

PROJECT INFORMATION REPORT  
REHABILITATION OF FLOOD CONTROL WORKS  
ROCK CREEK LEVEE  
NAC-2-09

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PROJECT INFORMATION REPORT  
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ROCK CREEK LEVEE  
NAC-2-09

**EXECUTIVE SUMMARY**

PROJECT NAME: Rock Creek Levee

PROJECT FUNDING CLASS: 320

PROJECT CWIS NUMBER: 322468

NON-FEDERAL SPONSOR: Yakima County

LOCATION AND DESCRIPTION: This non-Federal flood control project is located on the left bank of the Naches River near the community of Rock Creek, Yakima County, Washington. The Rock Creek Levee provides 30-year level of protection. The current levee alignment is 1,600 feet in length. Rock Creek enters the Naches River at approximately river mile 33.0. The levee has a 12 foot (typical) top width and 2H:1V typical sideslopes armored with class IV riprap. A 5 ft. X 15 ft. toe exists along the length of the levee. The levee protects residences and outbuildings, commercial structures, utilities, the local fire station, and State Highway 410.

DESCRIPTION OF DAMAGE: During the January 2009 flood event, the Naches River exceeded flood stage and high velocity flows caused damages from flooding including excessive toe scour, riprap armor and levee embankment damages leaving an oversteepened slope with loss of armor protection and damaged toe along the levee alignment. Seepage through the levee was encountered along a 150 ft. reach approximately 150 ft. downstream of the levee's upstream end. In the current damaged state, the levee offers only annual level of protection.

PROPOSED REPAIR: The recommended alternative is the Repair In-Kind with Partial Setback alternative. The recommended repair would re-establish the levee toe along the alignment, replace the riverward slope to 2H:1V along the length of the levee, and repair the 5 ft. x 15 ft. class V toe and class IV riprap armor lost during the high water event. All existing materials will be incorporated into the final repair. Additionally a seepage berm will be constructed at station (sta) 1+50 to sta 3+00 (approx.). A 400 ft. section of the levee will be set back from sta. 4+50 to sta. 8+50 (approx.). The levee breached at station 16+00 and is the current outflow of Rock Creek. The downstream end of the levee will be established at this location and the section of the levee downstream of Rock Creek's current outflow will be abandoned. Repairs will return the Rock Creek levee to its pre-flood level of protection.

SUMMARIZED FINANCIAL AND ECONOMIC DATA:

	Total
Construction subtotal	\$ 268,000
S&A (6% of construction subtotal)	\$ 16,000
Contingency (10% of construction subtotal)	\$ 27,000
Total Construction Cost	\$ 311,000
Engineering and Design (6% of total construction) (Federal Cost)	\$ 19,000
Total Project Costs	\$ 330,000
Federal Project Cost (80% + E&D)	\$ 268,000
Sponsor Project Cost (20%)	\$ 62,000
B/C ratio	7 to 1

POINT OF CONTACT: Doug Weber, CENWS-OD-EM, (206) 764-3406

## **PROJECT REPORT**

### **1. Project Identification**

- a. Project Name: Rock Creek Levee
- b. Project Funding Class: 320
- c. Project CWIS Number: 322468

### **2. Project Authority**

- a. Classification: Non-Federal
- b. Authority: NA
- c. Estimated original cost of project: \$831,000
- d. Construction completion date of the original project: Unknown
- e. Additional information regarding major modifications/improvements/betterments: None.
- f. The levee was previously repaired in 1996 and an initial repair in April 2009.

### **3. Public Sponsor**

- a. Sponsor Identification: Yakima County  
POC for Yakima County: Terry Keehnan  
Yakima County Public Works  
Yakima County Courthouse  
128 N 2<sup>nd</sup> Street, Room 408  
Yakima, WA 98901  
509-574-2311

#### b. Application for Assistance:

- (1) Date of Issuance of District's Public Notice: 13 January 2009
- (2) Date of Public Sponsor's written request (see Appendix A): 27 January 2009

### **4. Project Location**

- a. County: Yakima  
State: Washington  
Basin: Yakima  
River: Naches  
River Mile: 33.0  
River Bank: Left

- b. The Rock Creek Levee is adjacent to the Naches River near the community of Rock Creek, Washington. This levee system provides the only means of flood control protection for the adjacent homes, businesses, infrastructure and utilities, and Highway 410. Highway 410 is the only access for the town of Rock Creek during the winter when Chinook Pass is closed.

### ***Additional information***

**REPORT PURPOSE:** This report provides pertinent information regarding the project, the repair plan, estimated quantities, costs and benefit ratios to restore the existing levees to pre-flood

condition. Due to the dynamic process of rivers, damages induced by rivers on levees and other structures continuously change. Information including project description, final repair actions contained within this document is subject to change without notice prior to construction.

