



# Homeland Security

September 21, 2010

MEMORANDUM FOR: Nancy Ward  
Regional Administrator  
FEMA Region IX

FROM:   
Robert J. Lastrico  
Western Regional Director

SUBJECT: *City of Rancho Palos Verdes, California*  
Public Assistance ID. No. 037-59514-00  
FEMA Disaster No. 1577-DR-CA  
Audit Report Number DS-10-11

We audited public assistance funds awarded to the City of Rancho Palos Verdes, California (City). The objective of the audit was to determine whether the City expended and accounted for Federal Emergency Management Agency (FEMA) funds according to federal regulations and FEMA guidelines.

The City received a public assistance subgrant award of \$964,891 from the California Office of Emergency Services (OES),<sup>1</sup> a FEMA grantee, for (a) debris removal; (b) emergency protective measures; and (c) repairs to utilities and other facilities damaged by severe storms occurring from December 27, 2004, to January 11, 2005. Of the \$964,891, FEMA provided 75% federal funding and non-federal sources funded the remaining 25% for 6 projects (2 large and 4 small projects<sup>2</sup>). The audit covered the period of December 27, 2004, through May 3, 2007, and included reviews of the two large projects and two small projects with a total award of \$938,762 (See Exhibit A). As of the date of this review, the City had received total reimbursement for all project costs.

We conducted this performance audit under the authority of the *Inspector General Act of 1978*, as amended, and according to generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objective. The evidence obtained during the audit provides a reasonable basis for our findings and conclusions based on our audit objective.

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<sup>1</sup> OES became a part of California Emergency Management Agency (Cal EMA) on January 1, 2009.

<sup>2</sup> At the time of the disaster, the large project threshold was \$55,500.

We discussed audit issues with the City’s designated consultant during the field work and provided FEMA, Cal EMA, and City officials with a summary of the pertinent issues and accompanying exhibits. We reviewed judgmentally selected samples of cost documentation to support project costs and personnel charges, and performed other procedures considered necessary to accomplish our objective. We did not assess the adequacy of the City’s internal controls applicable to subgrant activities because it was not necessary to accomplish our audit objective. We did, however, gain an understanding of the City’s method of accounting for disaster-related costs.

**RESULTS OF AUDIT**

Of the \$938,762 the City claimed for the four projects we reviewed, \$916,872 did not comply with the criteria required for federal reimbursement (federal share \$687,654). The table below lists the areas in which we questioned the amounts claimed by the City.

<b>Finding</b>	<b>Subject</b>	<b>Amount Questioned</b>
A	Work on a Federal-Aid Road	\$559,699
B	Cost to Repair Damage to a Corrugated Metal Pipe	357,173
Total		\$916,872

**Finding A – Work on a Federal-Aid Road**

City records for Project Worksheet (PW) 1103 included \$559,699 in ineligible costs for disaster repairs that were the responsibility of the Federal Highway Administration (FHWA), Federal-aid Highways Program. According to Title 44, *Code of Federal Regulations*, Section 206.226(a)(1) [44 CFR 206.226(a)(1)], disaster assistance is not available under the *Robert T. Stafford Disaster Relief and Emergency Assistance Act* (Stafford Act) when another federal agency has specific authority to restore facilities damaged or destroyed by an event which is declared a major disaster. FEMA’s *Public Assistance Guide* (FEMA 322, October 1999, pages 20, 53, and 54) further clarifies that the Stafford Act specifically excludes funding from FEMA’s Public Assistance Program for damaged facilities under the authority of FHWA.

During severe storms in December 2004 and January 2005, a corrugated metal storm drain pipe (culvert) represented as owned by the City, collapsed and produced a sinkhole that damaged a roadway. PW 1103 identified the damage location as 20 feet below Western Avenue (also known as State Route 213) at Delasonde Drive. The scope of work (SOW) for this project entailed repairs to a sinkhole which required an estimated 1,000 cubic yards of fill material. The narrative in the PW explained that most of the City's storm drain system was constructed with corrugated metal pipes (CMPs) by the Los Angeles County Department of Public Works (LACDPW) prior to incorporation of the City in 1957. After the City’s incorporation, LACDPW turned over those CMPs of a certain size or less to the City for their ownership and maintenance responsibility. The PW narrative specifically stated that the damaged culvert was owned by the City.

In an effort to secure funding for the repairs, the City first contacted FHWA. FHWA initially assumed responsibility for the damaged road (culvert, sinkhole, and road surface on State Route 213), but later denied the City's request for Emergency Relief (ER) funding.<sup>3</sup> FHWA denied

<sup>3</sup> See Exhibit B for FHWA criteria applicable to ER Program funding.

ER funding based on photos and video inspection of the storm drain system showing that the failed culvert was materially deficient prior to the storms, and that the deficient condition had contributed to the road damage. While FHWA officials denied the City's initial funding request and a subsequent appeal, it informed the City that replacement of deficient culverts was eligible for maintenance funding under FHWA's regular federal-aid system rather than FHWA's ER funds.

Subsequent to FHWA's denial, the City sought and received funding from FEMA. FEMA funded the repairs to the culvert and the sinkhole under PW 1103 without considering whether funding was available under FHWA's regular federal-aid system. The City later sought FEMA funding for the surface repairs performed on the road, which FEMA denied. Documentation indicates that FEMA and Cal EMA believed the City was responsible for repairs to the culvert and related sinkhole; however, they believed that the surface roadway was under California Department of Transportations (Caltrans)/FHWA jurisdiction.

