

# Tucannon River Model Watershed Habitat Projects

**Annual Report  
1997 - 1998**



DOE/BP-36266-1

December 1998

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P.O. Box 3621  
Portland, Oregon 97208

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**TUCANNON MODEL WATERSHED  
1997 HABITAT PROJECTS**

**ANNUAL PROGRESS REPORT**

Project Period:  
January 1, 1997 to March 31, 1998

Prepared by:

Terry Bruegman  
Debby Nordheim

Tucannon Model Watershed  
Columbia County Conservation District  
Dayton, WA 99328

Funded by:

U.S. Department of Energy  
Bonneville Power Administration  
Environment, Fish and Wildlife  
P.O. Box 3621  
Portland, OR 97208-3621

Project Number 97-081-00  
Contract Number 97AP36266

## **TUCANNON RIVER MODEL WATERSHED PROGRAM 1997 HABITAT PROJECTS ABSTRACT**

The Tucannon River is home to Spring Chinook, Fall Chinook, Summer Steelhead, and Bulltrout. All species are currently ESA listed weak stocks or are pending listing. In an effort to restore, protect, and enhance salmonid habitat from a grass root base the Columbia Conservation District continues to implement the Tucannon River Model Watershed Plan through the Tucannon River Model Watershed Program.

1997 projects, funded by Bonneville Power Administration contract #97AP36266, included 12 new projects and 6 O&M projects on 1996 project sites. An additional 1996 carry over project, BPA contract #96AP96537, was also constructed. BPA funding was supplemented with funds from Columbia County, Washington, Washington State Conservation Commission, and private landowners. Total project cost was \$238,672.59.

Projects were designed to address critical limiting factors identified through the watershed assessment and Plan development. Construction elements were composed of bioengineering techniques designed to increase salmonid habitat complexity, insure stream bank and geomorphic stability, and reduce stream temperature and sediments in spawning gravels. Structural elements included 31 barbs with rootwads, 67 rootwads designed in revetment complexes, 6 vortex rock weirs with rootwads, extensive LWD placement, 1 irrigation culvert placement, 4 back water and/or off channel rearing areas, over 6 acres of DSP, and shaping and securing of 6828 ft. of river.

Cooperation and agreement between landowners and resource agencies for restoring resource conditions has grown due to project success and is expected to continue for the benefit of all.

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Watershed Fish Habitat Restoration  
**BPA Project Number:** 97-81  
**BPA Contract Number:** 97AP36266  
**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): BLC Site (RM 14)  
Subsite Name (i.e. specific location, legal description): SE1/4, Sec29, T12N, S39E  
County & State: Columbia County, Washington  
Hydrounit Number: 17060107  
Quad Map(s): Tucannon

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 7 days

**Was the project completed within the original budget?** Yes: X No:

**If no, what caused cost overruns?**

**What was the overall cost of the project?** \$23,415.50

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

328 ft. fish stream improvement  
2 mini rock deflectors

LWD/conifer along bank  
shaped back fill area  
culvert placed for off site irrigation  
33 rootwad revetment complex  
point bar shaped

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Direct thalweg to stabilize river system  
Reduce sediment in gravels  
Add bio-diversity and habitat complexity  
Small to medium pools for rearing and resting  
Reduce direct water withdrawal  
Develop shad, stream bank stability and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes: X**            **No:**

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structure integrity & performance  
Geomorphic stability

Are "before and after" photographs of the project site available?            Yes: X    No:

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Watershed Fish Habitat Restoration  
**BPA Project Number:** 97-81  
**BPA Contract Number:** 97AP36266  
**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Dahm Site (RM 33)  
Subsite Name (i.e. specific location, legal description): NE1/4, Sec16, T10N, R41E  
County & State: Columbia County, Washington  
Hydrounit Number: 17060107  
Quad Map(s): Hopkins Ridge

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 5 days

**Was the project completed within the original budget?** Yes: No: X

**If no, what caused cost overruns?**

Added additional materials to meet NRCS engineered specifications. Additional labor and materials were need to secure LWD was needed.

