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PROJECT MEMORANDUM

Project Name:	CSO Beaches Project	**Date:**	June 18, 2010
Client:	King County DNRP	**Project Number:**	7562A10
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Reviewed By:	Brian Matson		
Subject:	Model Results Summary and Basis of Planning		
Distribution:	File		

The CSO Project Team established basis of planning data (e.g. storage volume and peak flow required for CSO control) through modeling, using flow data collected between early 2007 and mid 2008. The team also used the data to distribute peak flow hydrographs, measured at the bottom of each basin, into smaller hydrographs representing each sub-basin.

1.0 BASIS OF PLANNING

King County calibrated each of the Puget Sound Beach CSO project areas using the County's Runoff Model and approximately 2 years of data collected prior to 2007. Subsequently Carollo Engineers calibrated the MOUSE model for sub-basins in each of the project basins using flowmeters that were placed in the sewers for 6 months from December 2007 through June 6, 2008. Both calibrated models were run for a 30-year long-term simulation to obtain the 1-year storage volume for each project basin.

The resulting 1-year control volumes from each model differed from the other model's estimates, which is to be expected when using a different model and a different calibration period. The team worked together to develop a comparison of each model to the data gathered from early 2007 through June 2008. Based on this comparison, the values for storage and peak flow, shown in Table 1, were established as the basis for planning in each CSO basin.

Table 1
Basis of Planning for CSO Control(1)

CSO Basin	Storage Volume (Gal)	Peak Flow (mgd)
Barton	110,000	48
Murray	990,000	46(2)
South Magnolia	1,800,000	12
North Beach(3)	190,000	8.5

(1) Values required for an average of one event per year based on the entire rainfall record analyzed (1978 – 2008).
(2) Represents peak flow from Murray Basin only. Flows from the Barton Pump Station are added to determine peak flow capacity of the Murray Pump Station.
(3) Values shown for North Beach Pump Station capacity of 3.4 mgd.

2.0 PEAK FLOW DISTRIBUTION

Each basin was divided into several sub-basins for flow monitoring and model calibration. The sub-basins were calibrated to disaggregated flow data from county facilities and flow meters within the collection system. Several storm events during the flow monitoring period of late 2007 through mid-2008 were used in the model. Model calibration developed peak flow and volume data by adjusting the model parameters so that the data results correlate to observed storm flows. The model peak flow and volume results were within calibration criteria set by industry guidelines when compared to observed data. The resulting peak flow distribution for each basin is shown in the figures below.

