

June 25, 2004
Project No. 600550002

Mr. Warren Rosebraugh, P.E.
Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009-6399

Subject: Agronomic Laboratory Test Results
Laveen Area Conveyance Channel
Maricopa County, Arizona
Contract FCD 2003C013
Assignment No. 2

Dear Mr. Rosebraugh:

We are pleased to submit the supplemental analysis and recommendations provided by Fruit Growers Laboratory, Inc. (FGL) for the above-mentioned project. Herein we describe our activities relating to this assignment and briefly discuss FGL's test results, including a comparison of the previous and current studies.

As part of our scope of services for this task and prior to our field visit, we reviewed the 1977 *United States Department of Agriculture (USDA) Soil Survey of Maricopa County, Arizona - Central Part* to evaluate the general soil trends in this area. Although the segment of the Laveen Area Conveyance Channel (LACC) alignment between 57th Avenue and 75th Avenue was not mapped by the USDA, for the remainder of the alignment we noted the soil types that were traversed by the alignment. These primarily included: Gilman Loam (GgA) and Glenbar Loam - Sailable-Alkali (Gs). However, near the Salt River, the LACC alignment crosses small portions of various soils including: Glenbar Clay Loam (Gt), Avondale Clay Loam (Ao), Gilman Fine Sandy Loam (Ge), Vint Fine Sandy Loam, (Vh), and Carrizo and Brios Soils (CF). We compared this soil data to the laboratory soil descriptions previously provided by FGL (reported in our letter dated February 18, 2003). FGL describes the soil as either Sandy Loam or Loam. We did not observe any other correlation between USDA soil types and the laboratory test results.

Without a correlation to the USDA soil types, we decided to obtain samples from locations that would provide adequate representation of the soils along the alignment. Using the boring locations of work previously performed, and concentrating more on the area near the Salt River, we

planned the locations for an additional 12 samples: 4 in the detention basin area, and 8 along the channel alignment.

On June 9, 2004, a representative of Ninyo & Moore traveled the LACC alignment and visited the basin area at the southeast corner of Southern Avenue and 43rd Avenue. The 12 soil samples were obtained at or near the planned locations. Figure 1 shows the approximate locations of each agronomic sample obtained for this study and during our previous studies.

In general, the soil samples were collected at the approximate finish elevation of the channel bottom. The perpendicular offset from the low-flow canal ranged from approximately 2 feet to 15 feet, and the approximate stationing of each sample location was recorded. The approximate stationing and offset of each sample location is available upon request (but is limited to the samples obtained for this assignment).

In the basin area, samples B-1 and B-2 were collected from stockpiles of material that had been excavated from the basin bottom. Sample B-3 was advanced in an area that, according to the contractor, would be removed and used to fill portions of the basin that had been over-excavated. Sample B-4 was obtained at the approximate finish elevation of the basin in that area.

Along the channel alignment, from approximately 51st Avenue east to 47th Avenue, the channel bottom was not excavated at the time of our field visit. Therefore, we did not sample this interval during this assignment. However, in January 2003, we reported agronomic data for a sample taken within this area. If further testing is desired for this area, we could provide this service to you.

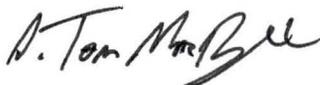
The samples obtained for this assignment were generally collected from borings advanced using hand-auguring techniques. Samples B-1 and B-2 were collected using a shovel due to the presence of numerous cobbles. Except for the stockpile samples, the excavations were advanced to a depth of approximately 18 inches below the ground surface. The soil cuttings were placed into plastic bags, labeled, and sealed for transportation to the lab. The samples were shipped to FGL in Santa Paula, California for laboratory analysis.

FGL analyzed the 12 samples and based on the results of laboratory tests, provides recommendations for soil amendments and plant types. FGL also provided laboratory test results of each sample. The test results and recommendations for each sample analyzed are attached.

The laboratory test results from previous studies and those attached herein show similar soils and agronomic conditions. Specifically, FGL recommended that the plants selected for this area be non-acidic loving and have a high tolerance to free limestone. In most cases, FGL recommends that plants also have a slight to high resistance to salinity. Further correlations between the boring location and specific agronomic data were not noticed in our review of the data (i.e. we did not observe the trend of increasing salinity as the alignment approaches the Salt River). As a result, we recommend that FGL's soil preparation and fertilizer recommendations, along with the appropriate plant/shrub/tree types be generalized and heeded along the entire alignment (including the detention basin area).

Please review FGL's test results and recommendations, and let us know if you have any additional needs. Should you have any questions related to this letter, please contact the undersigned at your convenience.

Sincerely,
NINYO & MOORE



A. Tom MacDougall
Senior Staff Engineer

ATM/SDN/avv

Distribution: (2) Addressee

Attachments: Agronomic Soil Test Results
Figure 1

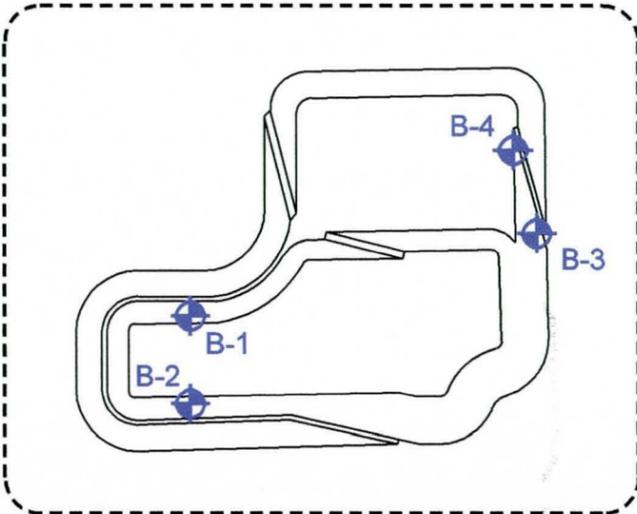
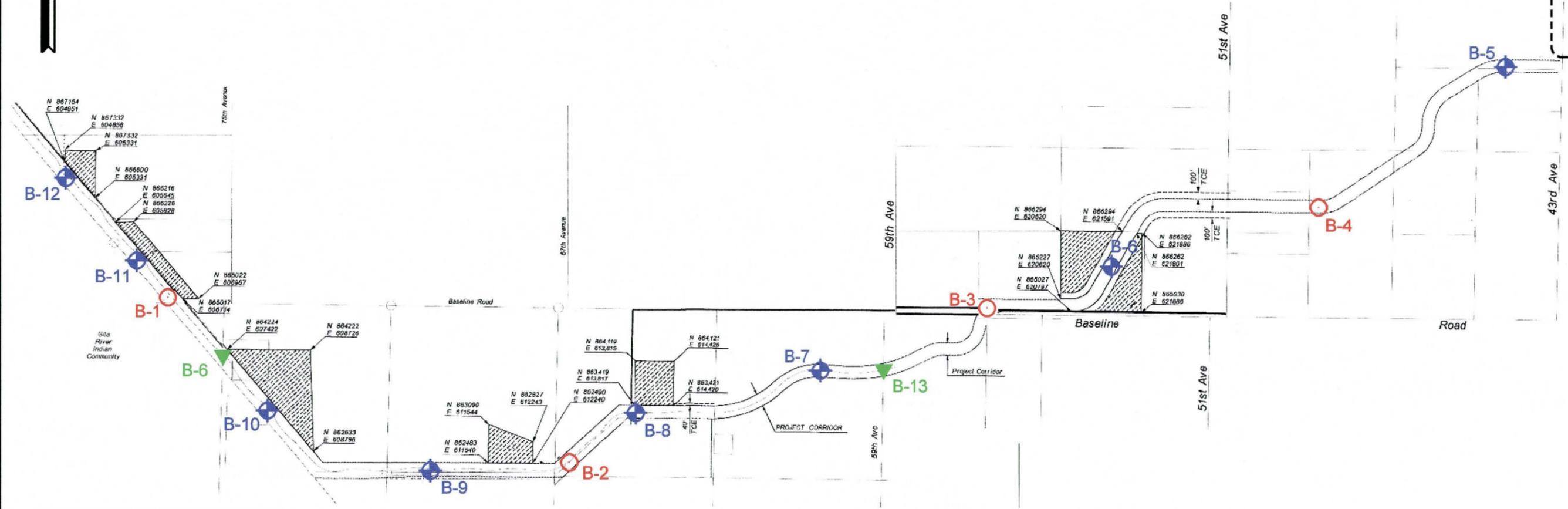
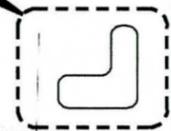


Steven D. Nowaczyk, P.E.
Senior Project Engineer



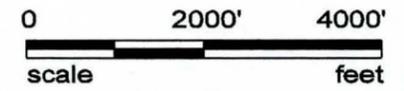


SEE ENLARGED WATER RETENTION BASIN DETAIL



ENLARGED WATER RETENTION BASIN

- LEGEND**
- ▼ B-13 BORING LOCATIONS (OCTOBER 2001)
 - B-4 BORING LOCATIONS (JANUARY 2003)
 - ◆ B-12 BORING LOCATIONS (JUNE 2004)



SAMPLE LOCATION MAP

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY
LAVEEN AREA CONVEYANCE CHANNEL
MARICOPA COUNTY, ARIZONA

PROJECT NO.
600550002

DATE
06/04

FIGURE
1

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FRUIT GROWERS LABORATORY, INC.

ANALYTICAL CHEMISTS

June 22, 2004

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

RECEIVED

JUN 24 2004

NINYO & MOORE
SAN DIEGO OFFICE

Subject: Amended Reports

Enclosed are amended reports for your samples received on June 10, 2004.

The table below lists the FGL Lab Number, sample description and reason for amendment.