**What was the overall cost of the project?** \$10,677.00

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

250 ft. fish stream improvement

Anchor several county constructed rootwads place in gravel berm constructed for emergency protection of property

2 rock barbs with rootwads

LWD throughout length of project

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Directed flow to stabilize river system

Habitat complexity and cover

Reduced sediment in gravels

Small to medium pools with cover for rearing and resting

Develop shade, stream bank stability, and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

Yes:

No:

**If Yes, list types and duration of monitoring:**

Habitat cross-sections

Habitat complexity evaluation

Structure integrity and performance

Geomorphic stability

**Are “before and after” photographs of the project site available?** Yes:  No:

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Early Action Projects Project

**BPA Project Number:** 97-81

**BPA Contract Number:** 97AP36266

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Howard Pit Site

Subsite Name (i.e. specific location, legal description): NE1/4, Sec25 T11N, S40E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Zumwalt

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 2 days

**Was the project completed within the original budget?** Yes: X No:

**If no, what caused cost overruns?**

**What was the overall cost of the project?** \$6,052.30

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

Develop a source of rip rap and graded rock for habitat improvement

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Provide a close source for rock

Minimize rock expenses

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Materials used on instream habitat enhancement projects.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes:**                      **No:..X**

**If Yes, list types and duration of monitoring:**

Are “before and after” photographs of the project site available?                      Yes: X    No:

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Watershed Fish Habitat Restoration

**BPA Project Number:** 97-81

**BPA Contract Number:** 97AP36266

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Ducharme Site (RM 11)

Subsite Name (i.e. specific location, legal description): SE1/4, Sec23, T12N, S38E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Kellogg Creek & Starbuck East

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 4 days

**Was the project completed within the original budget?** Yes: No: X

**If no, what caused cost overruns?**

Additional time and materials were needed to meet NRCS engineered specifications.

**What was the overall cost of the project?** \$12,339.96

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

400 ft. fish stream improvement

7 rootwad revetment complex  
400 ft Large Wood Debris

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Reduce sediment in gravels  
Add bio-diversity and habitat complexity  
Small to medium pools for rearing and resting  
Develop shade, stream bank stability and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes:**       **No:**

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structure integrity and performance  
Geomorphic stability

Are "before and after" photographs of the project site available?      Yes:       No:

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Watershed Fish Habitat Restoration

**BPA Project Number:** 97-81

**BPA Contract Number:** 97AP36266

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Hovrud-Marengo Bridge (RM 25)

Subsite Name (i.e. specific location, legal description): NW1/4, Sec13, T11N, R40E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Turner

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 3 days

**Was the project completed within the original budget?** Yes: X No:

**If no, what caused cost overruns?**

**What was the overall cost of the project?** \$7,569.43

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

350 ft. fish stream improvement  
Backwater area established

2 rock barbs with rootwads  
180 ft. LWD  
Gravel Bar removed

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Off channel rearing & resting site  
Directed flow to stabilize river system  
Habitat complexity and cover  
Reduced sediment in gravels  
Small to medium pools with cover for rearing and resting  
Develop shade, stream bank stability, and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes: X**            **No:**

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structure integrity and performance  
Geomorphic stability

**Are “before and after” photographs of the project site available?    Yes: X            No:**

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Early Action Projects Project

**BPA Project Number:** 97-81

**BPA Contract Number:** 97AP36266

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Hovrud Sediment Basin O&M (RM 23.3)

Subsite Name (i.e. specific location, legal description): SW1/4, Sec11 T11N, S40E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Turner

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 4 days

**Was the project completed within the original budget?** Yes: No: X

**If no, what caused cost overruns?**

Additional excavator time and rock was needed to meet NRCS engineered specifications.

