

**Appendix E: Modeled Benefits for Wet Weather
Non-Structural BMPs**

Summary of Aliso Creek Wet Weather Non-Structural BMPs and Quantification of Water Quality Benefits

BMP Name	Wet or Dry Weather	Land Use Targeted	Pollutant Generating Activity	Quantification Assumptions			Quantification Method	Expected Annual Reduction of Average Watershed Baseline Load by 2031	
				Load Assumption	Units	Citation/Assumptions		Fecal Coliform (10 ¹² MPN and percent)	
							Low Range	High Range	
Potential Public Private Partnership Program	Wet Weather	Single Family Residential (SFR)	Residential Roofs	27,240	Parcels of Single Family Residential in Watershed	PACE Geodatabase Land Use and Parcel Data	(residential parcels in watershed) * (SFR rooftop area) * [(expected percent of residential area converted to rain barrels) * (annual load reduction per acre conversion to rain barrels) + (expected percent of SFR disconnected to lawns) * (annual load reduction per acre from disconnection to lawn)]	35 0.73%	510 11%
				1,200 - 4,400	Single Family Residential Rooftop Size	Range developed on a GIS assessment of 20 parcels within the watershed			
				0.055	10 ¹² MPN of fecal coliform reduced per impervious acre treated by rain barrels	Modeled in SBPAT using local rainfall data, assumed 0.2 inch design storm (equates to one 55 gallon barrel for each 500 sq.-ft roof area), 10-day drain time.			
				0.60	10 ¹² MPN of fecal coliform reduced per impervious acre treated by disconnection	Modeled in SBPAT using local rainfall data, assumed area receiving flow would have an infiltration rate of 0.15 in/hr. (C/B soils) and effective depression storage (including root zone) of 0.1 inches, and would be 1/4 the area of contributing flow			
				2.5-10%	Percent of Residential Area Converted to rain barrels	Conversion over 15 years, based on expected effectiveness of incentives program.			
				7.5-30%	Percent of Residential Area Converted to disconnected to pervious area.	Conversion over 15 years, based on expected effectiveness of incentives program.			
Redevelopment through Permit-Required LID Implementation	Wet Weather	All Land Uses covered under SUSMP	Urban development	0.18	10 ¹² MPN of fecal coliform reduced per Residential Acre Converted	Modeled in SBPAT using local rainfall data; Applied standard SUSMP-sized bioretention with underdrains to unit areas of various land uses.	Sum for all land uses of (Load Reduction per Acre Converted) * (Acres Converted per Year) * (Years to 2031) * (+ or - 20%)	110 2.3%	170 3.6%
				0.61	10 ¹² MPN of fecal coliform reduced per Commercial Acre Converted				
				0.033	10 ¹² MPN of fecal coliform reduced per Industrial Acre Converted				
				0.63	10 ¹² MPN of fecal coliform reduced per Education Acre Converted				
				0.0090	10 ¹² MPN of fecal coliform reduced per Transportation Acre Converted				
				460	Acres Residential Converted (Land Use Redev. Rate = 0.18%)	Calculated by Extrapolating City of LA Redevelopment Rate From Ballona IP (rate shown in parentheses) to watershed area by land use			
				68	Acres Commercial Converted (Land Use Redev. Rate = 0.15%)				
				54	Acres Industrial Converted (Land Use Redev. Rate = 0.34%)				
				24	Acres Education Converted (Land Use Redev. Rate = 0.16%)				
				190	Acres Transportation Converted (Land Use Redev. Rate = 2.7%)				
Wet Weather Total							Total expected load reduction	145	680
							% of Average Watershed Load (WY 1993)	3.0%	14%

Summary of Dana Point Watershed Wet Weather Non-Structural BMPs and Quantification of Water Quality Benefits

