City of El Cerrito

Storm Drain Master Plan
Update 1999

March, 1999

Prepared by:

Harris & Associates, Inc.

City of El Cerrito
Storm Drain Master Plan
Update 1999

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City of El Cerrito
Storm Drain Master Plan
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I. Introduction

In 1992, the City of El Cerrito commissioned an evaluation of its storm drainage system. The resulting Master Plan by Willdan Associates was needed because the City had received a number of claims due to storm system-related property damage. The City's insurer notified the City that unless corrective actions were initiated, it would cease to insure the City against claims for private property damage due to failure of storm drain pipes.

The Master Plan identified $13.25 million in needed corrections. Of highest priority were 60 sites for which corrections were estimated to cost $5.8 million. The study concluded that to delay these repairs would jeopardize the safety of public and private property.

Subsequently, in 1993, the voters approved a $6.3 million bond issue (Measure J) investing in the storm drain infrastructure by financing repairs at these high priority sites. In 1993, Harris & Associates (Harris) was retained to implement what has become known as the Phase I program.

In July 1998 the El Cerrito City Council approved a contract with Harris to prepare an update of the Storm Drain Master Plan. This Update describes the work completed to date as part of Phase I and what impact those improvements have had on the overall storm drain system. The Update also charts possible courses of action for capital improvements and other activities that are recommended in order to (a) keep the system operating with limited risk to public and private property; and (b) optimize the use of limited available funding.

II. Summary of 1992 Master Plan

The Storm Drain Master Plan identified the following problems associated with El Cerrito's storm drain system:

- Pipes in most of the residential areas were 40-50 years old and deteriorating
- Much of the drainage was conveyed in pipelines buried in the historic natural drainage courses instead of via pipelines installed in the public right-of-way
- Many drainage improvements on private property were built to varying standards, with diverse materials, and without benefit of public easements
- In a number of situations, houses or other structures were constructed directly above pipelines
- Upstream drainage characteristics had changed over time as El Cerrito developed, rendering some old pipe capacities inadequate.

The increasing amount of storm damage and resulting private property damage claims necessitated a better understanding of the system in order to make improvements. A computer-based storm drain map was prepared and the system was divided into approximately 950 pipe segments. The following criteria were established during the 1992 analysis in order to create a recommended improvement program:

a. **Condition.** Replace those storm drains having a substandard structural condition. Assumptions were made based on a limited amount of field work performed for the 1992 study. Reinforced concrete pipe (RCP) was assumed to be in fair to good condition and corrugated metal pipe (CMP) was assumed to be in poor to fair condition due to observed corrosion and perforation of pipe inverts (bottoms). Further field review of CMP segments was recommended.

b. **Capacity.** Provide capacity to enable conveyance of the 10-year peak flow rate. Most small urban watershed systems are designed to handle the flow of a 10-year storm event. A 10-year storm is defined as a storm that will be equaled or exceeded on the average of once every ten years.

c. **Access.** Convey all public storm water through drainage facilities located within the street right-of-way or within a public drainage easement. This criteria was established to facilitate maintenance operations and to reduce the potential damage to buildings built over or near drainage pipelines.

A point system similar to that in Table 3 of this Update was devised in order to document each pipe segment in each criteria category. After deficiency points were assigned to each segment, the worst pipelines were clustered into geographically proximate "sites" (potential projects) and prioritized in descending order. Improvement costs were estimated for projects with the highest deficiency points.

The result of the 1992 analysis can be summarized as follows:

- It was estimated that 60 percent (64,000 linear feet) of the City's total 140,000 linear feet (LF) of pipeline length had some deficiency (received 3 or more points).

- The total improvement program identified $13.25 million in deficiencies, divided into two phases, "Phase I" and "Future".

- Phase I included 60 sites having 12 or more deficiency points, with a total length of 40,000 LF and an estimated construction cost of $5.8 million. These sites warranted inclusion in a Capital Improvement Program.

- The 400 "Future" segments, which had some noted deficiency and were not in the Phase I program, accounted for 44,000 LF of pipeline with an estimated repair cost of $7.45 million.

- The 56,000 LF of pipeline that was in adequate condition in 1992 (two or fewer deficiency points) represented 40 percent of the system by length.

Table 1 shows the findings in tabular form.

TABLE 1:	1992 Storm Drain Master Plan Summary				
	Deficient Pipes			Adequate Pipes (Remainder)	Totals
	Phase I	Future	Total		
Segments (pipe reaches)	200	400	600	350	950
Length (feet)	40,000	44,000	84,000	56,000	140,000
Percent of total (by feet)	29	31	60	40	100
Deficiency points	≥ 12	3 - 11	≥ 3	0 - 2	-
Sites (projects)	60	- not determined -			
Cost estimate (million)	$5.80	$7.45	$13.25	0	$13.25

III. Phase I Improvement Program (1992 – 1999)

A. Construction Activities

Harris' first task was to evaluate the 1992 Master Plan criteria used for prioritizing sites. It was determined early in the Phase I program that the cost of relocating drains from private property into the street right-of-way would be prohibitively expensive in most cases. By replacing or repairing pipes in their existing alignment and using trenchless technologies where appropriate, the program funds were stretched so that most of the Phase I sites have been improved. Construction occurred as multiple projects between 1994 and 1998. Table 2 (included as Appendix 1) summarizes each year's construction program.

In addition to the Phase I work, the Program was flexible enough to address other problems as they arose. Several severe winter storms, especially in 1994-1995 and 1996-97, resulted in pipeline failures or revealed weaknesses that required corrective work on an emergency basis. This included some pipe segments that were not on the Phase I work list. Also, the City's maintenance crew identified system problems, some of which also were corrected.

The City Council requested consideration of creek restoration at limited sites as an alternative to pipeline rehabilitation or replacement. Harris developed criteria for evaluating creek restoration sites and identified 12 candidate sites.

These were reduced to two sites, which were designed and constructed as part of the Phase I program. They are Poinsett Park and along the Ohlone Greenway between Schmidt Lane and Portola Drive.

B. Program Outcomes

The City's strategy to define the worst sites as those receiving over 12 deficiency points in the 1992 Master Plan and to set the Phase I program and bond funding accordingly was a prudent decision.

Several severe storm winters occurred during the 5 years of the program. These storms validated the Master Plan predictions of problems at sites that had not yet been improved, and generally validated the selected solution for those sites once they had been improved during Phase I. Maintenance call-outs during storm events have been fewer than before the program, the number of property damage claims has fallen off, and property damage has been generally reduced compared to the average in the years preceding the construction program.

This is not to say that storm damage was completely eliminated. Some construction-related problems, a blocked grate, and a blocked channel have resulted in several storm damage incidents since 1994. These incidents, however, were carefully analyzed and adjustments made to reduce the potential for recurrence.

The storm drain system operates much more effectively at this time than it did in 1994. As Phase I nears completion, it is now appropriate to identify any remaining problem areas, and to evaluate the cost-effectiveness of performing improvements to the segments not addressed in the Phase I program.

C. Remaining Sites For 1999

As previously noted, City staff and Harris have identified problem areas and many problems have been corrected through Phase I construction activity. However, there are three remaining sites where improvements are still needed. Engineering and preparation of construction documents have not yet been authorized by the City. These sites, with estimated costs, are summarized in the following table:

	Site Location/Description	Construction Cost	Engineering	CM	PM
46A	838 Seaview – Collect and convey overland flow of public water on private property	$25,000	$2,000	$2,000	$800
10A	Cypress Street – Eliminate street flooding	$165,000	$15,000	$13,000	$3,000
15A	Potrero Street – New top slab and grate for existing storm drain box structure	$23,000	$2,100	$1,600	$500
	Contingency	$32,000	$3,000	$2,600	$600
	Estimate of Subtotal Cost	$245,000	$22,100	$19,200	$4,900
	Estimate of Total Cost				$291,200

A thorough discussion of each of the above sites is included as Appendix 6.

IV. 1999 Master Plan Update

A. Methodology

The primary objectives accomplished by this update are:

- Describe the completed Phase I improvements and evaluate their effectiveness (Section III).
- Review the evaluation criteria used in 1992, in light of our Phase I experience, and modify them accordingly for this 1999 analysis (Section IVA).
- Determine the magnitude of remaining system deficiencies (Section IVB)
- Identify options for future program elements (Section V).

The process used to perform the analysis for this update is described below:

Reconsideration of Evaluation Criteria. It was determined during Phase I that relocating storm drains from private property into the streets is problematic and expensive. In order to stretch the bond funding and achieve more project improvements, it was decided in 1994 (during Phase I design) to allow pipelines to remain on private property in most cases.

The City Attorney has opined that de facto public easements exist where storm drain pipes are located on private property. To account for this position, the evaluation criteria points for right-of-way have been adjusted downward (halved) in this 1999 study so that private property alignment is no longer considered as severe a "deficiency".

Capacity deficiencies will keep their same range of points in 1999 as in 1992. Although the program strives for a 10-year storm design, achieving this

capacity is not always cost effective, especially if a pipeline has not previously experienced flooding.

Corrugated Metal Pipe (CMP) segments will keep their same range of deficiency points in 1999 as in 1992. CMP is still considered to be one of the greater concerns of a 50-year old system. Much of the CMP on private property was replaced or rehabilitated in Phase I. By keeping the point system the same as in 1992, the remaining CMP pipelines (including many road crossing culverts) have risen in the priority listing in this 1999 Update.

Pipe segments with known or potential flood problems are the highest priority for the 1999 Update program. Therefore, the points allocated for flooding potential have been increased (doubled) to reflect this desire to further reduce City liability. Points are assigned for known low areas of street crossings where significant ponding or flooding of property could occur, as well as pipelines that have experienced overflows in the street. Areas where private property has been flooded or damaged will receive special attention regardless of the points they receive in the analysis.

The revised weighting factors described above are summarized in the following Table 3, which is an update of Table 5 in the 1992 plan.

TABLE 3
POINT ASSESSMENT FOR DEFICIENCY CONDITIONS

10-Year Flow (cfs):	0 – 25	25 – 50	50 – 100	> 100
Approximate drain size:	18"	24"	36"	> 36"
Capacity deficiency (%)	10 – 25	25 – 50	50 – 100	> 100
Evaluation Factor	**Points**			
Storm Drain Flow	2	3	4	5
Capacity Deficiency Percent	1	2	3	4
Potential for Deterioration	6	8	10	12
Private Property or Public R/W	1	2	3	4
Known Flood Area	7	8	9	10

Update of the Storm Drain Information Database. All work constructed in the Phase I program was input into the computerized system database. Using the newly assigned point system in the Table above, points were assigned to each segment in the system. The cost of making improvements was inflated using the Bay Area Consumer Price Index (CPI) to reflect 1999 costs (32% increase to 1992 costs.) The computer then calculated the ranking of each segment. Harris then clustered the segments into

geographically proximate "sites", or potential projects, working from the worst (highest points) downward. Listing of sites stopped at 12 deficiency points, which is also the cut-off point for Phase I in the 1992 Study. The estimated cost of repairs for these 30 resulting sites is $1.9 million. Below this "line", data is shown for each segment; however, these segments have not been clustered into sites. This procedure mirrors that used in 1992. The results of the foregoing analysis are contained in Table 4 (included as appendix 3).

Maintenance Department and Field Review Input. In order to ensure that all known problem areas are addressed, the City's maintenance personnel provided information on known problem areas. Limited field reviews were conducted to verify data received. Segments in need of maintenance repair work were added to a list for future program consideration.

Evaluation. As noted, all sites and segments are now reflected on Table 4, ranked by deficiency points. Harris has identified four categories reflecting the relative degree of needed repairs:

- High Priority – Repair is needed; include the project in the Capital Improvement Program (the site received twelve or more deficiency points).
- Low Priority – Some repair need has been identified, but improvements can be deferred (received three to eleven deficiency points).
- Non-priority – Segments that do not require repair or monitoring unless problems develop (received 0-2 deficiency points).
- Monitor Status – No work is recommended at this time and the pipe is assumed to be in good condition. However, due to the pipe's material, age, or critical location it is advisable to monitor the condition periodically by video inspection and field review. This review would occur if the City elected to perform the "Future Data Collection Analysis" program described in Section V4 of this Update report.

Possible Programs. The final step in the Update process was to create program categories. The categories can be used by the City decision makers to develop a long-term strategy for the City's storm drain program.

- Capital Improvement Projects. These are projects (sites) that are recommended to be completed within five years.
- Maintenance Improvements. These are lower cost repairs or improvements that will reduce the City maintenance personnel's ongoing level of effort and/or reduce the potential for property damage. They are intended to keep the system in adequate working order.
- Emergency Fund. Though optional, it is recommended that a fund be established to address unforeseen storm drain problems.

B. Results and Conclusions

This Section presents the results of the analysis described in previous sections.

Results of Segment Prioritization. Table 4 (Appendix 3) contains the results of the computer ranking of every segment in the system that received deficiency points. In order to identify specific improvement projects, segments having 12 or more deficiency points were grouped into "sites" based on geographic proximity and deficiency points. These sites were then prioritized. (Note that this table updates Table 9 of the 1992 Plan).

Potential Improvement Projects. Regardless of the level of funding the City decides to allocate to a continuing storm system capital improvement program, Table 4 offers a prioritized master list of projects. This listing provides a starting point for subsequent analysis needed to define the scope of each improvement project.

It can be seen that 77 segments with the most deficiency points were consolidated into 30 sites (potential projects) having an estimated construction cost of $1.9 million. (It should be noted that this is an "order of magnitude" estimate since it is beyond the scope of this update to prepare a new estimate of project costs for each site.)

C. Fiscal Issues

The magnitude of system improvements identified in the 1992 Plan resulted in a successful ballot measure approving the sale of bonds to finance the program. Harris understands that the balance of the bond account will be approximately $996,000 at the end of fiscal year 1998-99. Further, Harris understands that future assessments are projected to exceed debt service requirements by approximately $110,000 per year over the remaining 14 years of the assessment.

In addition to the bond proceeds, a limited amount of NPDES funds were used in the 2nd and 3rd program years to pay for project elements eligible for those funds. Harris understands that a small amount of future NPDES funds may be available for eligible storm drain activity

The use of the available storm drain program funds, the future assessments in excess of bond debt service requirements, and NPDES monies for an on-going storm drain program will need to be considered by the City Council.

V. Options for the Future (1999 and Beyond).

This section identifies five primary categories of expenditures which Harris believe are necessary for the City of El Cerrito to establish a comprehensive storm drain program strategy. Whether the City Council decides to pursue all or some of these activities, and how they are to be funded, is a policy decision to be made by the City Council taking into account all available data and public input.

