



CITY OF MARTINEZ

CITY COUNCIL AGENDA October 1, 2008

TO: Mayor and City Council

FROM: Tim Tucker, City Engineer
Veronica Nebb, Senior Assistant City Attorney
Karen Majors, Assistant City Manager – Community and Economic Development

SUBJECT: Authorizing Emergency Work to Stabilize Alhambra Creek Bank

DATE: September 25, 2008

RECOMMENDATION:

Adopt resolutions necessary to implement emergency stabilization of the east bank of Alhambra Creek from Escobar to Marina Vista.

BACKGROUND:

Since 1998 the City of Martinez has constructed several projects to improve the flood capacity and environmental habitat of Alhambra Creek from Green Street to the Carquinez Strait. The City recently received a letter from Attorney Dan Adams of the law firm of Turner, Huguet and Adams on behalf of his clients, the Dunivan family, owners of property adjacent to Alhambra Creek. In his letter, Mr. Adams noted that his clients have grave concerns regarding the soil stability of areas surrounding Alhambra Creek adjacent to their property. Mr. Adams demanded that the City take action to abate the situation to avoid litigation. Mr. Adams correspondence included a geotechnical evaluation report prepared by William Langbehn, Geotechnical Engineer, for the stretch of Alhambra Creek from Marina Vista to Main Street. Based on site evaluations and soil investigation reports and tests undertaken as part of previous city projects, Mr. Langbehn presented his professional findings, conclusions and recommendations to address soils related concerns in and adjacent to Alhambra Creek. Mr. Langbehn's conclusions and recommendations are generally as follows:

- A. The properties along the east side of Alhambra Creek from Escobar to Marina Vista are being adversely affected by the ongoing beaver activity.
- B. The increased risk of flood problems and related problems is significant.
- C. The primary geotechnical concerns are erosion and bank stability.
- D. Erosion and bank stability have reached critical levels with local undermining of adjacent walls and structures.
- E. Seismic risks are present due to erosion and stability the creek bank.
- F. Remove and relocate of the beaver colony to a more suitable habitat niche in a natural setting.
- G. Install rock revetments using large dimension boulder riprap.

- H. Install bulkhead walls at the top of bank.
- I. Install local bio-technical improvements for re-vegetation purposes.
- J. Fill in beaver burrows with pressure grout.
- K. Install sheet pile walls.

The City retained the professional services of Cal Engineering and Geology to peer review the work completed by Mr. Langbehn and to inspect the areas of concern cited by Mr. Adams in his letter to the City. Phillip Gregory, P.E., G.E. of Cal Engineering conducted initial reconnaissance visits in March and May, of this year. Although CE&G indicated that they do not agree on all aspects of the Langbehn Report, both geotechnical engineers observed erosion and other problems related to the stability of the east bank of Alhambra Creek between Marina Vista and Escobar and recommended remedial repair work to the area.

On September 18th staff met with Mr. Gregory to finalize recommendations relating to said work in order to present to the recommendations to the City Council and the property owners. At that time, Mr. Gregory re-inspected the area of concern. He determined that the area had significantly deteriorated since his last inspection. Based upon the significant change in the condition of the east bank slope between his two inspections, Mr. Gregory now believes there is a high likelihood that severe undermining and potential collapse of retaining wall features in the creek are probable during moderate to high creek flows. Mr. Gregory therefore recommended that action be taken immediately to abate this condition. Mr. Gregory concurred with Mr. Langbehn's recommendation to install a sheetpile wall along the top of the east bank of Alhambra Creek between Marina Vista and Escobar.¹

Staff has concluded that several steps need to be taken to complete the work in an expeditious manner to avoid any further deterioration of east creek bank and to avoid impacting the condition of the retaining wall and buildings at 611 Escobar and 610 Marina Vista. Based upon construction details prepared by CE&G, staff estimates that the work necessary to mitigate the urgent situation may cost up to \$500,000. We have evaluated CEQA requirements, the California Public Contract Code and developed construction plans to correct this critical, emergency situation. These issues are discussed in greater detail below.

CEQA: In certain circumstances, the California Environmental Quality Act allows a project needed to prevent or mitigate an emergency to be exempt from the requirements of CEQA. Given the significant change in the condition of the east bank of Alhambra Creek between May, 12, 2008 and September 19, 2008 due, in part, to the activities of a growing beaver population, and the expert engineering opinions regarding the need to immediately abate this condition in order to avoid resulting impact on the properties located at 611 Escobar and 610 Marina Vista, city staff has determined that an emergency now exists that requires immediate action. Voids have appeared at the base of the retaining wall located at 611 Escobar, and the building located at 611 Escobar is less than five feet away from said retaining wall in some places. The foundation of the building located at 610 Marina Vista is located four feet from the bank which is showing signs of soil instability. This type of situation is what was envisioned when Section 15260 of the CEQA Guidelines was adopted. Staff has prepared the attached Notice of Exemption and with the approval of the attached resolution will file with Contra Costa County Clerk.

¹ The City Council has met in closed session regarding the threat of litigation relating to this issue and has reviewed the engineering reports relating thereto. The City Council has considered the recommendations of both engineers and the possibility of impending litigation relating to these issues.

Public Bidding Requirements: The California Public Contract Code also has provisions for emergency work. Section 22050.(a)(1) allows the City Council by a 4/5th vote to authorize emergency repairs of public facilities without giving formal notice for bids to let a contract. City staff has gone above and beyond our minimum requirements by developing plans and specifications and soliciting informal bids from three competent construction firms. With City Council approval of the attached resolutions, the bids for the proposed work will be opened on Thursday, October 2nd at 10:00 AM.

Section 22050.(a)(1) of the California Code requires the City Council to make findings based on substantial evidence that the emergency will not permit a delay resulting from a competitive solicitation for bids, and that the actions are necessary to respond to the emergency. Staff has contacted the California State Department of Fish and Game to discuss the rapidly declining stability of the eastern creek bank of Alhambra Creek between Marina Vista and Escobar. Fish and Game concurred that the proposed repairs are urgent and provided procedures for the City to follow during the emergency work.

Fish and Game Code Section 1610 exempts certain types of emergency work from the notification requirement in Section 1602 including “immediate emergency work necessary to protect life or property.” City Council approval and adoption of the attached resolutions are necessary to enable city staff to move forward in an expeditious manner with the emergency work incorporating the procedures provided by the State Department of Fish and Game.

It should be stressed that the creek bank stability has deteriorated significantly between inspections by our Geotechnical Engineer and that the City Engineer agrees with the Langbehn’s recommendation to install a sheet pile wall to buttress the east creek bank prior to the impending winter storm season. City staff is confident that the three firms that the city is soliciting bids from can provide insurance and bonds immediately following the informal bid opening. We have worked with each of the firms on previous major projects. If the staff was required to follow the normal bidding process the bid, award and contract, insurance and bonding process, the repair work would take six to eight weeks pushing us well into the rainy season.

