

Supplemental Calculations
Relating to
Oceano Nursery

Prepared by

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Included in this package:

- Apportionment of Responsibility
- Calculation of contribution of County paved roads to runoff at storm drain inlet
- Recalculation of OCSD improved property's contribution to runoff at storm drain inlet (adds Railroad Depot property to contribution)

Apportionment of Responsibility

This calculation shows my opinion of the apportionment of responsibility for the flooding at the Ocean Nursery. The method used to apportion the responsibility is to give equal weight to each of the six causes of the flooding. Then, each defendant's responsibility for that cause of flooding is assigned. In all cases, except one, equal responsibility is given to each responsible defendant. The one exception is the increases in runoff due to improvement or property with impervious surfaces. In this case the contribution by Cal Trans and OCSD is based on the fraction of the total runoff from their improved property reaching the culvert entrance. The remaining responsibility is assigned to the County of San Luis Obispo because they are the permitting agency that allowed development by the numerous other private parties.

The responsibility is apportioned as follows:

- Union Pacific Railroad 28.3%
- OCSD 24.4%
- County of San Luis Obispo 21.7%
- Pismo-Oceano Vegetable Exchange 15.8%
- Cal Trans 8.7%

The calculation of the responsibility is included on the following page.

	Fraction of Total Problem	Share by Deficiency				
		Cal Trans	Co of SLO	OCSD	POVE	UP
Blocking the natural drainage way with a pipe too small for the conditions	16.7%	0.0%	0.0%	0.0%	0.0%	100.0%
OCSD Well Pipe adding silt and debris during normal well operation	16.7%	0.0%	0.0%	100.0%	0.0%	0.0%
Pipe capacity compromised by poorly designed extension	16.7%	0.0%	0.0%	0.0%	75.0%	25.0%
Upstream watershed conditions worsened	16.7%	7.3%	85.3%	7.4%	0.0%	0.0%
Decrease in storage volume at inlet	16.7%	25.0%	25.0%	25.0%	0.0%	25.0%
Lack of maintenance	16.7%	20.0%	20.0%	20.0%	20.0%	20.0%
	100.0%					

	Share by Responsibility				
	Cal Trans	Co of SLO	OCSD	POVE	UP
Blocking the natural drainage way with a pipe too small for the conditions	0.0%	0.0%	0.0%	0.0%	16.7%
OCSD Well Pipe adding silt and debris during normal well operation	0.0%	0.0%	16.7%	0.0%	0.0%
Pipe capacity compromised by poorly designed extension	0.0%	0.0%	0.0%	12.5%	4.2%
Upstream watershed conditions worsened	1.2%	14.2%	1.2%	0.0%	0.0%
Decrease in storage volume at inlet	4.2%	4.2%	4.2%	0.0%	4.2%
Lack of maintenance	3.3%	3.3%	3.3%	3.3%	3.3%
Total Responsibility	8.7%	21.7%	25.4%	15.8%	28.3%

Estimation of the impact of County's paved roads on runoff at entrance to storm drain

	Length	Width	Area	
Belridge	270	38	10260	
13th	985	46	45310	
14th	860	20	17200	
15th A	1029	28	28812	
15th B	340	20	6800	
16th	845	42	35490	1/2 at 55, 1/2 at 30
17th	1025	46	47150	1/2 at 55, 1/2 at 42
Wilmar	985	50	49250	
Rice A	200	22	4400	
Rice B	200	22	4400	
Warner A	200	22	4400	
Warner B	200	22	4400	
Warner C	200	22	4400	
Warner D	200	22	4400	
Paso Roble	880	30	26400	1/2 at 35, 1/2 at 25
Ocean	70	20	1400	
	sum		294472 sq ft	
			6.8 ac	

County Road Contribution		
Area	6.8 acres	see figure
	0.85 C	
I10	2.25 in/hr	
I100	3.2 in/hr	
Q 10	13.0 cfs	
Q100	18.5 cfs	
	43.9 cfs total	
	62.5 cfs total	
10-yr	29.6%	
100-yr	29.6%	



Include Oceano Depot in OCSD owned and improved property.

OCSD Contribution		
Area	1.417 acres	district office/sheriff/fire
	0.283 acres	railroad depot
	0.85 C	
I10	2.25 in/hr	
I100	3.2 in/hr	
Q 10	3.3 cfs	OCSD Office/Fire/Sheriff & RR Depot
Q100	4.6 cfs	
	43.9 cfs total	Entire Watershed
	62.5 cfs total	
10-yr	7.4%	OCSD Contribution
100-yr	7.4%	



Including the Railroad Depot property increases the OCSD contribution to the total flow at the pipe inlet from 6.2% to 7.4%.