

MEMORANDUM

Date: August 7, 2007
To: Kate Bolton
Organization: UC Berkeley Capital Projects
From: Jorgen Blomberg
PWA Project #: 1799.01
PWA Project Name: Winter Creek Temporary Stabilization Project
Subject: 2005 - 2006 Monitoring Summary
Copy(ies) To: Mark Cederborg (Hanford ARC)

Per your request Philip Williams & Associates (PWA) is pleased to provide this memo documenting monitoring activities of the Winter Creek Temporary Stabilization Project 2005 – 2006. Coordinated monitoring and maintenance activities were performed by PWA and Hanford ARC. In coordination with PWA and Hanford ARC the University has monitored the stabilization project since the project was constructed in October 2005. As part of the monitoring program PWA and Hanford ARC have provided reports documenting conditions of the project site and specifically on the performance of the stabilization structures.

Background

In 2005 the University of California, Berkeley (UC) implemented a temporary stabilization project in Winter Creek in Mather Memorial Redwood Grove at the University of California, Berkeley Botanical Gardens to address significant and active channel incision and associated bank instability. The intent of the project was to provide temporary stabilization and protection to the site and specifically to limit ongoing erosion until a comprehensive enhancement plan for long-term stabilization is developed and implemented. Hanford ARC and PWA collaborated to develop, implement and monitor the temporary stabilization project.

Photos of the site and stabilization structures are attached as a separate transmittal.

Please find the detailed summary of our coordinated monitoring site visits follow.

Notes from December 21, 2005 Site Visit:

General

Following is a summary of PWA's site visit on Wednesday December 21st, 2005. In addition to this summary, please see the attached photos for your review and records. The site clearly experienced significant rain and associated runoff.

Observations

General: The project held up well during the recent storms and large runoff events. The structures performed well to protect existing headcuts from additional erosion. The structures also appear to have captured and focused flows to the center of the channel and over the geogrid baskets as intended. The erosion control fabric associated with each of the structures remains in place and is providing benefits to bank protection and sediment control.

Weather conditions were mild and cloudy with some light rain. The flow in the creek is estimated at approximately 1 CFS.

Culvert Extension/ Dissipation Basin: The culvert extension appears to be stable and connected to the existing culvert. The dissipation structure persisted through the runoff event. Several gravel bags were displaced and transported from the left bank at the lower end of the structure as well as from the apron at the downstream limit of the structure. Along with the transport of several gravel bags (5 – 10) the erosion control fabric on the channel bed has been torn apart at the apron of the structure. Some additional erosion has occurred on the left bank downstream of the structure.

Structure 1: Several gravel bags were displaced from the apron and left bank at the downstream end of the structure. It appears that several gravel bags may have ruptured and the gravel dispersed.

Structure 2: Structure appears to be stable. Several gravel bags (5 – 10) were displaced and transported from the right bank at the lower end of the structure as well as from the apron at the downstream limit of the structure. The foundation of the lower geogrid basket has degraded due to the loss of gravel bags in the apron. Along with the transport of several gravel bags the erosion control fabric on the channel bed has been torn apart at the apron of the structure.

Structure 3: Structure appears to be stable. Several gravel bags (3 – 4) were displaced and transported from the apron at the downstream limit of the structure. The bags have created a small dam feature in the channel approximately 8 feet downstream of the structure.

Structure 4: Structure appears to be stable. Some sedimentation/ capture on right bank upstream of the structure.

Structure 5: Structure appears to be stable. Several gravel bags (2 – 3) were displaced and transported from the right bank at the downstream limit of the structure.

Structure 6: Structure appears to be stable. Several gravel bags (3 – 4) were displaced and transported from the apron at the downstream limit of the structure. The existing bank failure on the left bank downstream of the structure has increased and the gravel bags placed along the toe of the bank have been moved around within the channel.

Structure 7: Structure appears to be stable. Several gravel bags (3 – 5) were displaced and transported from the left bank at the downstream limit of the structure.

