---|---|
| ***Federal:*** | ***State:*** |
| **NRCS Watershed Plans/Studies/Assessments**[14,15] | **IDEQ TMDLs**[16] |
| Cottonwood Creek SAWQP (2001) | Cottonwood Creek Subbasin Assessment/TMDL (2000) |
| | SFClearwater Subbasin Assessment/TMDL (2004) |
| Cottonwood Creek | **IDEQ 319 Projects/**[17] |
| River Basin Study (2002) | Butcher/Threemile Creek TMDL Implementation(2005) |
| Cottonwood Creek - | Camas Prairie GW Nitrate Priority Area – Phase I and II (2003, 2006) |
| Preliminary Investigation Report (1991) | American River WQ Improvement (2007) |
| | SF Cottonwood TMDL Implementation Phase I and II (2001, 2005) |
| | Cottonwood Creek TMDL Implementation Phase I and II (2001, 2003) |
| **NWPCC Subbasin Plans and Assessments**[18] | **SCC Plans/Projects**[19] |
| Clearwater Subbasin Assessment (2003) | Cottonwood Creek TMDL Implementation Plan (2001) |
| | Cottonwood Creek Monitoring – IASCD (ongoing) |
| | **ISDA Regional Water Quality Projects**[20] |
| | Idaho, Lewiston, Nez Perce Counties Regional GW Study (on-going) |
| | **IDWR Comprehensive Basin Plans**[21] |
| | SF Clearwater Basin Comp State Water Plan (2005) |

* Listing includes past efforts in the watershed, and on-going studies and assessments.

## Surface and Groundwater Resource Protection[/ 22, 23, 24]



## Resource Concerns – Continued

| Resource Concerns/ Issues by Land Use | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **SWAPA*** | **Specific Resource Concerns/Issues** | **Pasture** | **Hayland** | **Dry Crops** | **Surface Irrigated Crops** | **Sprinkler Irrigated Crops** | **Rangeland** | **Grazed and Ungrazed Forest** |
| Soil Erosion | Sheet and rill | | | x | | | | |
| | Ephemeral or classic gully | x | x | x | | | x | x |
| | Irrigation-induced | | | | | | | |
| | Wind | | | | | | | |
| | Streambank | x | x | x | | | x | x |
| Water Quantity | Inefficient use on irrigated lands | | | | | | | |
| Water Quality, Surface | Suspended sediment | x | x | x | | | x | x |
| | Nutrients and organics | x | x | x | | | x | |
| Water Quality, Ground | Nutrients and organics | | x | x | | | | |
| | Pesticides | | | x | | | | |
| Soil Condition | Organic matter depletion | x | | x | | | | x |
| | Compaction | x | x | x | | | x | x |
| Plant Condition | Productivity, health and vigor | x | x | x | | | x | x |
| | Noxious and invasive plants | x | x | x | | | x | x |
| | Wildfire hazard | | | x | | | x | x |
| Domestic Animals | Inadequate feed or water | x | | | | | x | x |
| Fish and Wildlife | Inadequate water | x | x | x | | | x | x |
| | Inadequate cover/shelter | x | x | x | | | x | x |

*** SWAPA: - Soil, Water, Air, Plants and Animals**

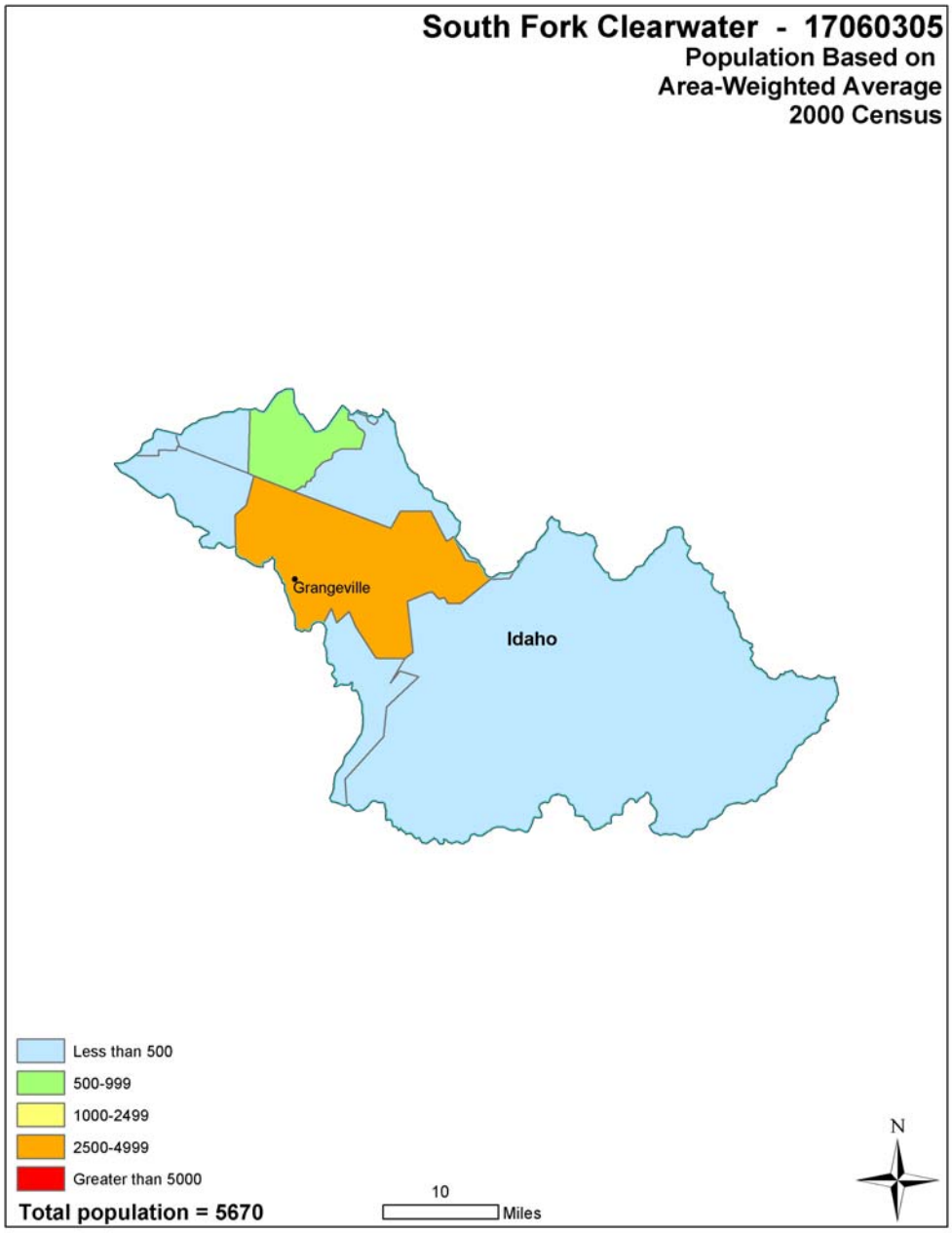
**Human considerations**: Implementation of conservation practices and enhancement has the potential for change in management and cost of production. Installation of practices will have an upfront cost and require maintenance. In the short run increased management may be required as new techniques are learned. Land may be taken out of production for installation of practices or conversion to other uses, such as wildlife habitat. Long term benefits should result from increased soil health, benefits to water quality and wildlife habitat.