FHWA regulations at 23 CFR 650.115(a) discuss storm drainage facilities within federal-aid highways, and places the responsibility for these drainage facilities with the state highway agency (Federal Aid Policy Guide, September 30, 1992, Transmittal 5). Consistent with this ownership responsibility, FHWA and Caltrans have issued guidance dating back as early as May 21, 1992, indicating that maintenance funding exists for restoration of drainage systems. In addition to FHWA regulations and other guidance on funding drainage systems applicable to federal-aid roads, review of project records showed the City's concern regarding the eligibility of PW 1103 under FEMA's Public Assistance Program (see Exhibit C for details).

The City disagreed with this finding and stated that "FEMA and Cal EMA properly determined eligibility and extended the appropriate grant awards and payments based upon its knowledge of all of the information and facts necessary to reach the conclusion that following the refusal of Caltrans to repair the sinkhole, the City was left with no choice other than to protect the public health and safety."

We considered the City's response, and notwithstanding FHWA's/Caltrans' denial of disaster assistance funding alluded to in the City's response, FEMA funded the project based on the City's representation that it owned and maintained the damaged culvert. However, the denial of funds was not based on facility ownership or maintenance responsibility but rather on the type of funding requested from FHWA (i.e., ER funding versus federal-aid system funding). FHWA's determination that the failed culvert was materially deficient prior to the storms did not qualify the repair for FEMA funding. Previously cited 44 CFR 206.226(a)(1) denies the use of FEMA disaster assistance funding when another agency has primary funding responsibility. Additionally, 44 CFR 206.223(a) notes that to be eligible for FEMA financial assistance, an item of work must be required as the result of the major disaster event and be the legal responsibility of an eligible applicant. FEMA's Public Assistance Guide (FEMA 322, October 1999, page 23) clarifies, that "Work must be required as a direct result of the declared disaster. Damage that results from a cause other than the designated event or from pre-disaster damage is not eligible." Page 24 further explains the time period in which the damages must have occurred "during the incident period, or damage that is the direct result of events that occurred during the incident period, is eligible." Because the work specified for PW 1103 did not meet the regulatory requirement for FEMA funding, the \$559,699 FEMA reimbursed the City is questionable.

## **Finding B – Costs to Repair Damage to a Corrugated Metal Pipe (CMP)**

FEMA authorized \$357,173 under PW 2254 for repair costs not eligible for funding under FEMA's Public Assistance Program. The SOW under PW 2254 entailed lining approximately 180 linear feet of City-owned CMP from Western Avenue to Pontevedra Drive. This location is an upstream extension of the FEMA-funded sinkhole repair we questioned in Finding A but not within the federal-aid road. As noted in Finding A, FHWA ultimately denied ER funding because the damage was the result of progressive deterioration and the lack of maintenance of the aging drainage system, and this damage existed before the disaster. Likewise, the repairs that FEMA funded under PW 2254 were not related to the disaster damage, but rather due to deferred maintenance.

According to 44 CFR 206.223(a), *General work eligibility*, to be eligible for financial assistance, an item of work must be required as the result of the major disaster event. FEMA's Public Assistance Guide (FEMA 322, October 1999, page 23) further clarifies that "Work must be required as a direct result of the declared disaster. Damage that results from a cause other than the designated event or from pre-disaster damage is not eligible."

During its video inspection and evaluation of damages in the vicinity of Western Avenue, the City identified a collapsed CMP beneath a 6-foot retaining wall adjacent to a sidewalk on private property. The storm drain video inspections report dated January 14, 2005, noted "hole in pipe . . . bottom of pipe gone..." and significant settlement of the 30" CMP likely caused as a result of the back-erosion from the hole in the CMP and loss of crushed rock ("fines") from the compacted fill bedding of the pipe. FEMA's funded repair included the re-lining of the CMP in place. The conditions identified to the CMP during that evaluation (hole in pipe and bottom of pipe gone), demonstrate a progressive deterioration of the pipe and lack of maintenance.

We assessed the condition of the City's storm drain system primarily using the Storm Drain Master Plan Update (2004 Update) which was presented to the Mayor and members of the City Council by the City's Director of Public Works on June 15, 2004. To determine the accuracy of the June 2004 presentation and accompanying slides, we: (1) verified that the services of an engineering firm were obtained in August 2003 to: (a) update the existing 1998 Master Plan of Drainage and (b) provide updated cost estimates to reconstruct deficient storm drains; (2) reviewed an August 2003 memorandum from the Director of Public Works to the Mayor and City Council members stating that most of the City's CMPs were approaching the end of their useful service life; and (3) determined that the City contracted with a firm to obtain in-field data (video inspection) in September 2003 to determine the actual physical conditions of the storm drain pipes.