BMP Name	Wet or Dry Weather	Land Use Targeted	Pollutant Generating Activity	Quantification Assumptions			Quantification Method	Expected Annual Reduction of Average Watershed Baseline Load by 2031	
				Load Assumption	Units	Citation/Assumptions		Fecal Coliform (10 ¹² MPN and percent)	
							Low Range	High Range	
Potential Public Private Partnership Program	Wet Weather	Single Family Residential (SFR)	Residential Roofs	11,000	Parcels of Single Family Residential in Watershed	PACE Geodatabase Land Use and Parcel Data	(residential parcels in watershed) * (SFR rooftop area) * [(expected percent of residential area converted to rain barrels) * (annual load reduction per acre conversion to rain barrels) + (expected percent of SFR disconnected to lawns) * (annual load reduction per acre from disconnection to lawn)]	10 0.6%	270 18%
				860 - 5,700	Single Family Residential Rooftop Size	Range developed on a GIS assessment of 20 parcels within the watershed			
				0.055	10 ¹² MPN of fecal coliform reduced per impervious acre treated by rain barrels	Modeled in SBPAT using local rainfall data, assumed 0.2 inch design storm (equates to one 55 gallon barrel for each 500 sq.-ft roof area), 10-day drain time.			
				0.60	10 ¹² MPN of fecal coliform reduced per impervious acre treated by disconnection	Modeled in SBPAT using local rainfall data, assumed area receiving flow would have an infiltration rate of 0.15 in/hr. (C/B soils) and effective depression storage (including root zone) of 0.1 inches, and would be 1/4 the area of contributing flow			
				2.5-10%	Percent of Residential Area Converted to rain barrels	Conversion over 15 years, based on expected effectiveness of incentives program.			
				7.5-30%	Percent of Residential Area Converted to disconnected to pervious area.	Conversion over 15 years, based on expected effectiveness of incentives program.			
Redevelopment through Permit-Required LID Implementation	Wet Weather	All Land Uses covered under SUSMP	Urban development	0.18	10 ¹² MPN of fecal coliform reduced per Residential Acre Converted	Modeled in SBPAT using local rainfall data; Applied standard SUSMP-sized bioretention with underdrains to unit areas of various land uses.	Sum for all land uses of (Load Reduction per Acre Converted) * (Acres Converted per Year) * (Years to 2031) * (+ or - 20%)	35 2.3%	53 3.4%
				0.61	10 ¹² MPN of fecal coliform reduced per Commercial Acre Converted				
				0.033	10 ¹² MPN of fecal coliform reduced per Industrial Acre Converted				
				0.63	10 ¹² MPN of fecal coliform reduced per Education Acre Converted				
				0.0090	10 ¹² MPN of fecal coliform reduced per Transportation Acre Converted				
				180	Acres Residential Converted (Land Use Redev. Rate = 0.18%)	Calculated by Extrapolating City of LA Redevelopment Rate From Ballona IP (rate shown in parentheses) to watershed area by land use			
				15	Acres Commercial Converted (Land Use Redev. Rate = 0.15%)				
				0.91	Acres Industrial Converted (Land Use Redev. Rate = 0.34%)				
				3.5	Acres Education Converted (Land Use Redev. Rate = 0.16%)				
				0.0	Acres Transportation Converted (Land Use Redev. Rate = 2.7%)				
Wet Weather Total							Total expected load reduction	45	323
							% of Average Watershed Load (WY 1993)	2.9%	21%

Summary of Laguna Coastal Watershed Wet Weather Non-Structural BMPs and Quantification of Water Quality Benefits