| FEDERALLY LISTED THREATENED AND ENDANGERED SPECIES[25] | |
|---|---|
| **Threatened and Endangered Species** | **Candidate Species** |
| **Mammals –** Gray Wolf, Lynx<br>**Birds –** None<br>**Fish –** Bull Trout, Steelhead<br>**Invertebrates –** None<br>**Plants –** None | **Plants** – None<br><br>**PROPOSED SPECIES -** None |
| **ESSENTIAL FISH HABITAT –** Bull Trout | **CRITICAL FISH HABITAT –** Steelhead |

## Census and Social Data[/26]

**Population: 5,670**

**Number of Farms: 220**



## Census and Social Data - continued

The Census of Agriculture is authorized under PL 105-113 and uses the definition of a farm as any place from which $1,000 or more of agricultural products are produced or sold, or normally would have been sold, during the census year.

Census and Social data shown below are based on county-wide statistics and may not accurately reflect the actual watershed-specific portion of the counties.

Sixty-two percent of farm operators are farmers by occupation. The remaining operators have off-farm jobs as their primary occupation. The majority of operators are male; women make up 9.0 percent of the total. Ninety-eight percent of all operators are white. Non-white operators are of Hispanic, American Indian and Asian background.

Farm size ranges from less than 10 acres to more than 1,000 acres with an average of 960 acres. Agricultural land in the watershed is a mix of cropland, range, pasture and hay land. Land users in the watershed utilize EQIP, CRP, Continuous CRP and other programs to implement conservation plans.

For the period of 1997 through 2002, the number of farms in the watershed has decreased by 9.4 percent. Farm size is up 10.3 percent. The market value of production is also up, rising 19.6 percent. Government payments to farmers have increased by 17.4 percent. Farm sales range from less than $1,000 to more than $500,000 per year. Seventy-seven percent of farms reported sales of less than $50,000 per year.

| | Number of farms | Average size farm | Market Value of Production (Average Farm) | Government Payments (Average Farm) |
|---|---|---|---|---|
| 1997 | 243 | 870 | $44,500 | $8,600 |
| 2002 | 220 | 960 | $53,200 | $10,100 |
| Change | -9.4% | 10.3% | 19.6% | 17.4% |

Economic Profile:

| | Watershed | Idaho | United States |
|---|---|---|---|
| Population | 5,670 | 1,294,000 | 281,422,000 |
| Per Capita Personal Income (2005) | $22,300 | $28,500 | $34,500 |
| Median Home Value (2000) | $88,600 | $106,600 | $119,600 |
| Percent Unemployment (2006) | 6.1% | 3.4% | 4.6% |
| Percent Below Poverty Level (2004) | 14.6% | 11.5% | 12.7% |

## Progress/Status

**PRS Data**

| Conservation Treatment Acres | FY04 | FY05 | FY06 | FY07 | FY08 | Avg/Year | Total |
|---|---|---|---|---|---|---|---|
| Access Road (560) ft | 24 | 0 | 6110 | 1875 | 840 | 1769.8 | 8849 |
| Animal Trails and Walkways (575) ft | 0 | 130 | 0 | 0 | 0 | 26.0 | 130 |
| Comprehensive Nutrient Management Plan (100) number | 0 | 1 | 1 | 4 | 1 | 1.4 | 7 |
| Conservation Cover (327) acres | 435 | 0 | 0 | 308 | 0 | 148.6 | 743 |
| Conservation Crop Rotation (328) acres | 776 | 635 | 3352 | 3723 | 1735 | 2044.2 | 10221 |
| Contour Farming (330) acres | 747 | 449 | 3612 | 3372 | 1774 | 1990.8 | 9954 |
| Diversion (362) ft | 0 | 1400 | 0 | 0 | 301 | 340.2 | 1701 |
| Fence (382) ft | 1410 | 5340 | 5816 | 7414 | 37152 | 11426.4 | 57132 |
| Forage Harvest Management (511) acres | 0 | 0 | 0 | 15 | 42 | 11.4 | 57 |
| Forest Stand Improvement (666) acres | 0 | 0 | 18 | 17 | 0 | 7.0 | 35 |
| Heavy Use Area Protection (561) acres | 0 | 0 | 3 | 7 | 3 | 2.6 | 13 |
| Nutrient Management (acres) | 2052 | 2173 | 4901 | 3914 | 1272 | 2862.4 | 14312 |
| Pasture Planting (512) acres | 0 | 24 | 38 | 526 | 12 | 120.0 | 600 |
| Pest Management (595) acres | 40 | 497 | 2962 | 3461 | 938 | 1579.6 | 7898 |
| Pipeline (516) ft | 0 | 1283 | 2071 | 7095 | 10419 | 4173.6 | 20868 |
| Pond (378) number | 0 | 0 | 1 | 1 | 1 | 0.6 | 3 |
| Prescribed Grazing (528 & 528A) acres | 181 | 0 | 0 | | 0 | 45.3 | 181 |
| Pumping Plant (533) number | 0 | 0 | 0 | 2 | 1 | 0.6 | 3 |
| Range Planting (550) acres | 0 | 0 | 0 | 3 | 0 | 0.6 | 3 |
| Residue Management, Direct Seed (777) acres | 1087 | 1921 | 2403 | 2932 | 734 | 1815.4 | 9077 |
| Residue Management, Mulch Till (329B&345) acres | 56 | 150 | 0 | 1220 | 545 | 394.2 | 1971 |
| Residue Management, No-Till/Strip Till (329A&329) acres | 763 | 872 | 3887 | 1731 | 777 | 1606.0 | 8030 |
| Riparian Herbaceous Cover (390) acres | 0 | 0 | 0 | 1 | | 0.3 | 1 |
| Roof Runoff Structure (558) number | 0 | 0 | 0 | 0 | 2 | 0.4 | 2 |