## **5. Project Design**

This non-Federal urban levee was constructed to provide flood control protection from periodic recurring flooding from the Naches River near the community of Rock Creek, Yakima County, Washington. This levee is located on the left bank of the Naches River near the community of Rock Creek, Yakima County, Washington. Rock Creek enters the Naches River at approximately river mile 33.0. The levee has a 12 foot typical top width and 2H:1V typical sideslopes armored with class IV riprap. A 5 ft. X 15 ft .class V toe exists along the length of the levee. The current levee is approximately 1,600 feet in length. Prior to the flood, the levee provided a 30-year level of protection, but now offers annual level of protection.

## **6. Disaster Incident**

During January 2009, rainfall and rapid snowmelt resulted in a major flood event on the Naches River. For more information on the flood event, see Seattle District's EngLink Situation Reports for flood event #3.

## **7. Project Damages**

During the January 2009 flood event, the Naches River exceeded flood stage and high velocity flows caused damages from flooding including excessive toe scour, riprap armor and levee embankment damages leaving an oversteepened slope with loss of armor protection and damaged toe along the levee alignment. Seepage through the levee was encountered along a 150 ft. reach approximately 150 ft. downstream of the levee's upstream end. In the current damaged state, the levee offers only annual level of protection.

## **8. Project Performance Data**

- a. Inspection Results.
  - (1) Date of last inspection: June 2008
  - (2) Type of last inspection: Continuing Eligibility Inspection (CEI)
  - (3) Project condition code of last inspection: Minimally Acceptable
  - (4) Status: Eligible
- b. Sponsor's Annual O&M Costs: Yakima County dedicates approximately \$3,000 in annual maintenance for this levee. The levee is maintained with periodic vegetation cutting, gravel placement, and pre- and post-flood inspections to repair minor damages. The level of maintenance is consistent with Seattle District recommendations. There are no maintenance deficiencies.
- c. Estimated Cost to Repair Maintenance Deficiencies: No maintenance deficiencies identified.

## 9. Project Alternatives Considered

Multiple alternatives were considered including the No-Action, Repair In-Kind, Repair In-Kind with Partial Setback, and Non-Structural alternatives. A preliminary analysis has been performed on the following alternatives:

### a. **No-Action Alternative**

The no action alternative was rejected due to the high likelihood of failure of the levee with the occurrence of even an annual flood event. The results of a failure would include damages to homes, business and infrastructure including Highway 410.

### b. **Repair In-Kind Alternative**

This alternative was the preliminarily recommended alternative however was dropped once it was determined that a partial setback would be more environmentally advantageous.

Repairs to the Rock Creek levee will restore the 30-year level of protection that pre-existed the flood event.

### c. **Repair In-Kind plus Partial Setback Alternative**

This alternative was evaluated and selected as the preferred alternative. The initial repair in April 2009 provides protection for the spring flood season. Permanent repairs will re-establish reliable flood protection for the future flood seasons, and restore the 30-year level of protection that existed prior to the flood event. A portion of the levee from Sta. 4+50 to Sta. 8+50 will be setback. The downstream end of the levee will be established at approximately sta. 16+00, Rock Creek's current outflow.

### d. **Non-Structural Alternative**

This alternative would relocate all existing structures, utilities and other infrastructure within the damage area protected by this section of levee. This was not a viable alternative for our sponsor. The costs associated with this alternative were deemed too high for the level of benefit associated with this alternative.

## 10. Recommended Alternative

The recommended alternative is repair in-kind plus partial setback. The initial repairs in April 2009 provided protection for the spring flood season. Permanent repairs will re-establish reliable flood protection for the future flood seasons, and restore the 30-year level of protection that existed prior to the flood event. A portion of the levee from Sta. 4+50 to Sta. 8+50 will be setback. The downstream end of the levee will be established at approximate sta. 16+00, Rock Creek's current outflow. The local sponsor prefers the partial setback alternative.

## 11. Lands, Easements, Rights-of-Way, Relocations, and Disposal areas (LERRD)

The Rock Creek Levee Repair is located on the left bank of the Naches River in Section 17, Township 16 North, Range 15 East, Willamette Meridian, in Yakima County, Washington. The

levee repair will set back a portion of the existing levee prism and return the levee project to its pre-flood level of protection (See, Appendix B Project Drawings). Acquisition of additional perpetual property interests will be required if the proposed repair footprint exceeds the area covered by the Public Sponsor's existing perpetual easements, or if the existing easements do not provide the required interests in project lands.

In order to proceed with the levee repair, the Public Sponsor must make the required project lands available prior to solicitation for the construction contract. See the proposed project schedule under Section 15 of this report.