1. **Capital Improvement Program (CIP).** A desired funding level can be established for each year of a five-year storm system CIP. Projects can be selected from the Table 4 list based on deficiency points and subsequent video inspection (see option 4 below). This activity could be funded with existing and future Measure J bond assessments or another bond measure.

2. **Preventative Maintenance Program.** In order to improve the level of protection of properties from storm damage, a continued proactive maintenance program is necessary. The elements of a successful maintenance program include:

   - Cleaning (flushing lines to eliminate deposits)
   - Minor repairs (spot repairs of defective catch basins, trash racks, etc.)
   - Minor improvements (constructing new trash racks)
   - Public relations program (informing residents of the importance of keeping watersheds clear of debris and keeping pollutants out of drains).
   - Inspection (video and physical condition surveys) (see option 4 below)

   Based on input from the City's maintenance staff and past budget expenditures, it is estimated that a satisfactory program including the first four of the above elements would cost $50,000 per year, not including video inspection (see Option 4 below).

   These activities could be funded with existing and future Measure J bond assessments or another bond measure. In addition, within some limitations, NPDES funds can be used for maintenance activity.

3. **Emergency Response Fund.** Even though system improvements have been made in Phase I, the City's overall system is still vulnerable to damage from major storm events. These events often require emergency expenditures, which may include one or more of the following costs:

   - clean-up of debris
   - repair of damaged property
   - repair of storm drain facilities

- possible improvements to enhance the affected storm facility
- payment of damage claims.

It would be prudent to establish a set-aside fund for such expenditures. Once the initial contribution is made, monies should be added to replace prior year expenditures, in order to maintain the desired balance. Based on past experience it is recommended that the fund be set at $100,000.

Existing storm drain funds could be used to setup this emergency fund. Future allocations might come from future assessments, if available. Absent these sources of funds, the City General Fund Revenue would be needed to make the fund whole following emergency activities if it is desired to maintain the fund at the same level.

4. **Future Data Collection and Analysis.** City staff has been budgeting funds to video inspect a portion of the storm system every year. The City Council may wish to consider completing the entire video inspection program in the summer of 1999. Compiling a complete inventory and description of the City's storm drain pipes will add an important refinement to the analysis and conclusions contained in this update. The information from the video inspection could then be used to fine-tune the City's capital and maintenance programs. The estimated cost to complete video inspection of the remaining segments is $115,000, including the analysis of video logs and updating Table 4 of this 1999 Master Plan Update.

   Existing storm drain program funds could be allocated to this activity.

5. **1999 Recommended Construction Program**

   Three projects, which are described in Section 3C, "Remaining Sites for 1999", and Appendix 6, are recommended for completion in 1999.

   Existing storm drain program funds could be allocated to this activity.

Appendices

1. Table 2: Phase I completed sites (1994-99)
2. Map 1: Phase I completed sites (1994-99)
3. Table 4: 1999 Update – Storm Drain Information Database
4. Map 2: Possible Future Sites – System Map
5. Table 5: Possible Future Sites (30 detail sheets, bound separately)
6. Remaining sites for 1999

MAP 1

CITY OF EL CERRITO STORM DRAIN AND CREEK RESTORATION PROGRAM

Phase I - Completed Sites 1994-1999

LEGEND

- Existing Storm Drain
- Phase I Improvements
- Inlet Improvements

GRAPHIC SCALE:

750 0 750 1500

1"=750'

Harris & Associates
220 Mason Circle, Concord, CA 94520

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XREF: 99STUDY

SHT 1 OF 2

MAP 1

CITY OF EL CERRITO STORM DRAIN AND CREEK RESTORATION PROGRAM

Phase I - Completed Sites 1994-1999

LEGEND

- Existing Storm Drain
- Phase I Improvements
- Inlet Improvements

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GRAPHIC SCALE:
750 0 750 1500
1"=750'

SHT 2 OF 2

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XREF: 99STUDY

City of El Cerrito

Storm Drain Master Plan Update 1999

Table 2. Summary of Phase 1 Work Completed (1994-1998)

Site No.	Location	Description	Amount
Year 1 Program (1994)			
Year 1 Programmed Construction:			
11	Hill St.	780 LF 36" and 42" RCP	
54	Richmond/Clayton	1520 LF 3 x 5 RC Box	
60	Fairmount	411 LF 18" SD and 517 LF slipline	
	Year 1 Base Bid Total:		$848,186
	Year 1 Change Orders:		$102,113
	Year 1 Programmed Construction:		$950,299
Year 1 Emergency Construction (via change orders):			
16	Gladys	885 LF 42" RCP	
43	Ashbury/Hotchkiss	469 LF 42" RCP	
58	Village/Seaview	185 LF 30" HDPE in side yards	
N/A	812 Contra Costa	Emergency repair of front yard inlet	
	Year 1 Emergency Construction Total:		$466,135
		Year 1 Total Construction Costs:	$1,416,434
Year 2 Program (1995)			
2A / 2C Programmed Construction:			
17/19	Navellier/Lawrence/Scott	583 LF 18" and 36" Plastic in side/rear yards	
22/23	Schmidt/Liberty	1,017 LF RC SD and open channel 3 x 5 and less	
43A	Hotchkiss	Sack rip-rap repair to rear yard creek	
2	Poinsett	1,480 LF RCP, Plastic, trenchless and open channel SD	
20	Donal	1,420 LF RCP & Plastic SD, 30" and less	
26	Contra Costa	331 LF Plastic and RCP SD in street & yards, 24" and less	
38 / 38A	Galvin/Seaview	253 LF Plastic, RCP, and open SD in street & yards, 15" and less	
	2A/2C Construction Cost (incl. Change Orders):		$1,319,488
	2D - Poinsett Park (Oracle and AmeriCorp Portion):		$42,929

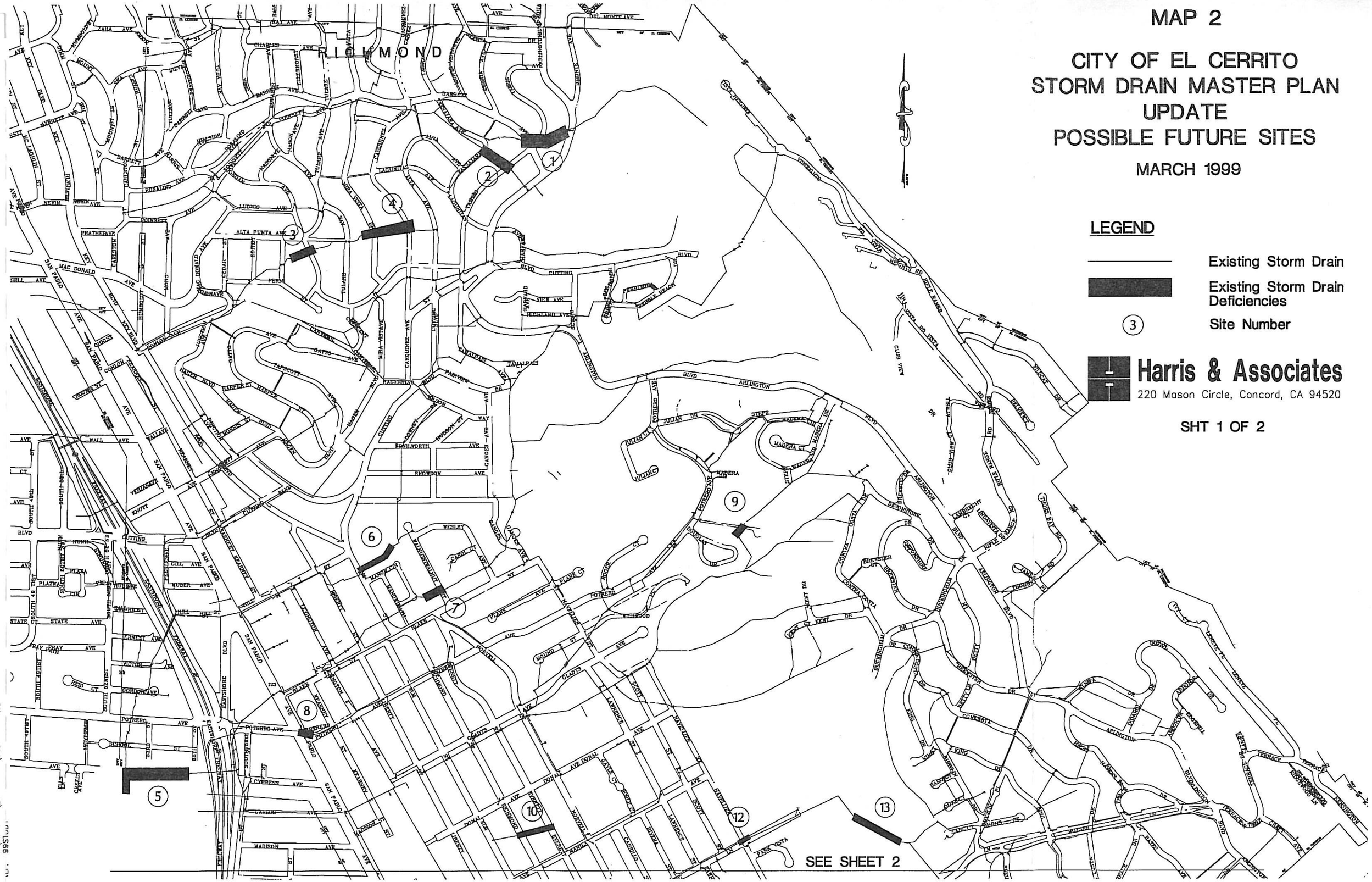
2B Programmed Construction:			
60A	Colusa/ EBMUD	Connect to exist. 30"EBMUD pipe w/ valving	
34	Kearney	1,056 LF RCP and Plastic SD, 3 x 5 RCB and less	
40	Stockton	954 LF RCP & Plastic SD, 280 LF slipline	
42/51	Lincoln/Norvell	819 LF RC SD, 3 x 5 RCB and 48" SD	
57	Colusa/Bonnie	411 LF RCP SD, 36" and less	
	2B Construction Cost (incl. Change Orders):		$659,847
		Year 2 Total Construction Costs:	$2,022,264
Year 3 Program (1996)			
Year 3 Programmed Construction:			
4A	Tamalpais Ave.	R/R exist SD DI	
4B	Arlington Blvd.	60 lf 18" RCP	
5	Edwards Street	R/ R exist SDDI	
6	Gloria Ave.	57 lf 15" RCP	
7	Mira Vista Ave.	138 lf CML 24" SD	
8	Junction Ave.	65 lf CML 24" SD	
9A	Hagen - Cutting	464 lf Rehab ex 12"SD	
9B	Cutting - Tapscott	540 lf pipeburst ex 12" VCP	
12	Kenilworth/Walnut	Rehab 826 lf ex 24" SD	
13	Arlington	Slipline 170 lf ex 48" SD	
27	Duke Court	CML 170 lf ex 30" CMP	
30/31	Arlington Blvd.	Repair inlets on Arlington	
33	King Drive	CML 263 lf exist 30" CMP	
36	Galvin	CML 246 lf exist 30" and 24" CMP	
37	Seaview Drive	CML 286 lf ex 24" CMP	
45	Terrace Drive	CML 209 lf 24", 30" and 48" arch CMP	
48	King Drive	Install 263 lf RCP and Plastic SD in street and City easement	
59	Bonnie to Balra	Rehab / Replace 593 lf ex 15" VCP & 18" CMP	
		Year 3 Construction Costs (costs incl. Change Orders):	$597,647

Year 4 Program (1997-98)			
Year 4 Programmed Construction:			
4	Tamalpais Ave.	New trash rack U/S of Arlington.	
5	Edwards Street	CIPP or slipline 245 lf exist. RCP and CMP.	
11A	Hill Street	760 lf of new 2'x3' box pipe (parallel) across San Pablo Avenue	
30/31	Arlington	Remove 85 lf 15"CMP and replace with 24"RCP	
47	Shevlin	Remove and replace SDDI. Cement-mortar-line 85 lf 24"CMP.	
49	Seaview	Cement-mortar-line 70 lf 48"CMP.	
25	Hillside Park	Install new trash rack and access road	
46	Seaview	Cement-mortar-line 277 lf 30"CMP. Construct trash rack	
29	King	Cement-mortar-line 190 lf 30"CMP. Junction box improvements.	
28	Contra Costa	Remove and replace 79 lf 12"CMP, Pipe-burst 26 lf 12"CMP	
		and conc. box pipe.	
56	Eureka (Alt. Site)	Cement-mortar-line 1386 lf 24" to 30"CMP and steel.	
55	Eureka (Alt. Site)	Blakemont slide area - Cement-mortar-line 1154 lf 24" to 30"CMP.	
24A	Schmidt	Install new trash rack @ Recycle Center	
14A	Liberty/Blake	Improve Hydraulics @ Liberty X-ing	
17A	Scott/Lawrence	Trash Rack & Poss. Overflow Diversion	
38B	Seaview	Correct Overland Flow Problem	
59A	#400 Seaview	Reconstruct existing inlet	
4A	2643 Arlington	Erosion Control	
27A	King and Shevlin	Replace orroded 24 " CMP in street R/W	
54A	513 Everett Street	150 LF of 4 inch drain line for flooding in local low area	
23A	Portola Street	Overflow Improvements adjacent to Ohlone Greenway	
55D	708 Balra	Correct Overland runoff at side yard of residence	
25A	Moeser / Corp Yard	Access Road to New trash rack on creek	
46A	838 Seaview	Trash Rack at large diameter drain inlet	
56A	7709 Errol Dr.	Patch ex SD and correct surface drainage	
		Year 4 Construction Costs:	$690,473
		TOTAL CONSTRUCTION COSTS 1994 - 1998:	$4,726,818