**What was the overall cost of the project?** \$10,337.38

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

Secure 1996 project structure security

repair to cobble berm on rootwad revetment complex  
repair both upper and lower vortex rock weirs  
re-key corners  
replace lost scour rocks

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Project O& M designed to maintain project benefits of:  
Direct thalweg to stabilize river system  
Reduce sediment in gravels  
Add bio-diversity and habitat complexity  
Small to medium pools for rearing and resting  
Create large plunge pools  
Lower width to depth ratio  
Facilitate sorting of gravels  
Reduce destruction of bank vegetation and trees  
Develop shade, stream bank stability, and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**  
Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes: X**            **No:**

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structure integrity and performance  
Geomorphic stability

Are “before and after” photographs of the project site available?            Yes: X    No:

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Watershed Fish Habitat Restoration

**BPA Project Number:** 97-81

**BPA Contract Number:** 97AP36266

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Howard/Hovrud Phase 2 Site (RM 24)

Subsite Name (i.e. specific location, legal description): NE1/4, Sec14, T11N, S40E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Turner

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 7 days

**Was the project completed within the original budget?** Yes: No: X

**If no, what caused cost overruns?**

Additional material was needed to meet NRCS engineered specifications. Additional time was also required to place material and to prep the site.

**What was the overall cost of the project?** \$36,916.20

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

1200 ft. fish stream improvement  
3 vortex rock weir with 2 large rootwads each in plunge pool  
5 rock barbs with root wads  
LWD along banks

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Direct thalweg to stabilize river system  
Reduce sediment in gravels  
Add bio-diversity and habitat complexity  
Small to medium pools for rearing and resting  
Create large plunge pool with LWD for cover and bio-diversity  
Develop shade, stream bank stability, and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes: X**            **No:**

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structure integrity and performance  
Geomorphic stability

Are "before and after" photographs of the project site available?            Yes: X    No:

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Early Action Projects Project

**BPA Project Number:** 97-81

**BPA Contract Number:** 97AP36266

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Howard Lower Feeder Site O&M (RM 26.2)

Subsite Name (i.e. specific location, legal description): SE1/4, Sec18 T11N, S41E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Zumwalt

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 6 days

**Was the project completed within the original budget?** Yes: No: X

**If no, what caused cost overruns?**

O&M estimates were done in early spring when snow melt & runoff were not finished, making O&M estimates incomplete as needs were better identified when flows receded.

**What was the overall cost of the project?** \$8,736.69

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

Secure 1996 project structure security  
repair to cobble berm on rootwad revetment complex  
repair both upper and lower vortex rock weirs  
reshape head cut  
construct spillway shoot and line with rock

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Project O& M designed to maintain project benefits of:

Direct thalweg to stabilize river system  
Reduce sediment in gravels  
Add bio-diversity and habitat complexity  
Small to medium pools for rearing and resting  
Create large plunge pools  
Lower width to depth ratio  
Facilitate sorting of gravels  
Reduce destruction of bank vegetation and trees  
Develop shade, stream bank stability, and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes:**  **No:**

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structures integrity and performance  
Geomorphic stability

Are "before and after" photographs of the project site available?  Yes:  No:

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Early Action Projects Project

**BPA Project Number:** 97-81

**BPA Contract Number:** 97AP36266

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Howard Bosley Site O&M (RM 28.1)

Subsite Name (i.e. specific location, legal description): NW1/4, Sec30 T11N, S41E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Zumwalt

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 1 days

**Was the project completed within the original budget?** Yes: No: X

**If no, what caused cost overruns?**

O&M estimates were done in early spring when snow melt and runoff were not finished, making L&M estimates incomplete as needs were better identified when flows receded.