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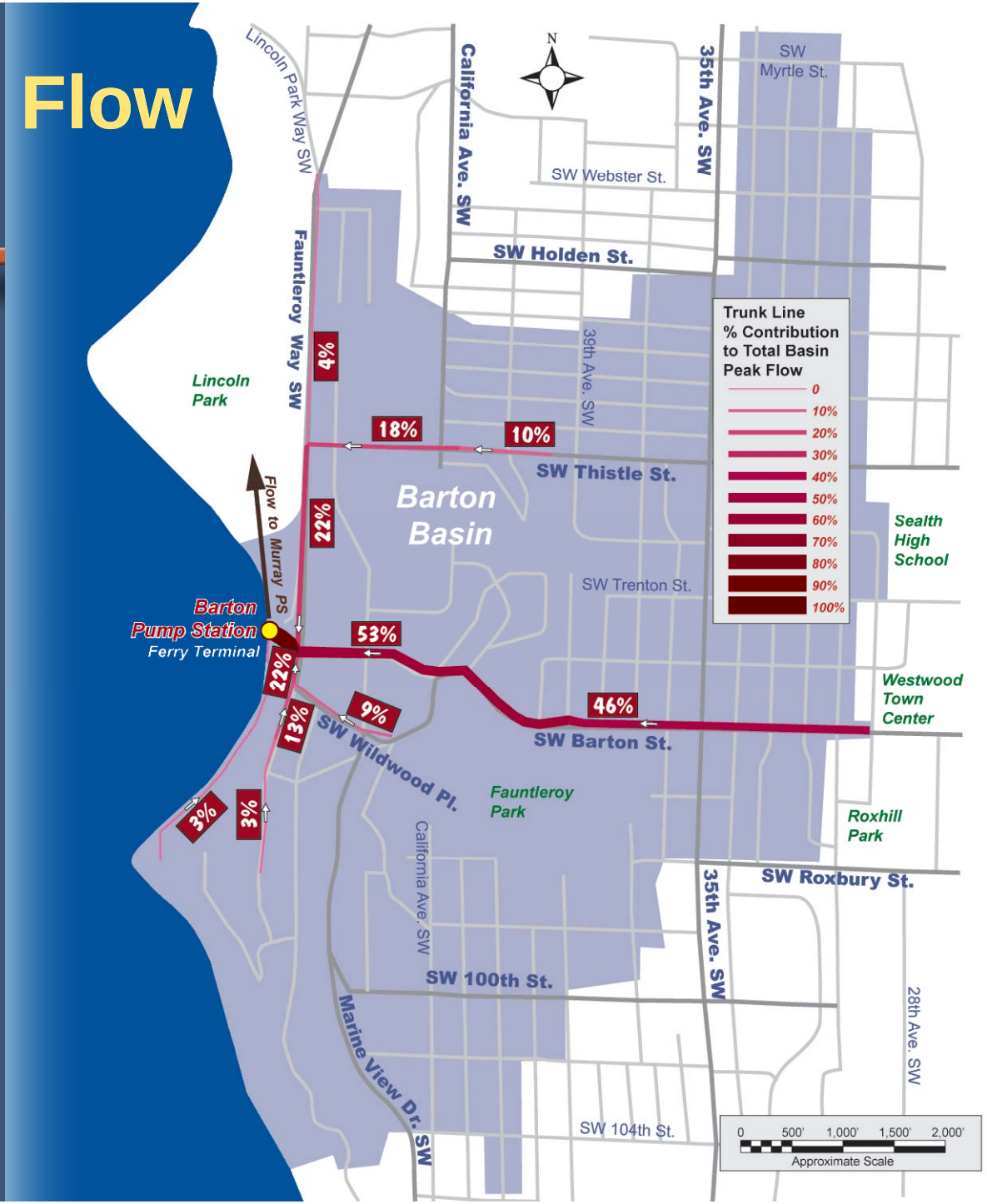
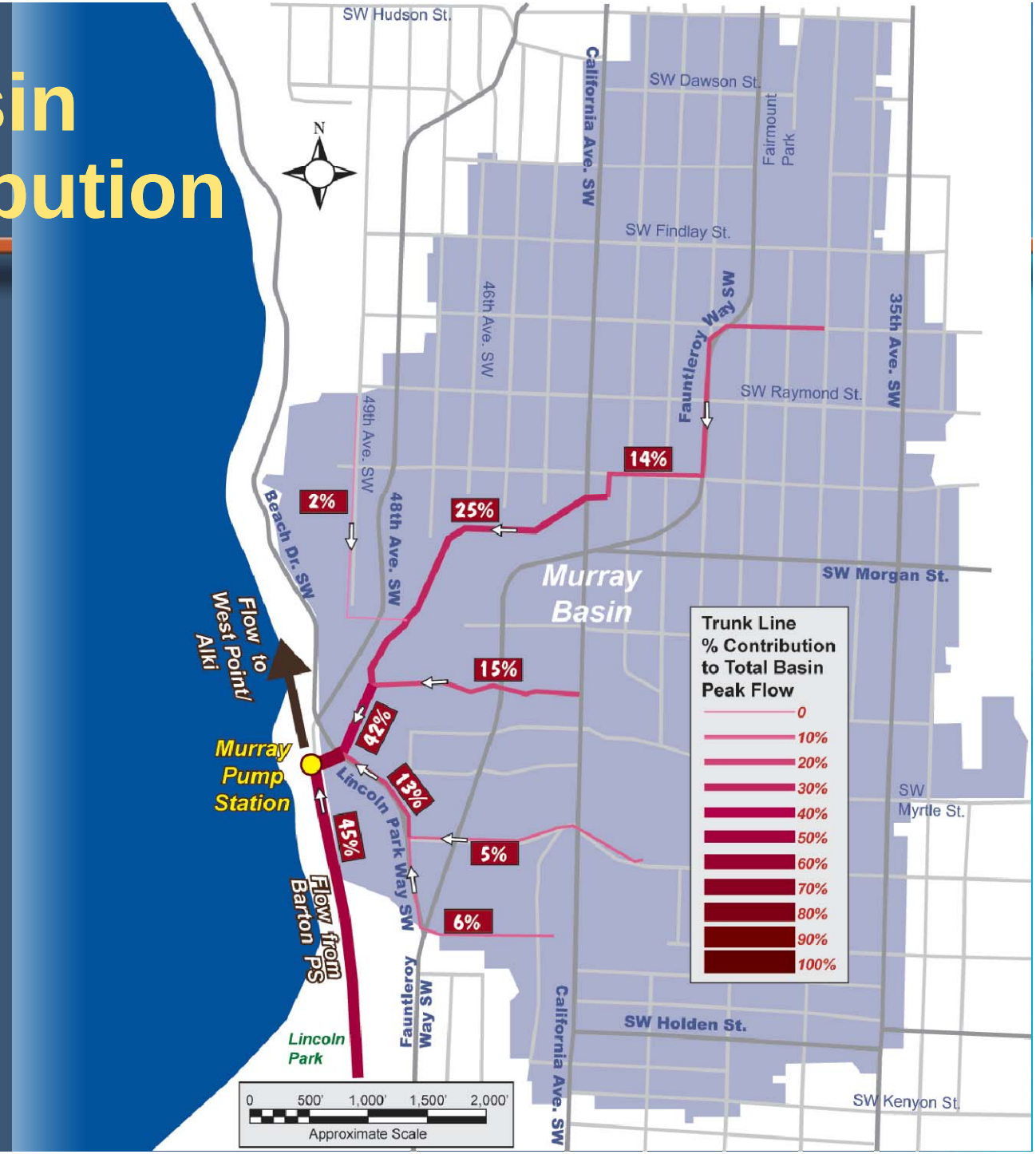
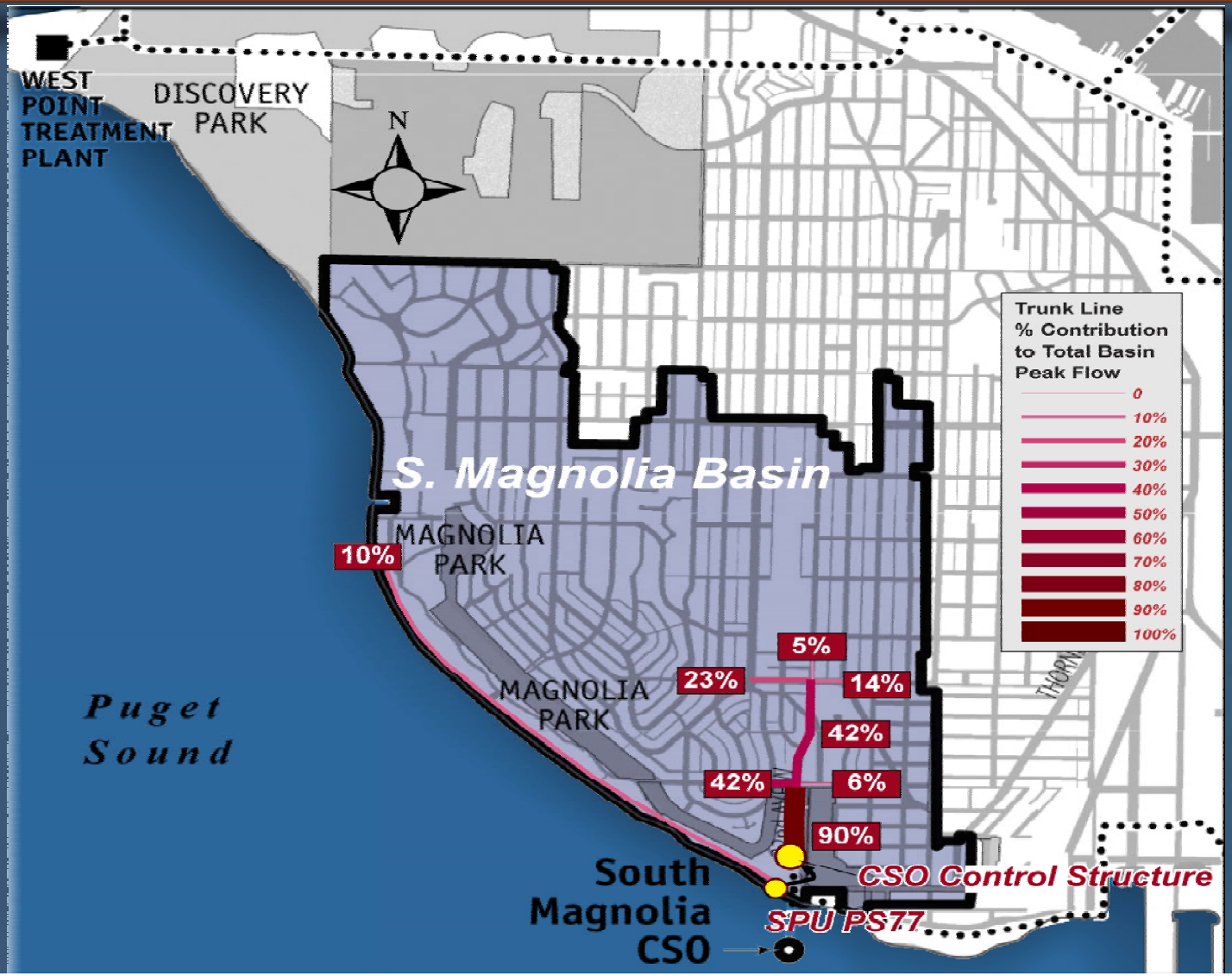
Barton Basin Flow Distribution



Murray Basin Flow Distribution



South Magnolia Basin Flow Distribution



North Beach Basin Flow Distribution