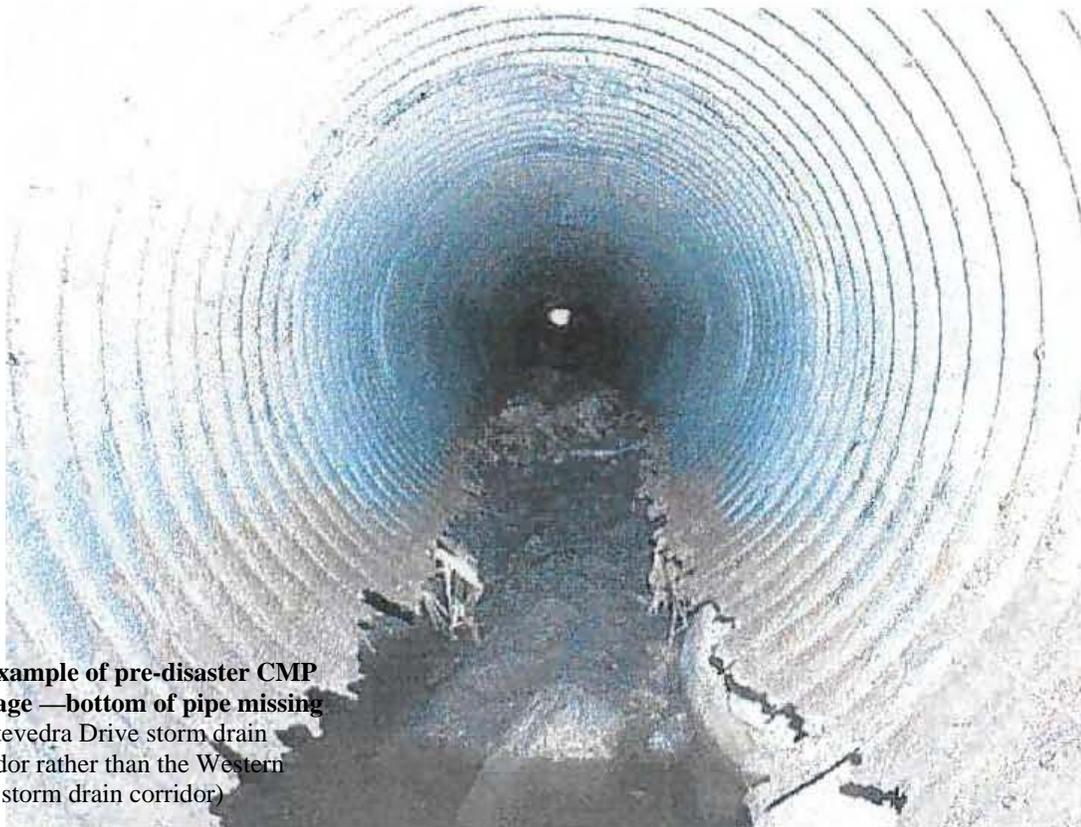
On April 6, 2004, the Director of Public Works informed the City Council that the engineers contracted to update the costs to reconstruct deficient storm drains, analyze areas that were not included in the original update, and prepare new storm drain base maps, had submitted their preliminary estimates to the City's staff. The Council was told that City staff was reviewing the estimated costs and would soon present the results to City Council. The final report was anticipated to be delivered in June 2004. The City noted at the May 2004 City Council meeting that \$500,000 received from a non-recurring insurance settlement during fiscal year (FY) 2003-2004 would be used as 10% of the amount needed to fund the storm drain lining program. Additionally, the minutes noted that the Public Works Department expected to present a report regarding the proposed storm drain lining program in the near future.

Subsequent to the June 2004 presentation, City staff and the City's Finance Advisory Committee expressed the need to immediately implement a long-term plan to replace existing, and build additional storm drain infrastructure. Also, the City Council approved a recommendation to use \$500,000 for a storm drain lining program funded by a one-time insurance recovery received from an unrelated project. Additionally, the City Council directed staff to proceed with the preparation of an engineer's report for the possible formation of a storm drain user fee. From the 2004 Update, we determined that:

- In 1998, the City performed its initial investigation of the storm drain system. The investigation primarily focused on: (1) mapping the system to show pipe location, size, and material type, (2) identifying undersized pipes, and (3) estimating the cost to reconstruct those pipes that were undersized. However, the resultant 1998 Master Plan did not investigate the condition of pipes in the system.
- In 1999, the City investigated storm drains and pipes along Palos Verdes Drive East and used video inspection to determine the condition of the CMPs. The resultant engineering report concluded that the condition of CMPs was generally poor with approximately 75% of them decayed to such a degree that pipe collapse was possible.
- In 2003, the City Council authorized an update to the 1998 Master Plan of Drainage to bring the detail in the 1998 Master Plan up to a level comparable to the 1999 focused study. Thus, the City recognized the need to obtain in-field data (video inspection) to determine the actual physical conditions of the storm drain pipes.
- Of the 477 storm drain pipe systems located on City property, 297 are City-owned and 180 are owned by Los Angeles County. Of the City's 297 storm drain pipes, 200 are older CMP systems. The June 2004 presentation noted that, for the most part, storm drain system spending by the City was in response to an urgent need due to flooding.
- The 2004 presentation included two tables with data describing the physical condition and progressive deterioration of CMPs prior to the disaster. Table 1 identified four types of deficiencies, one of which dealt primarily with CMP deterioration that could cause the pipe to collapse and produce a sink hole at the surface even during mild storm events. Table 1 also proposed that CMPs with this deficiency be lined. Table II identified that 153 of the City's 200 CMPs required repairs. The scope of work summary noted 62 CMPs requiring some level of reconstruction and 91 requiring lining only. Only 47 CMPs (23%) did not require repairs (the analysis noted that as of the reporting date, video examination had been completed on only 20% the City's total system). Both tables are included in Exhibit D of this report. The presentation also noted that storm drain deficiencies were found throughout the City but were concentrated in two drainage areas; along Palos Verdes Drive East and along the City's southern coastline. These two areas were the first areas developed by the City and have the oldest infrastructure.

