

**MOORPARK CITY COUNCIL
AGENDA REPORT**

TO: The Honorable City Council

FROM: Yugal K. Lall, City Engineer/Public Works Director 

DATE: January 9, 2006 (Council Meeting 1-18-06)

SUBJECT: Consider Proposed Appeal of the New Draft Digital Flood Insurance Rate Map [DFIRM] for the City of Moorpark and Resolution Amending the Fiscal Year 2005/06 Budget to Provide Funding for Certain Flood Zone Planning Efforts

BACKGROUND

1. **New Hydrology Study and New DFIRM:** For the past several years, the Ventura County Watershed Protection District [VCWPD] has been working with the U. S. Army Corp of Engineers [COE], the Federal Emergency Management Agency [FEMA] and their consultants, on a new Hydrology Study for the Calleguas Creek Watershed and on FEMA's development of a new Digital Flood Insurance Rate Map [DFIRM] for all of Ventura County. That effort is nearing completion.
2. **New Flood Zone Boundaries:** The recently completed Hydrology Study for the Calleguas Creek Watershed yielded data which indicates that peak storm flows will far exceed the capacity of the Arroyo Simi Channel through the City of Moorpark. As a result, the new draft DFIRM shows many more properties within the various Flood Zones than what is shown on the current 1986 Flood Insurance Rate Map [FIRM]. A representation of 1986 FIRM and the draft DFIRM are attached as Exhibits 1 and 2.
3. **Public Meeting:** On November 9, 2005, the City Council hosted a public meeting to discuss the draft DFIRM. Notice of that meeting was mailed to all property owners in the City. The purpose of that meeting was to advise affected property owners of effects of the proposed new DFIRM and of the need for owners of affected properties to seek flood insurance.
4. **Engineering Analysis:** At the November 9, 2005, meeting staff advised the City Council that the services of a consultant engineer had been retained to review and possibly critique the data, methodologies and assumptions used by the VCWPD

and FEMA in determining the water surface elevations (WSE) which generated the flood zone boundaries on the draft DFIRM.

DISCUSSION

A. Preliminary Draft Report

Attached as Exhibit 1, is a preliminary draft report from the City's consultant summarizing the consultant's analysis of the DFIRM in support of same. That report also sets forth the consultant's recommendations regarding possible grounds for submitting an appeal to FEMA.

B. Summary of Consultant's Analysis

To summarize the consultant findings, there are basically five main areas of concerns that can potentially reduce the limits of the flood plain within the city the exact limits of the reduction up to 3 feet in water depth is yet to be determined and will be subjected to FEMA approval of our appeal:

- Breakout Analysis upstream of the railroad bridge. In this scenario it would be assumed that the levee upstream of the railroad bridge would fail creating a break-out of the flow at this location. The existing channel would be capable of carrying a flow of up to 16,000 cfs (cubic feet per second) and a break-out of 6,000 cfs flowing through the streets and low lying areas adjacent to the channel. This rationale was previously used by FEMA for the City of Simi Valley, wherein the limits of the flood boundaries were reduced;
- Bridge Analysis Assumptions used by FEMA consultants including the roughness coefficient and the modeling methodology does not compare with what was historically used;
- The Peach Hill Wash Flood Plain was removed from the 100 year flood plain on August 24, 1990, and this was left out of the study by the FEMA consultants;
- The Flood Plain delineation for the Walnut Canyon Drain at Casey Road does not conform to the current topography, and detention improvements upstream of Casey Road were not included. Revisions to the topography and inclusion of the new detention basins may reduce the flood plain boundary in this area;
- Overflow analysis through the City is based on the over bank hydraulic characteristics rather than the main channel analysis.

C. Consultant's Recommendation

File an appeal to FEMA for the five (5) main areas of concern based on FEMA guidelines.

D. Summary and Conclusion

Staff concurs with the recommendation of our consultant to file an appeal to FEMA by February 28, 2006.

E. Fiscal Impact

To date City has spent approximately \$15,000 towards the DFIRM review, and an additional amount of \$25,000 is needed for the preparation of the appeal. Funding has been through the General Fund. At this time staff is requesting a budget appropriation to cover this specific need.

STAFF RECOMMENDATION (Roll Call Vote)

1. Direct staff to retain consultant services to prepare and submit to FEMA an appeal of the Draft DFIRM, said appeal to address the issues discussed in Section B of this report.
2. Adopt Resolution No. 2006-_____.

