





**Green Visions Plan**  
**Watershed Modeling and Analysis Tools**  
 Regional Water Quality Control Board  
 11 August 2009





## GVP Watershed Modeling Goals


- Determine quantities of contaminants entering stream network
- Simulate transport of contaminants in reservoirs, rivers, and groundwater
- Predict water quality by stream catchment
- Using the MIKE BASIN modeling tools



From LASGRWC

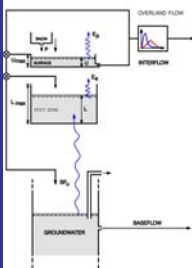


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## Model Implementation

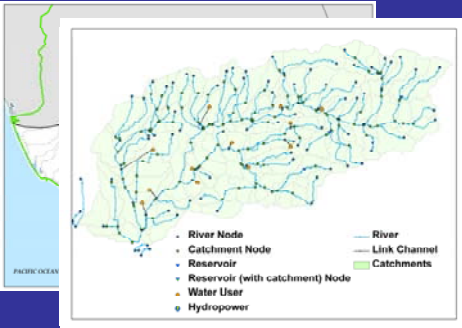
- Prepare model & data
- Calibrate rainfall-runoff relationships
- Calibrate delivery & transport of contaminants
  - NO<sub>3</sub>-N, NH<sub>3</sub>-N
  - Total P
- Validate rainfall-runoff & water quality predictions
- Generate final results



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## Subwatershed Delineation

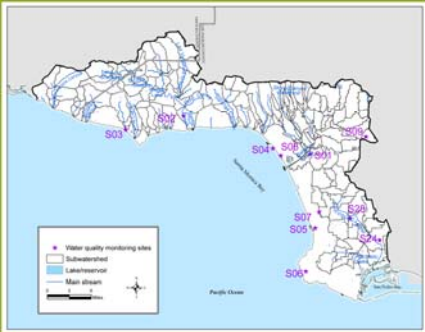


- River Node
- Catchment Node
- Reservoir
- Reservoir (with catchment) Node
- Water User
- Hydropower

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## Santa Monica Bay Watershed



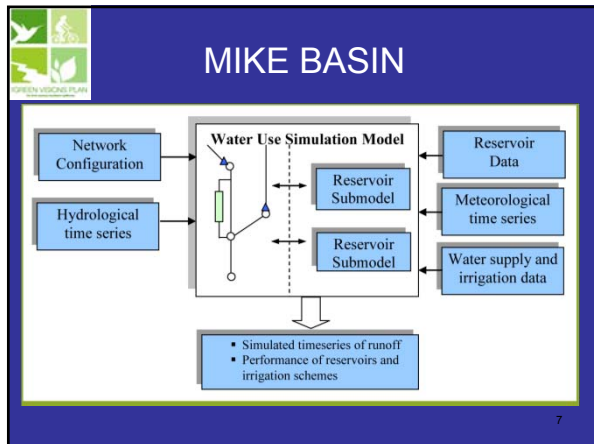
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## Field Observations



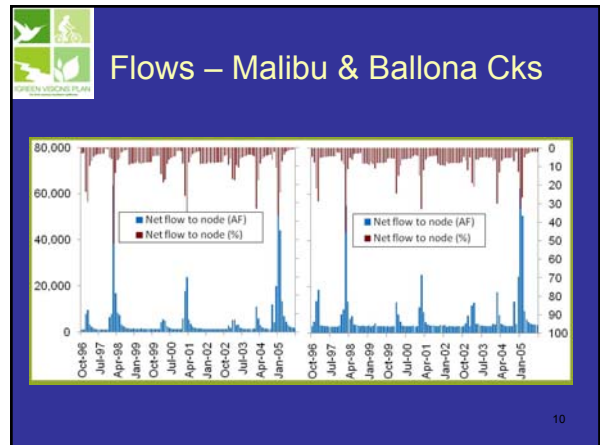
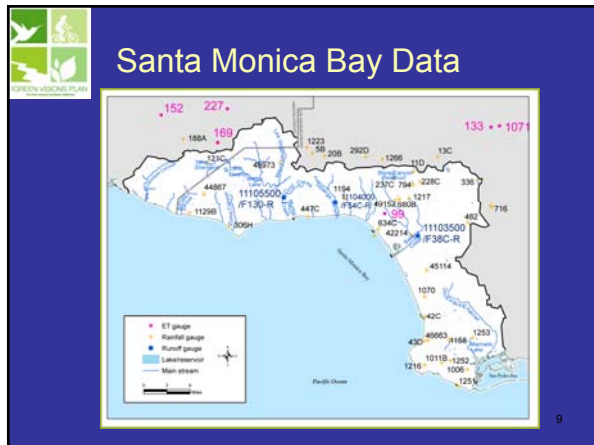
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### Model Calibration & Validation