As previously stated, FEMA funded PW 2254 to cover the repair cost of a CMP that was verified by video inspection to have "hole in pipe . . . bottom of pipe gone." When identified post disaster, the damage was consistent with the City's own findings about the physical conditions of the CMP system pre-disaster.

- The June 2004 presentation also included information about the estimated costs of reconstructing storm drain pipes or lining damaged CMPs. The presentation identified 65 systems [62 CMP and 3 reinforced concrete systems] with 58 reconstruction or reconstruction and lining projects with estimated costs of \$24.8 million. It also identified 91 CMPs in 6 areas throughout the City that required lining only at an estimated cost of \$4.6 million. To highlight the City's recognition of the need for capital improvements to its storm drainage systems, we have included tables prepared by the City's engineering consultants in Exhibit E of this report.
- The City's visual aids used during the June 2004 presentation included the image shown below. The City noted that of its inventory of 200 CMP systems, 68% were deficient. However, as we noted above, Exhibit D shows that of the 200 City-owned CMPs, 153 (77%) required lining, reconstruction, or both. The visual aids presented to the Mayor and City Council also noted that CMP deterioration could lead to pipe collapse even during a mild storm and that pipe rehabilitation or reconstruction was the repair solution.



**An example of pre-disaster CMP damage —bottom of pipe missing**  
(Pontevedra Drive storm drain corridor rather than the Western Ave. storm drain corridor)

The lining program slides noted only 20% of the CMP area had been video inspected (40 pipes had been inspected) which inhibited the ability to set citywide priorities. Nonetheless, inspections completed at that time served as the basis to categorize work into the three groups: 1 – lining needed high priority (under roadway or adjacent to a structure); 2 – lining needed low priority; and 3 – no lining needed. Two key conclusions shown in the visual aids were that the high priority projects needed immediate attention and (2) video inspections program should be continued until all 200 CMPs were inspected.

The information presented in June 2004 is also consistent with the deteriorated status ascribed to City owned CMPs in the sinkhole vicinity as stated by a Los Angeles County senior official in February 2005, a few weeks following the disaster. Furthermore, a City internal memorandum dated November 15, 2005, corroborates our conclusion that the City's CMP system constructed in the 1930s was significantly flawed prior to the disaster event. The memorandum issued from the City's Public Works Director to the City Council referenced the City-funded CMP project at Pontevedra Drive (The damage relating to PW 2254 was from Western Avenue to Pontevedra Drive) and noted the following:

The 30" diameter pipe collects runoff water from the neighborhoods above Pontevedra Drive and transmits it between two homes to the pipe being repaired by Caltrans, which runs under Western Avenue. The pipe is showing signs of ageing and should be lined. If this pipe is not lined at this time it will continue to deteriorate, likely failing sometime in the near future.

**Conclusion:** The CMP damage identified for PW 2254 and shown in the January 2005 storm drain video inspections is consistent with the pre-disaster pipe decay reported in the 2004 Update. City officials explained that the CMP was operating pre-disaster and that the significant disaster related rainfall caused the CMP failure. However, City records did not include, nor did City officials provide us with evidence identifying the physical condition of the CMP pre-disaster or any regular maintenance performed on the overall aging system. City repairs to the system historically were focused on responding to an urgent repair need caused by flooding.

We communicated our results to City officials during the audit exit conference of April 22, 2010. Those officials disagreed with our audit conclusion and requested additional time to locate and provide us with documentation to support that the disaster caused the damages to the CMP system. Subsequent to the exit conference, the City's Engineer explained how a method of sampling water runoff in catch basins could establish the integrity of the CMPs pre-disaster. We requested that the City: (1) provide us documentation that the sampling occurred pre-disaster, (2) identify which CMPs were sampled and the staff who conducted the sampling, and (3) provide us the results of those samples. No such information was provided.

On May 28, 2010, we received written responses to this finding from the City. City officials continued to disagree with our conclusion and stated that based on the professional determinations of licensed engineers within the City's Department of Public Works, the extraordinary rain event caused the disaster damage identified in PW 2254. We were also asked to remove any and all findings and conclusions regarding the Pontevedra Storm Drain claim from our audit report. We considered the City's responses but have not changed our position that the repair costs the City incurred under PW 2254 were not eligible for reimbursement under FEMA's Public Assistance Program [44 CFR 206.223 (a)]. Other than testimonial evidence obtained during the audit, the records we reviewed and discussions we had with responsible City officials did not convince us that damage was caused by the extraordinary rain event. The records reviewed noted that the majority of CMPs within the City's aging storm drain system were deteriorated. The video inspection of the Pontevedra CMP after the disaster showed the same deteriorated state that produced the sinkhole on State Route 213 that FHWA attributed to progressive deterioration and lack of maintenance (See finding A). Because the City's own records stressed the importance of initiating extensive repairs to CMP systems throughout the City prior to the disaster, and no records were produced to show the

pre-disaster condition of the Pontevedra CMP, we continue to question the \$357,173 provided to the City under PW 2254 for the CMP repairs.

Exhibit F summarizes the key points of the City's written responses and provides our analysis and comments in response to the City's assertions.

### **RECOMMENDATIONS**

We recommend that the Regional Administrator, FEMA Region IX, in coordination with Cal EMA:

**Recommendation #1.** Collect from the City the \$559,699 in FEMA disaster grant funding provided for the federal-aid road (Finding A).