**What was the overall cost of the project?** \$5,370.70

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

Secure 1996 project structure security  
added rock to barbs with rootwads  
repair both upper and lower vortex rock weirs

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Project O& M designed to maintain project benefits of:  
Direct thalweg to stabilize river system  
Reduce sediment in gravels  
Add bio-diversity and habitat complexity  
Small to medium pools for rearing and resting  
Create large plunge pools  
Lower width to depth ratio  
Facilitate sorting of gravels  
Reduce destruction of bank vegetation and trees  
Develop shade, stream bank stability, and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes: X**            **No:**

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structure integrity and performance  
Geomorphic stability

Are “before and after” photographs of the project site available?            Yes: X    No:

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Watershed Fish Habitat Restoration

**BPA Project Number:** 97-81

**BPA Contract Number:** 97AP36266

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Jacob-Corey Site (RM 32)

Subsite Name (i.e. specific location, legal description): SW1//4, Sec4, T10N, R41E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Hopkins Ridge & Zumwalt

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 12 days

**Was the project completed within the original budget?** Yes: X No:

**If no, what caused cost overruns?**

**What was the overall cost of the project?** \$18,646.95

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

720 ft. fish stream improvement  
5 rock barbs/root wads

7 rootwad revetment  
LWD cabled

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Small to medium pools with shade for rearing and resting  
Maintain current stream bank vegetation  
Add bio-diversity and habitat complexity  
Develop pockets of sorted gravels  
Direct thalweg to stabilize river system  
Reduce sedimentation in gravels  
Develop shade, stream bank stability, and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

Yes:  No:

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structure integrity and performance  
Geomorphic stability

**Are “before and after” photographs of the project site available?** Yes:  No:

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Watershed Fish Habitat Restoration

**BPA Project Number:** 97-81

**BPA Contract Number:** 97AP36266

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Janet Howard Site (RM 25.7)

Subsite Name (i.e. specific location, legal description): SW1/4, Sec18, T11N, R41E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Zumwalt

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 4 days

**Was the project completed within the original budget?** Yes: X No:

**If no, what caused cost overruns?**

**What was the overall cost of the project?** \$9,948.65

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

560 ft. fish stream improvement  
5 rootwad revetment

1 rock deflectors  
140 ft. LWD

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Direct flow to stabilize river system  
Habitat complexity and cover  
Reduce sediment in gravels  
Small to medium pools with cover for rearing and resting  
Develop shade, stream bank stability, and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes:**  **No:**

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structure integrity and performance  
Geomorphologic stability

**Are “before and after” photographs of the project site available?** **Yes:**  **No:**

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Watershed Fish Habitat Restoration  
**BPA Project Number:** 97-81  
**BPA Contract Number:** 97AP36266  
**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Janet Howard Site (RM 25.7)  
Subsite Name (i.e. specific location, legal description): SW1/4, Sec18, T11N, R41E  
County & State: Columbia County, Washington  
Hydrounit Number: 17060107  
Quad Map(s): Zumwalt

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 2 days

**Was the project completed within the original budget?** Yes: No: X

**If no, what caused cost overruns?**

O&M estimates were done in early spring before snow melt and runoff were finished, making O&M estimates incomplete as needs were better identified when flows receded.

**What was the overall cost of the project?** \$5,643.75

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

1 rock deflectors repaired  
Re-key corners of vortex rock weir  
Reshape backwater area  
Armor lower corner of backwater area

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Direct flow to stabilize river system  
Habitat complexity and cover  
Reduce sediment in gravels  
Small to medium pools with cover for rearing and resting  
Develop shade, stream bank stability, and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes: X**            **No:**

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structure integrity and performance  
Geomorphoc stability

**Are “before and after” photographs of the project site available?    Yes: X            No:**

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Watershed Fish Habitat Restoration  
**BPA Project Number:** 97-81  
**BPA Contract Number:** 97AP36266  
**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Janet Howard Site (RM 25.7)  
Subsite Name (i.e. specific location, legal description): SW1/4, Sec18, T11N, R41E  
County & State: Columbia County, Washington  
Hydrounit Number: 17060107  
Quad Map(s): Zumwalt

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 2 days

**Was the project completed within the original budget?** Yes: No: X

**If no, what caused cost overruns?**

O&M estimates were done in early spring before snow melt and runoff were finished, making O&M estimates incomplete as needs were better identified when flows receded.