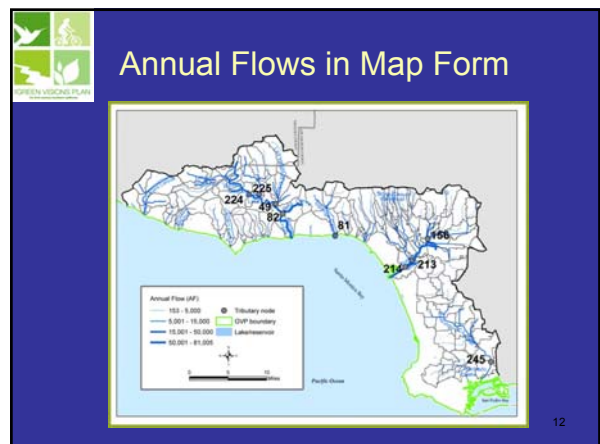
- Precipitation station data
- Evaporation station data
- Stream discharge data
- NPDES discharge & concentration data
- Event mean flux data (for selected constituents & land uses)
- Water quality monitoring data

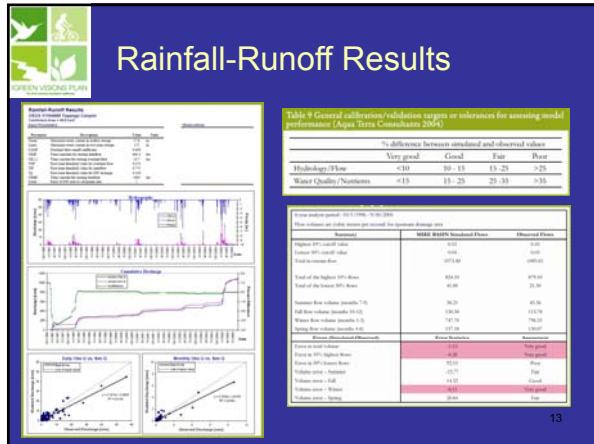
Two photographs are included: the top one shows a natural stream with a bridge and trees, and the bottom one shows a concrete-lined water treatment or monitoring facility with various pipes and structures.



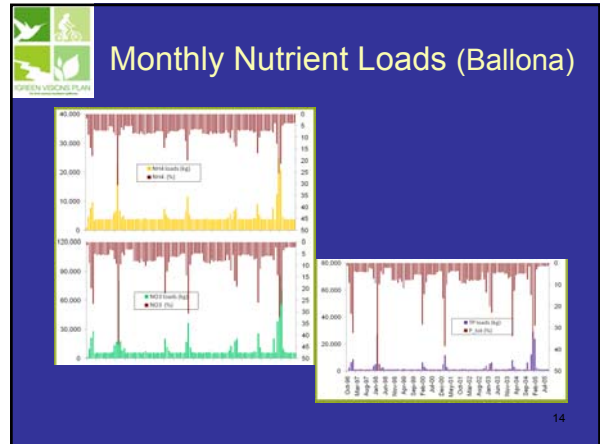
### Flows – Major Tributaries

Reach name	Node ID	Annual Q [AF]	Ocean Q (%)	Area (%)
Upper Ballona Creek	N156	48,132	29.8	13.6
Sepulveda Channel	N213	13,278	8.2	9.4
Ballona Creek	N214	78,115	48.4	40.7
Potrero Canyon Creek	N224	22,599	14.0	12.0
Medea Creek	N225	10,328	6.4	7.9
Dominguez Channel	N245	12,770	7.9	22.0
Las Virgenes Creek	N49	9,914	6.1	7.7
Topanga Canyon	N81	9,508	5.9	6.3
Malibu Creek	N82	60,977	37.8	31.0





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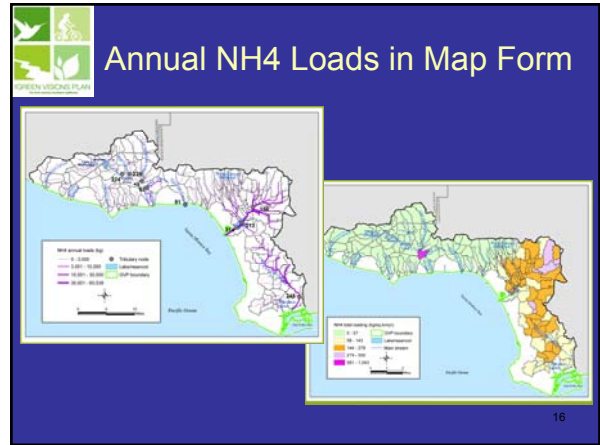


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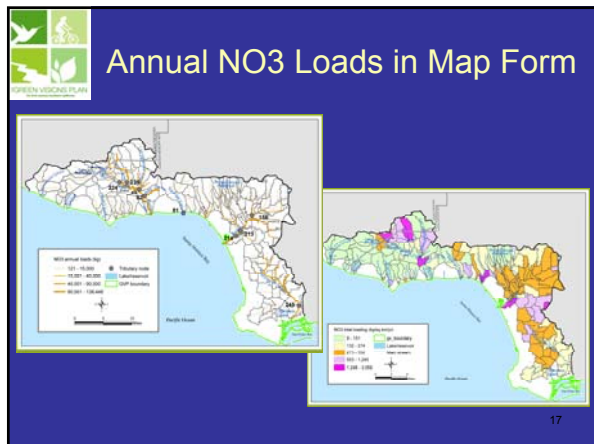
## Nutrients – Major Tributaries