## Progress/Status (continued)

| PRS Data (continued) | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Conservation Treatment Acres** | FY04 | FY05 | FY06 | FY07 | FY08 | Avg/Year | Total |
| Spring Development (574) number | 0 | 1 | 3 | 1 | 1 | 1.2 | 6 |
| Tree/Shrub Establishment (612) acres | 0 | 0 | 0 | 155 | 4 | 31.8 | 159 |
| Tree/Shrub Site Preparation (490) acres | 0 | 0 | 0 | 40 | 0 | 8.0 | 40 |
| Underground Outlet (620) ft | 0 | 0 | 0 | 0 | 230 | 46.0 | 230 |
| Upland Wildlife Habitat Management (645) acres | 0 | 0 | 0 | 165 | 0 | 33.0 | 165 |
| Use Exclusion (472) acres | 318 | 0 | 0 | 308 | 0 | 125.2 | 626 |
| Waste Storage Facility (313) number | 0 | 2 | 0 | 0 | 0 | 0.4 | 2 |
| Waste Treatment Lagoon (359) number | 0 | 0 | 1 | 0 | 0 | 0.2 | 1 |
| Water Well (642) number | 1 | 0 | 0 | 4 | 0 | 1.0 | 5 |
| Watering Facility (614) number | 0 | 3 | 4 | 5 | 11 | 4.6 | 23 |
| Wildlife Watering Facility (648) number | 1 | 0 | 0 | 0 | 0 | 0.2 | 1 |
| Windbreak/Shelterbelt Establishment (380) ft | 0 | 1420 | 0 | 0 | 678 | 419.6 | 2098 |

**Progress in the last five years has been focused on**:

~ residue management and erosion control on cropland
~ wildlife habitat management on upland and riparian
~ waste, nutrient and pest management systems
~ prescribed grazing on pasture and rangeland
~ surface and groundwater quality
~ forest management

**Resource concerns that require ongoing attention:**

~ erosion control
~ surface and groundwater quality
~ waste, nutrient and pest management
~ forest productivity and improving watershed health
~ improved grazing management
~ wildlife habitat improvements
~ threatened and endangered anadromous and resident fisheries

## Lands Removed from Production through Farm Bill Programs

- Conservation Reserve Program (CRP): **3,530 acres**
- Wetland Reserve Program (WRP): **None**

# Footnotes/Bibliography



1. Ownership Layer – Source: This spatial data contains surface management land status (sometimes known as "ownership") and Public Land Survey System (PLSS) information for Idaho. The Bureau of Land Management (BLM) in Idaho creates and maintains these spatial data layers. The primary source of the spatial features is the BLM Geographic Coordinate Database (GCDB), which contains official survey records and corresponding geodetic control information maintained by the BLM Cadastral program. In areas where GCDB records are unavailable, the spatial features are taken from a variety of sources including the BLM Idaho Resource Base Data collection, US Geological Survey Digital Line Graphs (DLGs), and US Forest Service Cartographic Feature Files (CFFs), among others. The source of the attribute information is the BLM Master Title Plats (MTPs) and careful cooperation with other government agencies that own or manage land parcels. The layer is available from the Inside Idaho (Interactive Numeric & Spatial Information Data Engine): http://inside.uidaho.edu For current ownership status, consult official records at appropriate federal, state or county offices. Ownership classes grouped to calculate Public Ownership vs. Private Ownership.
2. National Land Cover Dataset (NLCD): NLCD 92 (National Land Cover Data 1992) is a 21-category land cover classification scheme that has been applied consistently over the conterminous U.S. It is based primarily on the unsupervised classification of Landsat TM (Thematic Mapper) 1992 imagery. Ancillary data sources included topography, census, agricultural statistics, soil characteristics, other land cover maps, and wetlands data. The NLCD 92 classification is provided as raster data with a spatial resolution of 30 meters. The layer is available from: http://edcwww.cr.usgs.gov/products/landcover/nlcd.html Description: Abstract: These data can be used in a geographic information system (GIS) for any number of purposes such as assessing wildlife habitat, water quality, pesticide runoff, land use change, etc. The State data sets are provided with a 300 meter buffer beyond the State border to facilitate combining the State files into larger regions.
3. Farm Services Agency, USDA, 2005. CRP acres from GIS (CLU) database.
4. ESTIMATES FROM THE 1997 NRI DATABASE (REVISED DECEMBER 2000) REPLACE ALL PREVIOUS REPORTS AND ESTIMATES. Comparisons made using data published for the 1982, 1987, or 1992 NRI may produce erroneous results. This is due to changes in statistical estimation protocols, and because all data collected prior to 1997 were simultaneously reviewed (edited) as 1997 NRI data were collected. All definitions are available in the glossary. In addition, this December 2000 revision of the 1997 NRI data updates information released in December 1999 and corrects a computer error discovered in March 2000. For more information: http://www.nrcs.usda.gov/technical/NRI/
5. PRISM Climate Mapping Project. Annual precipitation data. See http://www.ocs.orst.edu/prism_new.html for further information.
6. Irrigated Adjudicated Water Rights – Idaho Department of Water Resources http://www.idwr.idaho.gov/water/srba/mainpage/
7. USGS Idaho Streamflows, gaging station data (http://waterdata.usgs.gov/id/nwis/sw/ ) and estimates for ungaged streams based on statistical data (http://water.usgs.gov/osw/streamstats/idaho.html).
8. National Hydrography Dataset (NHD). Developed by the US Geological Survey in cooperation with U.S. Environmental Protection Agency and other state and local partners (http://nhd.usgs.gov).
9. IDEQ. 2002 Integrated Report (approved December 2005). http://www.deq.idaho.gov/water/data_reports/surface_water/monitoring/integrated_report.cfm.
10. IDEQ. 2004. South Fork Clearwater Subbasin Assessment and TMDL. http://www.deq.state.id.us/water/data_reports/surface_water/tmdls/clearwater_river_sf/clearwater_river_sf.cfm; and IDEQ. 2000. Cottonwood Creek Subbasin Assessment and TMDL.