**Recommendation #2.** Collect from the City the \$357,173 in FEMA disaster grant funding provided for repair of the CMP storm drainage system (Finding B).

### **DISCUSSION WITH MANAGEMENT AND AUDIT FOLLOW-UP**

We provided the City, Cal EMA, and FEMA a detailed discussion draft of the audit issues supplemented by approximately 30 source document exhibits in mid-March 2010. We conducted an exit conference with the City and Cal EMA officials on April 22, 2010. The City did not agree with either Finding A or B. The City requested and we granted a time extension to allow the City to locate documentation that could identify that the repairs FEMA funded under PW 2254 (Finding B) related to a CMP that was functioning pre-disaster in such a manner that would denote that its bottom was intact and there were no holes in the pipe. We also held a follow-up telephone conference, on April 29, 2010, with the City and Cal EMA to discuss acceptable practices for testing the integrity of CMP pipes. On May 28, 2010, we received the City's written responses to Finding B of this report that communicated a general disagreement with our audit approach and the conclusions. The City's comments are summarized in this report as appropriate. Also, Exhibit F to this report: (1) summarizes the key points raised by the City in its written responses to Finding B and (2) provides our analysis and comments on those responses. Both Cal EMA and FEMA withheld comments pending issuance of our final report.

Please advise this office by November 22, 2010, of actions planned or taken to implement our recommendations. Please note that your responses should include target completion dates for actions planned and actual completion dates for actions taken. Should you have questions concerning this report, please call me at (510) 637-1482, or your staff may contact Humberto Melara, Supervisory Auditor, at (510) 637-1463. Key contributors to this assignment were Humberto Melara, Curtis Johnson, and Devin Polster.

cc: Audit Liaison, FEMA Region IX  
Audit Liaison, FEMA (Job Code: G-10-015-EMO-FEMA)

**Schedule of Audited Projects  
City of Rancho Palos Verde, California  
FEMA Disaster Number 1577-DR-CA**

<b>Project Worksheet</b>	<b>Category of Work *</b>	<b>Award Amount</b>	<b>Questioned Costs</b>	<b>Finding Reference</b>
1103	F	\$559,699	\$559,699	A
2247	A	10,707	0	
2254	F	357,173	357,173	B
2266	B	11,183	0	
<b>Totals</b>		<b>\$938,762</b>	<b>\$916,872</b>	

- \* Category F - Utilities  
 Category A - Debris Removal  
 Category B - Emergency Work

### Applicable FHWA Criteria for ER Program funding

- FHWA ER funds are not intended to supplant other funds for correcting of preexisting, non-disaster related deficiencies [23 CFR 668.105(b)]. "...ER funds may not participate in . . . repair or reconstruction of facilities affected by long-term, preexisting conditions . . ." [23 CFR 668.109(c)(6)]. "...Not all catastrophic failures are ER eligible . . . ER funds do not apply to catastrophic failures from an internal cause or source [such as] gradual and progress deterioration or lack of proper maintenance . . ." [ER Manual, August 2003, FHWA, Chapter 2, Item C.12. "Catastrophic Failure from Internal Cause"]. "...Wholesale upgrading of deficient culverts on an area or route basis is not eligible. Eliminating a reoccurring annual maintenance problem with ER funds, based on the occurrence of a disaster, is not normal within the scope of the ER program . . ." [ER Manual, August 2003, FHWA, Chapter 2, Item D.2.e "Replacement of Culverts."].
- The following FHWA documents addressed preventative maintenance applicable to drainage systems: FHWA Memorandum, dated October 8, 2004, *ACTION: Preventive Maintenance Eligibility*; and Caltrans *Local Assistance Program Guidelines*, Chapter 4 Surface Transportation Program, LLP 01-11 December 20, 2001, Preventive Maintenance 4 – 2 indicate that preventative maintenance funding exists for restoration of drainage systems.

### Project Records Regarding the Eligibility of PW 1103 for FEMA Funding

- FEMA received and processed the City's request for disaster grant assistance for PW 2566, a project with work similar to the work performed under PW 1103. Although this work involved a CMP near the same location as work funded under PW 1103, FEMA later canceled the City's funding request because FHWA accepted the City's request for assistance.
- FEMA provided the City with a map that identified federal-aid roads within the City's boundaries and told the City that it would use the map to determine FHWA/Caltrans funding eligibility. FEMA specifically identified six federal-aid roads, including Western Avenue, and informed the City that permanent repair work involving those locations would be ineligible for FEMA funding.
- In January 2005, the City acknowledged, to the California Department of Transportation, that Western Avenue was a state highway and that it would take the lead on the repairs "even though City records did not indicate that these old pipes are, or ever were, Rancho Palos Verdes drainage facilities." In May 2005, Caltrans informed the City that FHWA verbally concurred that emergency repair on Western Avenue was eligible for FHWA funding. FHWA subsequently denied the City's request for funding under the ER Program but informed the City that deficient culverts could be funded with regular federal-aid system funds.
- City Council meeting minutes of September 25, 2005, acknowledged that the City received \$559,000 in disaster funding from FEMA for the road repair under PW 1103. The minutes noted that FEMA funding was received for the "sinkhole repair project at Western and Westmont, even though we don't believe we own the damaged facilities and that reimbursement should come from the FHWA."