Reach Name	Node ID	NH4 (kg)	NH4 % to ocean	NO3 (kg)	NO3 % to ocean	TP (kg)	TP % to ocean	Area (%)
Upper Ballona Creek	N156	27,165	30.3	38,244	11.7	10,692	13.7	13.6
Sepulveda Channel	N213	6,801	7.6	16,014	4.9	4,474	5.7	9.4
Ballona Creek	N214	56,897	63.6	107,501	32.8	29,234	37.5	40.7
Trunfo Creek	N224	0.0	0.0	34,538	10.5	7,139	9.1	12.0
Medea Creek	N225	0.0	0.0	64,979	19.8	13,377	17.1	7.9
Dominguez Channel	N245	25,991	29.0	72,099	22.0	19,029	24.4	22.0
Las Virgenes Creek	N49	0	0.0	21,164	6.5	4,373	5.6	7.7
Topanga Canyon	N81	0	0.0	10,988	3.4	2,312	3.0	6.3
Malibu Creek	N82	6,640	7.4	136,877	41.8	27,467	35.2	31.0

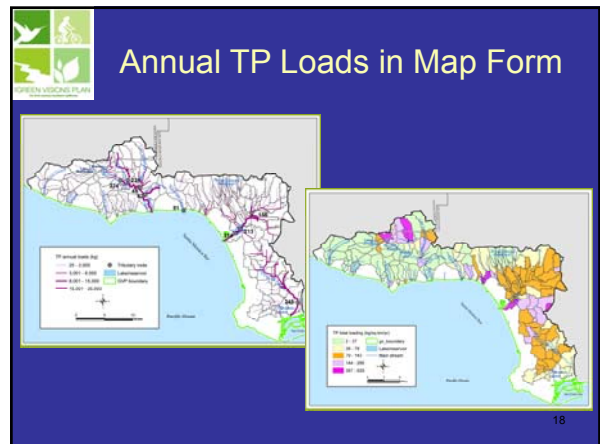
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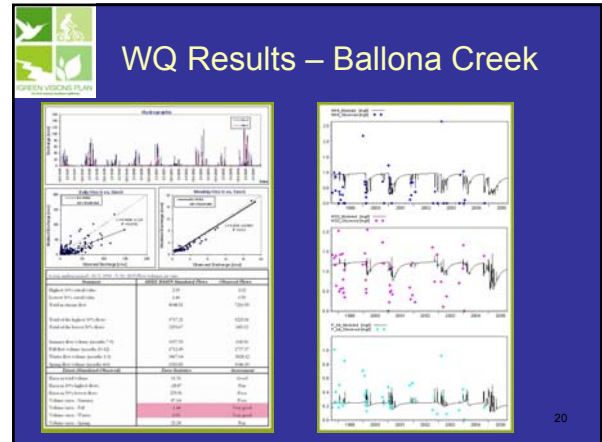
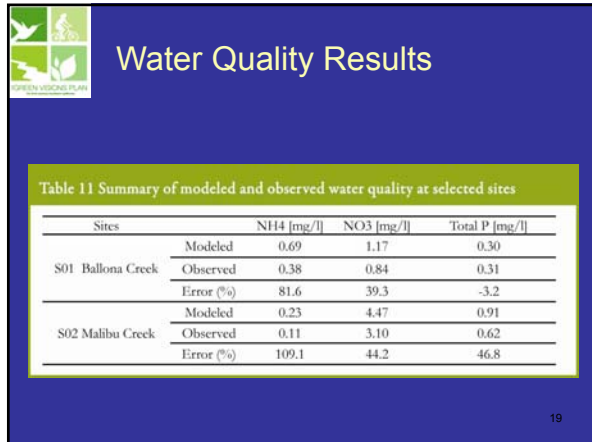
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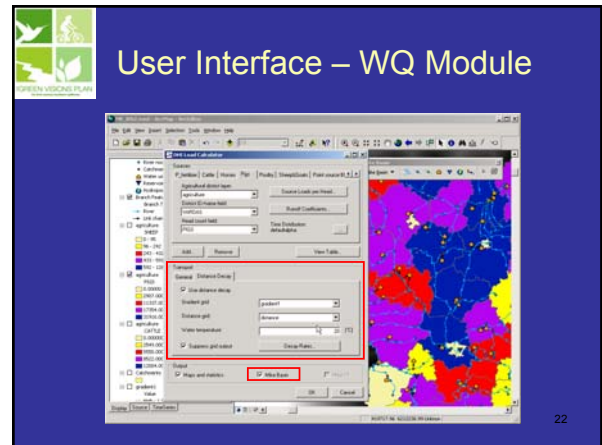
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- ## More Results!!!
- Santa Monica Bay – 145 streams & tributaries
  - Calleguas Creek – 145 tributaries (subwatersheds)
  - Los Angeles River – 171 tributaries (from 1,783 at outset)
  - San Gabriel River – 216 tributaries
  - Santa Clara River – 146 tributaries



## Green Visions Plan Spatial Decision Support Tools

<http://www.greenvisionsplan.net/>

EL Encanto RESTAURANT