

Short description.

Improve the quality of water discharged into the Yakima River from major drainage channels within the RSBOJC service area by constructing strategically located wetlands.

Section 2. Key words

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

Other keywords.

Water quality, wetlands, soil erosion, fish survival, turbidity

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	Determine Wetland Sites	a	Inventory areas along the Yakima River
2	Design Wetlands	a	Develop construction drawings and specifications for wetlands
3	Acquire Property	a	Survey property.
		b	Purchase or lease property for wetlands.
4	Construct Wetlands	a	Select construction contractor
		b	Manage construction

5	Operation and Maintenance	a	Continue O & M into the future.
---	---------------------------	---	---------------------------------

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	1/1998	12/1998	9.00%
2	1/1999	4/1999	13.00%
3	2/1999	5/1999	4.00%
4	5/1999	12/1999	72.00%
5	1/2000	12/2000	2.00%
			TOTAL 100.00%

Schedule constraints.

Land acquisition and permits may affect implementation schedule.

Completion date.

2000

Section 5. Budget

FY99 budget by line item

Item	Note	FY98
Personnel	RSBOJC Staff	\$5,000
Fringe benefits		\$2,500
Supplies, materials, non-expendable property		
Operations & maintenance		
Capital acquisitions or improvements (e.g. land, buildings, major equip.)		
PIT tags	# of tags:	
Travel		
Indirect costs		
Subcontracts	Site selection consultation	\$2,500
Other		
TOTAL		\$10,000

Outyear costs

Outyear costs	FY99	FY00	FY01	FY02
Total budget	\$100,000	\$50,000		
O&M as % of total	2.00%	2.00%		

Section 6. Abstract

The irrigated lands within the Roza-Sunnyside Board of Joint Control (RSBOJC) service area are drained by a network of major drainage waterways. Many of the soil types in the project are very fine textured and of excellent quality for growing crops. However, they tend to be highly erodeable. Due to their very small particle size, the eroded soil remains in suspension in the waterways ultimately making its way to the Yakima River. The proposed constructed wetlands would improve the quality of the Yakima River by removing much of the sediment from the drain water before it enters the river. The wetlands will require very little maintenance other than periodic attention to the water control structures. Some sediment removal may be necessary to maintain proper flow patterns.

Construction of the wetlands will be achieved through a five step program which will consist of: site selection, design, property acquisition, construction, and O & M.

With adequate funding, the program could be started during 1998. The water quality improvements would be achieved when the wetlands are constructed in 1999. The success of the program would be measured as part of the RSBOJC water quality monitoring program. The presence of constituents such as turbidity and suspended solids in the water returning to the Yakima River are expected to diminish when the wetlands are constructed.

Section 7. Project description

a. Technical and/or scientific background.

The water quality of the Yakima River has been evaluated by many agencies. Those studies conclude that the low flow rates and high levels of turbidity that exist at certain times of the year are detrimental to fish and wildlife. Several studies and on going data collection programs identify the major drainage waterways as significant sources of suspended sediments. The very fine texture of soil in the lower Yakima Valley that makes it premium farm land also contributes to the basin's water quality problem. The fact that the soil erodes very easily and then stays in suspension for long periods of time makes it necessary to provide settling areas with sufficient detention time before the water is discharged to the river. The technology of using constructed wetlands for water quality enhancement has been proven to be effective. The proposed wetlands would provide much more settling capacity than now exists and would function best if they were done in conjunction with the other water quality improvement projects proposed by the RSBOJC.

Sites adjacent to the Yakima River near the major drainage waterways have been identified as possible locations for the wetlands. The site selection needs to be completed as the first step of the program.

b. Proposal objectives.

It is the objective of the constructed wetlands program to provide the final stage of improving the quality of water returning to the Yakima River. The program represents significant improvement in water quality while creating a certain amount of wildlife habitat.

The success of the constructed wetland program can be monitored by expanding the agency's water quality program.

c. Rationale and significance to Regional Programs.

The rationale behind the constructed wetlands program is somewhat new to the central Washington area but the principles are quite conventional. Detention of the turbid drainage water will result in higher quality water being discharged to the Yakima River. The wetland areas will provide a certain amount of nutrient removal as well as solids reduction.

d. Project history

The proposed constructed wetland program is new to the basin in name only. The natural ecosystems that have existed for years have consisted of vegetated areas which help improve water quality. The proposed program will replace some of the natural treatment capability that has been lost. Financial constraints currently limit the ability of the RSBOJC to implement the constructed wetlands program.

e. Methods.

Implementation of the settling basin program will consist of: site selection, design, property acquisition, construction, and O & M. The site selection phase of the project could proceed as soon as funds become available.

The construction activities that will be required are the same as currently practiced by qualified local construction contractors. The work that will be needed to construct the wetlands will be able to be completed during the irrigation season. This will allow the work to proceed during favorable weather conditions and thereby reduce costs.

There will be a need for continuing inspection and maintenance of wetlands. The RSBOJC is prepared to assume these responsibilities after the first year of operation. No continuing O & M budget is projected as part of the publicly funded project after the first year of operation (end of 2000).

f. Facilities and equipment.

The planning work needed to implement the constructed wetlands program is similar to the type of work regularly performed by the RSBOJC staff. It is not anticipated that it will be necessary to acquire any additional specialized equipment or facilities for the planning work. However, the design and construction management is beyond the RSBOJC's ability to staff for this short duration project. It is anticipated that a consultant will be used for these tasks. Likewise, a construction contractor will be used for the actual construction work. The administrative workload will be able to be handled with the existing RSBOJC staff.

g. References.

CH2M HILL, 1975. Agricultural Return Flow Management in the State of Washington. Prepared for Washington State Department of Ecology.

Department of Ecology, 1990. Statewide Water Quality Assessment 350 (B) Report, State of Washington.

USGS, 1976. Sediment Transport by Irrigation Return Flows in the Lower Yakima River Basin, Washington. Open File Report 78-946.

Section 8. Relationships to other projects

The constructed wetlands program is related to efforts currently underway and proposed to improve the quality of water in the lower reaches of the Yakima River. This project very specifically links to and depends upon the RSBOJC water quality monitoring program. It is also closely tied to the return flow improvement and waterway buffer strip improvement programs. The water quality improvements that will result will be complementary to the programs done by others in the Yakima Basin.

Section 9. Key personnel

The work will be managed by RSBOJC staff. A consultant will be retained to complete the design and construction management tasks. The construction will be done by a contractor specializing in this type of work. Operation and maintenance work will be done by RSBOJC staff.

Section 10. Information/technology transfer

The project is expected to serve as a demonstration of the benefits that can be achieved by managing the quality of water that returns to irrigation and drainage waterways by using adequately sized and maintained constructed wetlands. This concept could be applied to many other irrigation and drainage projects.