To meet the real estate requirements for the Rehabilitation Effort, the Public Sponsor will need to demonstrate that it has the real property interests listed below:

#### **PERPETUAL FLOOD PROTECTION LEVEE EASEMENT ESTATE**

A perpetual and assignable right and easement in the land delineated on the attached location map, Exhibit A, by this reference made a part hereof, to construct, maintain, repair, operate, patrol and replace a flood protection levee, including all appurtenances thereto; reserving, however, to the owners, their heirs and assigns, all such rights and privileges in the land as may be used without interfering with or abridging the rights and easement hereby acquired.

Proposed access (both ingress and egress) to the Rock Creek Levee Project footprint is available over private lands from SR-410, a public road right-of-way (See project map). Access will need to be provided at the upstream end of the project to accomplish repair work. The Public Sponsor will need to demonstrate that it has the below real property interests for perpetual access to the levee easement footprint from the SR-410 public right-of-way.

#### **PERPETUAL ROAD EASEMENT**

A perpetual and assignable easement and right-of-way in, on, over and across the land delineated on the attached location map, Exhibit A, for the location, construction, operation, maintenance, alteration and replacement of (a) road(s) and appurtenances thereto; together with the right to trim, cut, fell and remove there from all trees, underbrush, obstructions and other vegetation, structures, or obstacles within the limits of the right-of-way; reserving, however, to the grantors, their heirs and assigns, the right to cross over or under the right-of-way as access to their adjoining land; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

Construction staging will occur within the perpetual levee easement footprint. The need for additional temporary staging areas is being considered. If it is later determined that a temporary construction staging area, or temporary access road is required for construction, the Public Sponsor will need to demonstrate that it has the below real property interests for those areas.

#### **TEMPORARY WORK AREA EASEMENT**

A temporary easement and right-of-way in, on, over, and across the land delineated on the attached location map, Exhibit A, for a period not to exceed twelve (12) months, beginning with date possession of the land is granted to the Grantee for use by the United States, its

representatives, agents, and contractors as a work area, including the right to deposit fill material thereon, move, store, and remove equipment and supplies, and erect and remove temporary structures on the land and to perform any other work necessary and incident to the construction of the Rock Creek Levee Rehabilitation Effort, Job No. NAC-2-09, together with the right to trim, cut, fell, and remove there from all trees, underbrush, obstructions, and any other vegetation, structures, or obstacles within the limits of the right-of-way; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however to existing easements for public roads.

The final location of temporary access routes and temporary disposal sites will be determined in the next project phase – E&D. If the COE, Real Estate Division determines the Public Sponsor does not have adequate real property interests for the lands needed for the proposed Rehabilitation Effort, including additional damage not visible at the time of inspection because of the presence of vegetation, then acquisition of property interests may be necessary. The need for the Public Sponsor to acquire or cure its existing property interests could result in further delay of repairing the damaged levee as proposed in the project schedule – see Section 15 of this report.

As part of the land certification process for the Rehabilitation Effort, the Public Sponsor will need to provide title reports not more than 90 days-old at the time of land certification demonstrating its real property interests in the lands required for the proposed levee repairs. Any questions regarding types of property interests needed for the proposed project should be coordinated with COE, Real Estate Division.

## **12. Economic Evaluation**

In preparing a cost and benefit feasibility assessment for any emergency project the Chief of Engineers shall consider the benefits to be gained by such a project for the protection of residential establishments, commercial establishments to include the protection of inventory, and agricultural establishments to include the protection of crops. The benefit-to-cost ratio (BCR) must be greater than 1.0 for the rehabilitation to be justified.

Benefits attributable to the proposed levee repair are calculated on the difference in probabilities associated with the Level of Protection (LOP) provided by the levee in the repaired condition compared to the damaged or post event condition. The benefits of project rehabilitation are determined by comparison of with and without project conditions. The economic analysis will be prepared in level of detail commensurate with the complexity of the project. It is not intended that the analyses for rehabilitation projects be exhaustive, but should provide sufficient data to estimate the benefits of each plan in order to support the plan formulation process.

With repair, the levee will be restored to a 30-year LOP. In accordance with EP 500-1-1, the economic life applicable to non-Federal urban levees shall be 50 years, or the degree of protection afforded by the project, whichever is less. Therefore, the following economic analysis is based on an economic life of 30 years. Prior to the flood event, this levee provided protection

from floods with a greater 30-year recurrence interval. The recent high water event caused damages to the levee that degraded the LOP to offering 1-year protection, meaning damages are likely with a return period greater than the annual flood event.

There are numerous parcels of land and structures in the community protected by this levee, including residences, businesses, the Rock Creek Fire Station and Highway 410. An evaluation of the parcels in the immediate vicinity of the flood plain covered a little over 70 acres and showed 17 structures with a total depreciated replacement value of approximately \$872,000. Since the without-project condition is expected to provide protection from flooding from an annual event, the zero-damage event is equivalent to the without-project level of protection of 1 year. We will also assume that a 2-year event would cause significant damage and flood these structures with at least 1 foot of water. A 30-year event is expected to inundate the floodplain with three to four feet of water; it is assumed that a 30-year event would flood all of the structures with at least 3.5 feet of water. Based on standard depth-damage curves, Table 1 shows the expected damages from the 2-year and 30-year events.