**What was the overall cost of the project?** \$5,643.75

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

1 rock deflectors repaired  
Re-key corners of vortex rock weir  
Reshape backwater area  
Armor lower corner of backwater area

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Direct flow to stabilize river system  
Habitat complexity and cover  
Reduce sediment in gravels  
Small to medium pools with cover for rearing and resting  
Develop shade, stream bank stability, and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes: X**            **No:**

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structure integrity and performance  
Geomorphologic stability

**Are “before and after” photographs of the project site available?    Yes: X            No:**

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Watershed Fish Habitat Restoration

**BPA Project Number:** 97-81

**BPA Contract Number:** 97AP36266

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Morper Site (RM 14)

Subsite Name (i.e. specific location, legal description): NE1/4, Sec32, T12N, S39E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Tucannon

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 12 days

**Was the project completed within the original budget?** Yes: X No:

**If no, what caused cost overruns?**

**What was the overall cost of the project?** \$22,678.12

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

750 ft. fish stream improvement  
5 rock deflectors with root wads

700 ft Large Wood Debris  
point bar shaped

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Direct thalweg to stabilize river system  
Reduce sediment in gravels  
Add bio-diversity and habitat complexity  
Small to medium pools for rearing and resting  
Develop shade, stream bank stability, and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes:**  **No:**

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structure integrity and performance  
Geomorphic stability

Are "before and after" photographs of the project site available? **Yes:**  **No:**

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Watershed Fish Habitat Restoration

**BPA Project Number:** 97-81

**BPA Contract Number:** 97AP36266

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): O'Shaughnessy (RM 34)

Subsite Name (i.e. specific location, legal description): SE1/4, Sec16, T10N, R41E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Hopkins Ridge

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 2 days

**Was the project completed within the original budget?** Yes: X No:

**If no, what caused cost overruns?**

**What was the overall cost of the project?** \$7,674.25

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

500 ft. fish stream improvement

Anchor existing log jam to stabilize meander

2 rock barbs with rootwads  
7 rootwad revetment

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Directed flow to stabilize river system  
Habitat complexity and cover  
Reduced sediment in gravels  
Small to medium pools with cover for rearing and resting  
Develop shade, stream bank stability and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**  
Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

Yes:  No:

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structure integrity and performance  
Geomorphologic stability

**Are “before and after” photographs of the project site available?** Yes:  No:

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Watershed Fish Habitat Restoration

**BPA Project Number:** 97-81

**BPA Contract Number:** 97AP36266

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Robertson Site (RM 17)

Subsite Name (i.e. specific location, legal description): NW1/4, Sec2, T11N, S39E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Tucannon

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 3 days

**Was the project completed within the original budget?** Yes: No: X

**If no, what caused cost overruns?**

Time estimate for site preparation and project completion were low, however county in-kind contribution accounted for most of the over run.

**What was the overall cost of the project?** \$13,261.71

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

550 ft. fish stream improvement  
preserved spring water channel & backwater for juvenile rearing area  
2 rock deflectors with root wads  
10 rootwad revetment  
100 ft Large Wood Debris  
gravel bar shaped

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Direct thalweg to stabilize river system  
Reduce sediment in gravels  
Add bio-diversity and habitat complexity  
Small to medium pools for rearing and resting  
Stabilize off channel site for rearing and resting  
Develop shade, stream bank stability and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes:**  **No:**

**If Yes, list types and duration of monitoring:**

Habitat cross-sections  
Habitat complexity evaluation  
Structural integrity and performance  
Geomorphic stability

Are "before and after" photographs of the project site available?  Yes:  No:

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Early Action Projects Project

