

**Bonneville Power Administration
Fish and Wildlife Program FY99 Proposal**

Section 1. General administrative information

**Improve Water Quality Through Sedimentation
And Nutrient Reduction**

Bonneville project number, if an ongoing project 9070

Business name of agency, institution or organization requesting funding
South Yakima Conservation District

Business acronym (if appropriate) SYCD

Proposal contact person or principal investigator:

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Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name
Natural Resources Conservation Service (NRCS)	200 Cheyne Road	Zillah, WA 98953	Alan Fulk

NPPC Program Measure Number(s) which this project addresses.

NMFS Biological Opinion Number(s) which this project addresses.

Other planning document references.

Yakama Indian Nation, Yakima, Washington; Kittitas-Yakima Resource Conservation and Development (RC&D); Yakima Rivershed Water Council; Tri-County Water

Council; Washington Department of Ecology (WDOE) Total Maximum Daily Load Evaluation Report for the Yakima River, pgs. 63-5; WDOE Needs Assessment for the Upper and Lower Yakima Water Quality Management Area, pg. 17; Surface-Water Quality Assessment of the Yakima River Basin, USGS 93-30, 1987; Yakima River Basin Water Quality Plan, Yakima Valley Conference of Governments, June 1995; Watershed Approach to Water Quality Management, Needs Assessment for the Upper/Lower Yakima Watershed, DOE Draft Jan 1997; Environmental Impact Statement (EIS), Yakima Fisheries Project, BPA, Jan 1996; Anadromous Fish Restoration Plan, pg 58-9; Granger Drain Monitoring Project Report, SYCD 1990-1992; Sulphur Creek Characterization Project, SYCD, Dec 1995; South Yakima Model Implementation Project, MIP Final Report, Oct 1992

Subbasin.

Granger Drain, Sulphur Creek & Mud Lake Drain

Short description.

Reduce sedimentation and nutrients in the Yakima River caused by poor irrigation practices and unmanaged dairies. Provide farm cooperators with cost-share and technical assistance to apply Best Management Practices (BMPs) within the watershed.

Section 2. Key words

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
X	Anadromous fish	X	Construction	X	Watershed
X	Resident fish		O & M		Biodiversity/genetics
	Wildlife		Production		Population dynamics
	Oceans/estuaries		Research		Ecosystems
	Climate		Monitoring/eval.		Flow/survival
	Other	X	Resource mgmt		Fish disease
			Planning/admin.		Supplementation
			Enforcement	X	Wildlife habitat enhancement/restoration
			Acquisitions		

Other keywords.

Water Quality, Sedimentation, Nutrient Loading, Turbidity, Runoff

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	Identify and prioritize water quality improvement projects.	a	Review and prioritize projects for the cost-share program using existing criteria set by the Conservation Commission and SYCD.
2	Provide technical assistance to cooperators to implement water quality related BMPs.	a	Coordinate with NRCS to provide technical assistance to cooperators for implementation of BMPs.
3	Evaluate the impact of the project activities on water quality.	a	Visually showcase the before and after conditions through the use of visual media such as videos, photos or slides.
		b	In cooperation with the NRCS staff, document before and after effects of the project through worksheets and technical field experience and observations.
4	Maintain project administration.	a	District supervisors will provide overall project direction with day-to-day administration provided by the district staff.
		b	Progress made on each project will be evaluated by district supervisors at monthly board meetings.
		c	Review projects costs and reimburse cooperator.
		d	Prepare final report, which includes a summary of activities and accomplishments.

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	11/1998	9/2000	0.00%
2	3/1999	9/2000	0.00%
3	3/1999	9/2000	0.00%
4	11/1998	9/2000	1
			TOTAL 100.00%

Schedule constraints.

Inclement weather, construction problems, timing of funds.

Completion date.

09/2000

Section 5. Budget

FY99 budget by line item

Item	Note	FY99
Personnel		\$ 0
Fringe benefits		\$ 0
Supplies, materials, non-expendable property		\$1,000
Operations & maintenance		\$ 0
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		\$ 0
PIT tags	# of tags:	\$ 0
Travel		\$ 0
Indirect costs		\$ 0
Subcontracts		\$ 0
Other	Cost Share to Cooperators	\$199,000
TOTAL		\$200,000

Outyear costs

Outyear costs	FY2000	FY01	FY02	FY03
Total budget				
O&M as % of total				

Section 6. Abstract

The South Yakima Conservation District has targeted three subwatersheds along with dairy operations within the district boundaries that are known to contribute to the water quality problem along the Yakima River.

Each year, significant quantities of soil and nutrients are lost from surface irrigated farmland due to excessive irrigation. Irrigation return flows carry soil and several agricultural chemicals, including DDT, to rivers and streams. This result is a loss of resources, for the farmer, the environment and the general public.