Event	Annual Exceedence Frequency	Inundation Depth	Estimated Damages (Content & Structure)
1-year	100%	0	-0-
2-year	50%	1	\$124,000
30-year	3.33%	3.5	\$409,000

If the levee is not repaired the expected annual damages (EAD) to the 17 structures and their contents are approximately \$169,000. The EAD is the probability weighted sum of damages from the without-project level of protection event (1-year) to the with-project level of protection (a 30-year event). With repair the EAD is approximately \$14,000. Therefore the approximate EAD of at least \$155,000 in damages are considered as preventable with rehabilitation and taken as benefits. The annual benefits for repair of the levee are the annual damages reduced by restoring the level of protection to the 30-year level that existed before the damage was incurred. Annual benefits are the difference between the with- and without-project EAD. Table 2 shows the with- and without-project EAD and the resulting expected annual damages reduced or benefits for restoring the level of protection to the levee, based on this sample of structures and damages. Since the project does not provide protection for events that exceed the 30-year recurrence interval, additional damages were not estimated and are assumed to remain the same.

Without-Project EAD	\$169,000
With-Project EAD	\$14,000
EAD Reduced (Annual Benefits)	\$155,000

The total estimated project costs including real estate to restore 30-year protection to the levee are \$330,000. These costs are annualized at the FY10 discount rate of 4 3/8 percent over the 30-

year period of analysis. Table 3 displays the total project costs, annualized costs, and resulting benefit-to-cost ratio (BCR).

**Table 3: Annualized Costs and Benefit-Cost Ratio**

First Cost	\$330,000
<b>Annual Cost</b>	
Principle and Interest (30 yrs @ 4.375%)	\$19,000
O&M	\$3,000
<b>Total Annual Cost</b>	<b>\$22,000</b>
Total Annual Benefit (EAD Reduced)	\$155,000
<b>Benefit-Cost Ratio</b>	<b>7 to 1</b>

The following checks were performed:

Benefit Check	Check met?
1. First costs do not exceed property value Property value: \$872,000 First costs: \$327,000	Yes
2. Crop benefits per acre do not exceed 5% of land value per acre	Not applicable
3. Crop benefits do not exceed net crop income	Not applicable
4. Each property owner accounts for less than 25% of the benefits	The protected area is owned by at least 15 individuals. No individual receives more than 25% of the benefits.

### 13. Environmental

The portion of the Naches River comprising the project area includes a single channel, approximately 150 feet in width, bounded by a levee on the left bank which protects residential structures, outbuildings, commercial structures, infrastructure including utilities, a fire station, and Hwy. 410. The right bank is a rock face. The upstream end of the levee is at Highway 410 approx. RM 33.5 and continues downstream for approximately 1,600 ft. Prior to the 2009 flood, Rock Creek had approached flowed parallel to the levee for a short distance before turning southeast, flowing along the highway, and entering the Naches River a distance below the downstream end of the levee. During the 2009 flood event, approximately 550 LF of the lower section of the levee was breached and lost. Rock Creek currently flows into the Naches River at this breach.

The Naches River in the vicinity of the project area provides migratory, foraging, and rearing habitat for most of the fish species that utilize the river and upstream tributaries, as well as habitat for a diversity of other aquatic and terrestrial species. Salmonid species in the project vicinity include bull trout and steelhead, both of which are listed species.

The recommended alternative includes the abandonment of the lower section of the levee and a partial setback of the middle section of the levee. Both of these will benefit the local environment. The abandonment of the lower section of the river will allow natural riverbank formation and increase the amount of vegetation along the banks to improve shoreline habitat for protected salmonids. It also decreases the impacts that would occur in repairing the breach by returning the confluence of Rock Creek to its pre-flood channel, and allows the natural meandering of the river and this creek through this area. By setting back the middle portion of the levee this is expected to decrease the frequency of future repairs, thus decreasing the cumulative impact of the levee by limiting future turbidity increases, temperature increases, and vegetative disturbance from construction. The setback will also allow for space in front of the levee that could revegetate naturally without endangering the integrity of the levee and without the need for continued maintenance. Overhanging vegetation along the river increases habitat function for salmonids and other fish by increasing nutrient input, shade, and creating refugia during high water events.