Footbridge: Most of the gravel bags placed in the channel below the footbridge were displaced. The scour/ undercut

area on the right bank has increased (approximately 6 inches vertically and laterally).

Summary

1. The stabilization structures performed well. The aprons of the structures should be reconstructed where they have been degraded.
2. Gravel bags were displaced throughout the project and should be replaced.
3. We recommend that UC and Hanford coordinate a site visit to identify appropriate maintenance and repair measures. PWA can be available to assist with next steps.

I hope that this information is useful for you. Happy Winter Solstice!

Jorgen Blomberg
PWA

Notes from January 4, 2006 Site Visit:

General

Following is a summary of PWA's site visit on Wednesday January 4th, 2006. In addition to this summary, please see the attached photos for your review and records. The site and region has experienced significant rain and associated runoff this season.

Observations

General: The project held up well during the recent storms (New Years weekend). The structures performed well to protect existing headcuts from additional erosion as intended. Hanford ARC had a three person crew on site to make suggested repairs to the structures as identified in our first maintenance and monitoring report (12/21/2005). PWA and Hanford walked the site and discussed repair activities and priorities. Additionally, the group made observations of new conditions occurring at the site.

A large landslide has occurred on the left bank of the creek downstream of the footbridge at Structure #6. The landslide is estimated to be approximately 30' long x 12' wide by 6' deep. A small redwood tree is contained in the landslide. The landslide appears to have slipped into the creek channel however the flows in the creek have maintained a flow path over structures 6 and 7. The landslide occurred at the location where a bank failure had previously occurred and was documented. There is potential for the landslide to move further downslope and into the creek which could obstruct or redirect creek flows. The condition of the new landslide is similar to the existing slope condition adjacent to the culvert outfall at the upstream limit of the project.

A smaller slope failure occurred on the left bank of the creek between Structure 2 and Structure 3. This failure is relatively shallow (approx. 2 feet) but has delivered soil and other debris to the creek channel. There was no obstruction to the creek flows observed.

Additional scour and channel incision at the footbridge has occurred. The right bank below the footbridge appears to be undercut approximately 2'. Ongoing channel degradation may impact the footbridge and the abutments.

Hanford was working to gather and replace rock bags that were displaced from the structures. Many of the bags were found in the middle of the channel just downstream of the respective structures.

Weather conditions were mild and clear. The flow in the creek is estimated at approximately 1 CFS.

Culvert Extension/ Dissipation Basin: Hanford was replacing displaced rock bags at the downstream end of the structure to reconstruct the apron and redirect flows off of the left bank. Several bags were replaced along the left side of the culvert extension at the outfall. Displaced rock bags (8 – 10) were collected from sections of channel downstream of the basin structure.

Structure 1: Hanford replaced displaced rock bags (3 – 4) along the left bank.

Structure 2: Hanford replaced rock bags along the right bank to redirect flows off of the toe and into the center of the channel. Landslide soils from left bank were shoveled out of the channel and additional fabric was going to be placed today on the exposed bank slope.

Structure 3: Hanford replaced several rock bags along the left bank at the downstream end of the structure.

Structure 4: Structure appears to be stable. Hanford placed several bags at the upstream end of the cavity/ undercut bank on the right bank in an effort to direct flows away from the erosion.

Structure 5: Structure appears to be stable.

Structure 6: Structure appears to be stable. See notes regarding landslide above.

Structure 7: Hanford replaced several displaced rock bags to reconstruct the apron of the structure.

Summary

1. The project structures continue to perform as intended.
2. Gravel bags were displaced throughout the project over the course of the recent storms. We recommend that UC and Hanford continue to monitor the project site and, in particular, the locations of the landslides. PWA can be available to assist with next steps.

I hope that this information is useful for you. Please feel free to contact me if you have any questions or need additional information.

Jorgen Blomberg
PWA