MAP 2

CITY OF EL CERRITO STORM DRAIN MASTER PLAN UPDATE POSSIBLE FUTURE SITES

MARCH 1999



LEGEND

Existing Storm Drain

Existing Storm Drain Deficiencies

(3) Site Number

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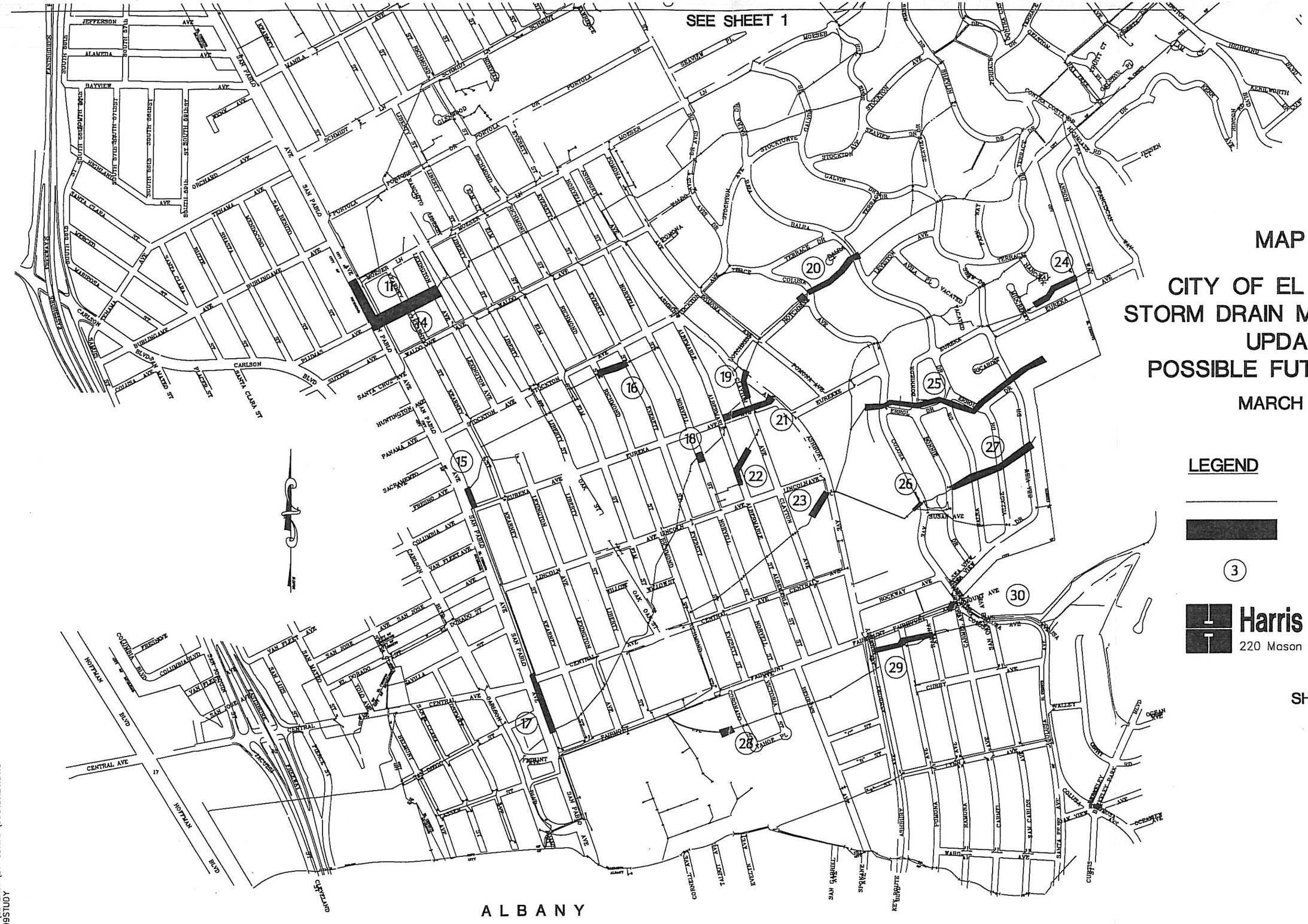
SHT 1 OF 2



MAP 2

CITY OF EL CERRITO STORM DRAIN MASTER PLAN UPDATE POSSIBLE FUTURE SITES

MARCH 1999

LEGEND

- Existing Storm Drain
- Existing Storm Drain Deficiencies
- (3) Site Number

Harris & Associates
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SHT 2 OF 2

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REF: 99STUDY

Storm Drain Master Plan Update 1999

Table 4. Drains with Deficiencies Sorted by Priority

Introduction. The following Table describes each pipe segment in the City's storm drain system and assigns deficiency points in accordance with the revised point system (see Table 3 of the Update). The segments with twelve or more points were grouped geographically into "sites" (or potential projects) and ranked by deficiency points. The Table becomes the basis for creating a Capital Improvement Plan.

Notes Related to Table 4:

1. The designated sites (priority 1 through 30) have been formed by clustering of segments. The clustering of contiguous segments into sites is based on geographic proximity.

2. Below Priority 30, the unclustered segments have been sorted by priority, based on number of deficiency points.

3. Certain Phase I sites, or portions thereof, which have not been completed to date due to earlier budget constraints have been re-evaluated and reinserted into the 1999 Update analysis. They are listed at the end of Table 4.

4. Site Numbers have been assigned, with site numbers being sequenced as follows: Sites are grouped into watersheds that run from north to south. Within each watershed, the sites are numbered from downstream to upstream.

5. Information on the condition of each drain segment will be added to the table at a future date after a program of pipeline video inspection and field review.

6. Cost factors from the 1992 Master Plan have been increased for inflation by a factor of 32%, based on the Bay Area Consumer Price Index. No other cost analysis has been included in this Table.

Table 4 - Drains with Deficiencies Sorted by Priority

Site Number	Drain No. (segment)	Priority of site	D/S Node	U/S Node	Map Page	Diameter or Height	Width (if not round)	Drain Material	Length	Drain Slope	STREET	PRiv. Prop.	10 Year Flow	100 Year Flow	Drain Capacity	Deficiency Points	Est. Req. Diameter	Est. Cost x $1,000	Est. Cost per Site x $1,000	Cumm. Cost x $1,000
25	828.00	1	871.0	0.0	22	18	0	CMP	240	0.10	EL CERRITO HS		21.6	30.9	18.0	9	18	31		
25	829.00	1	0.0	881.0	23	30	0	CMP	112	0.10	COLUSA AVE	PR	21.6	30.9	93.7	25	18	19		
25	830.00	1	0.0	0.0	23	30	0	CMP	58	0.10	COLUSA AVE	PR	18.3	26.1	93.7	25	15	8		
25	831.00	1	0.0	0.0	23	30	0	CMP	242	0.10	BONNIE DR	PR	18.3	26.1	93.7	25	15	35		
25	833.00	1	0.0	882.0	23	30	0	CMP	216	0.10	ERROL DR	PR	18.3	26.1	93.7	25	15	31		
25	835.00	1	0.0	0.0	23	30	0	CMP	126	0.10	BALRA DR	PR	7.0	9.9	93.7	25	12	15		
25	836.00	1	0.0	0.0	23	24	0	CMP	118	0.10	ERROL DR	PR	7.0	9.9	51.7	25	12	14		
25	836.10	1			23	24		CMP	40	0.10	ERROL	PR	7.0	9.9	71.5	25	12	5		
25	836.20	1			23	27		CMP	55	0.10	ERROL	PR	7.0	9.9	70.7	25	12	7		
25	836.30	1			23	24		CMP	42	0.10	ERROL	PR	7.0	9.9	51.7	25	12	5		
25	836.40	1			23	27		CMP	28	0.10	ERROL	PR	7.0	9.9	70.7	25	12	3		
25	836.50	1			23	24		CMP	44	0.10	ERROL	PR	7.0	9.9	51.7	25	12	5		
25	836.60	1			23	27		CMP	61	0.10	ERROL	PR	7.0	9.9	70.7	25	12	7		
25	837.00	1	0.0	0.0	23	24	0	CMP	45	0.10	SEAVIEW DR	PR	7.0	9.9	51.7	25	12	5		
25	838.00	1	0.0	883.0	22	24	0	CMP	126	0.10	SEAVIEW DR	PR	7.0	9.9	38.8	7	12	15		
25	854.20	1			23	15		CMP	207	0.08	BALRA	PR	7.9	11.2	23.8	25	12	25		
25	854.40	1			23	12		CMP	190	0.08	VILLAGE	PR	4.1	5.9	13.1	25	12	23		
																		0	253	253
24	826.00	2	0.0	0.0	23	22	0	CMP	706	0.10	EUREKA AVE	PR	38.9	55.7	41.0	25	21	17		
																		0	17	270
2	77.00	3	0.0	223.0	11	12	0	CMP	124	0.05	TAMALPAIS AVE		19.9	28.5	8.0	25	15	3		
																		0	3	273
27	845.00	4	0.0	885.0	22	30	0	CMP	30	0.10	BONNIE DR	PR	120.9	174.2	70.3	1	30	9		
27	847.00	4	0.0	0.0	22	36	0	CMP	50	0.10	BALRA DR		117.8	169.7	114.3	12	30	11		
27	848.30	4			22	30		CMP	20	0.15	VILLAGE		114.8	165.4	86.1	19	27	4		
27	850.00	4	0.0	887.0	22	30	0	CMP	35	0.10	VILLAGE DR	PR	114.8	165.4	70.3	24	30	10		
27	850.10	4			22	30		CMP	15	0.10	VILLAGE		112.6	162.2	70.3	20	30	3		
27	852.00	4	0.0	0.0	22	30	0	CMP	135	0.17	SEAVIEW DR	PR	112.6	162.2	92.1	22	27	36		
27	853.00	4	0.0	888.0	22	30	0	CMP	65	0.93	SEAVIEW DR		112.6	162.2	214.3	12	21	10		

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Site Number	Drain No. (segment)	Priority of site	D/S Node	U/S Node	Map Page	Diameter or Height	Width (if not round)	Drain Material	Length	Drain Slope	STREET	PRiv. Prop.	10 Year Flow	100 Year Flow	Drain Capacity	Deficiency Points	Est. Req. Diameter	Est. Cost x $1,000	Est. Cost per Site x $1,000	Cumm. Cost x $1,000
6	194.00	5	0.0	0.0	9	24	0	CMP	336	0.04	ELM ST	PR	58.3	83.6	24.5	21	27	0 28	82	355
11	440.00	6	0.0	703.0	7	48	0	CMP	360	0.01	SAN PABLO AVE		214.9	311.4	77.8	21	60	0 142	28	383
11	442.00	6	703.0	704.0	7	48	0	CMP	25	0.01	MOESER LN		133.8	193.9	77.8	20	48	8		
12	472.00	7	0.0	712.0	16	36	0	CMP	60	0.04	SCHMIDT LN		188.2	271.3	72.3	21	42	0 18	150	533
13	475.00	7	0.0	0.0	16	30	0	CMP	750	0.15	HILLSIDE PK		156.3	224.9	86.1	20	30	163	18	551
28	872.00	8	0.0	0.0	13	18	60	CMP	45	0.02	BART		191.7	277.4	45.5	21	48	0 15	163	714
18	693.00	9	0.0	0.0	14	48	0	CMP	50	0.03	NORVELL ST		169.7	244.5	134.8	19	42	0 15	15	728
19	698.00	10	0.0	0.0	15	48	0	CMP	140	0.03	CLAYTON ST		160.7	231.5	134.8	18	42	0 41	15	743
19	699.00	10	0.0	837.0	15	48	0	CMP	60	0.03	ASHBURY AVE		160.7	231.5	134.8	18	42	18		
26	842.00	11	0.0	884.0	22	36	0	CMP	60	0.10	COLUSA AVE		135.2	194.9	114.3	18	36	0 16	59	802
7	248.00	12	0.0	514.0	9	36	0	CMP	35	0.04	WALNUT ST		90.9	131.3	67.6	16	36	0 9	16	818
20	710.00	13	0.0	0.0	23	48	0	CMP	40	0.08	HOTCHKISS AVE	PR	133.9	192.6	220.1	16	36	0 14	9	828
20	712.00	13	0.0	840.0	23	48	0	CMP	40	0.08	COLUSA AVE		133.9	192.6	220.1	12	36	11		
20	714.00	13	0.0	841.0	23	48	0	CMP	50	0.08	BALRA DR		127.9	183.9	220.1	12	36	13		
8	307.00	14	539.0	0.0	9	16	25	CMP	54	0.02	POTRERO AVE		31.4	44.9	13.4	15	24	0 9	38	866
8	308.00	14	0.0	0.0	9	16	25	CMP	71	0.02	POTRERO AVE		31.4	44.9	13.4	15	24	12		
17	641.00	15	810.0	812.0	13	30	0	CMP	480	0.00	SAN PABLO AVE		35.7	51.6	14.9	15	36	0 128	21	887

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																		0	128	1,014
15	644.00	16	0.0	0.0	14	24	0	CMP	150	0.01	SAN PABLO AVE		30.4	43.7	14.0	15	27	30		
																		0	30	1,044
30	885.00	17	0.0	0.0	22	15	0	CMP	40	0.03	FAIRMOUNT AVE		26.5	37.8	6.1	15	21	6		
																		0	6	1,050
3	107.00	18	0.0	0.0	11	18	0	CMP	170	0.10	GLORIA ST	PR	24.5	35.0	18.0	11	18	29		
3	108.00	18	0.0	0.0	11	15	0	CMP	110	0.10	JORDAN AVE	PR	24.5	35.0	11.1	13	18	19		
3	109.00	18	0.0	313.0	11	15	0	CMP	40	0.10	JORDAN AVE		24.5	35.0	11.1	12	18	5		
																		0	53	1,103
5	139.00	19	400.0	402.0	1	48	0	RCP	130	0.00	CYPRESS AVE	PR	162.9	236.0	78.7	13	72	84		
																		0	84	1,187
[illegible]	[illegible]0	20	0.0	0.0	7	30	0	VCP	50	0.02	SAN PABLO AVE	PR	112.4	162.3	58.0	12	42	20		
[illegible]	[illegible]0	20	0.0	0.0	7	21	0	VCP	165	0.02	KEARNEY ST	PR	112.4	162.3	22.4	13	42	65		
[illegible]	[illegible]0	20	0.0	744.0	7	21	0	VCP	30	0.02	KEARNEY ST		112.4	162.3	22.4	9	36	8		
[illegible]	[illegible]0	20	0.0	745.0	7	21	0	VCP	220	0.02	KEARNEY ST	PR	111.6	161.1	22.4	13	42	87		
[illegible]	[illegible]	20	0.0	0.0	15	21	0	VCP	130	0.02	LEXINGTON AVE	PR	111.8	161.2	22.4	13	42	51		
																		0	231	1,418
[illegible]	[illegible]	21	0.0	0.0	11	18	0	CMP	50	0.05	BARRETT AVE	PR	23.0	33.3	12.7	12	18	9		
[illegible]	[illegible]	21	0.0	220.0	11	18	0	CMP	36	0.05	BARRETT AVE		23.0	33.3	12.7	11	18	5		
[illegible]	[illegible]	21	0.0	0.0	11	18	0	CMP	80	0.05	BARRETT AVE		19.8	28.6	12.1	11	18	10		
[illegible]	[illegible]	21	0.0	0.0	11	18	0	CMP	110	0.05	TAMALPAIS AVE	PR	19.8	28.6	12.7	12	18	19		
																		0	42	1,460
[illegible]	[illegible]	22	0.0	0.0	11	12	0	RCP	100	0.10	MIRA VISTA DR	PR	16.0	22.9	11.3	5	15	14		
[illegible]	[illegible]	22	0.0	315.0	11	12	0	CMP	30	0.10	MIRA VISTA DR		16.0	22.9	6.1	12	15	3		
[illegible]	[illegible]	22	0.0	0.0	11	12	0	RCP	150	0.20	MIRA VISTA DR	PR	9.5	13.6	15.9	1	12	18		
4	117.00	22	0.0	316.0	11	12	0	CMP	40	0.05	CARQUINEZ AVE		9.5	13.6	4.3	1	15	4		
																		0	40	1,500
9	390.00	23	0.0	628.0	18	24	0	CMP	115	0.05	EBMUD RESERVOIR		30.3	43.3	27.4	12	21	17		