The goal of this project is to improve fish habitat and water quality in tributaries and the main stem of the Lower Yakima River by reducing nutrient and sediment loading from agricultural runoff. SYCD believes that cost-sharing on the implementation of Best Management Practices (BMPs) is the most effective method of getting conservation practices on the ground.

Priority BMPs will be converting from surface irrigation to drip or sprinkler systems and dairy waste structures to improve storage and reduce water quality problems. These BMPs will reduce soil erosion sediment and nutrient loading to the Yakima River. Heavily polluted river water is detrimental to both anadromous and indigenous fish species. This permanent reduction in pollutants improves fish and wildlife habitat as well as the aesthetic quality of rivers and streams.

Evaluation of the impact of the project activities will be through the use of visual media such as videos, photos or slides, and technical field experience and observations. We will use our existing water quality monitoring program, which is conducted by an independent certified laboratory.

Section 7. Project description

a. Technical and/or scientific background.

In the Yakima River Basin, the watershed within the South Yakima Conservation District, water quality degradation is a major concern. Many pollutants flowing into the Yakima River can be attributed to irrigated farming practices, dairy operations, and inadequate management of these practices. The district's primary concern is to assist farm cooperators in applying conservation Best Management Practices (BMPs) to the land to maintain the soil and water resources. According to the South Yakima Model Implementation Project (MIP), "The principle source of pollution resulting from farming practices was identified as suspended sediment in surface runoff."¹

There are approximately 1.3 million acres within the South Yakima Conservation District (SYCD) with a wide range of permanent and row crops produced, such as hops, fruit, vineyard, mint, corn, small grains, alfalfa and asparagus. Approximately 80% of all agricultural production in Yakima County is in the area serviced by South Yakima Conservation District and the Natural Resources Conservation Service (NRCS).

The South Yakima Conservation District has targeted three sub-watersheds within the districts boundaries that are know to contribute to a water quality problem on the Yakima River. The Yakima River has been listed as a 303(d) Impaired Water Body by the Washington Department of Ecology.⁵

Granger Drain, Sulphur Creek, and Mud Lake are all return flows (natural drains) to the Yakima River. Each has high levels of sediment, nutrient, and bacteria loading, well beyond the standards, into the Yakima River. This has been an on-going project for SYCD to work within these areas with cost-share dollars. Due to previous efforts, the awareness and cooperative levels with the landowners is high.

The **Granger Drain** has been a federally recognized Hydrologic Unit Area (HUA) project since 1991. An HUA is a designated area with a known non-point source water quality problem. Since being designated an HUA, the Granger Drain has been the subject of a concerted effort to improve water quality through a teamwork approach by the cooperating lead agencies (NRCS, FSA, WSU-CE).

The Granger HUA, which is composed of 13 sub-basins, contains 17,732 acres of highly productive irrigated agricultural land. The drainage enters the Yakima River mainstream near the community of Granger. Several previous studies documented water quality problems in the Granger Drain HUA. The USGS determined that it was a major contributor of chemical and biological contaminants and sediments to the Yakima River (USGS NAWQUA 1986). In addition, according to the Department of Ecology in 1986, "Irrigation return flow in the single most significant source of pollutants in the lower Yakima River."

In 1991, when the Granger Drain received its HUA designation, the South Yakima Conservation District sponsored a two-year monitoring project on the Granger Drain to determine baseline water quality levels³. This study shows that during peak irrigation, the Granger Drain contributes as much as 163 tons of sediment per day, 1,410 pounds of nitrogen per day; and coliform bacteria in concentrations as high as 160,000 organisms/1000 ml. Due to hydrologic unit cost-share monies, the SYCD has been able to reduce the TSS load to 60 tons per day⁶ and expects much more can be done to further reduce this impact. The high contaminant load degrades the Yakima River below its state-established Class A standard. The district study also provided data on the levels of contaminants contributed by each of the 13 sub-basins. BMP implementation will be focused on the sub-basins with the greatest problems.

Agricultural activities make use of 98% of the land area in the Granger Drain, including row crops, pasture/hay and permanent crops, such as grapes, hops, and orchard fruit. The high sediment levels in the drain has a direct relationship to the number of acres of row crops (approximately 48% at present) being surface irrigated. Lack of appropriate irrigation water management and scheduling contribute to increased return flows. Excessive nitrogen comes from animal manure and commercial fertilizers, which enter the drain by way of surface runoff and leaching through soil profile. It is common with some cash crops to over apply nitrogen through either manure or commercial fertilizers to ensure maximum yield, despite the resulting residual nitrogen levels in the soils. The high bacterial loading reflects mismanagement of manure storage and application on many of the 22 dairies and three feedlots in the HUA.