http://www.deq.state.id.us/water/data_reports/surface_water/tmdls/cottonwood_creek/cottonwood_creek.cfm

11. StreamNet is a cooperative venture of the Pacific Northwest's fish and wildlife agencies and tribes and is administered by the Pacific States Marine Fisheries Commission. Streamnet provided data and data services in support of the region's Fish and Wildlife Program and other efforts to manage and restore the region's aquatic resources. Official Streamnet website: http://www.streamnet.org/
12. (Dairy) Idaho Department of Water Resources: http://www.idwr.idaho.gov/gisdata/gis_data.htm
13. (Feedlot) Idaho State Department of Agriculture: http://www.agri.state.id.us/ FOIA request.
14. Natural Resource Conservation Service, Watershed Projects Planned and Authorized, http://www.nrcs.usda.gov/programs/watershed
15. Natural Resource Conservation Service, Watershed Plans, Studies and Assessments completed, http://www.nrcs.usda.gov/programs/watershed/Surveys_Plng.html#Watershed%20Surveys%20and%20Plan
16. Idaho Department of Environmental Quality (IDEQ), Surface Water Quality: Subbasin Assessments, TMDLs, and Implementation Plans. http://www.deq.state.id.us/water/data_reports/surface_water/tmdls/sba_tmdl_master_list.cfm
17. Idaho Department of Environmental Quality, Watershed protection: Nonpoint source management (319 grant), Reports and program resources. http://www.deq.idaho.gov/water/data_reports/surface_water/nps/reports.cfm
18. Subbasin assessments and plans are developed by local groups (SWCDs, Watershed Councils, Tribes and others) as part of the Northwest Power and Conservation Council's fish and wildlife program in the Columbia River Basin. This program is funded and implemented by the Bonneville Power Administration. http://www.nwcouncil.org/fw/subbasinplanning/
19. Idaho Soil Conservation Commission (SCC), TMDL watershed implementation plans: agricultural component, http://www.scc.state.id.us/waq.htm, and Water Quality Program, http://www.scc.state.id.us/Docs/WQPA%20FACT%20SHEET.doc
20. Idaho State Department of Agriculture (ISDA). Groundwater water quality regional projects. http://www.agri.state.id.us/Categories/Environment/water/gwReports.php
21. Idaho Department of Water Resources (IDWR). State Comprehensive Water Plans. http://www.idwr.idaho.gov/waterboard/planning/Comp_Basin_Plans.htm
22. IDEQ. 2002 Integrated Report (approved December 2005). http://www.deq.idaho.gov/water/data_reports/surface_water/monitoring/integrated_report.cfm.
23. Groundwater Management Areas and Critical Groundwater Management Areas designated by the Idaho Department of Water Resources. http://www.idwr.idaho.gov/hydrologic/projects/gwma/
24. Nitrate Priority Areas. IDEQ has developed a list of degraded ground water areas. This list focuses on nitrate and ranks the top 25 nitrate-degraded areas (referred to as "nitrate priority areas") in the state based on the severity of the degradation, the population affected, and the trend; the rank of "1" indicates the most severely impacted area in the state. http://www.deq.state.id.us/water/prog_issues/ground_water/nitrate.cfm#ranking
25. NRCS Field Office Technical Guide, Section II, Threatened and Endangered List and the Idaho Conservation Data Center, Idaho Department of Fish and Game http://fishandgame.idaho.gov/cms/tech/CDC/
26. Data were taken from the 2002 Agricultural Census and adjusted by percent of HUC in the county or by percent of zip code area in the HUC, depending on the level of data available. Data were also taken from the U.S. Census, 2000 by zip code and adjusted by percent of zip code in the HUC. http://www.agcensus.usda.gov/Publications/2002/Census_by_State/Idaho/index.asp

## Conservation Activities and Future Conservation Needs

The following Current Conditions tables have been developed to estimate the present level of conservation installed within the HUC, based on what has been reported in the PRMS and PRS reporting systems for the years 2004 through 2008.

The following Future Conditions Tables are estimates of the future needs of conservation practices in the watershed.

Estimates of future needs in the watershed are based on the following factors:

1. Estimates of total additional conservation needs to reach "Resource Management System" level of treatment based on benchmark conditions in the watershed

2. Local knowledge of the area, past and ongoing project activities and professional judgment

3. Practices previously installed which have exceeded their expected life (life span), are no longer accomplishing the conservation objective, and may need to be replaced or upgraded.

## Conservation Activities for Dry Cropland/Hayland

| **Current Conditions** | | Total acres | Riparian Potential |
|---|---|---|---|
| Total Dry Cropland | | 135,660 | 12,210 |
| Typical Management Unit/Ownership | | 960 | |
| Current Farm Bill participation | | | |

| **Future Conditions** | Riparian Potential | Total Acres |
|---|---|---|
| Dry Cropland Acres | | 123,450 |
| Conversion to Riparian RMS | 12,210 | |
| Total Acres | | 135,660 |