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Site Number	Drain No. (segment)	Priority of site	D/S Node	U/S Node	Map Page	Diameter or Height	Width (if not round)	Drain Material	Length	Drain Slope	STREET	PRiv. Prop.	10 Year Flow	100 Year Flow	Drain Capacity	Deficiency Points	Est. Req. Diameter	Est. Cost x $1,000	Est. Cost per Site x $1,000	Cumm. Cost x $1,000
																		0	17	1,517
10	415.20	24		642.0	8	1	2	CMP	40	0.02	RICHMOND ST		9.7	13.8	3.0	12	18	5		
10	416.00	24	0.0	643.0	8	12	0	CMP	30	0.02	RICHMOND ST	PR	4.3	6.1	2.7	12	12	4		
																		0	9	1,526
16	663.00	25	0.0	0.0	15	15	0	CMP	140	0.02	RICHMOND ST	PR	7.6	10.8	4.8	12	15	20		
16	664.00	25	0.0	0.0	15	15	0	CMP	25	0.02	EVERETT ST	PR	7.6	10.8	4.8	12	15	4		
16	665.00	25	0.0	0.0	15	15	0		100	0.02	EVERETT ST	PR	7.6	10.8	4.8	6	15	14		
																		0	38	1,564
21	767.00	27	836.0	0.0	14	12	0	CMP	245	0.02	EUREKA AVE		7.3	10.4	2.7	12	15	26		
21	768.00	27	0.0	0.0	14	12	0	CMP	50	0.02	EUREKA AVE		7.3	10.4	2.7	12	15	5		
21	769.00	27	0.0	0.0	22	15	0	CMP	120	0.02	EUREKA AVE		7.3	10.4	5.0	10	15	13		
																		0	45	1,609
22	778.00	28	0.0	862.0	14	15	0	CMP	50	0.02	ALBEMARLE ST		12.1	17.3	5.0	12	18	6		
22	779.00	28	0.0	0.0	14	15	0	CMP	300	0.02	ALBEMARLE ST	PR	6.2	8.8	5.0	11	15	43		
22	780.00	28	0.0	863.0	14	15	0	CMP	35	0.02	CLAYTON ST		6.2	8.8	5.0	10	15	4		
																		0	54	1,663
23	796.00	29	0.0	0.0	22	42	0	RCP	210	0.02	ASHBURY AVE	PR	222.7	321.5	142.3	12	54	102		
																		0	102	1,765
29	890.00	30	0.0	903.0	21	36	0	RCP	230	0.03	ASHBURY AVE	PR	164.3	237.4	107.6	12	48	100		
29	891.00	30	0.0	0.0	21	36	0	RCP	40	0.02	POMONA AVE		164.7	237.8	103.3	8	30	9		
																		0	109	1,874
n/a	180.00		0.0	419.0	10	9	0	CMP	540	0.10	CUTTING BLVD	PR	5.6	8.0	2.8	12	12	64		
n/a	11.00		0.0	0.0	4	18	0	CMP	20	0.05	YUBA AVE	PR	16.6	23.8	12.7	11	18	3		
n/a	58.00		0.0	0.0	12	12	0	CMP	70	0.05	LA HONDA AVE		8.1	11.6	4.3	11	15	8		
n/a	135.00		0.0	326.0	11	18	0	CMP	45	0.05	ARLINGTON BLVD		20.3	29.2	12.7	11	18	6		
n/a	138.00		0.0	328.0	11	12	0	CMP	730	0.05	LAGUNITAS AVE		8.4	12.0	4.3	11	15	79		
n/a	338.00		0.0	607.0	9	36	0	RCP	210	0.03	EVERETT ST	PR	158.5	228.7	115.5	11	42	83		
n/a	381.00		0.0	0.0	17	24	0	RCP	85	0.03	NAVELLIER ST	PR	77.5	111.3	37.2	11	36	30		
n/a	482.00		0.0	719.0	25	12	0	CMP	240	0.10	CONTRA COSTA DR		11.8	16.9	6.1	11	15	26		
n/a	668.00		810.0	827.0	13	3	5	RCB	215	0.01	SAN PABLO AVE	PR	224.8	324.9	164.2	11	60	113		

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n/a	892.00		0.0	0.0	21	36	0	RCP	225	0.04	POMONA AVE	PR	164.7	237.8	128.6	11	42	89		
n/a	10.00		103.0	0.0	4	18	0	CMP	65	0.05	YUBA AVE		16.6	23.8	12.7	10	18	8		
n/a	141.00		0.0	403.0	1	43	68	HECP	218	0.00	CYPRESS AVE	PR	165.1	239.1	136.2	10	60	115		
n/a	206.00		0.0	431.0	10	15	0	CMP	80	0.07	CUTTING BLVD		12.9	18.4	9.3	10	15	9		
n/a	486.00		0.0	721.0	25	12	0	CMP	100	0.05	BREWSTER DR		5.8	8.2	4.3	10	12	9		
n/a	654.00		0.0	819.0	14	12	0	CMP	270	0.03	LIBERTY ST		5.0	7.1	3.4	10	12	24		
n/a	670.00		0.0	0.0	13	3	6	RCB	270	0.01	KEARNY ST	PR	228.1	329.5	189.7	10	60	142		
n/a	757.00		0.0	0.0	23	24	0	CMP	270	0.10	TERRACE DR	PR	34.0	48.6	38.8	10	21	53		
n/a	770.00		0.0	860.0	22	15	0	CMP	40	0.02	ASHBURY AVE		7.3	10.4	5.0	10	15	4		
n/a	804.00		0.0	873.0	23	30	0	CMP	110	0.10	COLUSA AVE		69.3	99.6	70.3	10	24	19		
n/a	806.00		0.0	874.0	23	30	0	CMP	80	0.10	BALRA AVE		65.6	94.1	70.3	10	24	13		
n/a	827.00		0.0	880.0	23	24	0	CMP	35	0.10	EUREKA AVE	PR	38.9	55.7	38.8	10	21	7		
n/a	877.00		0.0	0.0	13	42	0	PVC	76	0.02	VICTORIA PL	PR	187.8	271.5	168.0	10	54	37		
n/a	895.00		0.0	0.0	22	36	0	VCP	110	0.05	CARMEL AVE	PR	164.7	237.8	141.5	10	42	43		
n/a	9.00		0.0	105.0	4	24	0	RCP	60	0.05	YUBA AVE	PR	71.7	103.2	50.6	9	30	17		
n/a	47.00		0.0	210.0	11	21	0	RCP	510	0.08	BARRETT AVE	PR	65.9	95.2	44.8	9	27	134		
n/a	48.00		0.0	211.0	11	21	0	RCP	80	0.07	CARQUINEZ AVE	PR	55.7	80.4	41.9	9	24	18		
n/a	50.00		211.0	213.0	11	21	0	RCP	140	0.07	TASSAJARA PARK	PR	52.6	76.0	41.9	9	24	31		
n/a	140.00		0.0	0.0	1	3	4	RCB	50	0.00	CYPRESS AVE		165.1	239.1	67.8	9	54	18		
n/a	144.00		0.0	0.0	1	28	80	TRB	40	0.01	POTRERO AVE		165.6	239.4	61.8	9	54	15		
n/a	145.00		0.0	0.0	1	48	0	RCP	195	0.00	POTRERO AVE		165.6	239.4	60.9	9	60	77		
n/a	329.20			604.2	9	42		RCP	11	0.00	GLADYS		158.3	228.7	59.5	9	54	4		
n/a	436.00		700.0	0.0	7	3	4	2RCB	0	0.01	SANTA CRUZ AVE		340.1	493.2	162.1	9	54	0		
n/a	443.00		0.0	705.0	7	24	0	CMP	300	0.01	SAN PABLO AVE		14.7	21.1	12.3	9	21	44		
n/a	508.00		0.0	729.0	25	12	0	CMP	70	0.05	ARLINGTON PK		5.1	7.3	4.3	9	12	6		
n/a	562.00		0.0	745.9	15	8	9	RCC	50	0.02	BART		111.8	161.2	24.0	9	36	13		
n/a	591.00		0.0	766.0	15	24	0	RCP	230	0.04	ASHBURY AVE	PR	67.3	96.8	46.5	9	30	67		
n/a	633.00		0.0	0.0	13	3	7	RCB	285	0.00	CARLSON BLVD		260.3	377.4	80.6	9	72	138		
n/a	634.00		0.0	0.0	13	3	7	RCB	140	0.00	CARLSON BLVD		260.3	377.4	80.6	9	72	68		
n/a	781.00		808.0	0.0	13	48	0	RCP	420	0.01	FAIRMOUNT AVE		234.1	339.0	111.3	9	54	154		
n/a	785.00		0.0	0.0	13	42	0	RCP	260	0.01	RICHMOND ST		233.9	338.4	90.0	9	54	95		
n/a	786.00		0.0	865.0	13	42	0	RCP	345	0.01	RICHMOND ST		233.9	338.4	77.9	9	60	136		
n/a	788.10		865.0		14	3	5	RCB	48	0.00	CENTRAL		236.0	341.2	106.4	9	60	19		
n/a	788.30			867.0	14	3	5	RCB	252	0.00	CENTRAL		236.0	341.2	97.2	9	60	100		
n/a	894.00		0.0	0.0	21	36	0	RCP	97	0.02	RAMONA AVE	ES	164.7	237.8	81.7	9	42	29		
n/a	897.00		0.0	0.0	22	36	0	RCP	125	0.01	PK		161.2	232.7	78.9	9	42	37		

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n/a	142.00		0.0	0.0	1	48	0	RCP	99	0.01	SCHOOL ST		165.6	239.4	101.6	8	42	29		
n/a	143.00		0.0	0.0	1	48	0	RCP	120	0.00	POTRERO AVE		165.6	239.4	93.1	8	48	39		
n/a	146.00		0.0	0.0	1	48	0	RCP	108	0.01	GORDON AVE		165.6	239.4	103.6	8	42	32		
n/a	147.00		0.0	404.0	1	48	0	RCP	240	0.01	GORDON AVE		165.6	239.4	103.6	8	42	71		
n/a	181.50				9	2	3	2RCB	184	0.00	HILL		83.1	119.4	9.8	8	72	89		
n/a	187.00		0.0	0.0	9	27	0	RCP	93	0.01	LIBERTY ST		66.8	95.8	31.7	8	30	20		
n/a	195.00		0.0	424.0	10	24	0	RCP	91	0.05	WALNUT ST	PR	58.3	83.6	50.6	8	27	24		
n/a	271.00		0.0	524.0	18	48	0	CMP	95	0.05	ARLINGTON BLVD		28.9	41.5	174.0	8	21	14		
n/a	272.00		0.0	0.0	18	42	0	CMP	50	0.05	ARLINGTON BLVD		25.5	36.6	121.9	8	21	7		
n/a	317.00		600.0	0.0	8	42	0	RCP	820	0.02	CARLOS AVE		239.8	346.7	130.0	8	42	243		
n/a	325.00		0.0	0.0	9	42	0	RCP	75	0.01	GLADYS AVE		157.8	228.0	100.6	8	36	20		
n/a	326.00		0.0	0.0	9	42	0	RCP	135	0.01	GLADYS AVE		157.8	228.0	100.6	8	36	36		
n/a	333.30				9	42		RCP	55	0.01	EVERETT		158.5	228.7	100.6	8	36	15		
n/a	333.40				9	42		RCP	23	0.01	EVERETT		158.5	228.7	100.6	8	36	6		
n/a	340.00		607.0	609.0	9	36	0	RCP	40	0.02	NORVELL ST		153.9	222.0	94.3	8	36	11		
n/a	418.00		0.0	0.0	8	24	0	RCP	170	0.01	BART		50.5	72.3	22.6	8	27	34		
n/a	437.00		0.0	0.0	7	4	4	RCB	80	0.01	SAN PABLO AVE		340.1	493.2	182.9	8	54	29		
n/a	438.00		0.0	701.0	7	3	7	RCB	150	0.01	SAN PABLO AVE		340.1	493.2	220.0	8	48	49		
n/a	446.00		704.0	707.0	7	2	4	RCB	150	0.01	MOESER LN		122.9	178.0	69.8	8	36	40		
n/a	466.00		0.0	710.0	16	36	0	RCP	310	0.04	SCHMIDT LN		200.1	288.6	128.3	8	30	67		
n/a	467.00		0.0	711.0	16	36	0	RCP	250	0.04	SCHMIDT LN		195.0	281.1	128.3	8	30	54		
n/a	589.00		0.0	765.0	15	24	0	RCP	120	0.01	WALDO AVE		70.5	101.5	26.8	8	30	26		
n/a	590.00		0.0	0.0	15	24	0	RCP	270	0.02	ASHBURY AVE		67.3	96.8	27.7	8	30	59		
n/a	606.00		0.0	772.0	15	30	0	CMP	50	0.05	BALRA DR		29.1	41.8	49.7	8	21	7		
n/a	623.00		0.0	803.0	13	3	5	2RCB	170	0.01	ADAMS ST		513.6	745.4	311.6	8	60	67		
n/a	630.00		803.0	807.0	13	3	5	2RCB	260	0.01	CARLSON BLVD		491.1	712.6	274.8	8	60	103		
n/a	631.00		0.0	807.9	13	3	5	2RCB	530	0.01	SAN PABLO AVE		483.4	701.0	274.8	8	60	209		
n/a	637.00		0.0	809.0	13	3	5	RCB	40	0.01	SAN PABLO AVE		289.8	419.7	164.2	8	48	13		
n/a	638.00		0.0	810.0	13	3	5	RCB	200	0.01	SAN PABLO AVE		283.7	410.8	164.2	8	48	65		
n/a	699.50			838.0	15	42		RCP	39	0.01	POMONA		158.6	228.2	100.6	8	36	10		
n/a	727.00		0.0	0.0	24	24	0	CMP	90	0.10	SHEVLIN DR		30.0	43.0	38.8	8	18	12		
n/a	751.00		852.0	0.0	23	48	0	CMP	25	0.05	HUBER PK		35.9	51.5	174.0	8	24	4		
n/a	756.00		0.0	855.0	23	36	0	CMP	50	0.05	TERRACE DR		36.4	52.1	80.8	8	24	8		
n/a	759.00		0.0	856.0	24	24	0	CMP	80	0.10	CONTRA COSTA DR		34.0	48.6	38.8	8	21	12		
n/a	783.00		0.0	0.0	13	48	0	RCP	65	0.01	FAIRMOUNT AVE		234.1	339.0	143.6	8	42	19		
n/a	784.00		0.0	864.0	13	42	0	RCP	300	0.02	FAIRMOUNT AVE		234.1	339.0	149.2	8	36	80		