<u>FGL Lab #</u>	<u>Sample Description</u>	<u>Reason for Amendment</u>
SP 405930-1	B1 Basin	Reprinted with the correct description spelling per client request on 06/21/04.
SP 405930-2	B2 Basin	Reprinted with the correct description spelling per client request on 06/21/04.
SP 405930-3	B3 Basin	Reprinted with the correct description spelling per client request on 06/21/04.
SP 405930-4	B4 Basin	Reprinted with the correct description spelling per client request on 06/21/04.
SP 405930-5	B5 311+00	Reprinted with the correct description spelling per client request on 06/21/04.
SP 405930-6	B6 234+10	Reprinted with the correct description spelling per client request on 06/21/04.
SP 405930-7	B7 179+00	Reprinted with the correct description spelling per client request on 06/21/04.
SP 405930-8	B8 145+15	Reprinted with the correct description spelling per client request on 06/21/04.
SP 405930-9	B9 104+52	Reprinted with the correct description spelling per client request on 06/21/04.
SP 405930-10	B10 85+30	Reprinted with the correct description spelling per client request on 06/21/04.
SP 405930-11	B11 41+00	Reprinted with the correct description spelling per client request on 06/21/04.
SP 405930-12	B12 27+00	Reprinted with the correct description spelling per client request on 06/21/04.

If you have further questions or need further clarification please call.

Sincerely,

FRUIT GROWERS LABORATORY, INC.

Darrell H. Nelson, President



ANALYTICAL CHEMISTS

June 22, 2004

Lab #: SP 405930-01

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Recommendations for Flood Control District/Laveen Channel

Sample Description: B1 Basin

The following report presents the results of analyses conducted on your soil. See page 4 for sample information and analyses results. The following recommendations are based upon the current conditions of the soil. All application recommendations are for each 1,000 square feet of growing area. Please be sure to read the standard application notes presented on page 3.

I. Plant Selection

The analyses of this soil indicates the following plant selection requirements:

- A. Select only non-acidic loving plants for this soil.
B. Select only those plants that have a high or greater tolerance to free limestone for planting at this site.
C. Select only those plants that have a high or greater tolerance to Salinity for planting at this site.

II. Preplant Soil Amendments and Fertilizers

A. Turf and Groundcover

Table with 2 columns: Item description and Application rate. Includes items like Soil amendments (Organic, Limestone, Soil Sulfur) and Fertilizers (Nitrogen, Phosphorus, Potassium, Magnesium, Zinc, Manganese, Iron, Copper, Boron).

June 22, 2004

LAB No: SP 405930-01

B. Tree and Shrub Backfill Mix

1.	Native (site) soil	66%
2.	Nitrogen Fertilized Organic Material	33%
3.	Commercial Fertilizer (8-8-4)	1 lb./cu. yd.
4.	Iron	2 oz./cu. yd.
5.	Zinc	1 oz./cu. yd.
6.	Manganese	1 oz./cu. yd.

When planting specifications do not call for a separate backfill mix then backfill the holes that are excavated to install containerized plants using the native (site) soil amended according to the preplant recommendations given on page 1.

III. Leaching Requirement

It is recommended that you periodically add N-pHURIC to the irrigation water to obtain a water pH of 5.0 to facilitate the leaching of Sodium.

IV. Post-Plant Fertilization - lbs./1000 sq. ft.

Nitrogen	3/4 lb.
Phosphorus	1/3 lb.
Potassium	1/3 lb.

The actual post-plant requirements for fertilizers and soil amendments will vary depending upon the specific site conditions. Periodic post-plant analyses can be used to assure proper soil conditions and balanced levels of plant nutrition.

V. Irrigation

Make certain that the irrigation water being applied is penetrating to a depth slightly greater than the root zone of the plants being grown. Water with a frequency needed to maintain moist soil at all times - never wet for long periods and never let the soil dry out.

Application Notes

The application instructions listed below apply only if the material(s) is recommended in this report on page 1. Materials not included in the recommendations are excluded either because the analyses data did not indicate a need or the analysis to determine if a need existed was not requested.

Organic Materials

Nitrolized redwood compost is preferred but other organic mixes may be substituted depending upon the site requirements. Organic materials should be spread uniformly over the surface soils and when possible should be incorporated to a depth of two to three inches.

Limestone, Dolomite & Sulfur

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches.

Gypsum

This material should be broadcast uniformly over surface soils for water penetration. For best results do not incorporate.

Preplant Phosphorous, Zinc, Manganese, Iron & Copper

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches. Post-plant applications can be surface applied for water penetration.

Nitrogen, Potassium & Magnesium

These materials are highly water soluble and can be applied uniformly over the surface soils for water penetration or they can be incorporated with the other materials. Magnesium sources for plant nutrition include Epsom salts (Magnesium Sulfate), and the double salt of Potassium-Magnesium Sulfate (Sulfate of Potash-magnesia).



ANALYTICAL CHEMISTS

June 22, 2004

Lab ID : SP 405930-01
Customer ID: 2-18569

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Sampled On : June 9, 2004
Sampled By : Ninyo and Moore
Received On : June 10, 2004
Depth : 0-18"
Meth. Irrg. : S.S. Sprinklers

Description : B1 Basin
Project : Flood Control District/Laveen Channel

LANDSCAPE SOIL ANALYSIS

Test Description	Result		Optimum Range	Graphical Results Presentation				
				Very Low	Moderately Low	Optimum	Moderately High	Very High
Primary Nutrients								
Nitrate-Nitrogen	5.8	PPM	10 - 70					
Phosphorus	2	PPM	12 - 60					
Potassium (Exch)	130	PPM	81 - 500					
Potassium (Sol)	0.5	meq/L	0.25 - 1.0					
Secondary Nutrients								
Calcium (Exch)	3400	PPM	---					
Calcium (Sol)	13.4	meq/L	2.0 - 50					
Magnesium (Exch)	390	PPM	---					
Magnesium (Sol)	12	meq/L	1.5 - 60					
Sodium (Exch)	700	PPM	---					
Sodium (Sol)	125	meq/L	See SAR					
Sulfate	42.8	meq/L	0.6 - 20					
Micro Nutrients								
Zinc	0.5	PPM	0.7 - 50					
Manganese	2.1	PPM	1.4 - 50					
Iron	11.5	PPM	8.0 - 100					
Copper	0.6	PPM	0.2 - 15					
Boron	4.1	PPM	0.3 - 2.1					
Chloride	105	meq/L	0.1 - 4.0					
CEC	23.5	meq/100g	Variable					
% Base Saturation								
CEC - Calcium	71.9	%	60 - 80					
CEC - Magnesium	13.6	%	10 - 20					
CEC - Potassium	1.4	%	2 - 5					
CEC - Sodium	12.9	%	0 - 5					
CEC - Hydrogen	0.0	%	0 - 3					
pH								
pH	8.3	---	5.8 - 8.2					

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Table continued next page...

June 22, 2004

Ninyo & Moore

Lab ID : SP 405930-01

Customer ID: 2-18569

Description : B1 Basin

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation						
			Satisfactory		Possible Problem		Moderate Problem		Increasing Problem
Others									
Soil Salinity	14.7 mmhos/cm	0.5 - 2.0							
SAR	35.1	0.1 - 6							
Limestone	6.8 %	0 - 0.1							
Lime Requirement	0.0 Tons/AF	---	0	1	2	3	4	5	6
Moisture	4.4 %	1/2 Satn. %							
Saturation	28.8 %	20 - 60	Loamy Sand	Sandy Loam	Loam	Silt Loam	Clay Loam	Clay	Organic

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
 Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Soil pH & Limestone levels are important to consider when making plant selections. Soil pH levels above 7.0 are not suitable for acid loving plants. Soils containing limestone are not suitable for plants sensitive to Limestone.

FRUIT GROWERS LABORATORY, INC.

Darrell H. Nelson, President

DHN:jjrj



ANALYTICAL CHEMISTS

June 22, 2004

Lab #: SP 405930-02

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Recommendations for Flood Control District/Laveen Channel

Sample Description: B2 Basin

The following report presents the results of analyses conducted on your soil. See page 4 for sample information and analyses results. The following recommendations are based upon the current conditions of the soil. All application recommendations are for each 1,000 square feet of growing area. Please be sure to read the standard application notes presented on page 3.

I. Plant Selection

The analyses of this soil indicates the following plant selection requirements:

- A. Select only non-acidic loving plants for this soil.
B. Select only those plants that have a high or greater tolerance to free limestone for planting at this site.
C. Select only those plants that have a slight or greater tolerance to Salinity for planting at this site.

II. Preplant Soil Amendments and Fertilizers

A. Turf and Groundcover

- 1. Soil amendments Apply per 1000 sq. ft.
a. Organic (well-composted) 2.00 cu. yds.
b. Limestone 0.00 lbs.
c. Soil Sulfur 25.0 lbs.
2. Fertilizers Apply per 1000 sq. ft.
a. Nitrogen (N) 1.30 lbs.
b. Phosphorus (P2O5) 4.50 lbs.
c. Potassium (K2O) 3.50 lbs.
d. Magnesium (Mg) 0.00 lbs.
e. Zinc (Zn) 1.40 lbs.
f. Manganese (Mn) 0.00 lbs.
g. Iron (Fe) 0.30 lbs.
h. Copper (Cu) .025 lbs.
i. Boron (B) .000 lbs.

June 22, 2004

LAB No: SP 405930-02

B. Tree and Shrub Backfill Mix

1.	Native (site) soil	66%
2.	Nitrogen Fertilized Organic Material	33%
3.	Commercial Fertilizer (8-8-4)	1 lb./cu. yd.
4.	Iron	2 oz./cu. yd.
5.	Zinc	1 oz./cu. yd.
6.	Manganese	1 oz./cu. yd.

When planting specifications do not call for a separate backfill mix then backfill the holes that are excavated to install containerized plants using the native (site) soil amended according to the preplant recommendations given on page 1.

III. Leaching Requirement

It is recommended that you periodically add N-pHURIC to the irrigation water to obtain a water pH of 5.0 to facilitate the leaching of Sodium.

IV. Post-Plant Fertilization - lbs./1000 sq. ft.

Nitrogen	1/2 lb.
Phosphorus	1/2 lb.
Potassium	1/2 lb.