**Projected Treatment Needs for Dry Cropland:**

| Dry Cropland | Quantity | | Costs | | Effects | | | | Implementation | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Practices | Unit | Quantity | Additional Investment Cost | Annual O&M and Mngt. Cost | Water Conservation | Water Storage | Habitat | WQ | EQIP | WHIP | CREP | Other |
| Dry Cropland | Ac. | 123,450 | | | +3 | +2 | +2 | +3 | | | | |
| Conservation Crop Rotation (328) | Ac. | 123,450 | $ - | $ - | | | | | X | | | X |
| Contour Farming (330) | Ac. | 123,450 | 925,900 | 308,600 | | | | | X | | | X |
| Deep Tillage (324) | Ac. | 61,725 | 2,777,600 | 925,900 | | | | | X | | | X |
| Diversion (362) | Ft. | 238,500 | 655,900 | 13,100 | | | | | X | | | X |
| Forage Harvest Management (511) | Ac. | 37,035 | - | - | | | | | X | | | X |
| Grassed Waterway (412) | Ac. | 870 | 1,566,000 | 31,300 | | | | | X | X | | X |
| Nutrient Management (590) | Ac. | 123,450 | 1,851,800 | 617,300 | | | | | X | | | X |
| Pasture & Hayland Planting (512) | Ac. | 9,380 | 7,900,800 | 79,000 | | | | | X | | X | X |
| Pest Management (595) | Ac. | 123,450 | 2,962,800 | 987,600 | | | | | X | | | X |
| Residue Management, Mulch Till (345) | Ac. | 61,720 | 2,777,400 | 925,800 | | | | | X | | | X |
| Residue Management, No Till/Strip Till/Direct Seed (329) | Ac. | 123,450 | 11,110,500 | 3,703,500 | | | | | X | | | X |

## Conservation Activities for Dry Cropland/Hayland – Continued

**Projected Treatment Needs for Dry Cropland (Continued):**

| Dry Cropland | Quantity | | Costs | | Effects | | | | Implementation | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Practices | Unit | Quantity | Investment Cost | Annual O&M and Mngt. Cost | Water Conservation | Water Storage | Habitat | WQ | EQIP | WHIP | CREP | Other |
| Sediment Basin (350) | No. | 620 | 1,178,000 | 35,300 | | | | | X | | X | X |
| Stripcropping (585) | Ac. | 30,860 | 771,500 | 7,700 | | | | | X | | | X |
| Terrace (600) | Ft. | 845,700 | 2,368,000 | 23,700 | | | | | X | | | X |
| Upland Wildlife Habitat Management (645) | Ac. | 18,520 | 555,600 | 185,200 | | | | | X | | | X |
| Water and Sediment Control Basin (638) | No. | 610 | 1,050 | - | | | | | X | | | X |
| Windbreak/Shelterbelt Establishment (380) | Ft. | 1,540 | 2,300 | - | | | | | X | | | X |
| Dry Cropland Riparian | Ac. | 12,210 | | | +3 | +2 | +3 | +3 | | | | |
| Channel Bank Vegetation (322) | Ft. | 149,860 | $ 307,200 | $ 6,100 | | | | | X | | | X |
| Channel Stabilization (584) | Ft. | 149,860 | 3,746,500 | 187,300 | | | | | X | | | X |
| Fence (382) | Ft. | 200,640 | 435,400 | 8,700 | | | | | X | X | | X |
| Nutrient Management (590) | Ac. | 12,210 | 183,200 | 61,100 | | | | | X | X | | X |
| Pest Management (595) | Ac. | 12,210 | 293,000 | 97,700 | | | | | X | | | X |
| Pipeline (516) | Ft. | 201,460 | 590,300 | 3,000 | | | | | X | | | X |
| Prescribed Grazing (528) | Ac. | 12,210 | 183,200 | 61,100 | | | | | X | | | X |
| Pumping Plant (533) | No. | 75 | 216,000 | 2,200 | | | | | X | | | X |
| Riparian Forest Buffer (391) | Ac. | 3,440 | 5,160,000 | 51,600 | | | | | X | | | X |
| Riparian Herbaceous Cover (390) | Ac. | 3,440 | 1,032,000 | 10,300 | | | | | X | X | | X |
| Streambank & Shoreline Prot (580) | Ft. | 74,900 | 3,557,800 | 177,900 | | | | | X | X | | X |
| Tree/Shrub Establishment (612) | Ac. | 1,720 | 808,400 | 8,100 | | | | | X | | | X |
| Upland Wildlife Management (645) | Ac. | 1,830 | 54,900 | 18,300 | | | | | X | X | | X |
| Use Exclusion (472) | Ac. | 610 | 20,700 | 600 | | | | | X | X | | X |
| Watering Facility (614) | No. | 150 | 130,500 | 1,300 | | | | | X | | | X |
| Wetland Wildlife Management (644) | Ac. | 1,220 | 36,600 | 12,200 | | | | | X | | | X |
| Total RMS Costs | | | $ 54,160,850 | $8,551,500 | | | | | | | | |

## Conservation Activities for Dry Cropland – Continued

| Potential RMS Effects Summary for Dry Cropland | | |
|---|---|---|
| Cost Items and Programs | Costs | O&M Costs |
| Non Farm Bill Programs | $ 2,708,000 | $ 427,600 |
| Potential Farm Bill Programs | $ 51,452,850 | $8,123,900 |
| Operator O&M and Management Cost | | $8,551,500 |
| Annual Management Incentives (3 yrs - Incentive Payments) | $ 23,712,500 | |
| Operator Investment | $ 16,578,200 | |
| Federal Costshare | $ 13,870,150 | |
| Total RMS Costs | $ 54,160,850 | $8,551,500 |
| Estimated Level of Participation | | 75% |
| Total Acres in RMS System | | 101,745 |
| Anticipated Cost at Estimated Level of Participation | $ | 40,620,600 |
| Participating landowners will be in compliance with TMDLs | | |
| Improves habitat for ESA endangered & threatened species | | |

## Conservation Activities for Grazed Rangeland, Pasture and Hayland

| **Current Conditions** | Grazed | Ungrazed | Riparian/Wetland/Potential | Total Acres |
|---|---|---|---|---|
| Private Rangeland and Dry Pasture | 45,790 | | 5,500 | 45,790 |
| Typical Management Unit/Ownership | 960 | | | |
| Current Farm Bill participation | 15% | | | |

| **Future Conditions** | Rangeland / Pasture | Riparian | Total Acres |
|---|---|---|---|
| | 40,290 | 5,500 | 45,790 |