#### Potential Issues:

- a. **Water Quality.** There may be a temporary increase in turbidity due to construction and fill placement. Turbidity will be monitored during construction. If turbidity exceeds water quality maximum standards, construction will be halted, and will recommence when turbidity returns to acceptable levels. Some loss of stream bank habitat complexity, grassy vegetation, and organic matter inputs into Rock Creek and/or Naches River may occur.
- b. **Endangered Species Act:** The following species listed as endangered (E) or threatened (T) and their critical habitat (CH) are found in the project area:
  - Steelhead (T) (CH)
  - Bull trout (T) (CH)

Bull trout and steelhead are known to occur in the Naches River. The project area contains prime habitat for listed bull trout and listed steelhead which are known to be present in the construction area. The steelhead spawning season runs from late February through May. Juvenile steelhead will emerge from redds starting in July. There are approximately 500-1000 steelhead trout in the system so an impact to the fish (at any life stage) or their habitat is very critical. The river area adjacent to the proposed repairs consists of spawning gravels and deep pools. Steelhead spawning and bull trout migration occur here. Spawning redds survive all but the most severe flood flows (Scott Hoefler NMFS pers. comm.). Any in-water construction will occur within the approved fish window (June 1 – August 15) using best management practices to limit impacts. The partial setback will provide more high water refuge for species

during high water events. Narrowing the toe placement in areas where there are deep pools will reduce impacts to the aquatic habitat.

Although bald eagle was delisted on June 28, 2007, they continue to be protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. These acts require some measures to continue to prevent bald eagle “take” resulting from human activities. Additional guidance regarding these requirements is available at the time of this writing from <http://www.fws.gov/midwest/eagle> .

Any potential effects of the proposed work on threatened or endangered species and designated critical habitat will be addressed in separate compliance documentation in accordance with Section 7 of the Endangered Species Act.

When completed, this levee repair is not intended or expected to generate appreciable change in habitat conditions as compared with conditions pre-existing the flood event. Repair construction work may result in short-term impacts to fish and wildlife. If present, adult and juvenile salmonids may be temporarily displaced from the project area. Construction noise may temporarily disturb any wildlife in the project area. Long-term effects will include greater conveyance of the river and greater access to floodplain due to the setback of the levee from the river.

- c. Wetlands. The proposed project will be constructed to avoid impacts to wetlands. The construction work will occur within the footprint of the pre-existing levee, with the exception of the partial setback. Construction access and staging areas will be along the existing levee. The levee setback and repair will be constructed to avoid wetland impacts. Delineation will be necessary to define any potential wetland impacts. The setback and potential wetland impacts have been discussed with the Department of Ecology and it is anticipated that the benefits of the setback will outweigh the wetland loss. Further impact analysis, consideration of mitigation for any wetland loss, and coordination will occur during the E&D phase.
- d. Cultural Resources. The proposed site is within an area of high probability of historical importance to the Yakama Nation. The Corps has initiated consultation with the Washington State Historic Preservation Officer and the Yakama Nation. Should earth disturbing activities penetrate native sediments below or beside the existing Rock Creek Levee, an on-site professional archaeological monitor needs to be present. The affected tribes may ask to be notified prior to construction in the event they may want to witness the work.

Prior to repairs, a Corps archeologist will conduct a cultural resources survey of the project area to determine whether there is a potential for the proposed repairs to cause effects to historic properties. National Historic Preservation Act Section 106 compliance reports will be prepared for all proposed repairs. The report will include the findings of the investigations for each repair site, recommendations for archaeological monitoring during construction, and a determination of effects to archaeological and historic properties. If archaeological monitoring is recommended at some repair locations, the report will include a monitoring plan and protocols to be followed. The protocols will include an inadvertent discovery clause that will

apply when an archaeological monitor is not present. The Corps' determinations of effects to historic properties, the investigation report, and monitoring plan will be reviewed and approved by the Washington State Historic Preservation Officer (SHPO) and the appropriate tribes prior to construction.

- e. Recreation. This section of levee is not considered a recreational area.
- f. Cumulative Effects. Cumulative effects will be addressed as required pursuant to NEPA and ESA.
- g. Coordination. The proposed work is formally coordinated throughout the planning, design, and construction phases with the following agencies:
  - (1) U.S. Fish and Wildlife Service;
  - (2) NOAA Fisheries;
  - (3) Environmental Protection Agency;
  - (4) Washington Department of Fish and Wildlife;
  - (5) Washington Department of Ecology;
  - (6) Yakama Nation;
  - (7) State Historic Preservation Office.

Their recommendations will be considered and implemented as appropriate. The design will be coordinated with and reviewed by the above listed agencies. In accordance with ER 200-2-2, Procedures for Implementing NEPA, paragraph 8, Emergency Actions, and the environmental effects of the proposed levee rehabilitation will be considered during the planning process. An environmental assessment (EA) will be prepared to evaluate probable impacts of the project on the existing environment. Factors addressed by the evaluation will include, but will not be limited to, public safety, water quality, wetlands, threatened and endangered species, noise, air quality, cultural resources, economics, fish, and wildlife. The EA will be coordinated with applicable Federal and State resource agencies. The NEPA process will conclude prior to construction pursuant to requirements in ER 200-2-2.