Table 4 - Drains with Deficiencies Sorted by Priority

Site Number	Drain No. (segment)	Priority of site	D/S Node	U/S Node	Map Page	Diameter or Height	Width (if not round)	Drain Material	Length	Drain Slope	STREET	PRiv. Prop.	10 Year Flow	100 Year Flow	Drain Capacity	Deficiency Points	Est. Req. Diameter	Est. Cost x $1,000	Est. Cost per Site x $1,000	Cumm. Cost x $1,000
n/a	784.20		0.0	0.0	13	42	0	RCP	280	0.02	FAIRMOUNT AVE		233.9	338.4	149.2	8	36	74		
n/a	907.00		0.0	908.0	21	24	0	VCP	600	0.02	ALBANY SCH		86.7	124.4	28.6	8	36	160		
n/a	908.00		0.0	909.0	21	24	0	VCP	520	0.02	BEHRENS AVE		73.9	106.0	34.3	8	27	103		
n/a	8.00		0.0	104.0	4	24	0	RCP	50	0.05	YUBA AVE		77.9	112.1	50.6	7	21	7		
n/a	78.00		0.0	0.0	11	12	0	RCP	230	0.05	TAMALPAIS AVE	PR	16.8	24.1	8.0	7	18	39		
n/a	87.00		0.0	0.0	11	15	0	CMP	150	0.05	JORDAN AVE	PR	5.1	7.2	7.8	7	12	18		
n/a	168.00		0.0	0.0	10	11	0	CML	125	0.05	HAGEN BLVD	PR	12.0	17.1	4.6	7	15	18		
n/a	169.00		0.0	0.0	10	11	0	CML	135	0.05	HARPER ST	PR	12.0	17.1	4.6	7	15	20		
n/a	181.40			420.0	9	2	3	2RCB	74	0.00	HILL		89.8	129.5	57.7	7	36	20		
n/a	197.20				10	21		CML	116	0.10	WALNUT ST		56.1	80.4	36.2	7	15	13		
n/a	201.00		0.0	428.0	10	20	0	CML	246	0.10	SNOWDON AVE	PR	45.8	65.6	31.8	7	21	49		
n/a	321.00		0.0	0.0	8	48	0	RCP	126	0.01	KEARNY ST		226.2	326.9	157.4	7	36	34		
n/a	327.00		0.0	603.2	9	42	0	RCP	145	0.01	GLADYS AVE		157.8	228.0	114.7	7	30	32		
n/a	407.00		0.0	0.0	17	24	0	CMP	100	0.05	NAVELLIER ST	PR	17.7	25.4	27.4	7	18	17		
n/a	417.00		0.0	0.0	8	24	0	RCP	300	0.02	BART		50.5	72.3	29.5	7	24	51		
n/a	419.00		0.0	644.0	8	24	0	RCP	145	0.02	BART		50.5	72.3	27.7	7	24	24		
n/a	420.00		0.0	645.0	8	15	0	RCP	240	0.02	MANILA AVE		47.7	68.3	7.9	7	30	52		
n/a	421.00		0.0	0.0	8	15	0	RCP	290	0.02	MANILA AVE		39.5	56.4	8.4	7	27	57		
n/a	422.00		0.0	646.0	8	15	0	RCP	250	0.03	MANILA AVE		39.5	56.4	10.8	7	24	42		
n/a	423.00		0.0	647.0	16	15	0	RCP	480	0.04	MANILA AVE		30.6	43.7	12.9	7	18	62		
n/a	441.00		0.0	706.9	7	24	0	RCP	150	0.04	MOESER LN		81.9	118.7	45.2	7	24	25		
n/a	447.00		0.0	0.0	7	48	0	RCP	20	0.01	MOESER LN		208.2	301.3	143.6	7	36	5		
n/a	450.00		0.0	0.0	7	48	0	RCP	500	0.01	MOESER LN		208.2	301.3	143.6	7	36	133		
n/a	451.00		0.0	0.0	7	48	0	RCP	130	0.01	PORTOLA DR		208.2	301.3	143.6	7	36	35		
n/a	458.70				8	2	4	RCB	151	0.01	SCHMIDT LN		96.2	138.9	49.8	7	36	40		
n/a	458.90			709.2	16	2	4	RCB	198	0.01	SCHMIDT LN		96.2	138.9	49.4	7	36	53		
n/a	461.00		0.0	709.3	16	24	0	PL	56	0.04	SCHMIDT LN		96.2	138.9	61.7	7	24	9		
n/a	468.00		0.0	0.0	16	36	0	RCP	140	0.04	SCHMIDT LN		188.2	271.3	133.4	7	27	28		
n/a	469.00		0.0	0.0	16	36	0	RCP	100	0.04	SCHMIDT LN		188.2	271.3	133.4	7	27	20		
n/a	470.00		0.0	0.0	16	36	0	RCP	80	0.04	SCHMIDT LN		188.2	271.3	133.4	7	27	16		
n/a	488.00		0.0	722.0	24	30	0	RCP	110	0.01	DUKE CT		89.7	129.0	48.5	7	30	24		
n/a	525.00		0.0	0.0	25	18	0	CMP	210	0.05	DON CAROL DR	PR	12.0	17.1	12.7	7	15	30		
n/a	526.00		0.0	0.0	25	18	0	CMP	65	0.05	ARBOR DR	PR	12.0	17.1	12.7	7	15	9		
n/a	564.00		0.0	747.0	15	21	0	RCP	130	0.02	BART		45.5	65.3	22.4	7	24	22		
n/a	565.00		0.0	0.0	15	15	0	RCP	180	0.02	MOESER LN		45.1	64.7	9.1	7	27	36		
n/a	566.00		0.0	748.0	15	15	0	RCP	40	0.02	MOESER LN		45.1	64.7	9.1	7	27	8		

Table 4 - Drains with Deficiencies Sorted by Priority

Site Number	Drain No. (segment)	Priority of site	D/S Node	U/S Node	Map Page	Diameter or Height	Width (if not round)	Drain Material	Length	Drain Slope	STREET	PRiv. Prop.	10 Year Flow	100 Year Flow	Drain Capacity	Deficiency Points	Est. Req. Diameter	Est. Cost x $1,000	Est. Cost per Site x $1,000	Cumm. Cost x $1,000
n/a	567.00		0.0	749.0	15	15	0	RCP	300	0.03	MOESER LN		40.7	58.3	11.2	7	24	51		
n/a	568.00		0.0	750.0	15	15	0	RCP	200	0.03	MOESER LN		37.8	54.1	11.2	7	21	29		
n/a	569.00		0.0	0.0	15	15	0	RCP	270	0.03	MOESER LN		33.4	47.7	11.2	7	21	40		
n/a	570.00		0.0	0.0	15	15	0	RCP	200	0.06	MOESER LN		33.4	47.7	15.2	7	18	26		
n/a	571.00		0.0	751.0	15	15	0	RCP	50	0.05	MOESER LN		33.4	47.7	14.4	7	18	6		
n/a	586.00		0.0	0.0	15	27	0	RCP	125	0.02	WALDO AVE		72.3	104.1	40.4	7	27	25		
n/a	619.00		0.0	0.0	24	24	0	CMP	110	0.05	GALVIN DR	PR	5.4	7.7	27.4	7	12	13		
n/a	620.00		0.0	0.0	24	30	0	CMP	380	0.05	GALVIN DR	PR	5.4	7.7	49.7	7	12	45		
n/a	621.00		0.0	778.0	24	30	0	CMP	100	0.05	SEAVIEW DR	PR	5.4	7.7	49.7	7	12	12		
n/a	635.00		0.0	0.0	13	4	8	RCB	220	0.00	LASSEN ST		260.3	377.4	198.2	7	48	72		
n/a	639.00		0.0	811.0	13	24	0	RCP	472	0.00	SAN PABLO AVE		38.1	55.1	15.2	7	30	103		
n/a	639.20		0.0	0.0	13	24	0	RCP	150	0.00	SAN PABLO AVE		34.3	49.4	15.2	7	27	30		
n/a	639.30		0.0	0.0	13	24	0	RCP	650	0.00	SAN PABLO AVE		34.3	49.4	15.2	7	27	128		
n/a	639.50		0.0	0.0	14	24	0	RCP	448	0.00	SAN PABLO AVE		34.3	49.4	15.2	7	27	88		
n/a	640.00		0.0	812.9	14	24	0	RCP	448	0.00	SAN PABLO AVE		34.3	49.4	15.2	7	27	88		
n/a	643.00		0.0	813.0	14	24	0	VCP	690	0.00	SAN PABLO AVE		34.3	49.4	14.3	7	30	150		
n/a	656.00		0.0	820.0	14	21	0	CMP	220	0.03	LIBERTY ST	PR	14.3	20.5	13.6	7	18	38		
n/a	669.00		0.0	0.0	13	3	6	RCB	50	0.01	KEARNY ST		228.1	329.5	157.7	7	42	15		
n/a	692.20				14	3	5	RCB	43	0.01	LINCOLN		172.2	248.2	116.1	7	42	13		
n/a	699.30				15	42		RCP	19	0.01	ASHBURY		158.6	228.2	117.8	7	30	4		
n/a	848.10				22	30		RCP	95	0.04	BALRA		114.8	165.4	80.0	7	24	16		
n/a	882.00		0.0	900.0	21	18	0	RCP	260	0.02	ASHBURY AVE		34.7	49.5	13.0	7	24	44		
n/a	883.00		0.0	0.0	21	15	0	RCP	70	0.03	FAIRMOUNT AVE		26.5	37.8	11.2	7	18	9		
n/a	884.00		0.0	0.0	21	15	0	RCP	660	0.03	FAIRMOUNT AVE		26.5	37.8	11.4	7	18	85		
n/a	893.10		0.0	0.0	21	36	0	RCP	20	0.03	RAMONA AVE		164.7	237.8	115.5	7	27	4		
n/a	896.00		0.0	904.0	22	36	0	RCP	32	0.03	CARMEL AVE		164.7	237.8	111.6	7	30	7		
n/a	909.00		0.0	910.0	21	21	0	VCP	250	0.04	LYNN AVE		60.5	86.7	32.9	7	21	37		
n/a	21.00		0.0	109.0	12	10	0		60	0.05	MIRA VISTA DR		10.1	14.5	2.7	6	12	5		
n/a	23.00		0.0	0.0	12	12	0	TC	110	0.05	FRANCISCO WAY	PR	8.0	11.4	4.3	6	15	16		
n/a	27.00		0.0	0.0	12	12	0	CMP	240	0.05	CARQUINEZ AVE		2.2	3.1	4.3	6	12	21		
n/a	28.00		0.0	112.0	12	12	0	CMP	25	0.05	TASSAJARA AVE		2.2	3.1	4.3	6	12	2		
n/a	35.10				11	24		2HDP	77	0.01	POINSETT		85.8	124.3	58.8	6	27	15		
n/a	42.20				11	33		RCP	71	0.01	POINSETT		77.7	112.3	52.9	6	27	14		
n/a	79.00		0.0	224.0	11	12	0	RCP	30	0.05	ARLINGTON BLVD		16.8	24.1	8.0	6	15	3		
n/a	80.00		202.0	0.0	3	12	0	RCP	85	0.05	POINSETT AVE	PR	14.7	21.0	8.0	6	18	15		
n/a	93.00		302.0	304.0	2	36	0	RCP	85	0.01	CONLON AVE		86.7	125.0	66.7	6	24	14		