**Projected Treatment Needs for Grazed Rangeland, Pasture and Hayland:**

| | Quantity | | Costs | | Effects | | | | Implementation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Practices | Unit | Quantity | Investment Cost | Annual O&M and Mngt. Cost | Water Conservation | Water Storage | Habitat | WQ | EQIP | WHIP | WRP | CREP | Other |
| Grazed Range, Pasture & Hayland | Ac. | 40,290 | | | +3 | +2 | +3 | +3 | | | | | |
| Animal Trails and Walkways (575) | Ft. | 332,640 | $1,663,200 | $ 16,600 | | | | | X | | | | X |
| Brush Management (314) | Ac. | 13,300 | 665,000 | 6,700 | | | | | X | | | | X |
| Fence (382) | Ft. | 332,640 | 721,800 | 4,400 | | | | | X | | | | X |
| Firebreak (394) | Ft. | 166,320 | 332,600 | 6,700 | | | | | X | | | | X |
| Pasture & Hayland Planting (512) | Ac. | 4,030 | 644,800 | 6,400 | | | | | X | | | | X |
| Pest Management (595) | Ac. | 40,290 | 967,000 | 322,300 | | | | | X | | | | X |
| Pipeline (516) | Ft. | 166,320 | 487,300 | 2,400 | | | | | X | | | | X |
| Pond (378) | No. | 16 | 108,800 | 1,100 | | | | | X | | | | X |
| Prescribed Grazing (528) | Ac. | 40,290 | 241,700 | 80,600 | | | | | X | | | | X |
| Range Planting (550) | Ac. | 13,300 | 1,330,000 | 13,300 | | | | | X | | | | X |
| Spring Development (574) | No. | 60 | 144,000 | 700 | | | | | X | X | | | X |
| Upland Wildlife Management (645) | Ac. | 6,040 | 181,200 | 60,400 | | | | | X | X | | | X |
| Watering Facility (614) | No. | 60 | 52,200 | 500 | | | | | X | | | | X |
| Well (642) | No. | 25 | 168,800 | 1,700 | | | | | X | | | | X |

## Conservation Activities for Grazed Rangeland, Pasture and Hayland – Continued

**Projected Treatment Needs for Grazed Rangeland, Pasture and Hayland (Continued):**

| | Quantity | | Costs | | Effects | | | | Implementation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Practices | Unit | Quantity | Investment Cost | Annual O&M and Mngt. Cost | Water Conservation | Water Storage | Habitat | WQ | EQIP | WHIP | WRP | CREP | Other |
| Range & Pasture Riparian | Ac. | 5,500 | | | +3 | +2 | +3 | +3 | | | | | |
| Channel Bank Vegetation (322) | Ft. | 50,760 | 104,100 | 2,100 | | | | | X | | | | X |
| Channel Stabilization (584) | Ft. | 50,760 | 1,269,000 | 63,500 | | | | | X | | | | X |
| Fence (382) | Ft. | 44,880 | 97,400 | 1,900 | | | | | X | X | X | | X |
| Pasture & Hayland Planting (512) | Ac. | 550 | 88,000 | 900 | | | | | X | | | | X |
| Pest Management (595) | Ac. | 5,500 | 132,000 | 44,000 | | | | | X | | | | X |
| Pipeline (516) | Ft. | 22,700 | 66,500 | 300 | | | | | X | | | | X |
| Prescribed Grazing (528) | Ac. | 5,500 | 33,000 | 11,000 | | | | | X | | | | X |
| Pumping Plant (533) | No. | 10 | 28,800 | 300 | | | | | X | | | | X |
| Riparian Forest Buffer (391) | Ac. | 1,160 | 1,740,000 | 17,400 | | | | | X | | | | X |
| Riparian Herbaceous Cover (390) | Ac. | 1,160 | 348,000 | 3,500 | | | | | X | X | X | | X |
| Stream Crossing (578) | No. | 65 | 227,500 | 11,400 | | | | | X | X | X | | X |
| Streambank & Shoreline Prot (580) | Ft. | 25,380 | 1,205,600 | 60,300 | | | | | X | X | | | X |
| Tree/Shrub Establishment (612) | Ac. | 290 | 136,300 | 1,400 | | | | | X | | | | X |
| Upland Wildlife Management (645) | Ac. | 1,100 | 33,000 | 11,000 | | | | | X | X | | | X |
| Use Exclusion (472) | Ac. | 275 | 9,400 | 300 | | | | | X | X | X | | X |
| Watering Facility (614) | No. | 17 | 14,800 | 100 | | | | | X | | X | | X |
| Wetland Wildlife Management (644) | Ac. | 550 | 16,500 | 5,500 | | | | | X | | X | | X |
| Total RMS Costs | | | 13,258,300 | $ 768,700 | | | | | | | | | |

## Conservation Activities for Grazed Rangeland, Pasture and Hayland – Continued

**RMS Cost Summary for Grazed Rangeland, Pasture and Hayland**

| Cost Items and Programs | Costs | O&M Costs |
|---|---|---|
| Non Farm Bill Programs | $ 662,900 | $ 38,400 |
| Potential Farm Bill Programs | $12,595,400 | $ 730,300 |
| Operator O&M and Management Cost | | $ 768,700 |
| Annual Management Incentives (3 yrs - Incentive Payments) | $ 1,604,400 | |
| Operator Investment | $ 5,059,300 | |
| Federal Costshare | $ 6,594,600 | |
| Total RMS Farm Bill Costs | $13,258,300 | |

| | |
|---|---|
| Estimated Level of Participation | 35% |
| Total Acres in RMS System | 14,100 |
| Anticipated Cost at Estimated Level of Participation | $ 4,640,400 |
| Total Annual Forage Production Benefits (acre unit months) | 2,400 |
| Improves infiltration and storage of water in soil profile | |
| Improves upland wildlife habitat for deer, elk, antelope and other species | |
| Improves water quality by reducing erosion and sediment delivery to streams | |

NRCS Natural Resources Conservation Service

Idaho

# South Fork Clearwater - 17060305

8 Digit Hydrologic Unit Profile

September 2008

## Conservation Activities for Grazed Forestland

| Current Conditions | | | Total Acres |
|---|---|---|---|
| Total Private Forestland | | | 36,430 |
| Riparian Potential | | | 4,370 |
| Current Farm Bill participation | | | 0% |

| Future Conditions | Riparian Potential | Total Acres |
|---|---|---|
| Private Forestland Acres | | 32,060 |
| Conversion to Riparian RMS | 4,370 | |
| Total Acres | | 36,430 |