The proposed levee repairs would not be the first repair to this particular levee. Accordingly, cumulative impacts of the past, proposed, and reasonably foreseeable future projects in the area will likely be important considerations in the NEPA and ESA documentation. In addition, requirements for compliance with the Endangered Species Act will be completed. According to Title 33 Code of Federal Regulations, Section 323.4(a)(2), emergency reconstruction of recently damaged parts of levees does not require a Section 404 evaluation provided that the work does not include any modification that changes the character, scope, or size of the original fill design. The proposed repair includes a partial setback along a new alignment, and repairs along the original levee alignment. The levee repair and setback will be constructed to avoid wetland impacts. It is expected that a Sec. 404(b) (1) evaluation and a Sec. 401 water quality certification from Ecology may be required.

- h. Environmental enhancement features. Project construction will include environmental enhancement features to offset temporary construction impacts. Environmental features

proposed by agencies during NEPA coordination will be fully reviewed and engineered during E&D. Environmental enhancements could include removal of invasive species from the project area, partial levee setback, and placement of topsoil over disturbed areas including the levee face to OHW, and hydroseeding disturbed areas with native grasses.

#### 14. **Interagency Levee Task Force**

HQUSACE has not directed activation of an Interagency Levee Task Force for this flood event. However, informal coordination with FEMA is ongoing.

#### 15. **Project Management**

##### a. Funding Authority

- (1) Program and Appropriation: 3125
- (2) Project Funding Class: 320
- (3) Project CWIS Number: 322468

##### c. Project Funds: Project Cost Estimate

The cost estimate is presented by the details of each damage site first, followed by a project summary table that adds supervision and administration (S&A), contingency, and engineering and design (E&D).

**Table 1 - Project Cost Estimate**

	Total
Construction subtotal	\$ 268,000
S&A (6% of construction subtotal)	\$ 16,000
Contingency (10% of construction subtotal)	\$ 27,000
Total Construction Cost	\$ 311,000
Engineering and Design (6% of total construction) (Federal Cost)	\$ 19,000
Total Project Costs	\$ 330,000
Federal Project Cost (80% + E&D)	\$ 268,000
Sponsor Project Cost (20%)	\$ 62,000
B/C ratio	7 to 1

**c. Project Repair Schedule**

The Work Window (work allowed in the water) is 1 June to 15 August. Work performed outside this window will only consist of work that is not in the water.

**Table 2 - Project Repair Schedule**

RESPONSIBLE PARTY	MILESTONE TASKS	MILESTONE DATE
COE	PIR Approval	15 July 2010
COE	E&D complete	11 December 2011
COE	CA and Designs to Public sponsor for Review NLT	05 January 2011
COE	LER cert to Public sponsor based on confirmed footprint	19 January 2011
Yakima County	Sign CA by Public sponsor	14 February 2011
COE	EA/FONSI	11 March 2011
Yakima County	Public sponsor certifies lands	15 March 2011
Yakima County	Public sponsor provides cash contribution	15 March 2011
COE	RE Division Certifies Lands Available	17 April 2011
COE	Solicit contractors	15 May 2011
COE	Initiate (rental equipment) construction	1 June 2011
COE	In-Water Construction Complete	1 July 2011
COE	Complete Construction	15 July 2011

**d. Project Authentication**

Project Management .....Brian Nelson .....(206) 764-3786

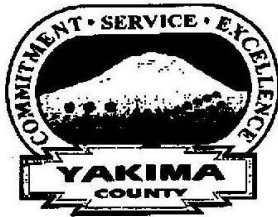
Emergency Management approval .....Doug Weber .....(206) 764-3406

**e. Technical Points of Contact**

Emergency Management .....	Doug Weber .....	(206) 764-3406
Economics.....	Scott Long.....	(206) 764-6697
Environmental .....	Bobbi Jo McClain .....	(206) 764-6968
	Jeff Laufle .....	(206) 764-6578
Cultural Resources .....	Danielle Storey.....	(206) 764-4466
Engineering and Design.....	Cathie DesJardin .....	(206) 764-3452
Program Management.....	Amanda Ogden .....	(206) 764-3628
Real Estate .....	Kevin Kane .....	(206) 764-6652
Hydraulics and Hydrology .....	Travis Ball.....	(206) 764-3277

APPENDICES

Appendix A: Project Sponsor's request for Rehabilitation Assistance



# Public Services

128 North Second Street • Fourth Floor Courthouse • Yakima, Washington 9890  
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VERN M. REDIFER, P.E. - Director

January 27, 2009

Mr. Doug Weber  
US Army Corps of Engineers  
Attn: CENWS-EC-DB-CS  
4735 East Marginal Way South  
Seattle, WA 98134