The actual post-plant requirements for fertilizers and soil amendments will vary depending upon the specific site conditions. Periodic post-plant analyses can be used to assure proper soil conditions and balanced levels of plant nutrition.

V. Irrigation

Make certain that the irrigation water being applied is penetrating to a depth slightly greater than the root zone of the plants being grown. Water with a frequency needed to maintain moist soil at all times - never wet for long periods and never let the soil dry out.

Application Notes

The application instructions listed below apply only if the material(s) is recommended in this report on page 1. Materials not included in the recommendations are excluded either because the analyses data did not indicate a need or the analysis to determine if a need existed was not requested.

Organic Materials

Nitrolized redwood compost is preferred but other organic mixes may be substituted depending upon the site requirements. Organic materials should be spread uniformly over the surface soils and when possible should be incorporated to a depth of two to three inches.

Limestone, Dolomite & Sulfur

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches.

Gypsum

This material should be broadcast uniformly over surface soils for water penetration. For best results do not incorporate.

Preplant Phosphorous, Zinc, Manganese, Iron & Copper

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches. Post-plant applications can be surface applied for water penetration.

Nitrogen, Potassium & Magnesium

These materials are highly water soluble and can be applied uniformly over the surface soils for water penetration or they can be incorporated with the other materials. Magnesium sources for plant nutrition include Epsom salts (Magnesium Sulfate), and the double salt of Potassium-Magnesium Sulfate (Sulfate of Potash-magnesia).



ANALYTICAL CHEMISTS

June 22, 2004

Lab ID : SP 405930-02
Customer ID: 2-18569

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Sampled On : June 9, 2004
Sampled By : Ninyo and Moore
Received On: June 10, 2004
Depth : 0-18"
Meth. Irrg. : S.S. Sprinklers

Description : B2 Basin
Project : Flood Control District/Laveen Channel

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation				
			Very Low	Moderately Low	Optimum	Moderately High	Very High
Primary Nutrients							
Nitrate-Nitrogen	2.6 PPM	10 - 70					
Phosphorus	ND PPM	12 - 60					
Potassium (Exch)	160 PPM	81 - 500					
Potassium (Sol)	0.14 meq/L	0.25 - 1.0					
Secondary Nutrients							
Calcium (Exch)	3800 PPM	---					
Calcium (Sol)	0.79 meq/L	2.0 - 50					
Magnesium (Exch)	450 PPM	---					
Magnesium (Sol)	0.5 meq/L	1.5 - 60					
Sodium (Exch)	830 PPM	---					
Sodium (Sol)	19.0 meq/L	See SAR					
Sulfate	6.4 meq/L	0.6 - 20					
Micro Nutrients							
Zinc	0.1 PPM	0.7 - 50					
Manganese	2.3 PPM	1.4 - 50					
Iron	14.5 PPM	8.0 - 100					
Copper	0.5 PPM	0.2 - 15					
Boron	0.61 PPM	0.3 - 2.1					
Chloride	11.6 meq/L	0.1 - 4.0					
CEC	26.6 meq/100g	Variable					
% Base Saturation							
CEC - Calcium	71.1 %	60 - 80					
CEC - Magnesium	13.9 %	10 - 20					
CEC - Potassium	1.5 %	2 - 5					
CEC - Sodium	13.5 %	0 - 5					
CEC - Hydrogen	0.0 %	0 - 3					
pH	8.9 ---	5.8 - 8.2					

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Table continued next page...

June 22, 2004

Ninyo & Moore

Lab ID : SP 405930-02

Customer ID: 2-18569

Description : B2 Basin

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation						
			Satisfactory	Possible Problem	Moderate Problem	Increasing Problem			
Others									
Soil Salinity	2.33 mmhos/cm	0.5 - 2.0							
SAR	23.7	0.1 - 6							
Limestone	14.8 %	0 - 0.1							
			0	1	2	3	4	5	6
Lime Requirement	0.0 Tons/AF	---							
			Very Low	Moderately Low	Optimum	Moderately High	Very High		
Moisture	9.5 %	1/2 Satn. %							
			Loamy Sand	Sandy Loam	Loam	Silt Loam	Clay Loam	Clay	Organic
Saturation	37.1 %	20 - 60							

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
 Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Soil pH & Limestone levels are important to consider when making plant selections. Soil pH levels above 7.0 are not suitable for acid loving plants. Soils containing limestone are not suitable for plants sensitive to Limestone.

FRUIT GROWERS LABORATORY, INC.

Darrell H. Nelson, President

DHN:jrj



ANALYTICAL CHEMISTS

June 22, 2004

Lab #: SP 405930-03

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Recommendations for Flood Control District/Laveen Channel

Sample Description: B3 Basin

The following report presents the results of analyses conducted on your soil. See page 4 for sample information and analyses results. The following recommendations are based upon the current conditions of the soil. All application recommendations are for each 1,000 square feet of growing area. Please be sure to read the standard application notes presented on page 3.

I. Plant Selection

The analyses of this soil indicates the following plant selection requirements:

- A. Select only non-acidic loving plants for this soil.
B. Select only those plants that have a high or greater tolerance to free limestone for planting at this site.
C. Select only those plants that have a moderate or greater tolerance to Salinity for planting at this site.

II. Preplant Soil Amendments and Fertilizers

A. Turf and Groundcover

- 1. Soil amendments: Organic (well-composted) 2.00 cu. yds., Limestone 0.00 lbs., Soil Sulfur 25.0 lbs.
2. Fertilizers: Nitrogen (N) 1.20 lbs., Phosphorus (P2O5) 4.50 lbs., Potassium (K2O) 3.40 lbs., Magnesium (Mg) 0.00 lbs., Zinc (Zn) 1.40 lbs., Manganese (Mn) 0.00 lbs., Iron (Fe) 0.40 lbs., Copper (Cu) .050 lbs., Boron (B) .000 lbs.

June 22, 2004

LAB No: SP 405930-03

B. Tree and Shrub Backfill Mix

1.	Native (site) soil	66%
2.	Nitrogen Fertilized Organic Material	33%
3.	Commercial Fertilizer (8-8-4)	1 lb./cu. yd.
4.	Iron	2 oz./cu. yd.
5.	Zinc	1 oz./cu. yd.
6.	Manganese	1 oz./cu. yd.

When planting specifications do not call for a separate backfill mix then backfill the holes that are excavated to install containerized plants using the native (site) soil amended according to the preplant recommendations given on page 1.

III. Leaching Requirement

It is recommended that you periodically add N-pHURIC to the irrigation water to obtain a water pH of 5.0 to facilitate the leaching of Sodium.

IV. Post-Plant Fertilization - lbs./1000 sq. ft.

Nitrogen	3/4 lb.
Phosphorus	1/3 lb.
Potassium	1/3 lb.

The actual post-plant requirements for fertilizers and soil amendments will vary depending upon the specific site conditions. Periodic post-plant analyses can be used to assure proper soil conditions and balanced levels of plant nutrition.

V. Irrigation

Make certain that the irrigation water being applied is penetrating to a depth slightly greater than the root zone of the plants being grown. Water with a frequency needed to maintain moist soil at all times - never wet for long periods and never let the soil dry out.

Application Notes

The application instructions listed below apply only if the material(s) is recommended in this report on page 1. Materials not included in the recommendations are excluded either because the analyses data did not indicate a need or the analysis to determine if a need existed was not requested.

Organic Materials

Nitrolized redwood compost is preferred but other organic mixes may be substituted depending upon the site requirements. Organic materials should be spread uniformly over the surface soils and when possible should be incorporated to a depth of two to three inches.

Limestone, Dolomite & Sulfur

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches.

Gypsum

This material should be broadcast uniformly over surface soils for water penetration. For best results do not incorporate.

Preplant Phosphorous, Zinc, Manganese, Iron & Copper

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches. Post-plant applications can be surface applied for water penetration.

Nitrogen, Potassium & Magnesium

These materials are highly water soluble and can be applied uniformly over the surface soils for water penetration or they can be incorporated with the other materials. Magnesium sources for plant nutrition include Epsom salts (Magnesium Sulfate), and the double salt of Potassium-Magnesium Sulfate (Sulfate of Potash-magnesia).



ANALYTICAL CHEMISTS

June 22, 2004

Lab ID : SP 405930-03
Customer ID: 2-18569

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Sampled On : June 9, 2004
Sampled By : Ninyo and Moore
Received On: June 10, 2004
Depth : 0-18"
Meth. Irrg. : S.S. Sprinklers

Description : B3 Basin
Project : Flood Control District/Laveen Channel

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation				
			Very Low	Moderately Low	Optimum	Moderately High	Very High
Primary Nutrients							
Nitrate-Nitrogen	3.1 PPM	10 - 70					
Phosphorus	ND PPM	12 - 60					
Potassium (Exch)	110 PPM	81 - 500					
Potassium (Sol)	0.15 meq/L	0.25 - 1.0					
Secondary Nutrients							
Calcium (Exch)	3400 PPM	---					
Calcium (Sol)	1.0 meq/L	2.0 - 50					
Magnesium (Exch)	320 PPM	---					
Magnesium (Sol)	0.8 meq/L	1.5 - 60					
Sodium (Exch)	750 PPM	---					
Sodium (Sol)	35.6 meq/L	See SAR					
Sulfate	11.3 meq/L	0.6 - 20					
Micro Nutrients							
Zinc	0.1 PPM	0.7 - 50					
Manganese	1.7 PPM	1.4 - 50					
Iron	12.5 PPM	8.0 - 100					
Copper	0.4 PPM	0.2 - 15					
Boron	1.18 PPM	0.3 - 2.1					
Chloride	25.8 meq/L	0.1 - 4.0					
CEC	23.0 meq/100g	Variable					
% Base Saturation							
CEC - Calcium	73.5 %	60 - 80					
CEC - Magnesium	11.3 %	10 - 20					
CEC - Potassium	1.2 %	2 - 5					
CEC - Sodium	14.2 %	0 - 5					
CEC - Hydrogen	0.0 %	0 - 3					
			Strongly Acidic	Moderately Acidic	Near Neutral	Moderately Alkaline	Strongly Alkaline
pH	8.7 ---	5.8 - 8.2					

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Table continued next page...

June 22, 2004

Ninyo & Moore

Lab ID : SP 405930-03

Customer ID: 2-18569

Description : B3 Basin

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation								
			Satisfactory		Possible Problem		Moderate Problem		Increasing Problem		
Others											
Soil Salinity	4.41 mmhos/cm	0.5 - 2.0									
SAR	37.5	0.1 - 6									
Limestone	7.1 %	0 - 0.1									
			0	1	2	3	4	5	6		
Lime Requirement	0.0 Tons/AF	---									
			Very Low		Moderately Low		Optimum		Moderately High		Very High
Moisture	1.2 %	1/2 Satn. %									
			Loamy Sand	Sandy Loam	Loam	Silt Loam	Clay Loam	Clay	Organic		
Saturation	29.3 %	20 - 60									

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
 Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Soil pH & Limestone levels are important to consider when making plant selections. Soil pH levels above 7.0 are not suitable for acid loving plants. Soils containing limestone are not suitable for plants sensitive to Limestone.

FRUIT GROWERS LABORATORY, INC.

Darrell H. Nelson, President

DHN:jjrj



ANALYTICAL CHEMISTS

June 22, 2004

Lab #: SP 405930-04

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Recommendations for Flood Control District/Laveen Channel

Sample Description: B4 Basin

The following report presents the results of analyses conducted on your soil. See page 4 for sample information and analyses results. The following recommendations are based upon the current conditions of the soil. All application recommendations are for each 1,000 square feet of growing area. Please be sure to read the standard application notes presented on page 3.

I. Plant Selection

The analyses of this soil indicates the following plant selection requirements:

- A. Select only non-acidic loving plants for this soil.
B. Select only those plants that have a high or greater tolerance to free limestone for planting at this site.
C. Select only those plants that have a high or greater tolerance to Salinity for planting at this site.

II. Preplant Soil Amendments and Fertilizers

A. Turf and Groundcover

Table with 2 columns: Item description and Application rate. Includes items like Soil amendments (Organic, Limestone, Soil Sulfur) and Fertilizers (Nitrogen, Phosphorus, Potassium, Magnesium, Zinc, Manganese, Iron, Copper, Boron).

June 22, 2004

LAB No: SP 405930-04

B. Tree and Shrub Backfill Mix

1.	Native (site) soil	66%
2.	Nitrogen Fertilized Organic Material	33%
3.	Commercial Fertilizer (8-8-4)	1 lb./cu. yd.
4.	Iron	2 oz./cu. yd.
5.	Zinc	1 oz./cu. yd.
6.	Manganese	1 oz./cu. yd.

When planting specifications do not call for a separate backfill mix then backfill the holes that are excavated to install containerized plants using the native (site) soil amended according to the preplant recommendations given on page 1.

III. Leaching Requirement

It is recommended that you periodically add N-PHURIC to the irrigation water to obtain a water pH of 5.0 to facilitate the leaching of Sodium.

IV. Post-Plant Fertilization - lbs./1000 sq. ft.

Nitrogen	1/2 lb.
Phosphorus	1/2 lb.
Potassium	1/2 lb.

The actual post-plant requirements for fertilizers and soil amendments will vary depending upon the specific site conditions. Periodic post-plant analyses can be used to assure proper soil conditions and balanced levels of plant nutrition.

V. Irrigation

Make certain that the irrigation water being applied is penetrating to a depth slightly greater than the root zone of the plants being grown. Water with a frequency needed to maintain moist soil at all times - never wet for long periods and never let the soil dry out.

Application Notes

The application instructions listed below apply only if the material(s) is recommended in this report on page 1. Materials not included in the recommendations are excluded either because the analyses data did not indicate a need or the analysis to determine if a need existed was not requested.

Organic Materials

Nitrolized redwood compost is preferred but other organic mixes may be substituted depending upon the site requirements. Organic materials should be spread uniformly over the surface soils and when possible should be incorporated to a depth of two to three inches.

Limestone, Dolomite & Sulfur

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches.

Gypsum

This material should be broadcast uniformly over surface soils for water penetration. For best results do not incorporate.

Preplant Phosphorous, Zinc, Manganese, Iron & Copper

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches. Post-plant applications can be surface applied for water penetration.

Nitrogen, Potassium & Magnesium

These materials are highly water soluble and can be applied uniformly over the surface soils for water penetration or they can be incorporated with the other materials. Magnesium sources for plant nutrition include Epsom salts (Magnesium Sulfate), and the double salt of Potassium-Magnesium Sulfate (Sulfate of Potash-magnesia).



ANALYTICAL CHEMISTS

June 22, 2004

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Lab ID : SP 405930-04
Customer ID: 2-18569

Sampled On : June 9, 2004
Sampled By : Ninyo and Moore
Received On: June 10, 2004
Depth : 0-18"
Meth. Irrg. : S.S. Sprinklers

Description : B4 Basin
Project : Flood Control District/Laveen Channel

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation				
			Very Low	Moderately Low	Optimum	Moderately High	Very High
Primary Nutrients							
Nitrate-Nitrogen	6.8 PPM	10 - 70	[Yellow bar]				
Phosphorus	ND PPM	12 - 60	[Red bar]				
Potassium (Exch)	80 PPM	81 - 500	[Yellow bar]				
Potassium (Sol)	0.25 meq/L	0.25 - 1.0	[Yellow bar]				
Secondary Nutrients							
Calcium (Exch)	3800 PPM	---					
Calcium (Sol)	1.8 meq/L	2.0 - 50	[Yellow bar]				
Magnesium (Exch)	270 PPM	---					
Magnesium (Sol)	1.6 meq/L	1.5 - 60	[Yellow bar]				
Sodium (Exch)	460 PPM	---					
Sodium (Sol)	51.0 meq/L	See SAR					
Sulfate	10.8 meq/L	0.6 - 20	[Dark Green bar]				
Micro Nutrients							
Zinc	0.1 PPM	0.7 - 50	[Red bar]				
Manganese	2.6 PPM	1.4 - 50	[Yellow bar]				
Iron	19.0 PPM	8.0 - 100	[Dark Green bar]				
Copper	0.5 PPM	0.2 - 15	[Yellow bar]				
Boron	1.45 PPM	0.3 - 2.1	[Dark Green bar]				
Chloride	42.0 meq/L	0.1 - 4.0	[Red bar]				
CEC	23.2 meq/100g	Variable	[Blue bar]				
% Base Saturation							
CEC - Calcium	81.0 %	60 - 80	[Yellow bar]				
CEC - Magnesium	9.5 %	10 - 20	[Yellow bar]				
CEC - Potassium	0.9 %	2 - 5	[Yellow bar]				
CEC - Sodium	8.7 %	0 - 5	[Yellow bar]				
CEC - Hydrogen	0.0 %	0 - 3	[Dark Green bar]				
			Strongly Acidic	Moderately Acidic	Near Neutral	Moderately Alkaline	Strongly Alkaline
pH	8.7 ---	5.8 - 8.2	[Orange bar]				

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Table continued next page...

June 22, 2004

Ninyo & Moore

Lab ID : SP 405930-04

Customer ID: 2-18569

Description : B4 Basin

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation						
			Satisfactory	Possible Problem	Moderate Problem	Increasing Problem			
Others									
Soil Salinity	6.17 mmhos/cm	0.5 - 2.0							
SAR	39.1	0.1 - 6							
Limestone	17.3 %	0 - 0.1							
			0	1	2	3	4	5	6
Lime Requirement	0.0 Tons/AF	---							
			Very Low	Moderately Low	Optimum	Moderately High	Very High		
Moisture	5.2 %	1/2 Satn. %							
			Loamy Sand	Sandy Loam	Loam	Silt Loam	Clay Loam	Clay	Organic
Saturation	40.2 %	20 - 60							

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
 Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Soil pH & Limestone levels are important to consider when making plant selections. Soil pH levels above 7.0 are not suitable for acid loving plants. Soils containing limestone are not suitable for plants sensitive to Limestone.

FRUIT GROWERS LABORATORY, INC.

Darrell H. Nelson, President

DHN:jrj



ANALYTICAL CHEMISTS

June 22, 2004

Lab #: SP 405930-05

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Recommendations for Flood Control District/Laveen Channel

Sample Description: B5 Basin

The following report presents the results of analyses conducted on your soil. See page 4 for sample information and analyses results. The following recommendations are based upon the current conditions of the soil. All application recommendations are for each 1,000 square feet of growing area. Please be sure to read the standard application notes presented on page 3.

I. Plant Selection

The analyses of this soil indicates the following plant selection requirements:

- A. Select only non-acidic loving plants for this soil.
B. Select only those plants that have a high or greater tolerance to free limestone for planting at this site.

II. Preplant Soil Amendments and Fertilizers

A. Turf and Groundcover

- 1. Soil amendments Apply per 1000 sq. ft.
a. Organic (well-composted) 2.00 cu. yds.
b. Limestone 0.00 lbs.
c. Soil Sulfur 25.0 lbs.

- 2. Fertilizers Apply per 1000 sq. ft.
a. Nitrogen (N) 1.40 lbs.
b. Phosphorus (P2O5) 4.50 lbs.
c. Potassium (K2O) 3.40 lbs.
d. Magnesium (Mg) 0.00 lbs.
e. Zinc (Zn) 1.50 lbs.
f. Manganese (Mn) 0.25 lbs.
g. Iron (Fe) 0.35 lbs.
h. Copper (Cu) .050 lbs.
i. Boron (B) .009 lbs.

June 22, 2004

LAB No: SP 405930-05

B. Tree and Shrub Backfill Mix

1.	Native (site) soil	66%
2.	Nitrogen Fertilized Organic Material	33%
3.	Commercial Fertilizer (8-8-4)	1 lb./cu. yd.
4.	Iron	2 oz./cu. yd.
5.	Zinc	1 oz./cu. yd.
6.	Manganese	1 oz./cu. yd.

When planting specifications do not call for a separate backfill mix then backfill the holes that are excavated to install containerized plants using the native (site) soil amended according to the preplant recommendations given on page 1.

III. Leaching Requirement

It is recommended that you periodically add N-pHURIC to the irrigation water to obtain a water pH of 5.0 to facilitate the leaching of Sodium.

IV. Post-Plant Fertilization - lbs./1000 sq. ft.

Nitrogen	3/4 lb.
Phosphorus	1/3 lb.
Potassium	1/3 lb.

The actual post-plant requirements for fertilizers and soil amendments will vary depending upon the specific site conditions. Periodic post-plant analyses can be used to assure proper soil conditions and balanced levels of plant nutrition.

V. Irrigation

Make certain that the irrigation water being applied is penetrating to a depth slightly greater than the root zone of the plants being grown. Water with a frequency needed to maintain moist soil at all times - never wet for long periods and never let the soil dry out.

Application Notes

The application instructions listed below apply only if the material(s) is recommended in this report on page 1. Materials not included in the recommendations are excluded either because the analyses data did not indicate a need or the analysis to determine if a need existed was not requested.

Organic Materials

Nitrolized redwood compost is preferred but other organic mixes may be substituted depending upon the site requirements. Organic materials should be spread uniformly over the surface soils and when possible should be incorporated to a depth of two to three inches.

Limestone, Dolomite & Sulfur

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches.

Gypsum

This material should be broadcast uniformly over surface soils for water penetration. For best results do not incorporate.

Preplant Phosphorous, Zinc, Manganese, Iron & Copper

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches. Post-plant applications can be surface applied for water penetration.

Nitrogen, Potassium & Magnesium

These materials are highly water soluble and can be applied uniformly over the surface soils for water penetration or they can be incorporated with the other materials. Magnesium sources for plant nutrition include Epsom salts (Magnesium Sulfate), and the double salt of Potassium-Magnesium Sulfate (Sulfate of Potash-magnesia).



ANALYTICAL CHEMISTS

June 22, 2004

Lab ID : SP 405930-05
Customer ID: 2-18569

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Sampled On : June 9, 2004
Sampled By : Ninyo and Moore
Received On: June 10, 2004
Depth : 0-18"
Meth. Irrg. : S.S. Sprinklers

Description : B5 311+00
Project : Flood Control District/Laveen Channel

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation				
			Very Low	Moderately Low	Optimum	Moderately High	Very High
Primary Nutrients							
Nitrate-Nitrogen	1.5 PPM	10 - 70					
Phosphorus	ND PPM	12 - 60					
Potassium (Exch)	90 PPM	81 - 500					
Potassium (Sol)	0.16 meq/L	0.25 - 1.0					
Secondary Nutrients							
Calcium (Exch)	3700 PPM	---					
Calcium (Sol)	1.14 meq/L	2.0 - 50					
Magnesium (Exch)	350 PPM	---					
Magnesium (Sol)	0.8 meq/L	1.5 - 60					
Sodium (Exch)	140 PPM	---					
Sodium (Sol)	8.10 meq/L	See SAR					
Sulfate	2.3 meq/L	0.6 - 20					
Micro Nutrients							
Zinc	ND PPM	0.7 - 50					
Manganese	1.4 PPM	1.4 - 50					
Iron	13.9 PPM	8.0 - 100					
Copper	0.3 PPM	0.2 - 15					
Boron	0.20 PPM	0.3 - 2.1					
Chloride	4.59 meq/L	0.1 - 4.0					
CEC	22.4 meq/100g	Variable					
% Base Saturation							
CEC - Calcium	83.5 %	60 - 80					
CEC - Magnesium	12.9 %	10 - 20					
CEC - Potassium	1.0 %	2 - 5					
CEC - Sodium	2.8 %	0 - 5					
CEC - Hydrogen	0.0 %	0 - 3					
pH	8.5 ---	5.8 - 8.2					
			Strongly Acidic	Moderately Acidic	Near Neutral	Moderately Alkaline	Strongly Alkaline

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Table continued next page...

June 22, 2004

Ninyo & Moore

Lab ID : SP 405930-05

Customer ID: 2-18569

Description : B5 311+00

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation							
			Satisfactory	Possible Problem	Moderate Problem	Increasing Problem				
Others										
Soil Salinity	1.14 mmhos/cm	0.5 - 2.0								
SAR	8.2	0.1 - 6								
Limestone	19.4 %	0 - 0.1								
			0	1	2	3	4	5	6	
Lime Requirement	0.0 Tons/AF	---								
			Very Low		Moderately Low		Optimum	Moderately High		Very High
Moisture	8.8 %	1/2 Satn. %								
			Loamy Sand	Sandy Loam	Loam	Silt Loam	Clay Loam	Clay	Organic	
Saturation	26.2 %	20 - 60								

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
 Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Soil pH & Limestone levels are important to consider when making plant selections. Soil pH levels above 7.0 are not suitable for acid loving plants. Soils containing limestone are not suitable for plants sensitive to Limestone.

FRUIT GROWERS LABORATORY, INC.

Darrell H. Nelson, President

DHN:jjrj



ANALYTICAL CHEMISTS

June 22, 2004

Lab #: SP 405930-06

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Recommendations for Flood Control District/Laveen Channel

Sample Description: B6 Basin

The following report presents the results of analyses conducted on your soil. See page 4 for sample information and analyses results. The following recommendations are based upon the current conditions of the soil. All application recommendations are for each 1,000 square feet of growing area. Please be sure to read the standard application notes presented on page 3.

I. Plant Selection

The analyses of this soil indicates the following plant selection requirements:

- A. Select only non-acidic loving plants for this soil.
B. Select only those plants that have a high or greater tolerance to free limestone for planting at this site.
C. Select only those plants that have a moderate or greater tolerance to Salinity for planting at this site.

II. Preplant Soil Amendments and Fertilizers

A. Turf and Groundcover

Table with 2 columns: Item description and Application rate. Includes sub-sections for Soil amendments and Fertilizers.

June 22, 2004

LAB No: SP 405930-06

B. Tree and Shrub Backfill Mix

1.	Native (site) soil	66%
2.	Nitrogen Fertilized Organic Material	33%
3.	Commercial Fertilizer (8-8-4)	1 lb./cu. yd.
4.	Iron	2 oz./cu. yd.
5.	Zinc	1 oz./cu. yd.
6.	Manganese	1 oz./cu. yd.

When planting specifications do not call for a separate backfill mix then backfill the holes that are excavated to install containerized plants using the native (site) soil amended according to the preplant recommendations given on page 1.

III. Leaching Requirement

It is recommended that you periodically add N-pHURIC to the irrigation water to obtain a water pH of 5.0 to facilitate the leaching of Sodium.

IV. Post-Plant Fertilization - lbs./1000 sq. ft.

Nitrogen	1/2 lb.
Phosphorus	1/2 lb.
Potassium	1/2 lb.

The actual post-plant requirements for fertilizers and soil amendments will vary depending upon the specific site conditions. Periodic post-plant analyses can be used to assure proper soil conditions and balanced levels of plant nutrition.

V. Irrigation

Make certain that the irrigation water being applied is penetrating to a depth slightly greater than the root zone of the plants being grown. Water with a frequency needed to maintain moist soil at all times - never wet for long periods and never let the soil dry out.

Application Notes

The application instructions listed below apply only if the material(s) is recommended in this report on page 1. Materials not included in the recommendations are excluded either because the analyses data did not indicate a need or the analysis to determine if a need existed was not requested.

Organic Materials

Nitrolized redwood compost is preferred but other organic mixes may be substituted depending upon the site requirements. Organic materials should be spread uniformly over the surface soils and when possible should be incorporated to a depth of two to three inches.

Limestone, Dolomite & Sulfur

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches.

Gypsum

This material should be broadcast uniformly over surface soils for water penetration. For best results do not incorporate.

Preplant Phosphorous, Zinc, Manganese, Iron & Copper

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches. Post-plant applications can be surface applied for water penetration.

Nitrogen, Potassium & Magnesium

These materials are highly water soluble and can be applied uniformly over the surface soils for water penetration or they can be incorporated with the other materials. Magnesium sources for plant nutrition include Epsom salts (Magnesium Sulfate), and the double salt of Potassium-Magnesium Sulfate (Sulfate of Potash-magnesia).



ANALYTICAL CHEMISTS

June 22, 2004

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Lab ID : SP 405930-06
Customer ID: 2-18569

Sampled On : June 9, 2004
Sampled By : Ninyo and Moore
Received On: June 10, 2004
Depth : 0-18"
Meth. Irrg. : S.S. Sprinklers

Description : B6 234+10
Project : Flood Control District/Laveen Channel

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation				
			Very Low	Moderately Low	Optimum	Moderately High	Very High
Primary Nutrients							
Nitrate-Nitrogen	18.2 PPM	10 - 70					
Phosphorus	ND PPM	12 - 60					
Potassium (Exch)	180 PPM	81 - 500					
Potassium (Sol)	0.37 meq/L	0.25 - 1.0					
Secondary Nutrients							
Calcium (Exch)	3700 PPM	---					
Calcium (Sol)	1.9 meq/L	2.0 - 50					
Magnesium (Exch)	530 PPM	---					
Magnesium (Sol)	1.8 meq/L	1.5 - 60					
Sodium (Exch)	580 PPM	---					
Sodium (Sol)	29.7 meq/L	See SAR					
Sulfate	8.6 meq/L	0.6 - 20					
Micro Nutrients							
Zinc	0.1 PPM	0.7 - 50					
Manganese	2.7 PPM	1.4 - 50					
Iron	13.0 PPM	8.0 - 100					
Copper	0.5 PPM	0.2 - 15					
Boron	0.83 PPM	0.3 - 2.1					
Chloride	15.7 meq/L	0.1 - 4.0					
CEC	25.7 meq/100g	Variable					
% Base Saturation							
CEC - Calcium	71.2 %	60 - 80					
CEC - Magnesium	17.1 %	10 - 20					
CEC - Potassium	1.8 %	2 - 5					
CEC - Sodium	9.8 %	0 - 5					
CEC - Hydrogen	0.0 %	0 - 3					
pH	8.6	5.8 - 8.2					
			Strongly Acidic	Moderately Acidic	Near Neutral	Moderately Alkaline	Strongly Alkaline

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Table continued next page...

June 22, 2004

Ninyo & Moore

Lab ID : SP 405930-06

Customer ID: 2-18569

Description : B6 234+10

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation						
			Satisfactory	Possible Problem	Moderate Problem	Increasing Problem			
Others									
Soil Salinity	3.94 mmhos/cm	0.5 - 2.0							
SAR	21.8	0.1 - 6							
Limestone	13.0 %	0 - 0.1							
			0	1	2	3	4	5	6
Lime Requirement	0.0 Tons/AF	---							
			Very Low	Moderately Low	Optimum	Moderately High	Very High		
Moisture	17.9 %	1/2 Satn. %							
			Loamy Sand	Sandy Loam	Loam	Silt Loam	Clay Loam	Clay	Organic
Saturation	40.8 %	20 - 60							

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
 Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Soil pH & Limestone levels are important to consider when making plant selections. Soil pH levels above 7.0 are not suitable for acid loving plants. Soils containing limestone are not suitable for plants sensitive to Limestone.

FRUIT GROWERS LABORATORY, INC.

Darrell H. Nelson, President

DHN:jjrj



ANALYTICAL CHEMISTS

June 22, 2004

Lab #: SP 405930-07

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Recommendations for Flood Control District/Laveen Channel

Sample Description: B7 Basin

The following report presents the results of analyses conducted on your soil. See page 4 for sample information and analyses results. The following recommendations are based upon the current conditions of the soil. All application recommendations are for each 1,000 square feet of growing area. Please be sure to read the standard application notes presented on page 3.

I. Plant Selection

The analyses of this soil indicates the following plant selection requirements:

- A. Select only non-acidic loving plants for this soil.
B. Select only those plants that have a high or greater tolerance to free limestone for planting at this site.
C. Select only those plants that have a high or greater tolerance to Salinity for planting at this site.

II. Preplant Soil Amendments and Fertilizers

A. Turf and Groundcover

- 1. Soil amendments
a. Organic (well-composted) 2.00 cu. yds.
b. Limestone 0.00 lbs.
c. Soil Sulfur 0.00 lbs.

- 2. Fertilizers
a. Nitrogen (N) 0.00 lbs.
b. Phosphorus (P2O5) 3.70 lbs.
c. Potassium (K2O) 0.00 lbs.
d. Magnesium (Mg) 0.00 lbs.
e. Zinc (Zn) 1.10 lbs.
f. Manganese (Mn) 0.00 lbs.
g. Iron (Fe) 0.30 lbs.
h. Copper (Cu) .025 lbs.
i. Boron (B) .000 lbs.

June 22, 2004

LAB No: SP 405930-07

B. Tree and Shrub Backfill Mix

1.	Native (site) soil	66%
2.	Nitrogen Fertilized Organic Material	33%
3.	Commercial Fertilizer (8-8-4)	1 lb./cu. yd.
4.	Iron	2 oz./cu. yd.
5.	Zinc	1 oz./cu. yd.
6.	Manganese	1 oz./cu. yd.

When planting specifications do not call for a separate backfill mix then backfill the holes that are excavated to install containerized plants using the native (site) soil amended according to the preplant recommendations given on page 1.

III. Leaching Requirement

It is recommended that you periodically add N-pHURIC to the irrigation water to obtain a water pH of 5.0 to facilitate the leaching of Sodium.

IV. Post-Plant Fertilization - lbs./1000 sq. ft.

Nitrogen	1/2 lb.
Phosphorus	1/2 lb.
Potassium	1/2 lb.

The actual post-plant requirements for fertilizers and soil amendments will vary depending upon the specific site conditions. Periodic post-plant analyses can be used to assure proper soil conditions and balanced levels of plant nutrition.

V. Irrigation

Make certain that the irrigation water being applied is penetrating to a depth slightly greater than the root zone of the plants being grown. Water with a frequency needed to maintain moist soil at all times - never wet for long periods and never let the soil dry out.

Application Notes

The application instructions listed below apply only if the material(s) is recommended in this report on page 1. Materials not included in the recommendations are excluded either because the analyses data did not indicate a need or the analysis to determine if a need existed was not requested.

Organic Materials

Nitrolized redwood compost is preferred but other organic mixes may be substituted depending upon the site requirements. Organic materials should be spread uniformly over the surface soils and when possible should be incorporated to a depth of two to three inches.

Limestone, Dolomite & Sulfur

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches.

Gypsum

This material should be broadcast uniformly over surface soils for water penetration. For best results do not incorporate.

Preplant Phosphorous, Zinc, Manganese, Iron & Copper

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches. Post-plant applications can be surface applied for water penetration.

Nitrogen, Potassium & Magnesium

These materials are highly water soluble and can be applied uniformly over the surface soils for water penetration or they can be incorporated with the other materials. Magnesium sources for plant nutrition include Epsom salts (Magnesium Sulfate), and the double salt of Potassium-Magnesium Sulfate (Sulfate of Potash-magnesia).



ANALYTICAL CHEMISTS

June 22, 2004

Lab ID : SP 405930-07
Customer ID: 2-18569

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Sampled On : June 9, 2004
Sampled By : Ninyo and Moore
Received On: June 10, 2004
Depth : 0-18"
Meth. Irrg. : S.S. Sprinklers

Description : B7 179+00
Project : Flood Control District/Laveen Channel

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation				
			Very Low	Moderately Low	Optimum	Moderately High	Very High
Primary Nutrients							
Nitrate-Nitrogen	10.0 PPM	10 - 70	[Yellow bar]				
Phosphorus	4 PPM	12 - 60	[Yellow bar]				
Potassium (Exch)	290 PPM	81 - 500	[Green bar]				
Potassium (Sol)	1.4 meq/L	0.25 - 1.0	[Yellow bar]				
Secondary Nutrients							
Calcium (Exch)	3700 PPM	---					
Calcium (Sol)	18.2 meq/L	2.0 - 50	[Green bar]				
Magnesium (Exch)	470 PPM	---					
Magnesium (Sol)	17 meq/L	1.5 - 60	[Green bar]				
Sodium (Exch)	390 PPM	---					
Sodium (Sol)	67.4 meq/L	See SAR					
Sulfate	21.6 meq/L	0.6 - 20	[Yellow bar]				
Micro Nutrients							
Zinc	0.4 PPM	0.7 - 50	[Yellow bar]				
Manganese	2.8 PPM	1.4 - 50	[Yellow bar]				
Iron	14.6 PPM	8.0 - 100	[Green bar]				
Copper	0.7 PPM	0.2 - 15	[Yellow bar]				
Boron	0.8 PPM	0.3 - 2.1	[Green bar]				
Chloride	83.8 meq/L	0.1 - 4.0	[Red bar]				
CEC	24.6 meq/100g	Variable	[Blue bar]				
% Base Saturation							
CEC - Calcium	74.4 %	60 - 80	[Green bar]				
CEC - Magnesium	15.9 %	10 - 20	[Green bar]				
CEC - Potassium	3.0 %	2 - 5	[Green bar]				
CEC - Sodium	6.9 %	0 - 5	[Yellow bar]				
CEC - Hydrogen	0.0 %	0 - 3	[Green bar]				
pH	8.1	5.8 - 8.2	[Green bar]				

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Table continued next page...

June 22, 2004

Ninyo & Moore

Lab ID : SP 405930-07

Customer ID: 2-18569

Description : B7 179+00

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation								
			Satisfactory	Possible Problem	Moderate Problem	Increasing Problem					
Others											
Soil Salinity	10.7 mmhos/cm	0.5 - 2.0									
SAR	16.1	0.1 - 6									
Limestone	16.9 %	0 - 0.1									
			0	1	2	3	4	5	6		
Lime Requirement	0.0 Tons/AF	---									
			Very Low		Moderately Low		Optimum		Moderately High		Very High
Moisture	10.4 %	1/2 Satn. %									
			Loamy Sand	Sandy Loam	Loam	Silt Loam	Clay Loam	Clay	Organic		
Saturation	35.3 %	20 - 60									

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
 Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Soil pH & Limestone levels are important to consider when making plant selections. Soil pH levels above 7.0 are not suitable for acid loving plants. Soils containing limestone are not suitable for plants sensitive to Limestone.

FRUIT GROWERS LABORATORY, INC.

Darrell H. Nelson, President

DHN:jjrj



ANALYTICAL CHEMISTS

June 22, 2004

Lab #: SP 405930-08

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Recommendations for Flood Control District/Laveen Channel

Sample Description: B8 Basin

The following report presents the results of analyses conducted on your soil. See page 4 for sample information and analyses results. The following recommendations are based upon the current conditions of the soil. All application recommendations are for each 1,000 square feet of growing area. Please be sure to read the standard application notes presented on page 3.

I. Plant Selection

The analyses of this soil indicates the following plant selection requirements:

- A. Select only non-acidic loving plants for this soil.
B. Select only those plants that have a high or greater tolerance to free limestone for planting at this site.
C. Select only those plants that have a slight or greater tolerance to Salinity for planting at this site.

II. Preplant Soil Amendments and Fertilizers

A. Turf and Groundcover

Table with 2 columns: Amendment/Fertilizer and Application Rate. Includes items like Soil amendments, Organic, Limestone, Soil Sulfur, and various Fertilizers (Nitrogen, Phosphorus, Potassium, Magnesium, Zinc, Manganese, Iron, Copper, Boron).

June 22, 2004

LAB No: SP 405930-08

B. Tree and Shrub Backfill Mix

1.	Native (site) soil	66%
2.	Nitrogen Fertilized Organic Material	33%
3.	Commercial Fertilizer (8-8-4)	1 lb./cu. yd.
4.	Iron	2 oz./cu. yd.
5.	Zinc	1 oz./cu. yd.
6.	Manganese	1 oz./cu. yd.