**Projected Treatment Needs for Grazed Forestland:**

| Forestland | Quantity | | Costs | | Effects | | | | Implementation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Practices | Unit | Quantity | Investment Cost | Annual O&M and Mgt. Cost | Water Conser-vation | Water Storage | Habitat | WQ | EQIP | WHIP | WRP | CREP | Other |
| Forestland (Grazed) | Ac. | 32,060 | | | +2 | +2 | +3 | +3 | | | | | |
| Access Road (560) | Ft. | 33,000 | $4,702,800 | $ 470,300 | | | | | | | X | | X |
| Animal Trails and Walkways (575) | Ft. | 264,000 | $ 1,320,000 | $ 13,200 | | | | | X | | | | X |
| Critical Area Planting (342) | Ac. | 3,210 | $ 1,508,700 | $ 45,300 | | | | | | | X | | X |
| Fence (382) | Ft. | 132,000 | $ 286,400 | $ 5,700 | | | | | X | | | | X |
| Firebreak (394) | Ft. | 66,000 | $ 132,000 | $ 2,600 | | | | | | | X | | X |
| Forest Slash Treatment (384) | Ac. | 900 | $ 135,000 | $ - | | | | | | | | | X |
| Forest Stand Improvement (666) | Ac. | 16,030 | $ 4,969,300 | $ 24,800 | | | | | | | X | | X |
| Forest Trails and Landings (655) | Ac. | 320 | $ 80,000 | $ 400 | | | | | | | | | X |
| Fuel Break (383) | Ac. | 110 | $ 63,800 | $ 600 | | | | | | | | | X |
| Nutrient Management (590) | Ac. | 32,060 | $ 480,900 | $ 160,300 | | | | | | | | | X |
| Pest Management (595) | Ac. | 32,060 | $ 769,400 | $ 256,500 | | | | | | | X | | X |
| Pipeline (516) | Ft. | 264,000 | $ 773,500 | $ 3,900 | | | | | X | | | | X |
| Prescribed Burning (338) | Ac. | 250 | $ 40,000 | $ - | | | | | | | X | | X |

## Conservation Activities for Grazed Forestland - Continued

**Projected Treatment Needs for Grazed Forestland (Continued):**

| Forestland | | Quantity | Costs | | Effects | | | | Implementation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Practices | Unit | Quantity | Investment Cost | Annual O&M and Mgt. Cost | Water Conser-vation | Water Storage | Habitat | WQ | EQIP | WHIP | WRP | CREP | Other |
| Prescribed Forestry (409) | Ac. | 1,000 | $ 22,500 | $ 7,500 | | | | | | | X | | X |
| Prescribed Grazing (528) | Ac. | 32,060 | $ 480,900 | $ 160,300 | | | | | X | | | | X |
| Silvopasture Est pasture (381) | Ac. | 4,810 | $ 481,000 | $ 4,800 | | | | | | | | | X |
| Spring Development (574) | No | 50 | $ 120,000 | $ 600 | | | | | X | X | | | X |
| Tree/Shrub Establishment (612) | Ac. | 8,010 | $ 3,764,700 | $ 37,600 | | | | | | | X | | X |
| Forest Site Preparation (490) | Ac. | 3,210 | $ 866,700 | $ - | | | | | | | X | | X |
| Tree/Shrub Pruning (660) | Ac. | 750 | $ 202,500 | $ 2,000 | | | | | | | | | X |
| Upland Wildlife Habitat Mngt (645) | Ac. | 6,410 | $ 192,300 | $ 64,100 | | | | | | X | X | | X |
| Watering Facility (614) | No. | 100 | $ 87,000 | $ 900 | | | | | X | | | | X |
| Wetland Wildlife Management (644) | No. | 50 | $ 1,500 | $ 500 | | | | | | | X | | X |
| Forestland Riparian | Ac. | 4,370 | | | +2 | +2 | +3 | +3 | | | | | |
| Access Road (560) | Ft. | 4,620 | $ 658,400 | $ 65,800 | | | | | | | X | | X |
| Animal Trails and Walkways (575) | Ft. | 36,960 | $ 184,800 | $ 1,800 | | | | | X | | | | X |
| Critical Area Planting (342) | Ac. | 440 | $ 206,800 | $ 6,200 | | | | | | X | X | | X |
| Fence (382) | Ft. | 422,400 | $ 916,600 | $ 18,300 | | | | | X | | | | X |
| Firebreak (394) | Ft. | 9,240 | $ 18,500 | $ 400 | | | | | | X | X | | X |
| Forest Slash Treatment (384) | Ac. | 130 | $ 19,500 | $ - | | | | | | | | | X |
| Forest Stand Improvement (666) | Ac. | 2,190 | $ 678,900 | $ 3,400 | | | | | | X | X | | X |
| Forest Trails and Landings (655) | Ac. | 40 | $ 10,000 | $ 100 | | | | | | | | | X |
| Fuel Break (383) | Ac. | 16 | $ 9,300 | $ 100 | | | | | | | | | X |
| Nutrient Management (590) | Ac. | 4,370 | $ 65,600 | $ 21,900 | | | | | | | | | X |
| Pest Management (595) | Ac. | 4,370 | $ 104,900 | $ 35,000 | | | | | | X | X | | X |
| Pipeline (516) | Ft. | 39,960 | $ 117,100 | $ 600 | | | | | X | | | | X |
| Prescribed Burning (338) | Ac. | 35 | $ 5,600 | $ - | | | | | | X | X | | X |
| Prescribed Forestry (409) | Ac. | 140 | $ 3,200 | $ 1,100 | | | | | | X | X | | X |