The State Code also requires city staff to provide the Council updates at each Council meeting until the work is complete or the emergency situation abated.

Plans, Specification and Award of Bid: Working with our Geotechnical Engineer and utilizing information developed as part of the original Alhambra Creek Channel Improvement project staff developed plans and specification and provided these to three qualified contractors. Various construction options were discussed and evaluated including: (1) bioengineering techniques; (2) rock revetment installation; and, (3) sheet piles.

- (1) **Bioengineering techniques** will not provide the long term lateral support needed for structures adjacent the east creek bank. It will not prevent future deterioration of the creek bank and would likely require the removal of the three beaver dams to provide access to the toe of the creek bank.
- (2) **Rock revetment** is a technique the City has used in other areas of Alhambra Creek. It is not the preferred technique in this section of creek this time of year in order to minimize the impact on local habitat. The beaver dam would need to be removed and the creek bottom excavated approximately three feet to provide a proper keyway.

- (3) **Installation of a sheet pile** wall can be done without draining the beaver ponds and requires very little bank disturbance. This type of construction does not require heavy machinery to be in the creek. A large crane would be placed in the sidewalk/park area along Castro Street. Castro Street will be closed until the work is completed. We have discussed this work with representatives for the State Department of Fish and Game. They indicated we could trim and top vegetation on the west bank to provide adequate vision by the crane operator and that vegetation could be removed on the east bank.

Any construction in this area will be disruptive to the beaver population. Installing sheet piles will allow us the best opportunity to preserve the beaver dams and minimize work in the creek. We have ruled out night construction because the work would be very disruptive to residents within 1000 feet of the construction zone.

FISCAL IMPACT:

Staff has determined that the only financial resources the City has available to fund the construction costs necessary to mitigate the deteriorating slope stability problems are undesignated General Fund reserves.

ACTION:

Adopt resolutions authorizing emergency work to stabilize the Alhambra Creek bank:

- A) Making Findings and Authorizing the Assistant City Manager Community and Economic Development to file a Notice of Exemption in accordance with the California Environmental Quality Act (CEQA);
- B) Declaring the Emergency Creek Bank Stabilization, Alhambra Creek, Escobar to Marina Vista Project, an emergency project in accordance with California Public Contract Code section 22050; and
- C) Approving the Emergency Creek Bank Stabilization, Alhambra Creek, Escobar to Marina Vista Project and allocating up to \$500,000 of General Fund reserves to C3007 to complete the project and authorizing the City Manager to execute a construction contract for same.

Attachments:

Resolutions—CEQA Exemption, Declaring Alhambra Creek Bank an Emergency, & Allocating Funds
Notice of Exemption, Maps 1 & 2
Report from Langbehn, CE GE

APPROVED BY:



City Manager

RESOLUTION NO. -08

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MARTINEZ MAKING
CEQA FINDINGS AND AUTHORIZING THE ASSISTANT CITY MANAGER
COMMUNITY AND ECONOMIC DEVELOPMENT DIRECTOR TO FILE
A NOTICE OF EXEMPTION IN ACCORDANCE WITH THE
CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

WHEREAS, the City of Martinez is located in Contra Costa County California. Existing within the City limits of the City of Martinez is a naturally occurring watercourse and drainage channel commonly known as Alhambra Creek; and

WHEREAS, within the last 24 months, beavers have established a colony within Alhambra Creek in the area between Escobar Street and the bay; and

WHEREAS, said colony of beavers have erected dams within Alhambra Creek and have built several lodges within the banks of the creek. In addition, said beavers have burrowed tunnels within the banks of Alhambra Creek; and

WHEREAS, on January 2, 2008, the City did receive a letter from Dan Adams of Turner, Huguet & Adams, representing a property owner with property adjacent to Alhambra Creek alleging that damage was occurring to said property adjacent to the beaver activity in the creek; and

WHEREAS, Mr. Adams provided to the City a report by a qualified engineer, Mr. William Langbehn, making certain observations, conclusions and recommendations relating to the soil stability in and around Alhambra Creek in the area of the beaver activities; and

WHEREAS, the City obtained the services of a geotechnical engineer, Mr. Philip Gregory, to review Mr. Langbehn's report and also to review the conditions at Alhambra Creek and make recommendations to the City relating to same; and

WHEREAS, City staff and City geotechnical consultants determined that significant deterioration of the eastern bank of Alhambra Creek between Escobar and Marina Vista occurred between May 12 and September 19, 2008; and

WHEREAS, in order to prevent additional erosion and structural damage to adjacent structures and to prevent the loss of or damage to life, health, property and essential public services, emergency repairs must be undertaken immediately, before the pending winter rains; and

WHEREAS, pursuant to the California Environmental Quality Act (CEQA) Section 21080 (b) (2) and (4) and section 15269 of the CEQA Guidelines the undertaking of emergency projects is exempt

from the requirements of CEQA.

NOW THEREFORE, BE IT RESOLVED, that, the City Council of the City of Martinez finds that the installation of sheet piles on the east bank of Alhambra Creek between Escobar and Marina Vista, is necessary to maintain the drainage capability of Alhambra Creek which is essential to the public health, safety and welfare and is further necessary to prevent or mitigate an emergency situation which presents a clear and imminent danger of loss of or damage to life, property and essential public services.

Facts in Support: The City has received an engineering study prepared by Mr. William Langbehn which noted his opinion that properties are being adversely affected by the ongoing beaver activity along the downtown section of Alhambra Creek. The increased risk of flood hazards and related problems is significant and that the primary Geotechnical concerns are the erosion and bank stability problems from continued loss of vegetation and burrowing and the increased geologic hazards during strong seismic shaking from semi-permanent high water levels.

The City obtained the services of Mr. Philip Gregory to review Mr. Langbehn's report and to review the conditions at Alhambra Creek and make recommendations to the City. Mr. Gregory inspected the creek on March 19th, May 12th and September 19th, 2008. Upon his third inspection of the creek Mr. Gregory concluded that the soil conditions in and about Alhambra Creek between Escobar and Marina Vista had deteriorated rapidly between his site visit on May 12, 2008 and his subsequent visit on September 19, 2008. Based upon this rapidly changing condition, Mr. Gregory recommended that the City take immediate action to stabilize the soil at the banks of the creek between Escobar and Marina Vista by the installation of sheet piles adjacent to the creek banks to protect adjacent structures from damage which in his opinion would occur with a moderate to severe rain.

Based upon the information submitted, two geotechnical consultants determined that significant deterioration of the eastern bank of Alhambra Creek has occurred. The City Engineer has concurred with the opinion of Mr. Gregory that significant additional deterioration of the eastern bank between Escobar and Marina Vista occurred between May 12 and September 19, 2008. Each of these engineers agrees that immediate stabilization of the banks of the creek between Escobar and Marina Vista is necessary in order to avoid damage to adjacent structures.

The proper functioning of Alhambra Creek as the major drainage channel within downtown Martinez is essential to avoid severe flooding damage within the downtown. In the event of bank failure, Alhambra creek will not be able to fully function as a drainage channel for the downtown and flood capacity will be impaired.

BE IT FURTHER RESOLVED, that the City has consulted with the California State Department of Fish and Game (DF&G), and DF&G concurs that an emergency situation exists that necessitates immediate repair; and

BE IT FURTHER RESOLVED, that based upon the forgoing facts and findings and the evidence submitted to the City Council both before and during the City Council meeting on this matter, including, but not limited to the engineering reports, staff reports, documentary and testimonial evidence submitted at the hearing, all historical data relating to Alhambra Creek, including all plans and specifications for improvements relating thereto, the City Council of the City of Martinez determines that the project is exempt from the provisions of the California Environmental Quality Act pursuant to California Public Resources Code Section 21080(b)(2)&(4) and section 15269 of the CEQA Guidelines and hereby authorizes the Assistant City Manager, Community and Economic Development Director, to file a notice of exemption relating to same.

* * * * *

I HEREBY CERTIFY that the foregoing is a true and correct copy of a resolution duly adopted by the City Council of the City of Martinez at a Regular Meeting of said Council held on the 1st day of October, 2008 by the following vote:

AYES:

NOES:

ABSENT:

RICHARD G. HERNANDEZ, CITY CLERK
CITY OF MARTINEZ

RESOLUTION NO. -08

**DECLARING THE EMERGENCY CREEK BANK STABILIZATION,
ALHAMBRA CREEK, ESCOBAR TO MARINA VISTA PROJECT,
AN EMERGENCY PROJECT IN ACCORDANCE WITH
CALIFORNIA PUBLIC CONTRACT CODE SECTION 22050**

WHEREAS, the City was presented a report from William K. Langbehn C.E., G.E. referenced "Preliminary Geotechnical Evaluation, Alhambra Creek Beaver Activity, 611 & 628/630 Escobar Street, 610 Marina Vista, and 649 Main Street Martinez, California; and

WHEREAS, in said report Mr. Langbehn among other things concluded the east bank of Alhambra Creek from Escobar Street to Marina Vista requires stabilization; and

WHEREAS, in said report Mr. Langbehn among other things recommends the installation of a sheet pile wall; and

WHEREAS, the City of Martinez has hired Phillip Gregory, P.E., G.E. of Cal Engineering & Geology to review said report and conduct necessary site reconnaissance; and

WHEREAS, Mr. Gregory conducted said reconnaissance on March 19, 2008, May 12, 2008 and September 19, 2008; and

WHEREAS, Mr. Gregory observed a significant and serious deterioration in the said east bank stability during his September 19, 2008 from the condition observed May 12, 2008; and

WHEREAS, Mr. Gregory has indicated a high likelihood that severe undermining and potential collapse of the retaining wall features in the creek during moderate to high creek flows; and

WHEREAS, Mr. Gregory further recommends that action be taken immediately to abate this condition; and

WHEREAS, the normal time required to advertise, receive bids, award a contract to the lowest responsible bidder, receive and review insurance and bonds is six to eight weeks.

NOW THEREFORE, BE IT RESOLVED, by the City Council of the City of Martinez finds the Emergency Creek Bank Stabilization, Alhambra Creek, Escobar to Marina Vista project and emergency project in accordance with California Public Contract Code Section 22050 and authorizes repair to proceed immediately in accordance with said code section and other State regulations.

Facts in support: The City has received an engineering study prepared by Mr. William Langbehn which noted his opinion that properties are being adversely affected by the ongoing beaver activity along the downtown section of Alhambra Creek. The increased risk of flood hazards and related problems is significant and that the primary Geotechnical concerns are the erosion and bank stability problems from continued loss of vegetation and burrowing and the increased geologic hazards during strong seismic shaking from semi-permanent high water levels.

The City obtained the services of Mr. Philip Gregory to review Mr. Langbehn's report and to review the conditions at Alhambra Creek and make recommendations to the City. Mr. Gregory inspected the creek on March 19th, May 12th and September 19th, 2008. Upon his third inspection of the creek Mr. Gregory concluded that the soil conditions in and about Alhambra Creek between Escobar and Marina Vista had deteriorated rapidly between his site visit on May 12, 2008 and his subsequent visit on September 19, 2008. Based upon this rapidly changing condition, Mr. Gregory recommended that the City take immediate action to stabilize the soil at the banks of the creek between Escobar and Marina Vista by the installation of sheet piles adjacent to the creek banks to protect adjacent structures from damage which in his opinion would occur with a moderate to severe rain.

Based upon the information submitted, two geotechnical consultants determined that significant deterioration of the eastern bank of Alhambra Creek has occurred. The City Engineer has concurred with the opinion of Mr. Gregory that significant additional deterioration of the eastern bank between Escobar and Marina Vista occurred between May 12 and September 19, 2008. Each of these engineers agrees that immediate stabilization of the banks of the creek between Escobar and Marina Vista is necessary in order to avoid damage to adjacent structures.

The proper functioning of Alhambra Creek as the major drainage channel within downtown Martinez is essential to avoid severe flooding damage within the downtown. In the event of bank failure, Alhambra creek will not be able to fully function as a drainage channel for the downtown and flood capacity will be impaired.

October 1st is considered the beginning of the rainy season time is of the essence. Failure to proceed immediately with the repair will likely lead to failure of the creek bank, retaining walls and adjacent buildings is considered an emergency condition and the impending emergency will not permit a delay resulting from a competitive solicitation for bids, and that beginning repairs immediately is necessary to respond to the emergency.

BE IT FURTHER RESOLVED, that based upon the forgoing facts and findings and the evidence submitted to the City Council both before and during the City Council meeting on this matter, including, but not limited to the engineering reports, staff reports, documentary and testimonial evidence submitted at the hearing, all historical data relating to Alhambra Creek, including all plans and specifications for improvements relating thereto, the City Council of the City of Martinez determines that the project is exempt from the provisions of the California Public Contract Codes related to notice for bids to let contracts.

* * * * *

I HEREBY CERTIFY that the foregoing is a true and correct copy of a resolution duly adopted by the City Council of the City of Martinez at a Regular Meeting of said Council held on the 1st day of October, 2008 by the following vote:

AYES:

NOES:

ABSENT:

RICHARD G. HERNANDEZ, CITY CLERK
CITY OF MARTINEZ

RESOLUTION NO. -08

APPROVING THE EMERGENCY CREEK BANK STABILIZATION,
ALHAMBRA CREEK, ESCOBAR TO MARINA VISTA PROJECT AND
ALLOCATING UP TO \$500,000 OF GENERAL FUND RESERVES TO C3007
TO COMPLETE THE PROJECT AND AUTHORIZING THE CITY MANAGER
TO EXECUTE A CONSTRUCTION CONTRACT FOR SAME

WHEREAS, the City of Martinez has recently become aware of the urgent need to stabilize the east bank of Alhambra Creek from Marina Vista and to Escobar Street; and

WHEREAS, the City Engineer with consultation for Geotechnical Engineers has determined the best and most environmentally sensitive approach to stabilize said bank is through the installation of a sheet pile wall; and

WHEREAS, the City is informally soliciting for bids from general engineering contractors to install said sheet pile; and

WHEREAS, on October 2, 2008, bids will be publicly opened; and

WHEREAS, it is deemed in the best interest of the public and the City to implement the Emergency Creek Bank Stabilization, Alhambra Creek, Escobar to Marina Vista project.

NOW THEREFORE, BE IT RESOLVED, by the City Council of the City of Martinez that the City Manager is authorized to execute a contract with the low bidder when the required performance bond, labor and materials bond, insurance and other contract documents have been reviewed and approved by the City Attorney.

BE IT FURTHER RESOLVED, that the City Council of the City of Martinez authorizes the transfer of up to \$500,000 from the General Fund Reserve to account C3007.

* * * * *

I HEREBY CERTIFY that the foregoing is a true and correct copy of a resolution duly adopted by the City Council of the City of Martinez at a Regular Meeting of said Council held on the 1st day of October, 2008 by the following vote:

AYES:

NOES:

ABSENT:

RICHARD G. HERNANDEZ, CITY CLERK
CITY OF MARTINEZ

NOTICE OF EXEMPTION

TO: _____ Office of Planning and Research
1400 Tenth Street
Sacramento, CA 95814

From: CITY OF MARTINEZ
525 HENRIETTA STREET
MARTINEZ, CA 94553

XX County Clerk
County of CONTRA COSTA
P.O. BOX 911
MARTINEZ, CA 94553

Project Title: Alhambra Creek (Escobar to Marina Vista) Emergency Stream Bank Stabilization and Repair Project

Project Location – Specific: Alhambra Creek between Escobar and Marina Vista
City of Martinez - Contra Costa County

Description of Nature, Purpose, and Beneficiaries of Project: Emergency repair work to immediately stabilize the east bank of Alhambra Creek between Escobar and Marina Vista before fall/winter rain season to prevent additional stream bank erosion and structural failure of adjacent buildings.

Name of Public Agency Approving Project:

The City of Martinez
Community and Economic Development Department
City Hall
525 Henrietta Street
Martinez, California 94553

Name of Person or Agency Carrying Out Project: The City of Martinez

Exempt Status: (Check One)

- Ministerial (Sec. 21080(b)(1); 15268);
- Declared Emergency (Sec. 21080(b)(2); 15269(b));
- Emergency Project (Sec. 21080(b)(4); 15269(c));
- Categorically Exempt 15301(d)

Reason Why Project is Categorically Exempt: The City of Martinez staff and geotechnical engineering consultants determined that significant deterioration of the eastern bank of Alhambra Creek between Escobar and Marina Vista occurred between May 12 and September 19, 2008 and that in order to prevent additional erosion and potential structural damage to adjacent structures, emergency repairs must be undertaken and completed immediately.

Contact Person: Karen L. Majors Telephone No.: (925)372-3514

If filed by applicant:

1. Attached certified document of exemption finding.
2. Has a notice of exemption been filed by the public agency approving the project?
Yes No

Date Received for Filing: _____

Signature
Appendix E from State Guidelines

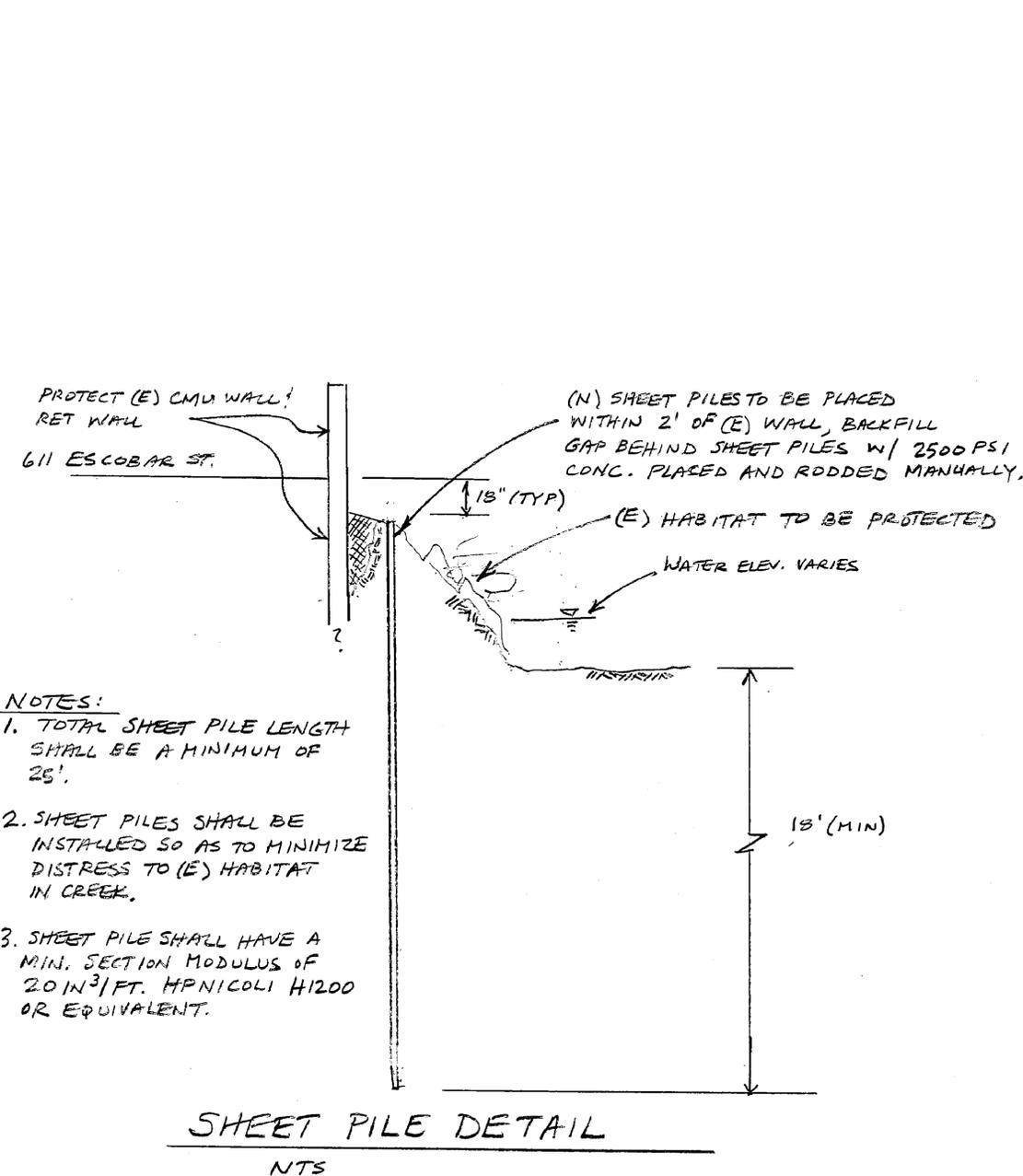
Assistant City Manager Community/Economic Development

CITY OF MARTINEZ

EMERGENCY CREEK BANK STABILIZATION

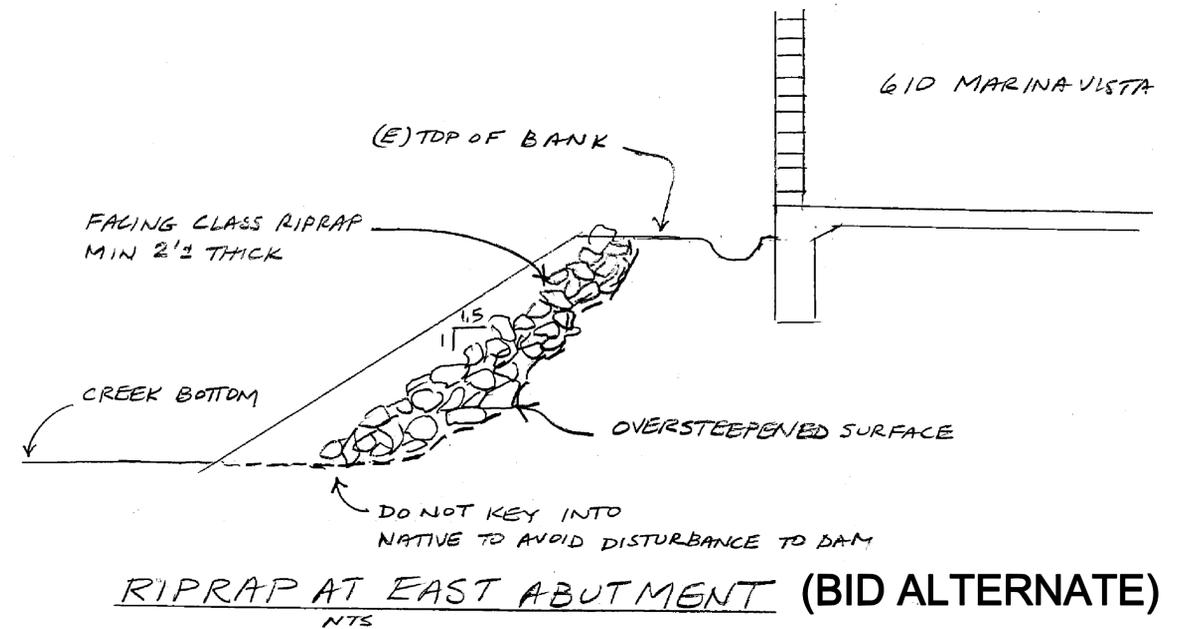
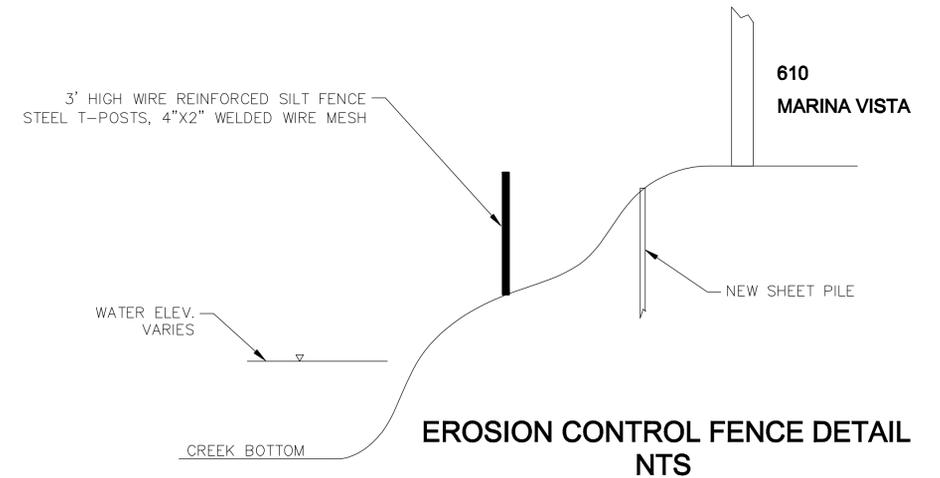
(ALHAMBRA CREEK, ESCOBAR TO MARINA VISTA)

PROJECT NO. C3007



NOTES:

1. TOTAL SHEET PILE LENGTH SHALL BE A MINIMUM OF 25'.
2. SHEET PILES SHALL BE INSTALLED SO AS TO MINIMIZE DISTRESS TO (E) HABITAT IN CREEK.
3. SHEET PILE SHALL HAVE A MIN. SECTION MODULUS OF 20 IN³/FT. HPN100L1 H1200 OR EQUIVALENT.



- NOTES:**
1. MANUALLY GRUB AREA TO REMOVE BRUSH AND ROOTS GREATER THAN 1" IN DIA.
 2. MANUALLY PLACE FACING CLASS TO AN INCLINATION OF 1.5:1 OR TO CONFORM AT ENDS.

FILENAME: Channel.dwg

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DESIGNED BY
AMS
DRAWN BY
AMS
CHECKED BY
TT
DATE
SEP 08

CITY OF MARTINEZ

COMMUNITY DEVELOPMENT DEPARTMENT
525 HENRIETTA STREET
MARTINEZ, CALIFORNIA 94553

PREPARED UNDER THE DIRECTION OF:

TIMOTHY M. TUCKER R.C.E. NO 056982

DATE:

PROJECT: C3007

ACCOUNT NO. _

CITY OF MARTINEZ
EMERGENCY CREEK BANK STABILIZATION
ALHAMBRA CREEK, ESCOBAR TO MARINA VISTA

CITY OF MARTINEZ CALIFORNIA

SCALE 1" = 10'	
SHEET NO. 1	TOTAL SHEETS OF 2

INSTALL 170 LF OF
NEW SHEET PILE WALL
SEE SHEET PILE DETAIL ON SHT. 1

EROSION CONTROL FENCE
SEE EROSION CONTROL
FENCE DETAIL ON SHT. 1

EXISTING 15' LONG
SHEET PILE WALL

2.0' ± TYPICAL

ESCOBAR STREET

CASTRO STREET

NOTES:

- 1. EAST BANK - VEGETATION AND TREE REMOVAL ALLOWED UNDER SUPERVISION OF CITY INSPECTOR.**
- 2. WEST BANK - VEGETATION AND TREES MAY BE PRUNED AND TOPPED ONLY.**



FILENAME: Channel.dwg

REVISIONS			
NO.	DESCRIPTION	BY	DATE

DESIGNED BY
AMS
DRAWN BY
AMS
CHECKED BY
TT
DATE
SEP 08

CITY OF MARTINEZ

COMMUNITY DEVELOPMENT DEPARTMENT
525 HENRIETTA STREET
MARTINEZ, CALIFORNIA 94553

PREPARED UNDER THE DIRECTION OF:

TIMOTHY M. TUCKER R.C.E. NO 056982

DATE:

PROJECT: C3007

ACCOUNT NO. —

CITY OF MARTINEZ
EMERGENCY CREEK BANK STABILIZATION
ALHAMBRA CREEK, ESCOBAR TO MARINA VISTA

CITY OF MARTINEZ

CALIFORNIA

SCALE
1" = 10'

SHEET NO.	TOTAL SHEETS
2	OF 2



WILLIAM K. LANGBEHN CE GE

Geotechnical Engineer

1034 Richmond Street, El Cerrito, CA 94530

fax (510) 558-8310

phone (510) 558-8028

"Licensed by the California Dept. of Consumer Affairs, Board for Professional Engineers and Land Surveyors"

February 18, 2008

Jonathan Daniel Adams
Turner, Huguet & Adams
924 Main Street
Martinez, California 94553

RE: Preliminary Geotechnical Evaluation
Alhambra Creek Beaver Activity
611 & 628/630 Escobar Street, 610 Marina Vista,
and 649 Main Street
Martinez, California

Dear Mr. Adams:

At your request, the undersigned engineer has completed a geotechnical reconnaissance and preliminary evaluation of bank stability problems and related geotechnical and geologic hazard concerns due to ongoing beaver activity along a section of Alhambra Creek, located in downtown Martinez immediately adjacent to the properties listed above.

BACKGROUND AND STUDY AREA DESCRIPTION

It is my understanding that the beavers have been living along the downtown reach of Alhambra Creek since 2006, constructing a dam across the section between Marina Vista and Escobar Streets ("Reach 1") as well as a lodge on the east bank above the dam and just downstream from the bridge at Escobar Street. The properties listed above are located on the east bank of the channel, and partially over the creek culvert at 649 Main Street. The beaver dam is adjacent to 610 Marina Vista and the lodge is adjacent to 611 Escobar Street, with predominantly soil banks along the both sides of the stream in this reach. The properties at 628 Escobar Street and 649 Main Street are located on the section of the creek between Escobar and Main ("Reach 2"), where the stream banks have been locally improved with concrete or sheet pile walls and with a large concrete box culvert just below Main Street. Stream channel improvements completed by the City since 2000 largely involved the west bank, with little or no work along the east bank in either Reach 1 or 2.

At its peak last December, the beaver dam was about 6 to 7 feet high, raising water levels along the creek in Reach 1 by at least 5 to 6 feet, with a large pool extending behind the dam upstream to beyond Main Street, where water levels were still at least 2 feet higher than ambient conditions (Kinney, 2007). The City installed a culvert bypass through the dam in an effort to discourage continued dam building and to help lower water levels. However, the dam was lowered by more than 2.5 feet and partially removed during early January at a time of heavy rainfall and potential flooding. The dam is currently being re-built by the beavers with suspected assistance from local supporters.

SCOPE OF WORK AND LIMITATIONS

The scope of this preliminary geotechnical evaluation consisted of the following tasks:

- Site meetings with Mr. Earl Dunivan Jr. and structural consultant, Mr. Marvin Kinney, to get an overview of the observed problems and current conditions.
- A site reconnaissance of the stream banks adjacent to the affected properties to evaluate the observed problems and to delineate areas of concern.
- A review of published geologic maps and related information, including available engineering reports, design plans and hydrology reports pertinent to the current study regarding the beaver activity and/or the previous work along the stream channel in this area.
- Evaluation and geotechnical analysis of the collected data.
- Preparation of this summary letter to present the relevant findings and conclusions along with a discussion of the most appropriate mitigation measures or alternatives recommended to address the observed problems stemming from the beaver activity.

Floor level surveys to establish existing settlement patterns in the structures have not been completed, but may be considered at a later date as part of more detailed investigation(s). Also, no building records or other archival research was performed. In addition, this study did not include any assessment of possible environmental hazards or any contamination that may be present.

No new surveying was completed for the current study but the existing bank conditions have been compared with prior survey information by Brian-Kangas-Fouk (BKF) shown on the City improvement plans for the creek project and on the figures from the referenced engineering and hydrology reports. Subsurface data in the study area was taken from the geotechnical exploration report for the channel improvements prepared by Engeo, Inc. dated December 16, 1999. Hydrology data was obtained from a report prepared by Philip Williams & Associates (PWA) dated January 24, 2000, and a PWA memorandum from March 8, 2007.

A recent assessment of the hydrology impacts caused by the beaver dam was also outlined by PWA in a memo to the City dated October 16, 2007. A structural damage assessment of existing buildings in the area was also recently completed by Mr. Marvin Kinney of A.C.K. Engineering & Surveying (Kinney) and summarized in a letter dated December 12, 2007. Relevant information from the above sources has been summarized in the following text.

GEOLOGIC SETTING

Alhambra Creek is the main natural watercourse in this area, with a watershed that includes not only all of the greater Alhambra Valley and most of the Martinez City limits but also Franklin Canyon, Vaca Canyon, upper Alhambra Valley and adjacent areas up to the northeast side of Briones Park. The creek also serves as the primary storm drain and flood channel for this large area.

Periodic flooding of the lower creek channel during peak storm events is relatively common and the City is considering a bypass culvert to reduce the frequency of flood events. The creek channel has a meandering pattern through much of the lower valley area but is constrained downtown in the study area by man-made obstructions such as bridges, box culverts and development.

Geologic maps indicate that the study area is underlain by younger alluvial sediments derived from the sedimentary bedrock in the surrounding hillsides. The sediments in this area typically consist of unconsolidated to poorly consolidated silty clays as well as clayey and silty sands with occasional sand and gravel lenses. The more coarse-grained granular sand and gravel deposits are often found within the active and former stream channels, while clayey fine-grained “over-bank” deposits are present in the surrounding valley areas. Surface soils in the area are described by the USDA as clay loam and silty clay loam of the Botella series, a moderately plastic soil with a medium to low shear strength and susceptibility to piping and a moderate expansion potential.

The borings by Engeo along this section of the stream channel typically revealed variable surface fills up to about 15 feet deep in places and consisting of silty and sandy clays and locally silty sands or sandy silt-clay mixtures. The fills were typically underlain by native silty and sandy clays which were locally soft near the water table, and sandy clays and clayey sands at depth with occasional sand lenses. Some of the native clays were also moderately to highly plastic with moderate to high expansion potential.