**BPA Project Number:** 96-065-00

**BPA Contract Number:** 96AP96537

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Rubenser Site #2 (RM 6)

Subsite Name (i.e. specific location, legal description): NE1/4, Sec20, T12N, S38E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Starbuck East

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 7 days

**Was the project completed within the original budget?** Yes: X No:

**If no, what caused cost overruns?**

**What was the overall cost of the project?** \$29,712.00

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

900 ft. fish stream improvement  
27 rootwad revetment complex

- 1 rock barb with rootwad
- 2 small rock deflectors
- 2 vortex rock weirs
- Off channel rearing area

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

- Direct thalweg to stabilize river system
- Reduce sediment in gravels
- Add bio-diversity and habitat complexity
- Small to medium pools for rearing and resting
- Create large plunge pools
- Lower width to depth ratio
- Facilitate sorting of gravels
- Reduce destruction of bank vegetation and trees
- Develop shade, stream bank stability and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes: X**                      **No:**

**If Yes, list types and duration of monitoring:**

- Habitat cross-sections
- Habitat complexity evaluation
- Structure integrity and performance
- Geomorphic stability

Are “before and after” photographs of the project site available?                      Yes: X    No:

**1997 TUCANNON RIVER MODEL WATERSHED PROJECTS  
PROJECT REVIEW**

**Project Name:** Tucannon River Early Action Projects Project

**BPA Project Number:** 97-81

**BPA Contract Number:** 97AP36266

**Project Implementor and Address:** Columbia Conservation District  
202 South Second Street  
Dayton, WA 99328-1327

**Project Leader(s):** Terry R. Bruegman, District Coordinator

**Project Description (Short):** Restore, protect, & enhance fish habitat and riparian areas by increasing habitat complexity, re-establishing geomorphic stability, and increase riparian vegetation.

**Location Information:**

Site Name (i.e. creek, hatchery): Rubenser Site #1 O&M (RM 6.5)

Subsite Name (i.e. specific location, legal description): SE1/4, Sec20, T12N, S38E

County & State: Columbia County, Washington

Hydrounit Number: 17060107

Quad Map(s): Starbuck East & Kellogg Creek

**Site Type Description (See Attachment 1):** F, S

**Work Type Description (See Attachment 2):** C

**Is project completed?** Yes: X No:

**If no, when is the project scheduled to be completed?**

**If yes, how long did the project take from start to finish (not including ongoing monitoring & evaluation activities)?** 1 days

**Was the project completed within the original budget?** Yes: X No:

**If no, what caused cost overruns?**

**What was the overall cost of the project?** \$2,780.00

**What was actually produced/built/accomplished by the project (please quantify if possible--e.g., 5 miles of fence constructed, 2 miles of streambank stabilized, 20 acres of land acquired, etc.)?**

Secure 1996 project structure security  
repair to cobble berm on rootwad revetment complex

**Are salmon production/supplementation activities planned or currently being implemented in this watershed?** Yes, through the Lower Snake River Comp Plan administered through the WDF&W.

**What will be the benefits of the products described above for anadromous fish?**

Project O& M designed to maintain project benefits of:

Direct thalweg to stabilize river system

Reduce sediment in gravels

Add bio-diversity and habitat complexity

Small to medium pools for rearing and resting

Create large plunge pools

Lower width to depth ratio

Facilitate sorting of gravels

Reduce destruction of bank vegetation and trees

Develop shade, stream bank stability and canopy cover with DSP

**When will these benefits become available (immediately, next summer, 5 years, 10 years)?**

Instream habitat structures provide immediate and long term benefits.

**Were monitoring and evaluation activities undertaken in association with the project?**

**Yes: X**

**No:**

**If Yes, list types and duration of monitoring:**

Habitat cross-sections

Habitat complexity evaluation

Structure integrity and performance

Geomorphic stability

Are "before and after" photographs of the project site available?

Yes: X No: