COASTAL STORM DRAIN MONITORING

Routine Investigation **Resample** **IC/ID Follow-Up** (Select One)

GENERAL SITE DESCRIPTION

Site ID: _____ **Latitude:** _____ (GPS coordinates recorded in NAD 83 decimal deg)
Location: _____ **Longitude:** _____
Date/Time: _____ **Watershed:** _____ (Watershed Management Area as defined in Permit)
Observer: _____ **TB Page:** _____

Observed Land Use:	Residential	Commercial	Industrial	Agricultural	Parks	Open (check all applicable)
Conveyance Type:	Manhole	Catch Basin	Outlet	Open Channel	Other	_____
Construction:	Concrete	Steel	Plastic	Natural		

ATMOSPHERIC CONDITIONS

Weather	Sunny	Partly Cloudy	Overcast	Fog	
Tide	N/A Low	Incoming	High	Outgoing	**Tide Height:** _____ft.
Last Rain	> 72 hours	< 72 hours			
Rainfall	None	< 0.1"	> 0.1"		

Potential Fecal Sources Within 75 ft.

Wildlife: #_____
Pets: #_____
Birds: #_____
Children (Diapers): _____
Other Bathers: #_____
Encampments: #_____

BEACH APPEARANCE **Composition:** Sandy Rocky/Gravel

Clean Trash Kelp/Grasses Organic Matter Other: _____

RUNOFF CHARACTERISTICS

Odor	None	Musty	Rotten Eggs	Chemical	Sewage	Other _____
Color	None	Yellow	Brown	White	Gray	Other _____
Clarity	Clear		Slightly Cloudy	Opaque		Other _____
Floatables	None	Trash	Bubbles/Foam	Sheen	Fecal Matter	Other
Deposits	None	Sediment/Gravel	Fine Particulates	Stains	Oily Deposit	Other _____
Vegetation	None	Limited	Normal	Excessive		Other _____
Biology	None	Insects	Algae	Snails/Fish	Mussels/barnacles	Other _____

Flow Observed Yes No Ponded Tidal (If yes, record conductivity below)
Flow Rate:_____ gpm (*See worksheets below) _____mS/cm or mhos/cm

Does the storm drain flow reach the Receiving Water? Yes No N/A

Evidence of Overland Flow? Yes No Irrigation Runoff Other: _____

Photo Taken Yes No **Picture #** _____

Stormdrain Sample Collected Yes No **Bottle ID#** _____ **Collection Time** _____

Storm Drain	T. Coliform		F. Coliform		Enterococcus	

Receiving Water Sample Collected Yes No **Bottle ID#** _____ **Collection Time** _____
Sample Location (From storm drain, facing receiving water) 75' Left 75' Right Mixing Zone Other _____

Receiving Water	T. Coliform		F. Coliform		Enterococcus	

*** FLOW ESTIMATION WORKSHEETS**

Flowing Creek or Box Culvert*

Width		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

Filling a Bottle or Known Volume*

Volume		mL
Time to Fill		sec
Flow		gpm

Flowing Pipe*

Diameter		ft
Depth		ft
Velocity		ft/sec
Flow		gpm

COMMENTS: _____

***See formula and conversions on back of page**

SAE / Metric Unit Conversion

0.083 ft	=	**1 in**	=	**2.54 cm**						
0.1337 ft^3	=	**1 gal**	=	**128 oz**		**$1ft^3/S$**	=	**448.8 gal/min**		
3,785 mL			=	**3.785 L**						
0.0078 gal	=	**1 oz**	=	**.0011 ft^3**		**1mL/S**	=	**0.0159 gal/min**		
1000 cm^3	=	**1 L**	=	**1000 mL**		**1728 in^3**	=	**$1ft^3$**		
		ppt	=	**g/L**						
		ppm	=	**mg/L**						
		ppb	=	**µg/L**						

Calculating the Area (a) of the Cross Section of a Circular Pipe Flowing Partially Full

D = Depth of water

a = area of water in partially filled pipe

d = diameter of the pipe

Ta = Tabulated Value

Then $a = Ta*d^2$

D/d	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	0.0000	0.0013	0.0037	0.0069	0.0105	0.0147	0.0192	0.0242	0.0294	0.0350
0.1	0.0409	0.0470	0.0534	0.0600	0.0668	0.0739	0.0817	0.0885	0.0951	0.1039
0.2	0.1118	0.1199	0.1281	0.1365	0.1440	0.1535	0.1623	0.1711	0.1800	0.1890
0.3	0.1982	0.2074	0.2187	0.2280	0.2355	0.2450	0.2540	0.2642	0.2780	0.2836
0.4	0.2934	0.3032	0.3130	0.3220	0.3328	0.3428	0.3527	0.3627	0.3727	0.3827
0.5	0.3980	0.4030	0.4130	0.4230	0.4330	0.4430	0.4520	0.4620	0.4720	0.4820
0.6	0.4920	0.5020	0.5120	0.5210	0.5310	0.5400	0.5500	0.5590	0.5690	0.5780
0.7	0.5870	0.5960	0.6050	0.6140	0.6230	0.6320	0.6400	0.6490	0.6570	0.6660
0.8	0.6740	0.6810	0.6890	0.6970	0.7040	0.7120	0.7190	0.7250	0.7320	0.7360
0.9	0.7450	0.7500	0.7560	0.7610	0.7660	0.7710	0.7750	0.7790	0.7820	0.7840

AREA x VELOCITY (CREEK/CHANNEL METHOD)

1. Measure the width, depth, and velocity of the water.
2. Convert each value to a common unit (i.e. all measurements converted to cm, ft, or in.)
3. Multiply the width * depth * velocity to determine flow.
4. Multiply the flow by 0.8 for creek measurements –or-- 0.9 for concrete channel measurements to account for channel roughness.
5. The results if measured in
   - Ft = Ft^3/sec
   - cm = cm^3/sec (mL/sec)
   - in = in^3/sec
6. Convert to desired value.

TIME REQUIRED TO FILL A KNOWN VOLUME (FILL A BOTTLE METHOD)

1. Determine volume/capacity of the sample bottle.
2. Measure time required to fill the bottle.
3. Divide time by seconds
4. Flow will be determined by initial volume units:
   - mL/s
   - oz/s
5. Convert to desired value

AREA x VELOCITY (PARTIALLY FILLED PIPE)

1. All measurement must be converted to a common unit before calculation (ft, in, or cm).
2. Let D = water depth
3. Let d = *inside* pipe diameter
4. Calculate D/d
5. Find the tabulated (Ta) value on the partially filled pipe formula chart above using the D/d value. (i.e. if D/d = 0.263 then Ta . 0.1623)
6. Find the area using the formula $a = Ta*d^2$.
7. Multiply area (a) by the water velocity.
8. Convert to desired value

***See formula and conversions on back of page**