The study area is not within a State of California Earthquake Fault Zone (Special Studies Zone) for active faults (Hart, et al, 1997). However, at least 14 active faults are present within a 60-mile radius of the site. Thus, as with much of the greater Bay Area, the site is in a seismically-active region where the risk of earthquake hazards is very real. The nearest active fault is the Concord fault, located about 3 miles east of the study area. The maximum probable earthquake for this fault is M6.9 with a peak site acceleration of about 0.4g, resulting in strong to severe earthquake shaking with an estimated Modified Mercalli intensity of X, i.e. a level of 10 on a scale of 12 where severe damage to buildings and bridges, even well-built ones, is expected (Engeo, 1999).

This expected strong shaking is the primary geologic hazard for this site and should be greatest on deep soil sites closest to the stream channel. Given the high clay content of the native soils at the site, the risk of seismically-induced soil liquefaction is considered low for most areas, but may be moderate to high in relatively clean, poorly consolidated sand lenses along the stream channel. The USGS indicates a high to very high liquefaction susceptibility along the active stream channel and moderate liquefaction susceptibility in adjacent valley areas. In addition, some risk of lateral spreading or ground lurching may also be locally present on soil slope sections of the stream banks as well as transient increases in lateral loads on bulkheads and retaining walls in saturated areas.

SUMMARY OF SITE OBSERVATIONS

A site reconnaissance was made on February 4, 2008 to document observed damages, impacts or other concerns directly related to the ongoing beaver activity that were visible and exposed along the stream banks adjacent to the subject properties. The east bank is assumed unless otherwise noted.

1. 610 Marina Vista (Reach 1)

The existing commercial building has a slab floor and a conventional T-footing foundation and is located only about 13 feet from the stream at low water, with a steep soil bank along the length of the property. The beaver dam is located at about the mid-point of the west side of the building. The observed damages and related concerns due to the beaver activity include the following:

- Extensive loss of vegetation along both banks with only minimal ground cover and occasional trees remaining. Recent tree fall at dam area with substantial erosion and scour near the dam and along the toe of the banks on both sides.
- Numerous beaver burrows, especially at and around dam area. Some of these burrows extend at least 10 to 11 feet into the east bank according to City measurements.

2. 611 Escobar Street (Reach 1)

The existing older wood-framed commercial/residential building is occupied by Bertola's restaurant and has a partial basement with a slab floor and is assumed to have conventional footing foundations. Extensive drainage improvements have been installed around the building and a concrete bulkhead wall is present along the top of the east bank, with steep soil banks below portions of this wall. Previous repairs have also been locally made on the inboard side of the bulkhead wall. The beaver lodge is located roughly adjacent to the southwest corner of the building below the wall. The observed damages and related concerns due to the beaver activity include the following:

- Extensive loss of vegetation on both banks with much of the willow trees removed. Occasional burrows on west bank. Recent tree fall near downstream end of wall, with complete loss of vegetation and substantial erosion and toe scour removing bank and exposing base of wall.
- Numerous beaver burrows and extensive loss of vegetation at and below lodge area, severe erosion and toe scour with loss of bank just below lodge. Bank is unstable and visibly slumping at and below lodge with tension crack at least 6 inches wide along base of wall.
- Severe erosion and toe scour with complete loss of vegetation and loss of bank at eddy hole developing upstream of lodge and just below east bridge abutment.

3. 628 Escobar Street (Reach 2)

Existing commercial building is assumed to have conventional footing foundations, with a concrete block wall along top of east bank as well as a concrete block rubble wall and "sack-crete" wall near east bridge abutment. Some later sheet pile buttress support for concrete wall near center with local soil banks below wall. Observed damages and concerns due to beaver activity are as follows:

- Extensive loss of vegetation and occasional burrows on both banks, with almost all standing trees removed on west bank and partial tree fall on east bank. Complete loss of vegetation in some areas along east bank.

4. 649 Main Street (Reach 2)

The existing building is assumed to have conventional footing foundations and is located along the box culvert section of stream channel, partially over and supported by the concrete walls of the box culvert. No soil banks are present in this area and no visible beaver activity was noted. However, new wall cracking is evident along rear wall since the most recent painting last year. The primary concern is elevated water levels and resulting geologic hazard issues when the beaver dam is in place, which raises water levels by at least 2 feet in this area (and by at least 5 feet near the dam), creating semi-permanent high water conditions instead of the typical transient high water levels in storm events, a potentially serious issue that affects all of the subject properties, as discussed below.

SUMMARY OF RECENT ENGINEERING REPORTS

Previous hydrologic studies by PWA revealed that Alhambra Creek would formerly reach flood stage or out-of bank conditions in the downtown area at a recurrence interval of about 7 years and this recurrence interval was increased to 10 years by the recent improvements. PWA also noted that to maintain flood capacity, damage to streamside vegetation should be minimized to reduce erosion, large debris should be cleared from the stream during peak events and sediment accumulation in lower reaches and in the tidal zone must be periodically removed when at least 2 feet deep, a problem of particular concern at the Marina Vista Bridge.

The recent PWA memorandum addressing the effects of the beaver dam concludes that the dam significantly increases flood risks for downtown Martinez, reducing the channel capacity by almost half for a 6-foot dam height. In addition, high water levels during flood events are typically raised by about 2 to 3 feet, dramatically enlarging the overall area affected during these flood events. The recurrence interval for annual chances of flooding has also been lowered from about one in 10 years to about one in 4 years with the dam in place, increasing the flood risk by 250% and negating the benefits of recent channel improvements. PWA also notes that the dam provides a location for debris and sediment to accumulate, further increasing flood hazards and maintenance requirements, with additional risk of flooding, erosion and damage to downstream structures in the event of dam failure.

The recent structural report by Kinney describes observed damages within various buildings that are within or near the study area and notes the recent wall cracking at 649 Main Street mentioned above. A discussion of the differential settlement and potential bank stability concerns as well as relevant earthquake hazard issues is also provided by Kinney. This discussion is further clarified and elaborated on for the current study from a geotechnical perspective as outlined below.

DISCUSSION AND CONCLUSIONS

Based on the results of this study, it is the opinion of the undersigned geotechnical engineer that the subject properties are being adversely affected by the ongoing beaver activity along the downtown section of Alhambra Creek. The increased risk of flood hazards and related problems is significant and has been well-documented by PWA. The primary geotechnical concerns are the erosion and bank stability problems from continued loss of vegetation and burrowing and the increased geologic hazards during strong seismic shaking from semi-permanent high water levels.

1. Erosion and Bank Stability

Severe erosion, tree falls and bank stability problems are now occurring and have reached critical levels near the lodge and dam areas, locally undermining adjacent walls and structures. These problems are expected to get even more severe in the future during continued dam building and re-building efforts after major storm events, when further loss of vegetation and removal of mud from within the burrows is needed as part of the dam re-building process.