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Site Number	Drain No. (segment)	Priority of site	D/S Node	U/S Node	Map Page	Diameter or Height	Width (if not round)	Drain Material	Length	Drain Slope	STREET	PRiv. Prop.	10 Year Flow	100 Year Flow	Drain Capacity	Deficiency Points	Est. Req. Diameter	Est. Cost x $1,000	Est. Cost per Site x $1,000	Cumm. Cost x $1,000
n/a	137.00		0.0	327.0	11	12	0		120	0.05	LAGUNITAS AVE		12.3	17.6	4.3	6	12	11		
n/a	173.00		0.0	416.0	10	15	0	CMP	45	0.05	TAPSCOTT AVE		2.6	3.7	7.8	6	12	4		
n/a	181.00		406.0	0.0	1	36	0	RCP	390	0.01	HILL ST		89.8	129.5	66.7	6	27	77		
n/a	200.00		0.0	427.0	10	21	0	CML	258	0.10	SNOWDON AVE		51.0	73.0	36.2	6	15	28		
n/a	216.00		0.0	435.0	11	24	0	CMP	40	0.05	ARLINGTON BLVD		10.8	15.4	27.4	6	15	4		
n/a	220.00		500.0	0.0	8	4	4	RCB	110	0.01	S 56TH ST		175.7	254.5	153.0	6	27	22		
n/a	221.00		0.0	502.0	8	4	4	RCB	60	0.01	S 56TH ST		175.7	254.5	153.0	6	27	12		
n/a	223.00		502.0	504.0	8	4	4	RCB	210	0.01	S 56TH ST		170.4	246.8	153.0	6	24	35		
n/a	235.00		0.0	509.0	9	2	4	RCB	25	0.02	LEXINGTON AVE		98.2	142.0	72.5	6	24	4		
n/a	262.00		0.0	0.0	10	21	0	RCP	70	0.10	HILLSIDE PK		69.7	100.4	50.1	6	15	8		
n/a	263.00		0.0	520.0	10	21	0	RCP	70	0.10	HILLSIDE PK		69.7	100.4	50.1	6	15	8		
n/a	268.00		0.0	523.0	18	18	0	CMP	270	0.05	ARLINGTON BLVD		7.1	10.2	12.7	6	12	24		
n/a	280.00		0.0	0.0	19	15	0	RCP	100	0.02	PEBBLE BEACH DR	PR	14.5	20.8	9.1	6	18	17		
n/a	285.00		0.0	0.0	19	12	0	RCP	90	0.02	MIRA VISTA CC	PR	8.0	11.5	5.0	6	15	13		
n/a	291.00		0.0	530.0	18	12	0	RCP	160	0.05	ARLINGTON BLVD		16.5	23.7	8.0	6	15	17		
n/a	295.00		531.0	533.0	9	18	0	RCP	650	0.03	BLAKE ST		29.1	41.8	16.6	6	18	84		
n/a	296.00		0.0	534.0	9	18	0	RCP	500	0.03	BLAKE ST		28.7	41.2	16.6	6	18	65		
n/a	303.00		535.0	538.0	9	12	0	CMP	280	0.02	NORVELL ST		2.9	4.2	2.7	6	12	25		
n/a	311.00		0.0	541.0	9	21	0	RCP	74	0.01	POTRERO AVE		31.4	44.9	17.4	6	21	11		
n/a	322.00		0.0	0.0	8	3	4	RCB	45	0.02	KEARNY ST		226.2	326.9	187.7	6	27	9		
n/a	363.00		0.0	0.0	18	18	0	CMP	130	0.05	JULIAN DR		4.9	7.0	12.7	6	12	12		
n/a	364.00		0.0	0.0	18	18	0	CMP	65	0.06	JULIAN DR		4.9	7.0	13.9	6	12	6		
n/a	365.00		0.0	0.0	18	18	0	CMP	60	0.08	JULIAN DR		4.9	7.0	15.7	6	12	5		
n/a	366.00		0.0	0.0	18	18	0	CMP	70	0.08	JULIAN DR		4.9	7.0	15.7	6	12	6		
n/a	367.00		0.0	0.0	18	18	0	CMP	75	0.21	MADERA CIR		4.9	7.0	26.3	6	12	7		
n/a	368.00		0.0	0.0	18	18	0	CMP	45	0.36	MADERA CIR		4.9	7.0	34.0	6	12	4		
n/a	369.00		0.0	0.0	18	18	0	CMP	60	0.39	MADERA CIR		4.9	7.0	35.3	6	12	5		
n/a	392.00		0.0	629.0	18	24	0	CMP	20	0.05	MADERA CIR		20.6	29.3	27.4	6	18	3		
n/a	400.00		624.0	634.0	17	10	0	RCP	280	0.20	NAVELLIER ST	PR	15.3	21.9	9.8	6	12	33		
n/a	405.00		0.0	0.0	17	24	0	CMP	30	0.05	SCOTT ST		17.7	25.4	27.4	6	18	4		
n/a	408.00		0.0	0.0	17	24	0	CMP	30	0.05	NAVELLIER ST		17.7	25.4	27.4	6	18	4		
n/a	410.00		603.0	638.0	8	48	0	RCP	572	0.00	BART		82.3	118.2	64.2	6	30	124		
n/a	439.00		0.0	702.0	7	3	7	RCB	300	0.02	SAN PABLO AVE		312.2	452.6	267.8	6	30	65		
n/a	444.00		0.0	0.0	7	24	0	CMP	240	0.01	SAN PABLO AVE		12.3	17.6	12.3	6	21	35		
n/a	445.00		0.0	706.0	7	24	0	CMP	50	0.01	PORTOLA DR		12.3	17.6	12.3	6	21	7		
n/a	473.00		0.0	713.0	16	36	0	RCP	475	0.05	SCHMIDT LN		170.6	245.8	149.1	6	18	61		

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Site Number	Drain No. (segment)	Priority of site	D/S Node	U/S Node	Map Page	Diameter or Height	Width (if not round)	Drain Material	Length	Drain Slope	STREET	PRiv. Prop.	10 Year Flow	100 Year Flow	Drain Capacity	Deficiency Points	Est. Req. Diameter	Est. Cost x $1,000	Est. Cost per Site x $1,000	Cumm. Cost x $1,000
n/a	494.00		0.0	723.0	25	18	0	CMP	120	0.05	KING DR		12.7	18.1	12.7	6	15	13		
n/a	505.00		0.0	727.0	25	22	0	CML	282	0.15	BREWSTER DR		74.0	106.3	50.2	6	15	30		
n/a	516.20		727.1		25	12		CMP	135	0.03	ARLINGTON BL		2.5	3.5	3.3	6	12	12		
n/a	516.30				25	12		CMP	65	0.03	ARLINGTON BL		2.5	3.5	3.3	6	12	6		
n/a	516.40				25	12		CMP	65	0.03	ARLINGTON BL		2.5	3.5	3.3	6	12	6		
n/a	516.50			731.9	25	12		CMP	195	0.03	VILLA NUEVA		2.5	3.5	3.3	6	12	17		
n/a	518.00		0.0		25	18	0	RCP	60	0.05	ARLINGTON BLVD		39.0	55.8	23.5	6	18	8		
n/a	542.00		714.0	740.0	24	12	0	CMP	460	0.05	MOESER LN		1.6	2.3	4.3	6	12	41		
n/a	581.00		0.0	759.0	15	30	0	RCP	280	0.02	WALDO AVE		85.0	122.5	58.0	6	24	47		
n/a	582.00		0.0	760.0	15	30	0	RCP	180	0.02	WALDO AVE		82.8	119.4	58.0	6	24	30		
n/a	583.00		0.0	761.0	15	30	0	RCP	130	0.02	WALDO AVE		81.2	117.0	58.0	6	24	22		
n/a	585.00		0.0	763.0	15	27	0	RCP	290	0.03	WALDO AVE		75.1	108.2	53.6	6	21	43		
n/a	588.00		0.0	0.0	15	24	0	RCP	270	0.05	WALDO AVE		70.5	101.5	50.6	6	18	35		
n/a	612.00		0.0	775.0	24	24	0	CMP	30	0.04	SEAVIEW DR		8.9	12.7	25.7	6	15	3		
n/a	613.00		0.0	0.0	24	24	0	CMP	170	0.05	SEAVIEW DR		4.3	6.1	27.4	6	12	15		
n/a	632.00		802.0	0.0	13	3	7	RCB	190	0.01	ADAMS ST		260.3	377.4	213.1	6	36	51		
n/a	642.00		0.0	0.0	13	27	0	VCP	780	0.00	SAN PABLO AVE		34.3	49.4	19.6	6	27	154		
n/a	645.00		0.0	0.0	14	24	0	RCP	300	0.01	SAN PABLO AVE	PR	30.4	43.7	25.8	6	27	79		
n/a	671.00		0.0	828.0	13	3	6	RCB	35	0.01	LEXINGTON AVE		228.1	329.5	189.7	6	36	9		
n/a	679.00		0.0	0.0	14	40	40	RCB	60	0.02	BART		194.5	280.8	159.1	6	27	12		
n/a	740.00		846.0	0.0	24	24	0	CMP	30	0.05	KING DR		11.0	15.6	27.4	6	15	3		
n/a	744.00		0.0	851.0	24	24	0	CMP	100	0.05	SHEVLIN DR		10.9	15.6	27.4	6	15	11		
n/a	754.00		0.0	854.0	24	30	0	CMP	80	0.05	SHELVIN DR		1.5	2.1	49.7	6	12	7		
n/a	772.00		834.0	861.0	14	15	0	RCP	130	0.02	LINCOLN AVE		20.5	29.3	9.1	6	18	17		
n/a	776.10				14	12		VC	20	0.02	NORVELL		12.1	17.3	5.0	6	15	2		
n/a	776.20				14	12		VC	120	0.02	ALBERMARLE		12.1	17.3	5.0	6	15	13		
n/a	777.00		0.0	0.0	14	12	0	VC	90	0.02	ALBEMARLE ST		12.1	17.3	5.0	6	15	10		
n/a	797.00		0.0	870.0	22	42	0	RCP	80	0.03	ASHBURY AVE		222.7	321.5	180.0	6	27	16		
n/a	808.00		0.0	0.0	23	10	0	TILE	35	0.10	BALRA DR	PR	11.7	16.7	6.9	6	15	5		
n/a	810.00		0.0	876.0	23	30	0	CMP	50	0.10	SEAVIEW DR		11.7	16.7	70.3	6	15	5		
n/a	840.00		870.0	883.8	22	36	0	RCP	600	0.01	EL CERRITO HS		94.3	136.0	73.1	6	24	101		
n/a	864.00		893.0	894.0	22	18	0	CMP	290	0.03	CENTRAL AVE		3.6	5.2	10.2	6	12	26		
n/a	881.00		0.0	899.0	21	3	4	RCB	380	0.02	HARDING SCH		185.6	268.3	160.4	6	24	64		
n/a	889.00		0.0	0.0	21	3	3	RCB	150	0.03	ASHBURY AVE		164.3	237.4	147.1	6	18	19		
n/a	910.00		0.0	911.0	21	21	0	RCP	144	0.03	LYNN AVE		43.6	62.4	25.6	6	21	21		
n/a	18.00		0.0	0.0	12	12	0	RCP	115	0.05	TULARE AVE	PR	10.1	14.5	8.0	5	15	17		

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Site Number	Drain No. (segment)	Priority of site	D/S Node	U/S Node	Map Page	Diameter or Height	Width (if not round)	Drain Material	Length	Drain Slope	STREET	PRiv. Prop.	10 Year Flow	100 Year Flow	Drain Capacity	Deficiency Points	Est. Req. Diameter	Est. Cost x $1,000	Est. Cost per Site x $1,000	Cumm. Cost x $1,000
n/a	19.00		0.0	0.0	12	12	0	RCP	55	0.05	MIRA VISTA DR	PR	10.1	14.5	8.0	5	15	8		
n/a	20.00		0.0	0.0	12	12	0	RCP	100	0.05	MIRA VISTA DR	PR	10.1	14.5	8.0	5	15	14		
n/a	35.20			203.0	11	33		RCP	106	0.02	POINSETT		85.8	124.3	72.7	5	18	14		
n/a	63.00		0.0	0.0	11	15	0	RCP	25	0.05	TASSAJARA PARK		24.9	36.0	14.4	5	15	3		
n/a	64.00		0.0	219.0	11	15	0	RCP	25	0.05	TASSAJARA AVE		24.9	36.0	14.4	5	15	3		
n/a	75.00		218.0	222.0	11	15	0	RCP	280	0.05	TASSAJARA PARK		23.1	33.2	14.4	5	15	30		
n/a	81.00		0.0	225.0	3	12	0	RCP	20	0.05	POINSETT AVE		14.7	21.0	8.0	5	12	2		
n/a	94.00		0.0	305.0	2	30	0	RCP	260	0.04	CONLON AVE		84.4	121.7	76.7	5	15	28		
n/a	106.00		0.0	312.0	11	15	0	RCP	57	0.10	GLORIA ST		27.0	38.7	20.4	5	12	5		
n/a	170.10			415.0	10	12		RCP	35	0.04	HARPER ST		12.0	17.1	7.1	5	12	3		
n/a	177.00		0.0	417.0	10	18	0	RCP	100	0.02	CUTTING BLVD		22.4	32.1	14.9	5	15	11		
n/a	198.00		0.0	426.0	10	21	0	RCP	36	0.10	GLEN MAWR AVE		56.1	80.4	50.1	5	12	3		
n/a	292.00		508.0	531.0	9	21	0	RCP	40	0.02	BART		31.1	44.7	22.4	5	15	4		
n/a	301.00		0.0	0.0	17	12	0	RCP	60	0.05	NAVELLIER ST		13.8	19.7	8.0	5	12	5		
n/a	302.00		0.0	537.0	17	12	0	RCP	70	0.05	NAVELLIER ST		13.8	19.7	8.0	5	12	6		
n/a	309.00		0.0	0.0	9	21	0	RCP	250	0.02	POTRERO AVE		31.4	44.9	22.4	5	15	27		
n/a	312.00		0.0	542.0	9	18	0	RCP	300	0.02	POTRERO AVE		22.7	32.5	14.9	5	15	32		
n/a	377.20				17	24		PVC	185	0.05	LAWRENCE		77.5	111.3	63.2	5	18	24		
n/a	382.00		0.0	623.0	17	27	0	VCP	40	0.05	NAVELLIER ST		77.5	111.3	69.3	5	15	4		
n/a	410.10				8	30		RCP	121	0.00	DONAL		35.2	50.4	25.9	5	21	18		
n/a	410.20				8	24	38	ERCP	19	0.00	DONAL		35.2	50.4	26.7	5	21	3		
n/a	410.80				8	18		RCP	248	0.00	ELM		9.7	13.8	6.2	5	15	27		
n/a	483.00		717.0	0.0	25	12	0	RCP	300	0.05	CONTRA COSTA D	PR	11.2	16.0	8.0	5	15	43		
n/a	518.10				25	18		RCP	230	0.07	ARLINGTON BL		39.0	55.8	27.2	5	15	25		
n/a	518.20			733.0	25	18		RCP	175	0.07	VILLA NUEVA		39.0	55.8	27.0	5	15	19		
n/a	544.00		709.0	741.0	16	24	0	RCP	100	0.01	SCHMIDT LN		25.3	36.2	18.2	5	18	13		
n/a	627.00		0.0	804.0	13	21	0	RCP	206	0.00	CARLSON BLVD		18.9	27.3	10.0	5	21	30		
n/a	628.00		0.0	805.0	13	21	0	RCP	320	0.00	CARLSON BLVD		15.5	22.3	10.0	5	18	41		
n/a	629.00		0.0	806.0	13	18	0	RCP	310	0.00	CARLSON BLVD		11.7	16.9	6.6	5	18	40		
n/a	666.00		0.0	825.0	15	12	0	RCP	30	0.02	EVERETT ST		7.6	10.8	5.0	5	12	3		
n/a	720.10				23	24		CML	65	0.08	TERRACE DR		52.5	75.3	46.2	5	12	6		
n/a	728.30				24	24		RCP	42	0.01	KING DR		30.3	43.4	22.6	5	18	5		
n/a	728.40			846.0	24	24		RCP	12	0.01	KING DR		30.3	43.4	22.6	5	18	2		
n/a	839.00		870.0	883.7	22	24	0	VCP	600	0.02	EL CERRITO HS		40.4	58.3	32.0	5	15	65		
n/a	2.00		0.0	0.0	4	30	30	RCB	190	0.05	SILVA AVE	PR	101.2	145.8	116.8	4	36	68		
n/a	17.00		0.0	0.0	12	12	0	RCP	100	0.05	TULARE AVE		10.1	14.5	8.0	4	12	9		