The City Council expressed concern of losing FHWA's funding due to the deferred maintenance issue and directed staff to research the ownership of the damaged facility. In February 2006, the City of Los Angeles denied a Claim of Damages stating that "... the City of Los Angeles has not found any record transferring responsibility for maintenance of State Highway 213 (Western Ave) from the State of California to the City." Likewise, the County of Los Angeles denied a similar City claim in April 2006 stating that the "incident occurred on property owned, controlled, and maintained by the State of California."

- The City's reports for fiscal year ended June 30, 2005, and June 30, 2009, noted that the City had received disaster emergency funding for the Western Avenue sinkhole where "...it was unclear whether the final costs will be allowable under FEMA guidelines; and, if the costs are not allowed, the funding would have to be returned." The latter report additionally noted that "...staff believes it is prudent to allow this FEMA reimbursement to remain in the CIP [Capital Improvement Plan] fund balance until the issues of responsibility for repair and funding sources were resolved.

Tables from “Storm Drain Master Plan Update” (June 2004)

TABLE I						
	Deficiency due to	Problem	Risk of no action	Solution	Relative Cost	Remark
1	Size of pipe	Existing pipe is too small	Street flooding will enter private property	Construct a new storm drain	High	Especially critical when grade of property is below grade of street
2	Absence of pipe or inlets	A pipe is needed to pick up drainage				
3	Pipe configuration	Existing pipe conveys drainage to private property	Drainage pipe discharges onto private property			Relatively rare
4	Condition of pipe	Portion of corrugated metal pipe has deteriorated	Pipe collapse. Sink hole at surface	Line pipe	Lower	Collapse may occur even during mild storm events

TABLE II					
Pipe Material Type	Total Number	Actions Required			
		None	Lining only	Reconstruction only	Lining and Reconstruction
Corrugated Metal Pipes	200	47	91	9	53
Reinforced concrete	117	114	0	3	0
High density polyethylene	2	2	0	0	0
Total	319	163	91	12	53

Tables from “Storm Drain Master Plan Update” (June 2004)

Name of Drainage Area (1)	Area	Total Area (acreage)	Reconstruction costs (2)	Lining Costs(2)
Los Angeles Drainage Area	1	2,820	\$ 11,231,080	\$ 2,050,000
Ocean South Drainage Area	2	3,330	\$ 11,471,110	\$ 850,000
Ocean West Drainage Area	3	710	\$ 210,000	\$ 450,000
Palos Verde Estate West Drainage Area	4	1,100	\$ 514,500	\$ 650,000
Palos Verde Estate North Drainage Area	5	450	\$ 730,800	\$ 450,000
Rolling Hills Estate Drainage Area	6	500	\$ 687,260	\$ 100,000
Total Acreage of Drainage Area		8,910	\$ 24,844,750	\$ 4,550,000

**(3) Table 5 - A summary of project cost to reconstruct by priority**

	Priority One	Priority Two	Priority Three	Total
Number of projects	12	21	25	58
Construction Costs	\$4,975,960	\$7,981,393	\$4,788,900	\$17,746,253
15% contingency	746,394	1,197,209	718,335	\$2,661,938
25% admin legal, and engineering	1,243,989	1,995,348	1,197,225	\$4,436,563
Total Project Costs	\$ 6,966,343	\$11,173,950	\$6,704,460	\$24,844,754

Tables from “Storm Drain Master Plan Update” (Engineer’s November 2004)

**(4) Table 1 - Proposed Drainage Improvements for the City of Rancho Palos Verde**

Name of Drainage Area	Cost Estimates
Los Angeles Drainage Area	\$8,627,200
Ocean South Drainage Area	\$7,468,650
Ocean West Drainage Area	150,000
Palos Verde Estate West Drainage Area	522,000
Palos Verde Estate North Drainage Area	367,500
Rolling Hills Estate Drainage Area	490,900
Total	\$17,626,250
Contingency (10%)	\$1,762,625
Admin./Engineering/Legal (25%)	\$4,406,563
Grand Total	\$23,795,438
General Comments: Work is categorized by priorities in drainage areas.	

Most of the variance between the master plan updates in June 2004 (\$24,844,754) and November 2005 (\$23,795,438) is attributable to a 5% reduction of contingency funds identified in the November 2004 Engineer's estimate.

Source:

- (1) Master Plan of Drainage Update – AKM Consulting Engineers – November 2004; Page 4
- (2) Master Plan of Drainage Update – June 2004 City Council Meeting; Page 7
- (3) Master Plan of Drainage Update – June 2004 City Council Meeting; Pages 5 & 6
- (4) Master Plan of Drainage Update – AKM Consulting Engineers – November 2004; Page 13

**Key points of the City's May 28, 2010 written responses to Finding B  
and OIG analysis and comment**

**1. City's Response:** The City disagreed with our use of the Director of Public Works' June 15, 2004 "Storm Drain Master Plan Update" presentation to the Mayor and members of the City Council as a reference to the condition of any storm drains. City officials said that the document was only a staff report established separately by City staff and not necessarily reflective of material provided by the engineering consulting firm retained to perform the 2004 Master Plan Update.

**OIG's Analysis and Comment:** The June 15, 2004 Storm Drain Master Plan Update was a current and reliable source of data since it was produced based on the work of an engineering consulting firm. In April 2004, the Director of Public Works told the Mayor and City Council:

In August 2003, the City Council awarded a professional service contract to AKM Consulting Engineers to update the City's master plan of storm drains. Services provided under this contract include an update of costs to reconstruct deficient storm drains, analysis of areas that were not included in the original update, and the preparation of new storm drain base maps. At this time, staff has received and is reviewing estimates of cost that will soon be presented to the City Council. A final report is scheduled to be delivered in June 2004.