When planting specifications do not call for a separate backfill mix then backfill the holes that are excavated to install containerized plants using the native (site) soil amended according to the preplant recommendations given on page 1.

III. Leaching Requirement

It is recommended that you periodically add N-pHURIC to the irrigation water to obtain a water pH of 5.0 to facilitate the leaching of Sodium.

IV. Post-Plant Fertilization - lbs./1000 sq. ft.

Nitrogen	3/4 lb.
Phosphorus	1/3 lb.
Potassium	1/3 lb.

The actual post-plant requirements for fertilizers and soil amendments will vary depending upon the specific site conditions. Periodic post-plant analyses can be used to assure proper soil conditions and balanced levels of plant nutrition.

V. Irrigation

Make certain that the irrigation water being applied is penetrating to a depth slightly greater than the root zone of the plants being grown. Water with a frequency needed to maintain moist soil at all times - never wet for long periods and never let the soil dry out.

Application Notes

The application instructions listed below apply only if the material(s) is recommended in this report on page 1. Materials not included in the recommendations are excluded either because the analyses data did not indicate a need or the analysis to determine if a need existed was not requested.

Organic Materials

Nitrolized redwood compost is preferred but other organic mixes may be substituted depending upon the site requirements. Organic materials should be spread uniformly over the surface soils and when possible should be incorporated to a depth of two to three inches.

Limestone, Dolomite & Sulfur

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches.

Gypsum

This material should be broadcast uniformly over surface soils for water penetration. For best results do not incorporate.

Preplant Phosphorous, Zinc, Manganese, Iron & Copper

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches. Post-plant applications can be surface applied for water penetration.

Nitrogen, Potassium & Magnesium

These materials are highly water soluble and can be applied uniformly over the surface soils for water penetration or they can be incorporated with the other materials. Magnesium sources for plant nutrition include Epsom salts (Magnesium Sulfate), and the double salt of Potassium-Magnesium Sulfate (Sulfate of Potash-magnesia).



ANALYTICAL CHEMISTS

June 22, 2004

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Lab ID : SP 405930-08
Customer ID: 2-18569

Sampled On : June 9, 2004
Sampled By : Ninyo and Moore
Received On: June 10, 2004
Depth : 0-18"
Meth. Irrg. : S.S. Sprinklers

Description : B8 145+15
Project : Flood Control District/Laveen Channel

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation				
			Very Low	Moderately Low	Optimum	Moderately High	Very High
Primary Nutrients							
Nitrate-Nitrogen	9.2 PPM	10 - 70	[Yellow bar]				
Phosphorus	5 PPM	12 - 60	[Yellow bar]				
Potassium (Exch)	200 PPM	81 - 500	[Green bar]				
Potassium (Sol)	0.39 meq/L	0.25 - 1.0	[Green bar]				
Secondary Nutrients							
Calcium (Exch)	3800 PPM	---					
Calcium (Sol)	3.6 meq/L	2.0 - 50	[Green bar]				
Magnesium (Exch)	410 PPM	---					
Magnesium (Sol)	1.9 meq/L	1.5 - 60	[Yellow bar]				
Sodium (Exch)	330 PPM	---					
Sodium (Sol)	17.7 meq/L	See SAR					
Sulfate	5.1 meq/L	0.6 - 20	[Green bar]				
Micro Nutrients							
Zinc	ND PPM	0.7 - 50	[Red bar]				
Manganese	2.8 PPM	1.4 - 50	[Green bar]				
Iron	9.8 PPM	8.0 - 100	[Green bar]				
Copper	0.5 PPM	0.2 - 15	[Green bar]				
Boron	0.51 PPM	0.3 - 2.1	[Green bar]				
Chloride	5.62 meq/L	0.1 - 4.0	[Yellow bar]				
CEC	24.2 meq/100g	Variable	[Blue bar]				
% Base Saturation							
CEC - Calcium	78.1 %	60 - 80	[Green bar]				
CEC - Magnesium	14.0 %	10 - 20	[Green bar]				
CEC - Potassium	2.1 %	2 - 5	[Green bar]				
CEC - Sodium	5.9 %	0 - 5	[Yellow bar]				
CEC - Hydrogen	0.0 %	0 - 3	[Green bar]				
pH							
pH	8.3	5.8 - 8.2	[Yellow bar]	[Yellow bar]	[Yellow bar]	[Yellow bar]	[Yellow bar]

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Table continued next page...

June 22, 2004

Ninyo & Moore

Lab ID : SP 405930-08

Customer ID: 2-18569

Description : B8 145+15

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation						
			Satisfactory	Possible Problem	Moderate Problem	Increasing Problem			
Others									
Soil Salinity	2.71 mmhos/cm	0.5 - 2.0							
SAR	10.7	0.1 - 6							
Limestone	13.9 %	0 - 0.1							
			0	1	2	3	4	5	6
Lime Requirement	0.0 Tons/AF	---							
			Very Low	Moderately Low	Optimum	Moderately High	Very High		
Moisture	13.6 %	1/2 Satn. %							
			Loamy Sand	Sandy Loam	Loam	Silt Loam	Clay Loam	Clay	Organic
Saturation	33.9 %	20 - 60							

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
 Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Soil pH & Limestone levels are important to consider when making plant selections. Soil pH levels above 7.0 are not suitable for acid loving plants. Soils containing limestone are not suitable for plants sensitive to Limestone.

FRUIT GROWERS LABORATORY, INC.

Darrell H. Nelson, President

DHN:jjrj



ANALYTICAL CHEMISTS

June 22, 2004

Lab #: SP 405930-09

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Recommendations for Flood Control District/Laveen Channel

Sample Description: B9 Basin

The following report presents the results of analyses conducted on your soil. See page 4 for sample information and analyses results. The following recommendations are based upon the current conditions of the soil. All application recommendations are for each 1,000 square feet of growing area. Please be sure to read the standard application notes presented on page 3.

I. Plant Selection

The analyses of this soil indicates the following plant selection requirements:

- A. Select only non-acidic loving plants for this soil.
B. Select only those plants that have a high or greater tolerance to free limestone for planting at this site.
C. Select only those plants that have a moderate or greater tolerance to Salinity for planting at this site.

II. Preplant Soil Amendments and Fertilizers

A. Turf and Groundcover

Table with 2 columns: Amendment/Fertilizer and Application Rate. Includes items like Soil amendments, Organic, Limestone, Soil Sulfur, and Fertilizers (Nitrogen, Phosphorus, Potassium, Magnesium, Zinc, Manganese, Iron, Copper, Boron).

June 22, 2004

LAB No: SP 405930-09

B. Tree and Shrub Backfill Mix

1.	Native (site) soil	66%
2.	Nitrogen Fertilized Organic Material	33%
3.	Commercial Fertilizer (8-8-4)	1 lb./cu. yd.
4.	Iron	2 oz./cu. yd.
5.	Zinc	1 oz./cu. yd.
6.	Manganese	1 oz./cu. yd.

When planting specifications do not call for a separate backfill mix then backfill the holes that are excavated to install containerized plants using the native (site) soil amended according to the preplant recommendations given on page 1.

III. Leaching Requirement

It is recommended that you periodically add N-pHURIC to the irrigation water to obtain a water pH of 5.0 to facilitate the leaching of Sodium.

IV. Post-Plant Fertilization - lbs./1000 sq. ft.

Nitrogen	3/4 lb.
Phosphorus	1/3 lb.
Potassium	1/3 lb.

The actual post-plant requirements for fertilizers and soil amendments will vary depending upon the specific site conditions. Periodic post-plant analyses can be used to assure proper soil conditions and balanced levels of plant nutrition.

V. Irrigation

Make certain that the irrigation water being applied is penetrating to a depth slightly greater than the root zone of the plants being grown. Water with a frequency needed to maintain moist soil at all times - never wet for long periods and never let the soil dry out.

Application Notes

The application instructions listed below apply only if the material(s) is recommended in this report on page 1. Materials not included in the recommendations are excluded either because the analyses data did not indicate a need or the analysis to determine if a need existed was not requested.

Organic Materials

Nitrolized redwood compost is preferred but other organic mixes may be substituted depending upon the site requirements. Organic materials should be spread uniformly over the surface soils and when possible should be incorporated to a depth of two to three inches.

Limestone, Dolomite & Sulfur

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches.

Gypsum

This material should be broadcast uniformly over surface soils for water penetration. For best results do not incorporate.

Preplant Phosphorous, Zinc, Manganese, Iron & Copper

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches. Post-plant applications can be surface applied for water penetration.

Nitrogen, Potassium & Magnesium

These materials are highly water soluble and can be applied uniformly over the surface soils for water penetration or they can be incorporated with the other materials. Magnesium sources for plant nutrition include Epsom salts (Magnesium Sulfate), and the double salt of Potassium-Magnesium Sulfate (Sulfate of Potash-magnesia).



ANALYTICAL CHEMISTS

June 22, 2004

Lab ID : SP 405930-09
Customer ID: 2-18569

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Sampled On : June 9, 2004
Sampled By : Ninyo and Moore
Received On : June 10, 2004
Depth : 0-18"
Meth. Irrg. : S.S. Sprinklers

Description : B9 104+52
Project : Flood Control District/Laveen Channel

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation				
			Very Low	Moderately Low	Optimum	Moderately High	Very High
Primary Nutrients							
Nitrate-Nitrogen	14.5 PPM	10 - 70					
Phosphorus	6 PPM	12 - 60					
Potassium (Exch)	260 PPM	81 - 500					
Potassium (Sol)	0.42 meq/L	0.25 - 1.0					
Secondary Nutrients							
Calcium (Exch)	3900 PPM	---					
Calcium (Sol)	3.0 meq/L	2.0 - 50					
Magnesium (Exch)	530 PPM	---					
Magnesium (Sol)	2.5 meq/L	1.5 - 60					
Sodium (Exch)	600 PPM	---					
Sodium (Sol)	30.9 meq/L	See SAR					
Sulfate	9.9 meq/L	0.6 - 20					
Micro Nutrients							
Zinc	0.2 PPM	0.7 - 50					
Manganese	2.8 PPM	1.4 - 50					
Iron	8.4 PPM	8.0 - 100					
Copper	0.8 PPM	0.2 - 15					
Boron	0.91 PPM	0.3 - 2.1					
Chloride	24.5 meq/L	0.1 - 4.0					
CEC	27.1 meq/100g	Variable					
% Base Saturation							
CEC - Calcium	71.6 %	60 - 80					
CEC - Magnesium	16.2 %	10 - 20					
CEC - Potassium	2.4 %	2 - 5					
CEC - Sodium	9.6 %	0 - 5					
CEC - Hydrogen	0.0 %	0 - 3					
pH	8.4 ---	5.8 - 8.2	Strongly Acidic	Moderately Acidic	Near Neutral	Moderately Alkaline	Strongly Alkaline

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Table continued next page...