Attachments:

Exhibit 1: Consultant's Report

Exhibit 2: Resolution

**KASRAIE CONSULTING**

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Director of Public Works
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799 Moorpark Avenue
Moorpark, CA 93021
Phone: 517-6255
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January 9, 2006

Subject: FEMA DFIRM Review – Phase 1
City of Moorpark, California

Dear Mr. Lall (*Yugal*):

Per your request, we have completed our preliminary evaluation of the new Federal Emergency Management Agency's (FEMA) Digital Flood Insurance Rate Maps (DFIRM) study for the City of the Moorpark.

The scope of this qualitative evaluation is limited due to the short time frame as dictated by FEMA's 90-day review process. Consequently, this letter report should not be construed as an all inclusive and thorough evaluation of a relatively large body of information material that has been produced by FEMA's mapping and engineering contractors for this purpose.

During the course of this evaluation, the following have been reviewed: the computer (hydraulic) models, work maps dated September 30, 2004, the 'Preliminary Flood Insurance Study' report, and the 'Flood Insurance Rate Maps (FIRM)' for 'Ventura County, California and Incorporated Areas' stamped Preliminary September 16, 2005. Additionally, some Public Works staff were consulted on various drainage issues, who also provided construction plans for various drainage and bridge facilities. Several field visits were conducted to validate or evaluate hydraulic assumptions made in the computer models.

FEMA contracted with NOLTE of San Diego, California as a 'Mapping Partner' to perform the necessary engineering and floodplain mapping analysis for this project from September 2001 through September 2004. FEMA also contracted with DEWBERRY of Fairfax, Virginia as another Mapping Partner who provided QA/QC and other services for the project.

The Preliminary DFIRM project for the City of Moorpark consists of the same three major streams that had been mapped in detail before; Arroyo Simi, Walnut Canyon Drain, and the Peach Hill Wash. All other floodplains remain the same as shown on the 'effective' FIRM dated September 29, 1986. No new detailed study has been performed for the other known floodplain areas in the City.

All detailed floodplain mapping projects are based on mathematical and computer analysis that are supposed to mimic natural processes and physical conditions on the ground.

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The lay of the land, slope, surface and land cover, debris and sediment, rainfall and wind condition, fire, obstruction in the drainage path, vegetation, buildings, flood channels, bridges, levees, human activity, etc. all affect the behavior of flood waters during major flood events. Consequently, the mathematical assumptions made to simulate the effects of the above factors greatly influence the results of the analysis, the BFEs, and the extent of the floodplains. Therefore, it is crucial that the basic mathematical assumptions made correspond to accepted national guidelines.

Findings

The City's first line of defense against a catastrophic flood event is a levee system built on the west bank of Arroyo Simi above the Railroad Bridge some thirty years ago. This levee does not currently meet FEMA's levee requirements and it cannot be certified to provide adequate protection against a 100-year flood. The lower reaches of Arroyo Simi through City of Moorpark are also hydraulically inadequate and deficient.

Generally speaking, the above study and floodplain maps have been prepared in accordance with FEMA's guidelines and specifications. The Arroyo Simi floodplain has been delineated conservatively and presents a 'worst case' flooding scenario in the case of major levee or bridge failure and breakouts.

Even though the contactors have followed FEMA's floodplain mapping guidelines, some of their assumptions may have resulted in overly conservative 'Base Flood Elevations' (BFE) in parts of the City as shown on the FIRMs. A case in point is the City's Police Services Center (PSC) which has recently been built on Spring Road approximately 4-5 feet above the adjacent ground. Under the new maps, the PSC would be flooded by an additional 2-4 feet of water during a 100-year storm event.

The following presents the results of this preliminary evaluation and review in a few basic categories:

Hydraulic & Hydrologic Modeling

1. The 'Present Condition' hydrology information used for the hydraulic modeling effort was provided by the Ventura County Watershed Protection District (VCWPD) in March 2003. The *total* peak flows have been used properly in the models, although the flow distribution for various sections seems to be unstable and changes rapidly from left overbank to right overbank. This indicates hydraulic instability which may require careful examination or remodeling. Some of the 'split flows' may also require examination and remodeling using the 'inline' or 'lateral structure' features in the hydraulic model.