Sulphur Creek has been identified as one of the most polluted drains on the Yakima River for many years. During the Sulphur Creek Characterization Project of 1994-1995¹, it was determined that Sulphur Creek contained 10 sub-basins, with numbers 5 and 10 being worst. These two sub-basins comprise only 20% of the total watershed, but contribute 80% of the pollutants. This water pollutes the Yakima River and surrounding lakes with silt, nitrates and phosphates. Overabundance of these nutrients results in cultural eutrophication due to non-point source pollution agriculture/septic). This is bad for both indigenous and anadromous fish runs, also resulting in social impact due to aesthetic depletion. The South Yakima Conservation District (SYCD) desires to apply Best Management Practices (BMPs) to achieve reduction in agricultural runoff. Baseline data has already been acquired; money is needed to provide cost-share for farmers to reduce further erosion and pollution.

The 78 **Dairies** within South Yakima County rank 2nd in milk production in Washington State with an average herd size of 750 milking cows. Total milk cows number approximately 66,000. Approximately 95% of the dairies are located within 15 miles of Sunnyside, Washington. The feedlots in the county range in size from 4,500 to 70,000 with a total number of cattle on feed estimated at 150,000. These numbers do not include off-site heifer and calf operations.

In the Yakima River Basin, the watershed within the South Yakima Conservation District, water quality degradation is a major concern. Many pollutants flowing into the Yakima River can be attributed to irrigated farming practices, dairy operations, and inadequate management of these practices. The district's primary concern is to assist farm cooperators apply conservation Best Management Practices (BMPs) to the land to maintain the soil and water resources. This is in accordance with the USDA Soil Conservation Service *Renewable Natural Resource Program*.⁴

Nutrient losses from the manure of dairy herds to ground or surface run-off are contributing factors to the water quality degradation of the Yakima River. Best Management Practices (BMPs) are the most effective way to prevent or reduce pollution generated from dairies, confined feeding operations, feedlots, and other animal rearing facilities. Structural BMPs may include waste storage ponds, settling basins, waste transfer, vegetative buffers, visual buffers, and fencing. Management BMPs that are addressed are Nutrient Management, Pesticide Management, and Irrigation Water Management. Other management practices typically associated with livestock production that may be addresses are Pasture and Hayland Management and Roof Run-off Management. These BMPs reduce the risk of pollutants entering the sub-watersheds and the Yakima River.

In 1993, the Yakama Indian Nation Water Resources Planning Program completed a turbidity and sediment study in agricultural return flows of the Toppenish Creek basin on the Yakama Indian Reservation. The study identified the **Mud Lake Drain** as a major contributor of sediment into the Toppenish Creek basin. The high sediment loads in the Mud Lake Drain are believed to be caused by the highly erosive nature of the Warden-Shano soil association which dominates the area, the used of furrow irrigation, and the accessibility of the drains to pastured cattle.

The Yakama Indian Nation requested assistance from the South Yakima Conservation District and the Natural Resources Conservation Service in addressing this water quality problem. Since Mud Lake Drain accounts for 90 percent of Toppenish Creek's flow at its confluence, all three entities have identified the drain as a priority for improving water quality of the Toppenish Creek corridor, and of the Yakima River.

The district believes that cost-sharing on Best Management Practices is the most effective method of getting conservation practices on-the-ground. The district, with input from the Yakama Indian Nation, will identify priority practices that will most significantly improve stream health. Based on the identified causes of sedimentation in the Mud Lake Drain, practices with a high priority for cost-sharing will likely be conversion from furrow irrigation to drip or sprinkler, and fencing to prevent livestock access to streams.

This grant agreement will provide cost-share assistance at the minimum level needed to encourage installation of long-term, effective conservation practices. All grant funds available

under this agreement will be used for cost-sharing; none will be used for employee salaries, benefits, or equipment.

b. Proposal objectives.

The objectives for this proposal are:

- 1. Identify and prioritize water quality improvement projects.**
 - a. Review and prioritize projects with the cost-share program using existing criteria set by the Conservation Commission and SYCD. High priority BMPs will be conversion of surface irrigation to drip or sprinkler and waste management systems.
- 2. To provide technical assistance to cooperators to implement water quality related BMPs.**
 - a. Coordinate with NRCS to provide technical assistance to cooperators.
- 3. Evaluate the impact of the project activities on water quality.**
 - a. Showcase the before and after conditions through the use of visual media such as videos, photos and slides.
 - b. In cooperation with the NRCS staff, document before and after effects of the project through worksheets and technical field experience and observations.
- 4. Maintain project administration.**
 - a. District supervisors will provide overall project direction with day-to-day administration provided by the district staff.
 - b. Progress made on each project will be evaluated by district supervisors at monthly board meetings.
 - c. Review projects costs and reimburse cooperators.
 - d. Prepare final report, which includes a summary of activities and accomplishments.