## Conservation Activities for Grazed Forestland - Continued

**Projected Treatment Needs for Grazed Forestland (Continued):**

| Forestland | | Quantity | Costs | | Effects | | | | Implementation | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Practices | Unit | Quantity | Investment Cost | Annual O&M and Mgt. Cost | Water Conser-vation | Water Storage | Habitat | WQ | EQIP | WHIP | WRP | CREP | Other |
| Prescribed Grazing (528) | Ac. | 4,370 | $ 65,600 | $ 21,900 | | | | | X | | | | X |
| Riparian Forest Buffer (391) | Ac. | 940 | $ 1,410,000 | $ 14,100 | | | | | | X | X | | X |
| Silvopasture Est pasture (381) | Ac. | 660 | $ 66,000 | $ 700 | | | | | | | | | X |
| Spring Development (574) | No | 20 | $ 40,000 | $ 200 | | | | | X | X | | | X |
| Stream Habitat Improve & Mgnt (395) | Ft. | 41,100 | $ 205,500 | $ 2,100 | | | | | | X | X | | X |
| Streambank&Shoreline Protec (580) | Ft. | 20,540 | $ 965,400 | $ 48,300 | | | | | | X | X | | X |
| Tree/Shrub Establishment (612) | Ac. | 1,090 | $ 490,500 | $ 4,900 | | | | | | X | X | | X |
| Forest Site Preparation (490) | Ac. | 440 | $ 132,000 | $ - | | | | | | X | X | | X |
| Tree/Shrub Pruning (660) | Ac. | 110 | $ 29,700 | $ 300 | | | | | | | | | X |
| Upland Wildlife Habitat Mngt (645) | Ac. | 870 | $ 26,100 | $ 8,700 | | | | | | X | X | | X |
| Watering Facility (614) | No. | 15 | $ 13,100 | $ 100 | | | | | X | X | X | | X |
| Wetland Wildlife Management (644) | No. | 10 | $ 300 | $ 100 | | | | | | X | X | | X |
| Total RMS Costs | | | $27,924,300 | $ 1,518,000 | | | | | | | | | |

## Conservation Activities for Grazed Forestland - Continued

| Potential RMS Effects Summary for Private Grazed Forestlands | | |
|---|---|---|
| Cost Items and Programs | Costs | O&M Costs |
| Non Farm Bill Programs (5 percent of total) | $ 1,396,200 | $ 75,900 |
| Potential Farm Bill Programs (95 percent of total) | $ 26,528,100 | $ 1,442,100 |
| Operator O&M and Management Cost | | $ 1,518,000 |
| Annual Management Incentives (3 yrs - Incentive Payments) | $ 2,213,200 | |
| Operator Investment | $ 13,553,700 | |
| Federal Costs Costshare | $ 12,157,400 | |
| Total RMS Costs | $ 27,924,300 | $ 1,518,000 |
| Estimated Level of Particpation | | 75% |
| Total Acres in RMS System | | 27,300 |
| Anticipated Cost at Estimated Level of Participation | | $ 20,943,200 |
| Improves forest productivity, health and ecological sustainability | | |
| Reduces forest fuel loading and fire danger | | |
| Reduces forest disease and insect mortality risk | | |
| Total Annual Forage Production Benefits | | |
| Improves infiltration and storage of water in soil profile | | |
| Improves upland wildlife habitat for elk, deer, antelope and other species | | |
| Improves water quality by reducing erosion and sediment delivery to streams | | |

## Conservation Activities for Headquarters

Confined Animal Feed Operations (CAFO - 700 Head Dairies or 1,000 Head Feeder Cattle) and Animal Feed Operations (AFO 200-700 Head of Dairy or 300 to 1,000 Head Feeder Cattle) are variable in complexity depending on size, number of cows and location of the waste storage facility. Note that an AFO can be designated as a CAFO regardless of number of animals if it is found to be a significant polluter.

Kinds and amounts of component practices required for proper operation are site specific, but typically include the following: Anaerobic Digester (366), Composting Facility (317), Access Road (560), Corral Dust Management (785), Dikes (356), Diversions (362), Fence (382), Heavy Use Area Protection (561), Irrigation Water Conveyance (430EE) (430DD), Pipeline (516), Pond (378), Pond Sealing or Lining (521), Pump Plant (533), Roof Runoff Structure (558), Separator, Structure for Water Control (587), Underground Outlet (620), Underground Outlet (620), Waste Treatment Lagoon (359), Watering Facility (614), Well Decommissioning (355), Windbreak/Shelterbelt Establishment (380), Dry Stack Areas and Ramps. Management practices commonly used include: Critical Area Planting (342), Filter Strip (393), Manure Transfer (634), Nutrient Management (590), Pest Management (595) and Waste Utilization (633).

| **Current Conditions** | | Total |
|---|---|---|
| CAFOs | | |
| AFOs | | 208 |
| Current Farm Bill participation | 15% | |
| Total CAFOs and AFOs | | 208 |

Numbers of Dairies and Feedlots needing treatment were estimated based on input from Idaho Department of Agriculture and the local NRCS Field Offices.

## Conservation Activities for Headquarters –Continued

| **Projected Treatment Needs for Headquarters:** | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Quantity | | Costs | | Effects | | | | Implementation | | | | |
| Practices | Unit | Quantity | Additional Investment Cost | Annual O&M and Mngt. Cost | Water Conservation | Water Storage | Habitat | WQ | EQIP | WHIP | WRP | CREP | Other |
| Dairy | No. | | | | +3 | +2 | +3 | +3 | | | | | |
| Structural/Management Practices | | | | | | | | | | | | | |
| Waste Storage Facility (313) CAFO | No. | - | - | - | | | | | X | | | | X |
| Waste Storage Facility (313) AFO | No. | - | - | - | | | | | X | | | | X |
| | | | | | | | | | | | | | |
| Feed Lot | No. | 124 | | | +3 | +1 | +3 | +3 | | | | | |
| Structural/Management Practices | | | | | | | | | | | | | |
| Waste Storage Facility (313) CAFO | No. | - | - | - | | | | | X | | | | X |
| Waste Storage Facility (313) AFO | No. | 124 | 5,580,000 | 111,600 | | | | | X | | | | X |

## Conservation Activities for Headquarters –Continued

**RMS Cost Summary for Headquarters**

| Cost Items and Programs | Costs | O&M Costs |
|---|---|---|
| Non Farm Bill Programs | $ 279,000 | $ 5,600 |
| Potential Farm Bill Programs | $5,301,000 | $106,000 |
| Operator O&M and Management Cost | | $111,600 |
| Annual Management Incentives (3 yrs - Incentive Payments) | $ 558,000 | |
| Operator Investment | | $2,650,500 |
| Federal Costshare | | $2,371,500 |
| Total RMS Costs | $ 5,580,000 | |
| Estimated Level of Participation | | 35% |
| Total CAFO/AFO in RMS System | | 43 |
| Anticipated Cost at Estimated Level of Participation | $ | 1,953,000 |
| Reduces impact to ground and surface water quality | | |
| 90% participation reflects Local, State and Federal regulations | | |