We included the estimate of costs submitted by the City staff in June 2004 and the engineer consultant in November 2004 as Exhibit E. Other than the presentation format being different [City staff's schedule based on priority designation, and the engineer's schedule based on drainage area zones] both estimate total costs related to reconstruction to be approximately \$24 million.

**2. City's Response:** All the pictures of the CMPs with missing bottoms included in the Director of Public Works' presentation were taken along the Palos Verdes Drive East corridor and not the Western Avenue storm drain corridor.

**OIG's Analysis and Comment:** The presentation noted the pre-disaster condition and number of CMPs with potential risks (see Exhibit D) but generally, the pictures in the presentation did not identify specific locations. The picture in our report was intended to show the general deteriorated condition of CMPs throughout a drainage system constructed in the 1930s. As we stated in our report, the presentation noted that CMP deterioration could lead to pipe collapse even during a mild storm and that pipe rehabilitation or reconstruction was the repair solution. Because the City did not provide us any evidence that the CMP in question had been inspected or maintained prior to the disaster, or that the damage was directly attributable to the storm event, we concluded that based on the age of the CMPs City-wide and the number of pipes requiring reconstruction or lining, the eligibility of the work performed under PW 2254 was questionable.

**3. City's Response:** City officials said that the Western Avenue storm drain corridor, where the Pontevedra storm drain damages occurred, is located within the Los Angeles Drain area, but Western Avenue storm drain was not identified as deficient in the 2004 Update. Additionally, the Master Plan of Drainage Update, submitted by the City's consulting engineers in November 2004, did not reference the Pontevedra storm drain in a table entitled "Preliminary Cost Estimates for the Proposed Improvements – Los Angeles Drainage Area" that was provided to the auditor at the exit conference.

**OIG's Analysis and Comment:** We agree that the Pontevedra storm drain reconstruction project did not appear on that table presented to us at the exit conference. The table is not relevant to the CMP repair being questioned. The Master Plan of Drainage Update considered two types of work: 65 storm drains requiring reconstruction or reconstruction/lining and 91 repairs requiring lining only. The table related to the 65 storm drain projects, whereas the scope of work for PW 2254 is consistent with the pre-disaster condition of the 91 deficient CMPs requiring lining only.

We further recognized that the 91 repair projects documented as of June 2004 resulted from the consulting engineers' video inspections of only 20% of City-owned CMPs. Therefore, additional compromised CMPs had not been identified. To illustrate, consider the Tarapaca Canyon CMP. The engineer's work and report did not identify the deteriorated CMP -- residents in the Tarapaca Canyon area informed the City of the potential problem and video inspections completed in the early fall of 2004 confirmed the problem. The City Counsel approved lining the CMP in December 2004 [pre-disaster event], and the repairs were performed and funded from the same source as the Pontevedra storm drain [post-disaster]. The video inspection described the condition of the CMP as follows:

Because of the poor condition of the pipe, a complete video inspection could not be completed, however, based upon what was inspected, it was concluded that the storm drain is deficient in several ways. The invert of the storm drain at several discrete locations was completely eroded and thus point repairs are required. The invert of the entire pipe is in a state of distress and thus the entire pipe needs to be lined.

Funding for this project came from the City's adopted FY 2004 – 2005 budget which included funding to construct lining and miscellaneous point repairs to the City's storm drains.

**4. City's Response:** City officials said our report cited the condition of the Palos Verdes Drive East storm drains multiple times as if it represented the condition of the entire city-wide system and that the general condition of its pipes cannot be linked to the general condition of pipes within the entire Los Angeles Drainage Area.

**OIG's Analysis and Comment:** The 1999 study was commissioned by the City Council and focused primarily on the storm drains along Palos Verdes Drive East. The study established that 75% of the CMPs along the street had decayed to the point where pipe collapse was a concern. In 2003, the City engaged a video firm to inspect additional sections of the CMP drainage system. The results of the CMP inspections were made available to City staff and incorporated into the June 2004 report. For example, the report noted that a number of CMPs identified were found to be deficient due to poor condition only and not as a result of being undersized. In such cases, the report concluded that the pipe could be reconstructed; however, a more attractive solution would be to repair the deteriorated pipes with some type of liner. The June 15, 2004 Storm Drain Master Plan Update addressed the scope of CMP deterioration in the "Location of projects" section. It was reported that "storm drain deficiencies are found throughout the City, however, they were found to be concentrated in two drainage areas: along Palos Verdes Drive East and along the City's southern coastline. This is not surprising since these two areas were first areas that the City developed and they have the oldest infrastructure."

The June 2004 Master Plan Update showed that the estimated costs of reconstructing or lining storm drains in Los Angeles Drainage Area (the area in which the Pontevedra storm drain is located), were

\$11.2 million and \$2.1 million, respectively. Each cost represented approximately 45% of the total estimated cost to reconstruct or line deteriorated storm drains in all six drainage areas (see Exhibit E). Therefore, our conclusions regarding the general condition of CMPs in the Los Angeles Drainage Area are appropriately supported by the City's June 2004 Storm Drain Master Plan Update.

**5. City's Response:** The City's overall storm drain system was deemed adequate considering 141 of the 297 (47.5%) storm drain systems requires no action.