Dear Mr. Weber

The purpose of this letter is to notify you that several sections of Federal Levee system on the Yakima River were damaged during the recent high water event. In addition, the Rock Creek Levee on the Naches River is substantially damaged. Yakima County is requesting rehabilitation assistance under Public Law 84-99. The damaged sections are as follows:

Segment	Location	Damage/Rehabilitation needed
Y10	Near Boise Cascade Parking Lot	Bank and toe erosion of revetment
Y10	Area upstream of Railroad Trestle	Bank and toe erosion of levee
Y10	Rotary Park playground	Major bank armor and toe erosion
Y10	Buchanan Lake	Seepage behind levee
Y9	Floodgate 22	Seepage behind levee, into bottom of irrigation canal.
Y8	NC Machinery	Need to install barb to enhance the emergency work completed during flood fight.
Y8	W. Birchfield Road	Seepage behind levee
N11	Rock Creek levee	Replace rip rap and reworking of riverward slope along length of levee.

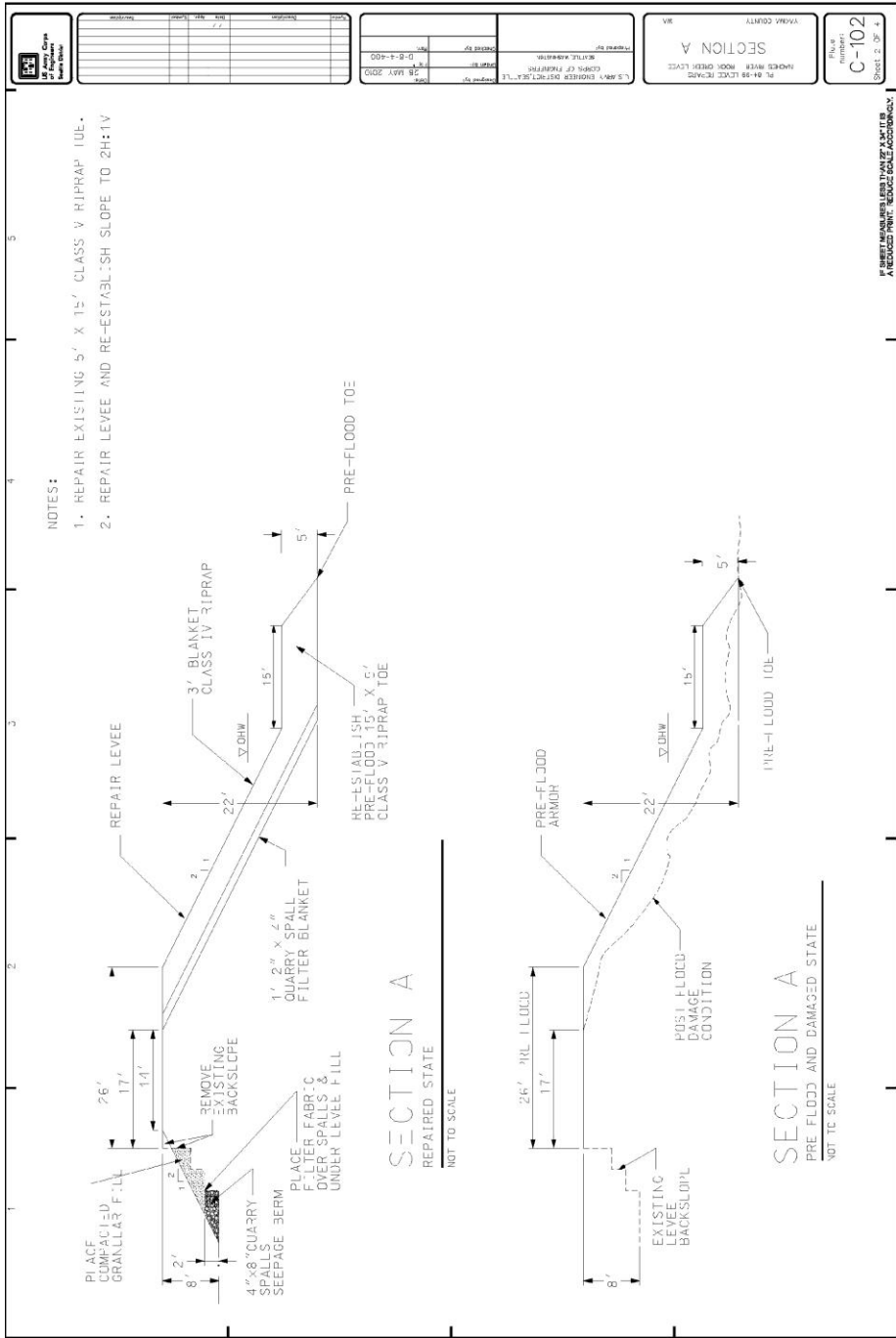
Thank you, for your consideration in this matter. Please feel free to contact me with any questions.