BMP Name	Wet or Dry Weather	Land Use Targeted	Pollutant Generating Activity	Quantification Assumptions			Quantification Method	Expected Annual Reduction of Average Watershed Baseline Load by 2031	
				Load Assumption	Units	Citation/Assumptions		Fecal Coliform (10 ¹² MPN and percent)	
							Low Range	High Range	
Potential Public Private Partnership Program	Wet Weather	Single Family Residential (SFR)	Residential Roofs	8,400	Parcels of Single Family Residential in Watershed	PACE Geodatabase Land Use and Parcel Data	(residential parcels in watershed) * (SFR rooftop area) * [(expected percent of residential area converted to rain barrels) * (annual load reduction per acre conversion to rain barrels) + (expected percent of SFR disconnected to lawns) * (annual load reduction per acre from disconnection to lawn)]	18 1.6%	230 21%
				2,000 - 6,400	Single Family Residential Rooftop Size	Range developed on a GIS assessment of 20 parcels within the watershed			
				0.055	10 ¹² MPN of fecal coliform reduced per impervious acre treated by rain barrels	Modeled in SBPAT using local rainfall data, assumed 0.2 inch design storm (equates to one 55 gallon barrel for each 500 sq.-ft roof area), 10-day drain time.			
				0.60	10 ¹² MPN of fecal coliform reduced per impervious acre treated by disconnection	Modeled in SBPAT using local rainfall data, assumed area receiving flow would have an infiltration rate of 0.15 in/hr. (C/B soils) and effective depression storage (including root zone) of 0.1 inches, and would be 1/4 the area of contributing flow			
				2.5-10%	Percent of Residential Area Converted to rain barrels	Conversion over 15 years, based on expected effectiveness of incentives program.			
				7.5-30%	Percent of Residential Area Converted to disconnected to pervious area.	Conversion over 15 years, based on expected effectiveness of incentives program.			
Redevelopment through Permit-Required LID Implementation	Wet Weather	All Land Uses covered under SUSMP	Urban development	0.18	10 ¹² MPN of fecal coliform reduced per Residential Acre Converted	Modeled in SBPAT using local rainfall data; Applied standard SUSMP-sized bioretention with underdrains to unit areas of various land uses.	Sum for all land uses of (Load Reduction per Acre Converted) * (Acres Converted per Year) * (Years to 2031) * (+ or - 20%)	24 2.2%	36 3.2%
				0.61	10 ¹² MPN of fecal coliform reduced per Commercial Acre Converted				
				0.033	10 ¹² MPN of fecal coliform reduced per Industrial Acre Converted				
				0.63	10 ¹² MPN of fecal coliform reduced per Education Acre Converted				
				0.0090	10 ¹² MPN of fecal coliform reduced per Transportation Acre Converted				
				110	Acres Residential Converted (Land Use Redev. Rate = 0.18%)	Calculated by Extrapolating City of LA Redevelopment Rate From Ballona IP (rate shown in parentheses) to watershed area by land use			
				13	Acres Commercial Converted (Land Use Redev. Rate = 0.15%)				
				12	Acres Industrial Converted (Land Use Redev. Rate = 0.34%)				
				2.3	Acres Education Converted (Land Use Redev. Rate = 0.16%)				
				78	Acres Transportation Converted (Land Use Redev. Rate = 2.7%)				
Wet Weather Total							Total expected load reduction	42	266
							% of Average Watershed Load (WY 1993)	3.8%	24%

Summary of San Clemente Watershed Wet Weather Non-Structural BMPs and Quantification of Water Quality Benefits

BMP Name	Wet or Dry Weather	Land Use Targeted	Pollutant Generating Activity	Quantification Assumptions			Quantification Method	Expected Annual Reduction of Average Watershed Baseline Load by 2031	
				Load Assumption	Units	Citation/Assumptions		Fecal Coliform (10 ¹² MPN and percent)	
							Low Range	High Range	
Potential Public Private Partnership Program	Wet Weather	Single Family Residential (SFR)	Residential Roofs	14,000	Parcels of Single Family Residential in Watershed	PACE Geodatabase Land Use and Parcel Data	(residential parcels in watershed) * (SFR rooftop area) * [(expected percent of residential area converted to rain barrels) * (annual load reduction per acre conversion to rain barrels) + (expected percent of SFR disconnected to lawns) * (annual load reduction per acre from disconnection to lawn)]	26 1.0%	370 14%
				1,800 - 6,300	Single Family Residential Rooftop Size	Range developed on a GIS assessment of 20 parcels within the watershed			
				0.055	10 ¹² MPN of fecal coliform reduced per impervious acre treated by rain barrels	Modeled in SBPAT using local rainfall data, assumed 0.2 inch design storm (equates to one 55 gallon barrel for each 500 sq.-ft roof area), 10-day drain time.			
				0.60	10 ¹² MPN of fecal coliform reduced per impervious acre treated by disconnection	Modeled in SBPAT using local rainfall data, assumed area receiving flow would have an infiltration rate of 0.15 in/hr. (C/B soils) and effective depression storage (including root zone) of 0.1 inches, and would be 1/4 the area of contributing flow			
				2.5-10%	Percent of Residential Area Converted to rain barrels	Conversion over 15 years, based on expected effectiveness of incentives program.			
				7.5-30%	Percent of Residential Area Converted to disconnected to pervious area.	Conversion over 15 years, based on expected effectiveness of incentives program.			
Redevelopment through Permit-Required LID Implementation	Wet Weather	All Land Uses covered under SUSMP	Urban development	0.180	10 ¹² MPN of fecal coliform reduced per Residential Acre Converted	Modeled in SBPAT using local rainfall data; Applied standard SUSMP-sized bioretention with underdrains to unit areas of various land uses.	Sum for all land uses of (Load Reduction per Acre Converted) * (Acres Converted per Year) * (Years to 2031) * (+ or - 20%)	57 2.2%	85 3.3%
				0.610	10 ¹² MPN of fecal coliform reduced per Commercial Acre Converted				
				0.033	10 ¹² MPN of fecal coliform reduced per Industrial Acre Converted				
				0.630	10 ¹² MPN of fecal coliform reduced per Education Acre Converted				
				0.0090	10 ¹² MPN of fecal coliform reduced per Transportation Acre Converted				
				220	Acres Residential Converted (Land Use Redev. Rate = 0.18%)	Calculated by Extrapolating City of LA Redevelopment Rate From Ballona IP (rate shown in parentheses) to watershed area by land use			
				40	Acres Commercial Converted (Land Use Redev. Rate = 0.15%)				
				70	Acres Industrial Converted (Land Use Redev. Rate = 0.34%)				
				6.4	Acres Education Converted (Land Use Redev. Rate = 0.16%)				
				120	Acres Transportation Converted (Land Use Redev. Rate = 2.7%)				
Wet Weather Total							83	455	
							% of Average Watershed Load (WY 1993)	3.3%	18%

