Soil & Plant Laboratory, Inc
Leaders in Soil & Plant Testing Since 1946
www.soilandplantlaboratory.com

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San Jose Office
September 28, 2010
Report 10-264-0051

L.H. Voss Materials, Inc.
2445 Del Vista Monte
Concord, Ca 94520

Attn: Rob

RE: Bio-swale

Background

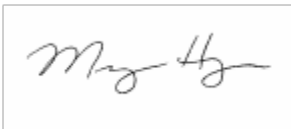
The sample received September 21, 2010 was identified as representing soil for use in a bioswale.

Analytical Results and Comments

The reaction of the soil is slightly alkaline at a pH of 7.2. Salinity (ECe), sodium, and boron are safely low. Boron is also nutritionally adequate. The sodium adsorption ratio (SAR) shows sodium adequately balanced by soluble calcium and magnesium.

The texture of the soil is loamy sand according to the USDA Soil Classification system. There is enough gravel present (15.5% by dry weight) to designate it as “gravelly.” Silt and clay content fall within the range commonly specified for bioswales. The percolation rate is 8.81 inches per hour, and falls within the range commonly specified for bioswales. Organic matter is moderate at 2.8%. In terms of soil fertility, nitrogen is low. The remaining nutrients are adequate for proper plant nutrition.

The pH of the soil is falls within the range that is preferred by most plants and common specifications for bioswale soils. The soil could benefit from the addition of sulfur coated urea (43-0-0) at 5 lbs per 1000 sq. ft. broadcast after the soil is laid to its final grade to increase the nitrogen level. Addition of organic matter is recommended to improve the water holding capacity of the soil. An organic amendment can also help improve the overall quality of the soil for healthy plant development. This could be added at 3 cu. yd. per 1000 sq. ft. to a depth of 6 inches.



Meagan Hynes, Ph.D.

Emailed: rob@lhvoss.com, lhvoss@lhvoss.com

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Project : Bio-Swale

COMPREHENSIVE SOIL ANALYSIS

Report No : **10-264-0051**
Purchase Order :
Date Recd : 09/21/2010
Date Printed : 09/27/2010

Sample Description - Sample ID	Half Sat %	pH	ECe dS/m	NO_3-N ppm	NH_4-N ppm	PO_4-P ppm	K ppm	Ca ppm	Mg ppm	Cu ppm	Zn ppm	Mn ppm	Fe ppm	Organic % dry wt.	Lab No.
	TEC	Qual Lime		Sufficiency Factors											
Bio-Swale	12	7.2	3.3	3	3	12	70	515	132	1.0	4.9	6	20	2.8	26132
	32	None		0.2		0.8	1.0	0.9	1.7	2.5	3.0	1.6	1.3		

Saturation Extract Values						SAR	Gravel %		Percent of Sample Passing 2 mm Screen					USDA Soil Classification	Lab No.
									Sand						
Ca meq/L	Mg meq/L	Na meq/L	K meq/L	B ppm	SO_4 meq/L		Coarse 5 - 12	Fine 2 - 5	Very Coarse 1 - 2	Coarse 0.5 - 1	Med. to Very Fine 0.05 - 0.5	Silt .002-.05	Clay 0-.002		
15.5	9.4	5.2	3.4	0.45	26.1	1.5	6.8	8.7	26.9	38.5	22.2	6.3	5.9	Gravelly Loamy Sand	26132

Sufficiency factor (1.0=sufficient for average crop) below each nutrient value. N factor based on 200 ppm constant feed. SAR = Sodium adsorption ratio. Half Saturation %=approx field moisture capacity. Nitrogen(N), Potassium(K), Calcium(Ca) and Magnesium(Mg) by sodium chloride extraction. Phosphorus(P) by sodium bicarbonate extraction. Copper(Cu), Zinc(Zn), Manganese(Mn) & Iron(Fe) by DTPA extraction. Sat. ext. method for salinity (ECe as dS/m),Boron (B), Sulfate(SO_4), Sodium(Na). Gravel fraction expressed as percent by weight of oven-dried sample passing a 12mm(1/2 inch) sieve. Particle sizes in millimeters. Organic percentage determined by Walkley-Black or Loss on Ignition.

* LOW , SUFFICIENT , HIGH

PERCOLATION RATE					
Client Name	L.H. Voss				
Report Number	10-264-0050				
Lab Number	65522				
	Bio Swale				
Cylinder Area in cm2	21.4				
Height of Soil Column in cm	9.4				
Hydraulic Head in cm	12.6				
Time Collected in min	35				
Volume Collected in ml	374.47				
K sat in/hr @ temp	8.810692722				