2. The hydraulic model software used for this purpose is called the 'River Analysis System' developed by the Hydrologic Engineering Center of the US Army Corps of Engineers. This software known as HEC-RAS is a standard and conventional 1-dimensional modeling tool which is approved by FEMA, and it is used across the United States for floodplain mapping purposes.
3. The 2001 topography with 2-foot contour interval has been used for this purpose, which is fairly adequate for many parts of the floodplain. However, in areas where the depth of flow is less than 2 feet, the results may be questionable.
4. The Manning's roughness 'n' factors used for the main channel and the overbank areas are within a reasonable and acceptable range. However, the use of 'vertical variation in (n) 0.2' above the bridges such the Spring Road and the Rail Road bridge is not a common practice and results in higher than normal water surface elevations above bridges that are overtopped during a flood.
5. The bridge analysis seems to be somewhat conservative as they have used the 'highest energy answer' for the low flow methods, and the 'energy only' for the high flow methods. This particular assumption also yields higher than normal water surface elevations above bridges such as the Spring Road Bridge, where the existing bridge opening does not have enough capacity to carry the 100-year flood. A more typical assumption in these cases is the 'momentum, pressure and weir' procedures.
6. The FIRM shows much of the Arroyo Simi flow is carried in the north overbank area above the main channel. If that is the case, the distance between the sections and the overall channel slope should match the overbank area, and not the main channel. It would appear that an 'overland flooding' situation is treated as a 'riverine' condition. A better approach would have been to model the overbank areas of Arroyo Simi separately from the main channel across the entire length of the overbank.
7. The calculated 'storage volume' of the overbank floodplain of Arroyo Simi is substantially larger than the 'hydrograph volume' for the portion of the 100-year 24-hour hydrograph in excess of the channel capacity. This would indicate that the overbank flooding depths and volume may be too high, as they do not conform to the amount of overflow volume separating from the main channel. A 2-dimensional unsteady floodplain analysis may provide a more realistic floodplain map within the urban areas of the City.
8. The floodplain delineation for the Walnut Canyon Drain at Casey Road does not conform to the actual topography. The latest topographic mapping may be utilized for this purpose to determine a more accurate spill and split flow at this location and the downstream reaches.
9. Unlike previous FEMA floodplain studies for Arroyo Simi in Moorpark, debris was not directly taken into account in the current study by adding floating debris to bridge piers. Debris can be a detriment to the stability of a bridge, and it directly affects the capacity of bridges during major storm events. This is especially of concern because of the October 2003 fire in the watershed upstream of Moorpark. The winter 2005 storm events in Happy Camp Canyon may have gotten worse as a result of the recent fires.

Levee

10. The FEMA mapping guidelines for uncertified levees have not been followed completely. Even though the analysis presented by the Mapping Partner appears to be conservative 'worst case' scenario, FEMA's 'Guidelines and Specification for Flood Hazard Mapping Partners, Appendix H: Guidance for Evaluating Flood Protection Systems, FINAL February 2002 Section H.6' states that if the subject levee does not meet the requirements stated in Section 65.10 of the NFIP regulations, the 1-percent-annual-chance flood elevations will be **recomputed as if the levee did not exist**. The levee built in 1976 above the Railroad Bridge does not meet FEMA's levee requirements and therefore it falls within these guidelines.
11. The above guidelines also address the need to perform several other analyses if levees exist on both sides of a stream, as it is the case between the New LA Avenue and the Railroad Bridge. In these cases, 'the evaluation of the levee systems shall consider the possibility of simultaneous levee failure, failure of only the left side, and failure of only the right side. Simultaneous levee failure shall be considered for both elevation and regulatory floodway computations.'

Flood Insurance Study

12. The Preliminary Flood Insurance Study (FIS) Report dated September 16, 2005 is a single document that contains the FIS reports for ALL the ten Cities and the County of Ventura. Some portions of this document which should have been updated as part of the current study within the Calleguas Creek Watershed have not changed, such as the peak flow hydrology tables, and some of the Floodway tables and their corresponding stations and water surface elevations. Other examples follow.
13. Some of the narratives about City of Moorpark are outdated and need to be corrected. For example, on Page 30, it is stated that 'the VCFCD has constructed a levee on the west bank of Arroyo Simi between New LA Avenue and a point north of the Southern Pacific Railroad. This levee meets the FEMA policy and, as such, is shown providing protection against the 1-percent annual chance flood.' This statement is incorrect as it is obvious on the new maps.
14. 'Engineering Methods' narrative on Page 38 does not mention the procedures and analysis used for the current study by the US Army Corps of Engineers (February 2003) or the VCWPD study (March 2003).
15. On Page 64, it is stated that in previous studies, 'debris potential was considered in the analysis throughout the study area.' That does not happen to be the case with the current model, as explained above. Sediment and debris production and transport is a natural process in this watershed, and cannot be ignored in floodplain mapping.

Flood Insurance Rate Maps

16. The floodplain for the Peach Hill Wash from the east limit of the current study (approximately 900' west of Tierra Rejada) to Peach Hill Road was removed from the 100-year floodplain on August 24, 1990, because the 100-year flood was contained in the underground storm drain system. The FIRM Panel is 060712 0005A (102A). A review of the construction plans for the closed conduit portion of Peach Hill Wash indicates that the system still has the 100-year flow capacity based on the current hydrology. Therefore, it is assumed that this portion of the Peach Hill Wash floodplain should be eliminated.