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n/a	24.00		0.0	110.0	12	14	0	CI	20	0.05	FRANCISCO WAY	PR	8.0	11.4	6.5	4	15	3		
n/a	62.00		213.0	218.0	11	21	0	RCP	300	0.05	TASSAJARA PARK		44.1	63.7	35.4	4	15	32		
n/a	227.00		0.0	0.0	9	2	5	RCB	160	0.02	POTRERO AVE	PR	126.4	182.9	115.5	4	42	63		
n/a	228.00		0.0	0.0	9	3	4	RCB	230	0.02	SAN PABLO AVE	PR	126.4	182.9	156.6	4	42	91		
n/a	310.00		0.0	0.0	9	21	0	RCP	100	0.03	POTRERO AVE		31.4	44.9	26.5	4	12	9		
n/a	410.40			639.0	8	24	38	ERCP	12	0.01	DONAL		35.2	50.4	31.8	4	15	1		
n/a	425.00		0.0	648.0	16	12	0	RCP	220	0.05	MANILA AVE		11.8	16.8	8.0	4	12	20		
n/a	459.00		708.0	0.0	7	36	0	RCP	275	0.03	BART	PR	115.4	166.7	107.6	4	42	109		
n/a	460.00		0.0	709.0	8	36	0	RCP	470	0.03	LIBERTY ST	PR	115.4	166.7	107.6	4	42	186		
n/a	484.00		0.0	720.0	25	12	0	RCP	60	0.05	BREWSTER DR		11.2	16.0	8.0	4	12	5		
n/a	506.20			727.1	25	24		RCP	18	0.02	ARLINGTON BL		35.8	51.4	32.0	4	12	2		
n/a	517.00		727.0	0.0	25	18	0	RCP	100	0.10	ARLINGTON BLVD		39.0	55.8	33.2	4	12	9		
n/a	646.00		0.0	814.9	14	24	0	RCP	40	0.01	KEARNEY ST		30.4	43.7	25.8	4	15	4		
n/a	648.00		0.0	815.0	14	24	0	RCP	362	0.01	KEARNEY AVE		20.3	29.1	16.0	4	15	39		
n/a	672.00		0.0	829.0	13	21	0	RCP	250	0.01	LEXINGTON AVE		20.5	29.6	15.0	4	15	27		
n/a	674.00		828.0	830.0	13	3	5	RCB	300	0.02	LEXINGTON AVE	PR	206.5	298.3	243.6	4	48	130		
n/a	676.00		0.0	0.0	13	3	7	RCB	150	0.02	CENTRAL AVE	PR	201.0	290.2	332.7	4	48	65		
n/a	676.20		0.0	0.0	14	34	69	RCB	60	0.02	OAK ST	PR	201.0	290.2	254.3	4	48	26		
n/a	676.30		0.0	0.0	14	48	64	RCB	60	0.02	OAK ST	PR	201.0	290.2	377.0	4	48	26		
n/a	681.00		0.0	0.0	14	3	5	RCB	360	0.02	ELM ST	PR	189.4	273.3	232.3	4	48	156		
n/a	682.00		0.0	834.0	14	3	5	RCB	180	0.03	RICHMOND ST	PR	189.4	273.3	284.5	4	48	78		
n/a	707.00		0.0	0.0	15	42	42	RCB	110	0.08	HOTCHKISS AVE	PR	133.9	192.6	362.3	4	36	39		
n/a	708.00		0.0	0.0	23	4	4	RCB	130	0.08	HOTCHKISS AVE	PR	133.9	192.6	432.3	4	36	46		
n/a	774.10				14	10		PE	75	0.02	NORVELL		5.8	8.2	4.0	4	12	7		
n/a	841.00		0.0		22	3	3	RCB	110	0.10	COLUSA AVE	PR	135.2	194.9	264.1	4	36	39		
n/a	870.00		895.0	0.0	13	4	4	RCB	30	0.02	EL CERRITO PLAZA	PR	191.7	277.4	258.7	4	48	13		
n/a	871.00		0.0	0.0	13	36	0	2RCP	460	0.02	EL CERRITO PLAZA	PR	191.7	277.4	188.7	4	48	200		
n/a	873.00		0.0	0.0	13	42	0	PVC	125	0.05	CORONADO ST	PR	191.7	277.4	293.9	4	42	49		
n/a	875.00		0.0	0.0	13	42	0	PVC	256	0.03	CORONADO ST	PR	187.8	271.5	220.0	4	48	111		
n/a	878.00		0.0	0.0	21	4	4	RCB	175	0.02	BEHRENS AVE	PR	187.8	271.5	234.9	4	54	85		
n/a	880.00		0.0	898.0	21	3	4	RCB	135	0.04	BEHRENS AVE	PR	187.8	271.5	308.2	4	42	53		
n/a	909.20		0.0	0.0	21	24	0	RCP	112	0.03	LYNN AVE		43.6	62.4	36.9	4	15	12		
n/a	911.00		0.0	912.0	21	21	0	RCP	240	0.04	LYNN AVE		35.2	50.4	31.7	4	12	21		
n/a	26.00		0.0	111.0	12	12	0		20	0.05	CARQUINEZ AVE		5.1	7.3	4.3	3	12	2		
n/a	35.00		0.0	202.0	3	30	0	RCP	125	0.15	POINSETT AVE	PR	94.8	137.3	158.9	3	27	33		
n/a	44.00		0.0	208.0	11	24	30	RCB	150	0.12	BARRETT AVE	PR	76.3	110.4	133.8	3	24	34		

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n/a	45.00		0.0	0.0	11	24	0	RCP	210	0.08	BARRETT AVE	PR	69.1	99.9	64.0	3	27	55		
n/a	76.10				11	18		CML	55	0.05	TAMALPAIS		19.9	28.5	17.0	3	12	5		
n/a	176.00		0.0	0.0	10	18	0	RCP	30	0.03	CUTTING BLVD		22.4	32.1	19.1	3	12	3		
n/a	179.00		0.0	0.0	10	12	0	VCP	200	0.02	CUTTING BLVD		5.6	8.0	5.0	3	12	18		
n/a	189.00		0.0	0.0	9	24	0	2RCP	120	0.03	LIBERTY ST	PR	66.8	95.8	83.6	3	30	35		
n/a	190.00		0.0	0.0	9	36	0	RCP	15	0.05	ELM ST	PR	66.8	95.8	153.0	3	27	4		
n/a	191.00		0.0	0.0	9	36	0	RCP	140	0.03	ELM ST	PR	66.8	95.8	107.6	3	36	50		
n/a	193.00		0.0	0.0	9	30	0	RCP	230	0.04	ELM ST	PR	58.3	83.6	82.0	3	27	61		
n/a	197.00		424.0	0.0	10	24	0	RCP	84	0.10	WALNUT ST	PR	56.1	80.4	71.5	3	24	19		
n/a	234.00		0.0	0.0	9	3	4	RCB	85	0.02	LEXINGTON AVE	PR	98.2	142.0	99.2	3	42	34		
n/a	236.00		0.0	0.0	9	39	0	RCP	140	0.02	LEXINGTON AVE	PR	97.2	140.4	116.8	3	42	55		
n/a	237.00		0.0	0.0	9	3	3	RCB	140	0.02	LIBERTY ST	PR	97.2	140.4	93.9	3	42	55		
n/a	239.00		0.0	510.0	9	4	4	WDB	150	0.03	LIBERTY ST	PR	97.2	140.4	177.2	3	36	53		
n/a	244.00		511.0	0.0	9	3	4	RCB	130	0.05	ELM ST	PR	92.4	133.4	171.9	3	36	46		
n/a	246.00		0.0	0.0	9	36	0	RCP	110	0.03	MANOR CIR	PR	90.9	131.3	105.5	3	36	39		
n/a	247.00		0.0	0.0	9	36	0	RCP	125	0.04	WALNUT ST	PR	90.9	131.3	124.8	3	36	44		
n/a	249.00		0.0	0.0	9	30	32	RCB	150	0.04	WALNUT ST	PR	85.9	123.9	106.5	3	36	53		
n/a	250.00		0.0	0.0	9	3	4	RCC	100	0.04	BLAKE ST	PR	85.9	123.9	124.5	3	36	36		
n/a	251.00		0.0	0.0	9	3	3	RCB	80	0.04	BLAKE ST	PR	85.9	123.9	114.1	3	36	28		
n/a	252.00		0.0	0.0	9	36	0	RCP	90	0.04	WESLEY AVE	PR	85.9	123.9	124.8	3	36	32		
n/a	254.00		0.0	0.0	10	36	0	RCP	110	0.10	WESLEY AVE	PR	84.0	121.2	210.9	3	27	29		
n/a	255.00		0.0	0.0	10	32	32	RCB	140	0.10	GANGES AVE	PR	84.0	121.2	196.2	3	27	37		
n/a	257.00		0.0	0.0	10	32	32	RCB	260	0.10	GANGES AVE	PR	82.7	119.3	196.2	3	27	68		
n/a	278.00		0.0	0.0	19	15	0	RCP	190	0.05	PEBBLE BEACH DR		17.1	24.5	14.4	3	12	17		
n/a	279.00		0.0	527.0	19	15	0	RCP	30	0.05	PEBBLE BEACH DR		17.1	24.5	14.4	3	12	3		
n/a	297.00		0.0	535.0	9	18	0	RCP	280	0.02	NORVELL ST		16.7	24.0	14.9	3	12	25		
n/a	298.00		0.0	536.0	9	18	0	RCP	300	0.02	NORVELL ST		17.7	25.3	14.9	3	12	27		
n/a	313.00		0.0	543.0	9	18	0	RCP	230	0.02	POTRERO AVE		18.0	25.8	14.9	3	12	21		
n/a	343.00		0.0	610.0	9	30	0	RCP	125	0.05	GLADYS AVE	PR	55.5	80.1	91.7	3	27	33		
n/a	344.00		0.0	611.0	17	30	0	RCP	285	0.05	GLADYS AVE	PR	55.9	80.7	91.7	3	27	75		
n/a	346.00		611.0	0.0	17	24	0	RCP	310	0.05	GLADYS AVE	PR	54.0	77.9	50.6	3	27	82		
n/a	348.00		0.0	614.0	17	30	0	RCP	320	0.09	WILDWOOD PL	PR	50.2	72.4	123.1	3	24	72		
n/a	399.00		0.0	633.0	18	12	0	RCP	60	0.09	DEVONSHIRE DR		11.9	16.9	10.7	3	12	5		
n/a	487.00		716.0	0.0	24	30	0	CML	170	0.40	DUKE CT	PR	89.7	129.0	187.4	3	21	34		
n/a	501.00		0.0	0.0	25	30	0	CML	190	0.21	KING DR	PR	78.1	112.2	135.4	3	24	43		
n/a	536.00		0.0	737.0	24	15	0	VCP	30	0.11	KING DR		24.2	34.8	21.4	3	12	3		

Table 4 - Drains with Deficiencies Sorted by Priority

Site Number	Drain No. (segment)	Priority of site	D/S Node	U/S Node	Map Page	Diameter or Height	Width (if not round)	Drain Material	Length	Drain Slope	STREET	PRiv. Prop.	10 Year Flow	100 Year Flow	Drain Capacity	Deficiency Points	Est. Req. Diameter	Est. Cost x $1,000	Est. Cost per Site x $1,000	Cumm. Cost x $1,000
n/a	537.00		0.0	0.0	24	15	0	VCP	60	0.05	KING DR		16.7	24.0	14.4	3	12	5		
n/a	600.00		0.0	769.0	16	15	0	RCP	50	0.05	AVIS DR		17.2	24.5	14.4	3	12	4		
n/a	717.00		0.0	0.0	23	30	0	CML	36	0.08	TERRACE DR	PR	52.9	75.9	83.8	3	24	8		
n/a	718.00		0.0	0.0	23	48	0	CML	15	0.08	TERRACE DR	PR	52.9	75.9	293.4	3	24	3		
n/a	720.00		0.0	0.0	23	30	0	CML	28	0.08	TERRACE DR	PR	52.5	75.3	83.8	3	24	6		
n/a	722.00		0.0	0.0	24	28	0	CML	227	0.10	SEAVIEW DR	PR	52.5	75.3	77.9	3	24	51		
n/a	746.00		0.0	0.0	23	48	0	CML	70	0.05	SEAVIEW DR	PR	54.1	77.6	232.0	3	27	18		
n/a	773.00		0.0	0.0	14	15	0	RCP	260	0.02	LINCOLN AVE		11.2	15.9	9.1	3	12	23		
n/a	774.00		0.0	861.1	14	15	0	RCP	60	0.02	NORVELL AVE		11.2	15.9	9.1	3	12	5		
n/a	776.00		0.0	861.8	14	12	0	VC	120	0.02	NORVELL AVE	ES	5.8	8.2	5.0	3	12	11		
n/a	802.00		0.0	0.0	23	30	0	RCP	100	0.05	EUREKA AVE	PR	69.3	99.6	91.7	3	30	29		
n/a	817.00		875.0	0.0	23	24	0	CML	81	0.10	BALRA AVE	PR	50.1	71.8	51.7	3	21	16		
n/a	821.00		0.0	0.0	23	30	0	CML	21	0.10	SEAVIEW DR	PR	50.1	71.8	93.7	3	21	4		
n/a	104.00		307.0	311.0	11	18	0	RCP	240	0.10	CANYON TRAIL PK	PR	31.6	45.3	33.2	2	18	41		
n/a	105.00		0.0	0.0	11	18	0	RCP	295	0.10	FERN ST	PR	27.0	38.7	33.2	2	18	50		
n/a	126.00		0.0	0.0	11	24	0	CML	138	0.08	JORDAN AVE	PR	31.6	45.4	46.2	2	21	27		
n/a	128.00		0.0	0.0	11	18	0	RCP	320	0.10	JORDAN AVE	PR	28.6	41.1	33.2	2	18	55		
n/a	130.00		0.0	0.0	11	18	0	RCP	220	0.10	CARQUINEZ AVE	PR	25.7	36.9	33.2	2	18	38		
n/a	267.00		0.0	522.0	18	36	0	PL	170	0.05	ARLINGTON BLVD	PR	34.3	49.3	193.9	2	21	34		
n/a	273.00		0.0	0.0	19	21	0	RCP	115	0.05	SCENIC AVE	PR	25.5	36.6	35.4	2	21	23		
n/a	274.00		0.0	0.0	19	21	0	RCP	130	0.05	SCENIC AVE	PR	25.5	36.6	35.4	2	21	26		
n/a	349.00		0.0	0.0	17	30	0	RCP	275	0.05	POTRERO AVE	PR	40.8	58.8	91.7	2	24	62		
n/a	350.00		0.0	0.0	17	30	0	RCP	270	0.05	POTRERO AVE	PR	40.8	58.8	91.7	2	24	60		
n/a	389.00		0.0	0.0	18	24	0	RCP	250	0.05	DOUGLAS DR	PR	30.3	43.3	50.6	2	21	49		
n/a	530.00		715.0	0.0	24	27	0	RCP	135	0.05	EARL CT	PR	27.2	39.1	69.3	2	21	27		
n/a	726.00		0.0	845.0	24	24	0	CML	40	0.10	SHEVLIN DR	PR	36.2	51.9	51.7	2	21	8		
n/a	823.00		0.0	879.0	23	30	0	CML	300	0.10	SEAVIEW DR	PR	43.6	62.5	93.7	2	21	59		
n/a	12.00		0.0	0.0	12	18	0	RCP	180	0.05	YUBA AVE	PR	16.6	23.8	23.5	1	18	31		
n/a	14.00		0.0	107.0	12	18	0	RCP	190	0.14	SONOMA AVE	PR	14.4	20.6	39.7	1	15	28		
n/a	15.00		0.0	0.0	12	18	0	RCP	390	0.06	RAY AVE	PR	11.7	16.8	24.7	1	15	56		
n/a	25.00		0.0	0.0	12	12	0	RCP	220	0.05	FRANCISCO WAY	PR	5.1	7.3	8.0	1	12	26		
n/a	60.00		0.0	0.0	12	12	0	RCP	330	0.05	LA HONDA AVE	PR	3.0	4.2	8.0	1	12	39		