**OIG's Analysis and Comment:** We agree with the City's representation that 47% of the storm drain systems required no action if you include storm drains made of all materials [200 CMP where 153 needed work, 117 reinforced concrete lines where only 3 needed work, and 2 high density polyethylene with none needing work]. However, based on the June 2004 Storm Drain Master Plan Update, only 23.5% or 47 of the City's 200 CMPs required no improvement action. Of the 76.5% of the CMPs requiring lining, reconstruction, or both, nearly half of the estimated funding for lining improvements required City-wide was identified in the Los Angeles Drainage Area in which the Pontevendra CMP is located.

**6. City's Response:** City officials disagreed that there was any relationship between the work performed under PW 2254 and the 10 other CMP repairs financed by the City. City officials commented that although two of the projects were in the Los Angeles Drainage Area, they were approximately 3-5 miles apart, and developed in different decades in areas with different drainage characteristics as the Pontevendra storm drain which is located on a hillside where drainage generally is better and the pipes last longer because of the grade of the hill.

**OIG's Analysis and Comment:** Our intent in highlighting the City's self-financed CMP improvements was to illustrate the general deterioration of CMPs throughout the City and that such CMPs existed pre-disaster without being identified by the consulting engineer's report [see above - OIG's Analysis and Comment #3 - Tarapaca Canyon CMP]. The work performed on the Pontevendra storm drain under PW 2254, as well as those financed by the City, included repairs to holes and absence of bottoms in the pipes. A memorandum dated April 5, 2005, from the City's Director of Public Works to the City Council referenced the aforementioned June 15, 2004 Storm Drain Master Plan Update and requested authorization to use the \$500,000 the City budgeted for CMP rehabilitation for the 10 City-financed projects and the 1 FEMA-funded project.

**7. City's Response:** The City disagrees with our use of correspondence from the Chief Engineer and General Manager, Los Angeles County Sanitary District to Caltrans that discussed the condition of the CMP repaired with FEMA disaster funds. The City notes that the engineer's letter does not reference the Pontevendra CMP because it runs down a steep hill between two homes and is not located underneath the Districts' sewer lines. The letter also contains no statement about the cause of the conditions of those storm drains or that the failure that occurred in DR 1577 event was due to deferred maintenance.

**OIG's Analysis and Comment:** The February 8, 2005, letter described the general condition of the City's CMP system following the sinkhole that occurred on Western Avenue (see Finding A). The letter noted that based on the Districts' drawings, there may be 12 other locations within the City where CMP storm drains crossed Western Avenue perpendicular to the alignment of the two Districts' sewers. Several of these storm drains had been examined by the City using closed circuit television and were found to be in the same condition as the CMP at Westmont Drive that caused the

sinkhole [cross road location Western Avenue (federal-aid road) at Westmont Drive in City of Rancho Palos Verdes].

In its response, the City acknowledged that a video inspection was performed on the CMP in question on January 15, 2005. The engineer's February 2005 letter noted his comments were based on viewing information the City obtained after closed circuit television inspection of the CMPs. Although the City's response infers the CMP is not connected to the storm drains crossing under the Districts' line within the sinkhole, PW 1103, page 2 of 8, indicated that the CMPs location was consistent with the engineer's description:

Site Number 1 – Location: Pontevedra Drive to 20 feet below Western Ave., City of Rancho Palos Verdes, CA.

Video examination of City-Owned storm water utility pipes crossing below Western revealed camera blockages at manholes 1-28, 1-27, 1-28 (Toscanini) on 1/13/05. A collapsed pipe below Pontevedra at Western on 1/14/05, and clear pipes at Redondela – Estudiante – Apprenda on 1/17/05 which confirmed a sinkhole potential at Western below Pontevedra. The Velez crossing is a 30-inch CMP at top depth of 10'6" in a manhole in front of 28402 Pontevedra. It descends steeply within an easement between two private properties to the dip in Western Avenue. Approximately 180 horizontal feet. Pipe collapse was reported at 155.9 linear feet from the Pontevedra/Velez manhole and at 12.6 feet from manhole 1-19 on east side of Western Avenue in the Smart & Final Parking Lot.

Interestingly, the City, in a letter to the California Department of Transportation dated January 18, 2005, made the same comment in reviewing the 12 CMPs and reached the same conclusion as the Chief Engineer and General Manager for Los Angeles County: "Our Public Works Department has investigated all twelve culvert crossings on Western Avenue within the City of Rancho Palos Verdes. As a result of the investigation, it appears that there are five additional corrugated pipes that are in a state of disrepair."

In addition, a City internal report on the completed Western Avenue project noted "...the tunneling began in Western Avenue. Access to the work performed within the easement was through Caltrans access pit located in Western Avenue. As the work proceeded up the easement from Western Avenue toward Pontevedra it was discovered that the failed CMP was not installed in a straight line between the lower and upper points."

Notwithstanding the City's assertion that the County engineer's letter contains no statement about the cause of the Western Avenue sinkhole, its letter inferred that corrosion failure caused the sinkhole. The fact remains that: (1) information obtained from the City showed that nearly 77% of City-owned CMPs required rehabilitation, (2) nearly half of the estimated funding the City required for lining projects was in the Los Angeles Drainage Area where the Pontevedra storm drain is located, (3) work required under PW 2254 was nearly identical to non-disaster work funded by the City, (4) the City was unable to provide evidence that it had inspected and maintained the Pontevedra CMP prior to the disaster, and (5) the City could not provide documentary evidence that the damage to this CMP was disaster-related or that it was any different than the damage to other CMPs repaired by the City.