Summary of San Juan Watershed Wet Weather Non-Structural BMPs and Quantification of Water Quality Benefits

BMP Name	Wet or Dry Weather	Land Use Targeted	Pollutant Generating Activity	Quantification Assumptions			Quantification Method	Expected Annual Reduction of Average Watershed Baseline Load by 2031	
				Load Assumption	Units	Citation/Assumptions		Fecal Coliform (10 ¹² MPN and percent)	
							Low Range	High Range	
Potential Public Private Partnership Program	Wet Weather	Single Family Residential (SFR)	Residential Roofs	48,000	Parcels of Single Family Residential in Watershed	PACE Geodatabase Land Use and Parcel Data	(residential parcels in watershed) * (SFR rooftop area) * [(expected percent of residential area converted to rain barrels) * (annual load reduction per acre conversion to rain barrels) + (expected percent of SFR disconnected to lawns) * (annual load reduction per acre from disconnection to lawn)]	78 0.70%	1,300 12%
				1,500 - 6,200	Single Family Residential Rooftop Size	Range developed on a GIS assessment of 20 parcels within the watershed			
				0.055	10 ¹² MPN of fecal coliform reduced per impervious acre treated by rain barrels	Modeled in SBPAT using local rainfall data, assumed 0.2 inch design storm (equates to one 55 gallon barrel for each 500 sq.-ft roof area), 10-day drain time.			
				0.60	10 ¹² MPN of fecal coliform reduced per impervious acre treated by disconnection	Modeled in SBPAT using local rainfall data, assumed area receiving flow would have an infiltration rate of 0.15 in/hr. (C/B soils) and effective depression storage (including root zone) of 0.1 inches, and would be 1/4 the area of contributing flow			
				2.5-10%	Percent of Residential Area Converted to rain barrels	Conversion over 15 years, based on expected effectiveness of incentives program.			
				7.5-30%	Percent of Residential Area Converted to disconnected to pervious area.	Conversion over 15 years, based on expected effectiveness of incentives program.			
Redevelopment through Permit-Required LID Implementation	Wet Weather	All Land Uses covered under SUSMP	Urban development	0.180	10 ¹² MPN of fecal coliform reduced per Residential Acre Converted	Modeled in SBPAT using local rainfall data; Applied standard SUSMP-sized bioretention with underdrains to unit areas of various land uses.	Sum for all land uses of (Load Reduction per Acre Converted) * (Acres Converted per Year) * (Years to 2031) * (+ or - 20%)	200 1.8%	290 2.6%
				0.610	10 ¹² MPN of fecal coliform reduced per Commercial Acre Converted				
				0.033	10 ¹² MPN of fecal coliform reduced per Industrial Acre Converted				
				0.630	10 ¹² MPN of fecal coliform reduced per Education Acre Converted				
				0.0090	10 ¹² MPN of fecal coliform reduced per Transportation Acre Converted				
				780	Acres Residential Converted (Land Use Redev. Rate = 0.18%)	Calculated by Extrapolating City of LA Redevelopment Rate From Ballona IP (rate shown in parentheses) to watershed area by land use			
				120	Acres Commercial Converted (Land Use Redev. Rate = 0.15%)				
				120	Acres Industrial Converted (Land Use Redev. Rate = 0.34%)				
				38	Acres Education Converted (Land Use Redev. Rate = 0.16%)				
				480	Acres Transportation Converted (Land Use Redev. Rate = 2.7%)				
Wet Weather Total							Total expected load reduction	278	1590
							% of Average Watershed Load (WY 1993)	2.5%	14%