This proposal will provide cost-share assistance at the minimum level needed to encourage installation of long term effective, conservation practices. All funds available under this agreement will be used for cost-share, with exception to \$1000.00 which is allocated for supplies.

The primary goal of this proposal is to reduce the sediment, biological and nutrient loading from entering into the Yakima River. This will be accomplished by assisting cooperators with the implementation of agricultural Best Management Practices (BMPs) to improve the soil and water resources and improve water quality and fish habitat.

c. Rationale and significance to Regional Programs.

d. Project history

This is a new project.

e. Methods.

This project will use the existing cost-share program guidelines that were set forth by the Washington Conservation Commission and the SYCD. All implementation of BMPs will meet NRCS standards and specifications and will be certified when completed. All cost-share payments will be verified and disbursed accordingly. Yearly followup will be completed on management practices associated with the BMPs. Water quality monitoring will be performed by the districts and other agencies already involved in the Yakima River Basin Study. All potential projects will have an Environmental and Wildlife Checklist in accordance with existing NRCS policies and guidelines.

f. Facilities and equipment.

All equipment necessary to complete cost-share projects will be provided by NRCS or SYCD, including vehicles, survey equipment, etc. Existing office space and computers will be utilized as necessary. All materials used in the implementation process will be purchased and maintained by the cooperators. All cost-share items will be maintained for a minimum period of ten years, as established by Washington Conservation Commission guidelines.

g. References.

¹South Yakima Model Implementation Project (MIP) Final Report, South Yakima Conservation District (SYCD), October 1982

²Sulphur Creek Characterization Report, South Yakima Conservation District (SYCD), December 1995

³Granger Drain Monitoring Project, South Yakima Conservation District, 1990-1992

⁴Renewable Natural Resource Program, USDA Soil Conservation Service, March 1977

⁵Section 303(d) List of Impaired Water Bodies, Washington Department of Ecology, 1996

⁶A Suspended Sediment and DDT Total Maximum Daily Load Evaluation Report for the Yakima River, Washington Department of Ecology, July 1997

Section 8. Relationships to other projects

Section 9. Key personnel

Name: Laurie Crowe, South Yakima Conservation District (1.0 FTE)

Project Duties: Provide technical assistance on water quality waste related projects in South Yakima Conservation District.

Resume:

Current Employment, Responsibilities

South Yakima Conservation District, 1994 through Present

Dairy Waste Resource Technician-provide land owners with technical assistance to develop designs for alternative solutions to improve water quality and address erosion, drainage and irrigation problems on dairy operations. Administers all District cost-share programs.

Past Employment

Soil Conservation Technician, Natural Resource Conservation Service (NRCS), Zillah, Washington 1991-1994

Soil Conservation Technician, Washakie County Conservation District, Wyoming 1987-1991

Project Expertise

I am experienced with implementing BMP cost-share programs as well as providing technical assistance and education to farm and dairy operations in the Central Washington area. The district has many past water quality projects and cost-share programs that indicate voluntary implementation of Best Management Practices (BMPs) is a permanent solution to solving water quality problems.

Relevant Job Completions

Granger Drain BMP Implementation Cost-Share Program, 1991 to Present

Administered cost share to farm cooperators to implement BMPs.

Dairy Waste Cost-Share Program, 1995-1997

Name: Judith Vesper, South Yakima Conservation District (1.0 FTE)

Project Duties: Provide technical assistance on cost-share within the SYCD.

Resume:

Education

BS Environmental Science (minor in Chemistry), Washington State University

AAS in Science, Columbia Basin College, Pasco, Washington

Current Employment, Responsibilities

Soil and Water Resource Technician, South Yakima Conservation District, 1997 through Present

My duties include direct contact with farm cooperators in planning BMPs for cost-share monies. This includes inspections, meeting with NRCS staff, and coming up with the best system for reducing soil erosion.

Past Employment

Laboratory Technician, US Agricultural Analytical, Pasco, WA 1997

Research Technologist, Department of Chemistry, Washington State University-TriCities, Richland, WA 1995-1997

Nuclear-Biological-Chemical NonCommissioned Officer, US Army Reserve, Kennewick, WA 1990-1992

Section 10. Information/technology transfer

Technical information obtained from this project will be included in a final report, which will include a summary of activities and accomplishments. The final report will be distributed Bonneville Power Administration (BPA), The Northwest Power Planning Council, The Yakima River Watershed Council, the Watershed Information Center. Copies of this final report will be made available for anyone who requests.