Appeal Process

FEMA has placed two official notices in a local newspaper to alert community residents about the availability of the mentioned floodplain maps (FIRM) and the FIS.

However, during a 90-day appeal period (which began November 28, 2005), community officials, or individual property owners working through community officials, may submit a formal objection to the proposed BFEs to FEMA. These objections, which are referred to as appeals, ***must be based on data that show the proposed BFEs to be scientifically or technically incorrect.*** FEMA reviews all information submitted by the community and other interested parties before finalizing the FIS Report and FIRM panels. If the appeal is successful, revised preliminary maps may be issued. A protest will not result in revised preliminary maps, but will be incorporated into the final maps if the required data is submitted.

An appeal is a dispute of a new or revised BFE and must be based on knowledge or information that the proposed flood elevations are scientifically or technically ***incorrect.*** A protest is a formal objection to items on the FIRM panels other than a BFE (e.g., floodplain boundaries or street names). The final maps are published after the compliance period ends and all protests and appeals are resolved.

Conclusions

Based on the above findings, it would appear that the City of Moorpark may have a strong enough case to appeal (and protest) the proposed floodplain maps and BFEs for the City. However, it is difficult to know whether or not FEMA would agree with the City's reasoning and the supporting technical and scientific data.

The following are key points on which a possible appeal may be filed with FEMA:

- A. Uncertified levee above the Railroad Bridge, and the possibility of breakout flow upstream
- B. Bridge analysis assumptions (roughness, modeling approach, etc.)
- C. Walnut Canyon Drain floodplain map revision at Casey Road and downstream
- D. Peach Hill Wash floodplains where the map had been revised years ago
- E. Overflow analysis through the City based on overbank hydraulic characteristics as opposed to the main channel, and the 'hydrograph storage' issue

Should the City decide to pursue an appeal and win the case, the resulting flood hazard areas may be 2-3 feet shallower in parts of the City, which may result in lower flood insurance premiums for the affected properties. However, the actual changes to the BFEs and the floodplain and floodway boundaries will be evident after a thorough reanalysis and approval by FEMA.

The deadline for the 90-day appeal period is February 28, 2006. The City and their consultants will not have adequate time to prepare the necessary information and analysis for an appeal by the said deadline. Therefore, a time extension request will need to be filed with FEMA as soon as possible, should the City decide to pursue an appeal at this time.

Thank you for retaining our professional services on this important project. We look forward to hearing from you soon. Please feel free to call if you have any questions or comments.

Very truly yours,



Hassan Kasraie, PE, CFM

Cc: Kenneth C. Gilbert

RESOLUTION NO. 2006 -

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MOORPARK, CALIFORNIA, AMENDING THE FY 2005/06 BUDGET TO PROVIDE FUNDING FOR CERTAIN FLOOD ZONE PLANNING EFFORTS FROM THE GENERAL FUND (FUND 1000)

WHEREAS, on June 15, 2005, the City Council adopted the Budget for Fiscal Year 2005/06; and

WHEREAS, a staff report has been presented to the City Council requesting a budget increase in the aggregate amount of \$40,000; and

WHEREAS, Exhibit "A", attached hereto and made a part hereof, describes said budget amendment and its resultant impacts to the budget line item(s).

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF MOORPARK DOES HEREBY RESOLVE AS FOLLOWS:

SECTION 1. That a budget amendment in the aggregate amount of \$40,000, as more particularly described in Exhibit "A", is hereby approved.

SECTION 2. The City Clerk shall certify to the adoption of this resolution and shall cause a certified resolution to be filed in the book of original resolutions.

PASSED AND ADOPTED this 18TH day of January, 2006.

Patrick Hunter, Mayor

ATTEST:

Deborah S. Traffenstedt, City Clerk

Attachment:

Exhibit 'A': Appropriation and Budget Detail

Resolution No. 2006 - _____
Exhibit "A"

**FY 2005/06
Budget Appropriations
Required for
Certain Flood Zone Panning Efforts**

A. Fund Allocation

Fund No.	Fund Name	Amount
1000.5500	General Fund	\$40,000
	Total	\$40,000

B. FY 05/06 Budget Appropriation:

BUDGET NUMBER	BUDGETED	REVISION	NEW BUDGET
1000.8100.0000.9103	\$ 1,000	\$ 40,000	\$ 41,000
Total	\$ 1,000	\$ 40,000	\$ 41,000

Approved as to form: _____