Sincerely,

Gary Ekstedt, P.E.  
County Engineer







- NOTES:
1. REPAIR EXISTING 5' X 15' CLASS V RIPRAP TOE.
  2. REPAIR LEVEE AND RE-ESTABLISH SLOPE TO 2H:1V



NO.	REVISION	DATE
1	ISSUED FOR PERMIT	11/11/2015
2	ISSUED FOR PERMIT	11/11/2015

PROJECT NO.	15-001
PROJECT NAME	ROCK CREEK LEVEE
DATE	28 MAY 2015

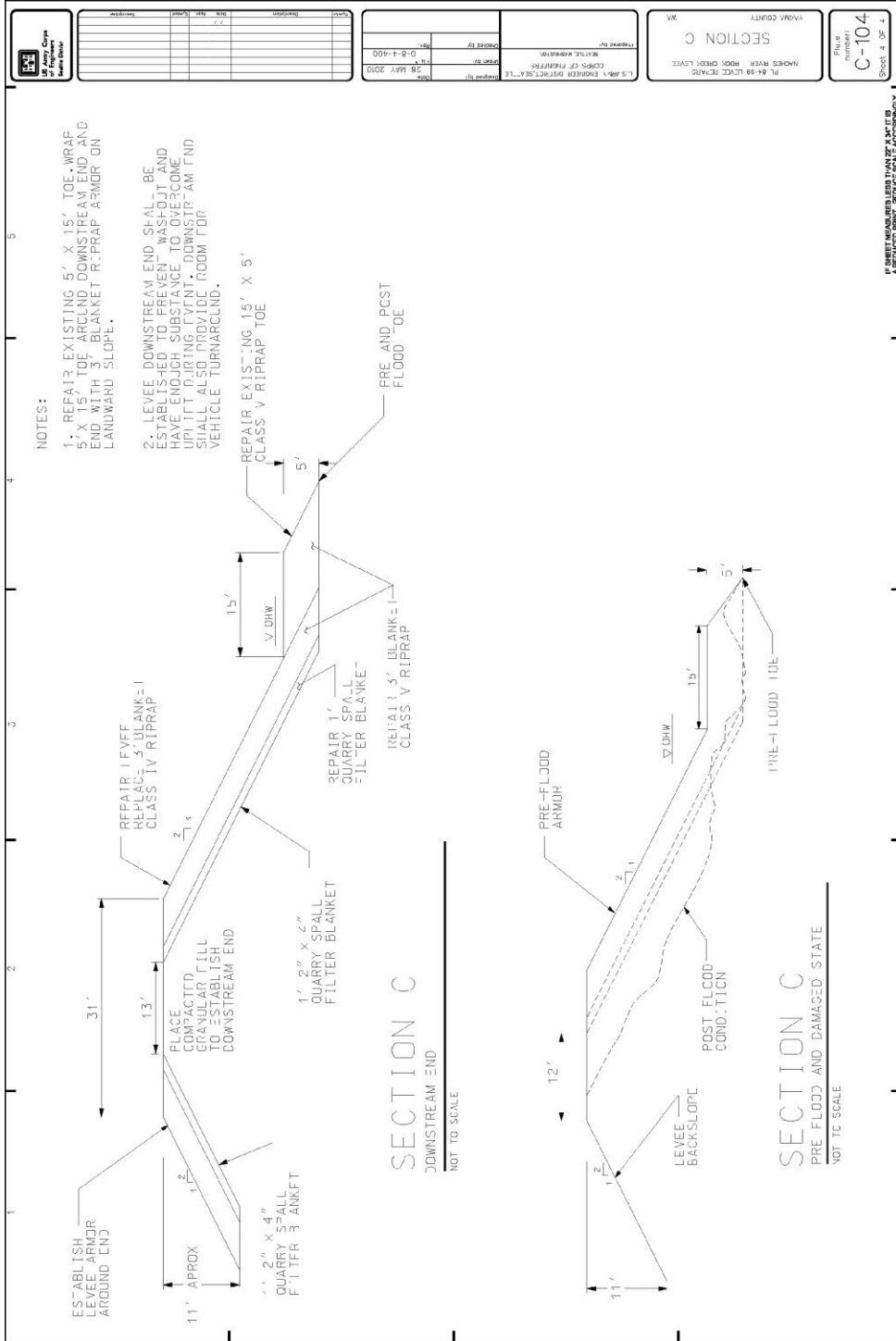
DESIGNED BY  
 CHECKED BY  
 DRAWN BY

SECTION A  
 ROCK CREEK LEVEE  
 YAVAPAI COUNTY

PROJECT NUMBER  
**C-102**  
 SHEET 2 OF 2

A REPAIRED STATE AND PRE-FLOOD AND DAMAGED STATE





**Appendix D: Damages**



## **Appendix Z: PIR Review Checklist**