Given the overall weak soils along the stream channel, the stability of the steep stream banks is largely dependent on maintaining dense woody vegetation along the banks to minimize toe erosion and scour. In addition, the deep burrowing into the banks is also of particular concern, allowing over-saturation of the soils at depth within the bank and resulting in an overall loss of density and soil strength. The local tree falls and loss of bank materials in some areas and the visible slumping just below the lodge are indications that bank stability has been compromised in these areas. Since much of the standing vegetation has been already removed from the overall study area, future beaver activity is expected to have an even greater impact, causing additional stresses to the local stream channel environment and further exacerbating the current problems.

Finally, the increased risk and frequency of flood hazards and related problems stemming from the beaver activity as documented by PWA is also significant as each flood event would at the minimum, cause additional erosion but would also result in more numerous dam removal and re-building episodes.

2. Geologic Hazards

As noted above, all of the subject properties are underlain by deep sediments along the stream channel where strong to severe seismic shaking is already expected during critical earthquake events. When over-saturated conditions are present near the ground surface due to high water levels, as is the case when the beaver dam is in place, the resulting strong shaking will be even more severe, potentially reaching a Modified Mercalli intensity level of XI, a catastrophic level of shaking when the risk of structural collapse, bodily harm and possible loss of life are greatly increased.

It should also be noted that the risk of a major earthquake during a time of high water levels is typically only a marginal probability given the short duration and infrequency of flood events. However, the risk of a major earthquake at a time of high water levels is likely amplified by at least 3 orders of magnitude (1000x) when the beaver dam is in place, which results in high water levels becoming a semi-permanent condition.

The associated seismic risks of localized soil liquefaction along the stream channel, lateral spreading or ground lurching of the soil banks, and increased lateral forces on bulkheads and retaining walls will also be greatly increased during high water levels and as a result of the beaver activity compromising the stability of the stream banks. These problems will result in localized ground failures that contribute to the risk of structural collapse, bodily harm and possible loss of life during severe earthquake shaking.

Finally, substantial differential settlements from dynamic consolidation of the relatively loose near-surface fills and soft natural soils could result even under moderate earthquake shaking, as was experienced last year, especially at high water levels when more severe shaking results. This type of settlement is a likely cause of the recent wall cracking noted at 649 Main Street, where portions of the structure are supported by near-surface shallow footings and remaining areas are supported by more rigid and deeply founded retaining walls. These walls may also have suffered some additional deflections caused by increased lateral forces during the shaking at the time of high water levels.

RECOMMENDATIONS

The presence of a beaver colony in the downtown reach of Alhambra Creek appears to be an anomalous occurrence that is currently causing significant damage and stress to the stream channel environment in this area. Typically, beaver colonies thrive in braided or meandering stream environments where periodic flooding carves new channels, allowing for the construction of new beaver dams and lodges at various locations across the width and length of the riparian corridor, minimizing environmental damage at any one location.

The current niche available in the downtown reach is very limited and appears unsuitable in the long-term given the current state of degraded habitat and the lack of alternative available locations. In consideration of the erosion and bank stability problems now occurring and the increased risks of severe geologic hazards as outlined above, the primary recommendation at this time has to be removal and relocation of the beaver colony to a more suitable habitat niche in a natural setting, along with restoring the stream channel to its previous hydrologic capacity by removing the beaver dam and most of the accumulated sediment. This solution will not only benefit the adjacent affected property owners but also in the end the beavers themselves.

For areas with bank stability problems, including severe toe erosion, tree falls and local slumping, suitable repairs to restore the banks will be needed either soon or at some point in the not too distant future. These repairs are expected to consist of rock revetments using large dimension boulder riprap where space is available as well as some additional bulkhead walls at the top of the bank in some areas and local bio-technical bank improvements since re-vegetation of the banks is also a primary concern. Filling of burrows with pressure grout as well as local installation of sheet pile walls are likely the best repair alternatives for areas damaged by extensive burrows, such as 610 Marina Vista. This repair work would also need to be consistent with Department of Fish and Game requirements and would also require permits from not only the DFG but numerous other jurisdictional agencies.

The specific design of such repairs was beyond the scope of this study.

CLOSURE

This study has been completed consistent with local standards and generally accepted guidelines in this area for reconnaissance-level geotechnical reports. The undersigned engineer has employed accepted geotechnical engineering procedures, and the professional opinions and conclusions are made in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

I hope this report is adequate for your needs at this time and I appreciate the opportunity to be of service in this matter. If you have any questions regarding this matter, please feel free to call.

Very truly yours,

William K. Langbehn CE GE
Civil and Geotechnical Engineer
(510) 558-8028

WKL/bhs
c:\...reports\dunivan.rep

Copies: Addressee (3, 1 by e-mail)
Earl Dunivan Jr. (1 by e-mail)



REFERENCES

- Crane, 1995, "Preliminary Geologic Map of the Benicia Quadrangle," portion of private map collection originally included with "Geology of the San Ramon Valley and Environs," AEG 1994.
- Dibblee, T.W., 1980, "Preliminary Geologic Map of the Benicia Quadrangle, Contra Costa and Solano Counties, California," USGS Open-File Map.
- Engeo, Inc., 1999, "Geotechnical Exploration, Alhambra Creek Channel Improvements, Martinez, California," report to David L. Gates & Assoc. dated December 16, 1999, signed by T.P. Bayham CEG 2063 and D.B. Bruggers GE 2094.
- Hart, E.W. and Bryant, W.A., 1997, "Fault-Rupture Hazards Zones in California," California Division of Mines and Geology Special Publication 42.
- Haydon, W.D., 1995, Landslide Hazards in the Martinez-Orinda-Walnut Creek Area, Contra Costa County, California: California Division of Mines and Geology Open-File Report 95-12, Landslide Hazard Identification Map No. 32.
- Jennings, C.W., 1994, "Fault Activity Map of California with Locations and Ages of Recent Volcanic Eruptions," CDMG Geologic Data Map No. 6.
- Philip Williams & Assoc. (PWA), 2000, "Alhambra Creek Hydraulic Study, Marina Vista to Green Street," report to David Gates and Assoc. dated January 24, 2000, signed by J. Haltiner PhD PE, et al.
- PWA, 2007, "Alhambra Creek Bypass Culvert – Initial Assessment," memorandum to City of Martinez dated March 8, 2007.
- PWA, 2007, "Alhambra Creek Beaver Dam Assessment," memorandum to City of Martinez dated October 16, 2007.
- USGS, 1959, "Topographic Map of the Benicia 7.5' Quadrangle," Photo-revised 1980.
- Welch, L.E., 1977, "Soil Survey of Contra Costa County, California," by the USDA Soil Conservation Service.