Summary of San Mateo Watershed Wet Weather Non-Structural BMPs and Quantification of Water Quality Benefits

BMP Name	Wet or Dry Weather	Land Use Targeted	Pollutant Generating Activity	Quantification Assumptions			Quantification Method	Expected Annual Reduction of Average Watershed Baseline Load by 2031	
				Load Assumption	Units	Citation/Assumptions		Fecal Coliform (10 ¹² MPN and percent)	
							Low Range	High Range	
Potential Public Private Partnership Program	Wet Weather	Single Family Residential (SFR)	Residential Roofs	770	Parcels of Single Family Residential in Watershed	PACE Geodatabase Land Use and Parcel Data	(residential parcels in watershed) * (SFR rooftop area) * [(expected percent of residential area converted to rain barrels) * (annual load reduction per acre conversion to rain barrels) + (expected percent of SFR disconnected to lawns) * (annual load reduction per acre from disconnection to lawn)]	1.1 0.23%	23 4.9%
				1,300 - 7,000	Single Family Residential Rooftop Size	Range developed on a GIS assessment of 20 parcels within the watershed			
				0.055	10 ¹² MPN of fecal coliform reduced per impervious acre treated by rain barrels	Modeled in SBPAT using local rainfall data, assumed 0.2 inch design storm (equates to one 55 gallon barrel for each 500 sq.-ft roof area), 10-day drain time.			
				0.60	10 ¹² MPN of fecal coliform reduced per impervious acre treated by disconnection	Modeled in SBPAT using local rainfall data, assumed area receiving flow would have an infiltration rate of 0.15 in/hr. (C/B soils) and effective depression storage (including root zone) of 0.1 inches, and would be 1/4 the area of contributing flow			
				2.5-10%	Percent of Residential Area Converted to rain barrels	Conversion over 15 years, based on expected effectiveness of incentives program.			
				7.5-30%	Percent of Residential Area Converted to disconnected to pervious area.	Conversion over 15 years, based on expected effectiveness of incentives program.			
Redevelopment through Permit-Required LID Implementation	Wet Weather	All Land Uses covered under SUSMP	Urban development	0.18	10 ¹² MPN of fecal coliform reduced per Residential Acre Converted	Modeled in SBPAT using local rainfall data; Applied standard SUSMP-sized bioretention with underdrains to unit areas of various land uses.	Sum for all land uses of (Load Reduction per Acre Converted) * (Acres Converted per Year) * (Years to 2031) * (+ or - 20%)	3.5 0.74%	5.3 1.1%
				0.61	10 ¹² MPN of fecal coliform reduced per Commercial Acre Converted				
				0.033	10 ¹² MPN of fecal coliform reduced per Industrial Acre Converted				
				0.63	10 ¹² MPN of fecal coliform reduced per Education Acre Converted				
				0.0090	10 ¹² MPN of fecal coliform reduced per Transportation Acre Converted				
				13	Acres Residential Converted (Land Use Redev. Rate = 0.18%)	Calculated by Extrapolating City of LA Redevelopment Rate From Ballona IP (rate shown in parentheses) to watershed area by land use			
				2.2	Acres Commercial Converted (Land Use Redev. Rate = 0.15%)				
				18	Acres Industrial Converted (Land Use Redev. Rate = 0.34%)				
				0	Acres Education Converted (Land Use Redev. Rate = 0.16%)				
				0	Acres Transportation Converted (Land Use Redev. Rate = 2.7%)				
Wet Weather Total							Total expected load reduction	4.6	28
							% of Average Watershed Load (WY 1993)	1.0%	6.0%