Table 4 - Drains with Deficiencies Sorted by Priority

Site Number	Drain No. (segment)	Priority of site	D/S Node	U/S Node	Map Page	Diameter or Height	Width (if not round)	Drain Material	Length	Drain Slope	STREET	PRiv. Prop.	10 Year Flow	100 Year Flow	Drain Capacity	Deficiency Points	Est. Req. Diameter	Est. Cost x $1,000	Est. Cost per Site x $1,000	Cumm. Cost x $1,000
n/a	61.00		0.0	217.0	12	12	0	RCP	150	0.05	TAMALPAIS AVE	PR	3.0	4.2	8.0	1	12	18		
n/a	66.00		0.0	0.0	11	18	0	RCP	100	0.05	TASSAJARA AVE	PR	23.0	33.3	23.5	1	18	17		
n/a	88.00		0.0	0.0	11	12	0	RCP	90	0.05	EDWARDS AVE	PR	5.1	7.2	8.0	1	12	11		
n/a	132.00		0.0	0.0	11	18	0	RCP	230	0.10	ALVA AVE	PR	24.2	34.7	33.2	1	18	39		
n/a	134.00		0.0	0.0	11	18	0	RCP	240	0.05	CUTTING BLVD	PR	20.3	29.2	23.5	1	18	41		
n/a	136.00		0.0	0.0	11	18	0	RCP	280	0.05	CUTTING BLVD	PR	12.3	17.6	23.5	1	15	41		
n/a	162.50				2	24		RCP	170	0.02	KEY BLVD	PR	5.3	7.5	32.0	1	15	25		
n/a	163.00		0.0	412.0	2	24	0	CML	60	0.02	KEY BLVD	PR	5.3	7.5	23.1	1	15	9		
n/a	171.00		0.0	0.0	10	10	0	CML	116	0.33	HARPER ST	PR	2.6	3.7	9.1	1	12	14		
n/a	172.00		0.0	0.0	10	10	0	CML	90	0.33	TAPSCOTT AVE	PR	2.6	3.7	9.1	1	12	11		
n/a	212.00		0.0	0.0	11	24	0	RCP	60	0.04	CUTTING BLVD	PR	10.8	15.4	42.9	1	15	9		
n/a	213.00		0.0	0.0	11	24	0	RCP	140	0.10	TAMALPAIS AVE	PR	10.8	15.4	73.0	1	12	17		
n/a	215.00		0.0	0.0	11	24	0	RCP	110	0.05	ARLINGTON BLVD	PR	10.8	15.4	50.6	1	15	16		
n/a	281.00		0.0	528.0	19	15	0	RCP	30	0.45	PEBBLE BEACH DR	PR	14.5	20.8	43.3	1	12	4		
n/a	282.00		0.0	0.0	19	12	0	RCP	420	0.11	MIRA VISTA CC	PR	8.0	11.5	11.8	1	12	50		
n/a	283.00		0.0	0.0	19	12	0	RCP	230	0.07	MIRA VISTA CC	PR	8.0	11.5	9.4	1	12	27		
n/a	284.00		0.0	0.0	19	12	0	RCP	380	0.11	MIRA VISTA CC	PR	8.0	11.5	11.8	1	12	45		
n/a	286.00		0.0	529.0	19	12	0	RCP	160	0.17	MIRA VISTA CC	PR	8.0	11.5	14.7	1	12	19		
n/a	360.00		617.0	0.0	18	0	0		50	0.05	POTRERO AVE	PR	16.6	23.9	0.0	1	18	9		
n/a	361.00		0.0	619.0	18	0	0		90	0.05	POTRERO AVE	PR	16.6	23.9	0.0	1	18	15		
n/a	374.00		0.0	0.0	18	18	0	RCP	90	0.09	MADERA CIR	PR	4.9	7.0	31.0	1	12	11		
n/a	375.00		0.0	0.0	18	18	0	RCP	20	0.02	MADERA CIR	PR	4.9	7.0	12.9	1	15	3		

Table 4 - Drains with Deficiencies Sorted by Priority

Site Number	Drain No. (segment)	Priority of site	D/S Node	U/S Node	Map Page	Diameter or Height	Width (if not round)	Drain Material	Length	Drain Slope	STREET	PRiv. Prop.	10 Year Flow	100 Year Flow	Drain Capacity	Deficiency Points	Est. Req. Diameter	Est. Cost x $1,000	Est. Cost per Site x $1,000	Cumm. Cost x $1,000
n/a	376.00		0.0	620.0	18	18	0	RCP	140	0.05	ARLINGTON BLVD	PR	4.9	7.0	23.5	1	12	17		
n/a	377.10				17	30		CMP	100	0.03	LAWRENCE		77.5	111.3	38.5	1	36	27		
n/a	395.00		629.0	631.0	18	21	0	RCP	118	0.05	MADERA CIR	PR	15.4	22.0	35.4	1	18	20		
n/a	402.00		0.0	635.0	17	12	0	RCP	240	0.06	KENT DR	PR	8.1	11.6	8.7	1	12	28		
n/a	409.00		0.0	636.0	17	24	0	RCP	100	0.05	NAVELLIER ST	PR	17.7	25.4	50.6	1	18	17		
n/a	481.00		0.0	718.0	25	15	0	RCP	30	0.10	CONTRA COSTA D	PR	14.0	20.1	20.4	1	15	4		
n/a	489.00		0.0	0.0	24	18	0	RCP	200	0.05	DUKE CT	PR	12.7	18.1	23.5	1	15	29		
n/a	496.00		0.0	724.0	25	12	0	RCP	79	0.05	CONTRA COSTA D	PR	3.2	4.6	8.0	1	12	9		
n/a	522.00		0.0	0.0	25	21	0	RCP	130	0.05	VILLA NUEVA DR	PR	22.4	32.0	35.4	1	18	22		
n/a	523.00		0.0	0.0	25	24	0	RCP	380	0.05	VILLA NUEVA DR	PR	22.4	32.0	50.6	1	18	65		
n/a	535.00		0.0	0.0	24	30	0	CML	144	0.04	BURNS CT	PR	24.2	34.8	60.0	1	21	28		
n/a	538.00		0.0	738.0	24	15	0	VCP	310	0.20	KING DR	PR	16.7	24.0	28.9	1	15	45		
n/a	540.00		0.0	0.0	24	15	0	RCP	280	0.05	CONTRA COSTA D	PR	7.9	11.4	14.4	1	12	33		
n/a	573.00		745.9	0.0	15	21	0	VCP	180	0.02	LIBERTY ST	PR	19.9	28.5	22.4	1	21	36		
n/a	575.00		0.0	753.0	15	21	0	RCP	230	0.02	LIBERTY ST	PR	17.4	24.8	22.4	1	21	45		
n/a	576.00		0.0	754.0	15	21	0	RCP	290	0.02	ELM ST	PR	14.5	20.8	22.4	1	18	50		
n/a	577.00		0.0	755.0	15	21	0	RCP	230	0.02	RICHMOND ST	PR	12.7	18.1	22.4	1	18	39		
n/a	578.00		0.0	756.0	15	21	0	RCP	250	0.02	EVERETT ST	PR	8.3	11.8	22.4	1	15	36		
n/a	579.00		0.0	757.0	15	21	0	RCP	130	0.02	NORVELL ST	PR	5.5	7.8	22.4	1	15	19		
n/a	611.00		0.0	774.1	24	24	0	CML	190	0.05	GALVIN DR	PR	8.8	12.6	36.5	1	15	28		
n/a	667.00		0.0	826.0	15	0	0		260	0.02	EVERETT ST	PR	4.0	5.6	0.0	1	15	38		
n/a	705.00		838.0	0.0	15	48	0	CMP	10	0.08	POMONA AVE		133.9	192.6	220.1	1	36	3		
n/a	761.00		0.0	857.0	24	30	0	RCP	50	0.10	BAY TREE LN	PR	24.4	34.9	129.7	1	18	9		
n/a	764.00		0.0	859.0	24	12	0	RCP	430	0.10	GELSTON PL	PR	9.3	13.2	11.3	1	12	51		

Table 4 - Drains with Deficiencies Sorted by Priority

Site Number	Drain No. (segment)	Priority of site	D/S Node	U/S Node	Map Page	Diameter or Height	Width (if not round)	Drain Material	Length	Drain Slope	STREET	PRiv. Prop.	10 Year Flow	100 Year Flow	Drain Capacity	Deficiency Points	Est. Req. Diameter	Est. Cost x $1,000	Est. Cost per Site x $1,000	Cumm. Cost x $1,000
n/a	774.20			861.7	14	12		CMP	90	0.02	NORVELL		5.8	8.2	2.7	1	15	10		
n/a	811.00		0.0	0.0	23	12	0	RCP	70	0.10	SEAVIEW DR	PR	8.2	11.7	11.3	1	12	8		
n/a	813.00		0.0	0.0	23	0	0		18	0.10	SEAVIEW DR	PR	8.2	11.7	0.0	1	12	2		
n/a	815.00		0.0	0.0	23	15	0	RCP	170	0.10	TERRACE DR	PR	8.2	11.7	20.4	1	12	20		
n/a	819.00		0.0	0.0	23	30	0	CMP	80	0.10	EUREKA AVE	PR	50.1	71.8	70.3	1	21	16		

Supplemental List - Projects Deferred from Phase 1 Master Plan (1994) to Master Plan Update (1999)

Site Designation 1992 Master Plan		Site Designation 1999 M.P. Update
21	Moeser / SPA	11
34	Hotchkiss / Balra	20
20	Richmond St.	10
14	Walnut St.	7
15	Potrero Ave.	8
6	Gloria / Jordan	3
41	San Pablo Ave. (SPA)	17
39	San Pablo Ave. (SPA)	15
53	Eureka Drive	21
52	Albermarle / Clayton	22
40	Cypress / SPA	16, 19
24	Schmidt Lane	12
25	Hillside Park	13
4	Barrett / Tamalpais	1,2
60	Ashbury / Pomona	29
55	Eureka Drive	24
56	Errol Drive	25

APPENDIX 6. Remaining Sites for 1999

This Appendix describes three projects summarized in Section IIIC of the Update.

Site 46A (838 Seaview Drive) – Public runoff from streets and uphill properties flows in a channel across private properties. During heavy rains, the flow leaves the channel and sheets overland between houses, causing erosion on private property at 838 Seaview Drive.

This site was not identified in the Phase 1 1992 Master Plan because it involves a deficiency in an above-ground channel, which was not analyzed at that time. Improvements to correct such above-ground channel deficiencies have been included in the program when they are observed by the City's maintenance personnel.

The proposed solution is to construct a pipeline and field inlet to intercept the drainage in the channel and reroute the water to the public drainage system in Seaview Drive.

Site 10A (Cypress Street) – During heavy rain the street floods from water backing up the system and exiting from a large drainage inlet at the east end of Cypress, west of the I-80 freeway right-of-way. The 24-inch corrugated metal pipe (CMP) in Cypress is a cross-connection pipe between two separate, parallel drains along the freeway. As a cross-connection, this pipe could not be analyzed for capacity in the 1992 Plan and was not included among the projects identified with Phase 1. This project will require some additional surveying, analysis, and engineering. With more detailed analysis, the required size of the pipeline in Cypress Street can be determined. One possible solution may be to abandon the cross-connecting pipe in Cypress, in order to keep the parallel flows separate. Shortly downstream of the Cypress Street cross-connection, the two parallel drains cross the City limits into the Richmond drainage system. Therefore, the downstream impacts must be considered in the analysis.

Site 15A (Potrero Avenue near Freeway I-80) – A drainage grate lies across the surface of the roadway. The grate is built into the top slab of a large concrete drainage structure below the street.

At one time the grate was required to collect a large volume of surface runoff. Over time other drainage facilities in the area have been constructed to intercept the overland flow upstream of the structure. The large grate area is no longer required. Due to the wear of traffic loads the grate has become deformed and no longer seats evenly within it's frame. The rattling noise caused by traffic has become a nuisance for residents of the area, including a nearby motel.

This project was not included in the Phase 1 Master Plan as it was not identifiable as a storm drain deficiency in accordance with the criteria of the 1992 study. This project has been added to the program as a result of complaints from those who live or work in the area and the observations of the City maintenance personnel. The solution for this site is to remove the existing grate and frame and to design a new reinforced concrete top slab for the existing sub-surface structure.