June 22, 2004

Ninyo & Moore

Lab ID : SP 405930-09

Customer ID: 2-18569

Description : B9 104+52

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation						
			Satisfactory	Possible Problem	Moderate Problem	Increasing Problem			
Others									
Soil Salinity	4.24 mmhos/cm	0.5 - 2.0							
SAR	18.6	0.1 - 6							
Limestone	11.1 %	0 - 0.1							
			0	1	2	3	4	5	6
Lime Requirement	0.0 Tons/AF	---							
			Very Low	Moderately Low	Optimum	Moderately High	Very High		
Moisture	5.6 %	1/2 Satn. %							
			Loamy Sand	Sandy Loam	Loam	Silt Loam	Clay Loam	Clay	Organic
Saturation	33.6 %	20 - 60							

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
 Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Soil pH & Limestone levels are important to consider when making plant selections. Soil pH levels above 7.0 are not suitable for acid loving plants. Soils containing limestone are not suitable for plants sensitive to Limestone.

FRUIT GROWERS LABORATORY, INC.

Darrell H. Nelson, President

DHN:jjj



ANALYTICAL CHEMISTS

June 22, 2004

Lab #: SP 405930-10

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Recommendations for Flood Control District/Laveen Channel

Sample Description: B10 Basin

The following report presents the results of analyses conducted on your soil. See page 4 for sample information and analyses results. The following recommendations are based upon the current conditions of the soil. All application recommendations are for each 1,000 square feet of growing area. Please be sure to read the standard application notes presented on page 3.

I. Plant Selection

The analyses of this soil indicates the following plant selection requirements:

- A. Select only non-acidic loving plants for this soil.
B. Select only those plants that have a high or greater tolerance to free limestone for planting at this site.
C. Select only those plants that have a moderate or greater tolerance to Salinity for planting at this site.

II. Preplant Soil Amendments and Fertilizers

A. Turf and Groundcover

Table with 2 columns: Amendment/Fertilizer and Application Rate. Includes items like Soil amendments, Organic, Limestone, Soil Sulfur, and various Fertilizers (Nitrogen, Phosphorus, Potassium, Magnesium, Zinc, Manganese, Iron, Copper, Boron).

June 22, 2004

LAB No: SP 405930-10

B. Tree and Shrub Backfill Mix

1.	Native (site) soil	66%
2.	Nitrogen Fertilized Organic Material	33%
3.	Commercial Fertilizer (8-8-4)	1 lb./cu. yd.
4.	Iron	2 oz./cu. yd.
5.	Zinc	1 oz./cu. yd.
6.	Manganese	1 oz./cu. yd.

When planting specifications do not call for a separate backfill mix then backfill the holes that are excavated to install containerized plants using the native (site) soil amended according to the preplant recommendations given on page 1.

III. Leaching Requirement

It is recommended that you periodically add N-pHURIC to the irrigation water to obtain a water pH of 5.0 to facilitate the leaching of Sodium.

IV. Post-Plant Fertilization - lbs./1000 sq. ft.

Nitrogen	3/4 lb.
Phosphorus	1/3 lb.
Potassium	1/3 lb.

The actual post-plant requirements for fertilizers and soil amendments will vary depending upon the specific site conditions. Periodic post-plant analyses can be used to assure proper soil conditions and balanced levels of plant nutrition.

V. Irrigation

Make certain that the irrigation water being applied is penetrating to a depth slightly greater than the root zone of the plants being grown. Water with a frequency needed to maintain moist soil at all times - never wet for long periods and never let the soil dry out.

Application Notes

The application instructions listed below apply only if the material(s) is recommended in this report on page 1. Materials not included in the recommendations are excluded either because the analyses data did not indicate a need or the analysis to determine if a need existed was not requested.

Organic Materials

Nitrolized redwood compost is preferred but other organic mixes may be substituted depending upon the site requirements. Organic materials should be spread uniformly over the surface soils and when possible should be incorporated to a depth of two to three inches.

Limestone, Dolomite & Sulfur

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches.

Gypsum

This material should be broadcast uniformly over surface soils for water penetration. For best results do not incorporate.

Preplant Phosphorous, Zinc, Manganese, Iron & Copper

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches. Post-plant applications can be surface applied for water penetration.

Nitrogen, Potassium & Magnesium

These materials are highly water soluble and can be applied uniformly over the surface soils for water penetration or they can be incorporated with the other materials. Magnesium sources for plant nutrition include Epsom salts (Magnesium Sulfate), and the double salt of Potassium-Magnesium Sulfate (Sulfate of Potash-magnesia).



ANALYTICAL CHEMISTS

June 22, 2004

Ninyo & Moore
 5710 Ruffin Road
 San Diego, CA 92123-1013

Lab ID : SP 405930-10
 Customer ID: 2-18569

Sampled On : June 9, 2004
 Sampled By : Ninyo and Moore
 Received On : June 10, 2004
 Depth : 0-18"
 Meth. Irrg. : S.S. Sprinklers

Description : B10 85+30
 Project : Flood Control District/Laveen Channel

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation				
			Very Low	Moderately Low	Optimum	Moderately High	Very High
Primary Nutrients							
Nitrate-Nitrogen	14.8 PPM	10 - 70	[Green bar]				
Phosphorus	7 PPM	12 - 60	[Yellow bar]				
Potassium (Exch)	220 PPM	81 - 500	[Green bar]				
Potassium (Sol)	0.40 meq/L	0.25 - 1.0	[Green bar]				
Secondary Nutrients							
Calcium (Exch)	3700 PPM	---					
Calcium (Sol)	4.6 meq/L	2.0 - 50	[Green bar]				
Magnesium (Exch)	470 PPM	---					
Magnesium (Sol)	3.5 meq/L	1.5 - 60	[Yellow bar]				
Sodium (Exch)	560 PPM	---					
Sodium (Sol)	34.6 meq/L	See SAR					
Sulfate	12.5 meq/L	0.6 - 20	[Green bar]				
Micro Nutrients							
Zinc	0.3 PPM	0.7 - 50	[Yellow bar]				
Manganese	3.0 PPM	1.4 - 50	[Yellow bar]				
Iron	10.5 PPM	8.0 - 100	[Yellow bar]				
Copper	0.8 PPM	0.2 - 15	[Yellow bar]				
Boron	1.06 PPM	0.3 - 2.1	[Green bar]				
Chloride	30.1 meq/L	0.1 - 4.0	[Red bar]				
CEC	25.5 meq/100g	Variable	[Blue bar]				
% Base Saturation							
CEC - Calcium	72.9 %	60 - 80	[Green bar]				
CEC - Magnesium	15.3 %	10 - 20	[Green bar]				
CEC - Potassium	2.2 %	2 - 5	[Green bar]				
CEC - Sodium	9.6 %	0 - 5	[Yellow bar]				
CEC - Hydrogen	0.0 %	0 - 3	[Green bar]				
pH	8.4 ---	5.8 - 8.2	Strongly Acidic	Moderately Acidic	Near Neutral	Moderately Alkaline	Strongly Alkaline
			[Yellow bar]				

Good [Green bar] Problem [Red bar] Indicates physical conditions and/or phenological and amendment requirements.
 Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Table continued next page...

June 22, 2004

Ninyo & Moore

Lab ID : SP 405930-10

Customer ID: 2-18569

Description : B10 85+30

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation						
			Satisfactory	Possible Problem	Moderate Problem	Increasing Problem			
Others									
Soil Salinity	5.09 mmhos/cm	0.5 - 2.0							
SAR	17.2	0.1 - 6							
Limestone	7.0 %	0 - 0.1							
			0	1	2	3	4	5	6
Lime Requirement	0.0 Tons/AF	---							
			Very Low	Moderately Low	Optimum	Moderately High	Very High		
Moisture	12.2 %	1/2 Satn. %							
			Loamy Sand	Sandy Loam	Loam	Silt Loam	Clay Loam	Clay	Organic
Saturation	34.8 %	20 - 60							

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
 Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Soil pH & Limestone levels are important to consider when making plant selections. Soil pH levels above 7.0 are not suitable for acid loving plants. Soils containing limestone are not suitable for plants sensitive to Limestone.

FRUIT GROWERS LABORATORY, INC.

Darrell H. Nelson, President

DHN:jjrj



ANALYTICAL CHEMISTS

June 22, 2004

Lab #: SP 405930-11

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Recommendations for Flood Control District/Laveen Channel

Sample Description: B11 Basin

The following report presents the results of analyses conducted on your soil. See page 4 for sample information and analyses results. The following recommendations are based upon the current conditions of the soil. All application recommendations are for each 1,000 square feet of growing area. Please be sure to read the standard application notes presented on page 3.

I. Plant Selection

The analyses of this soil indicates the following plant selection requirements:

- A. Select only non-acidic loving plants for this soil.
B. Select only those plants that have a slight or greater tolerance to free limestone for planting at this site.

II. Preplant Soil Amendments and Fertilizers

A. Turf and Groundcover

Table with 2 columns: Item description and Application rate. Includes items like Soil amendments, Organic, Limestone, Soil Sulfur, and Fertilizers (Nitrogen, Phosphorus, Potassium, Magnesium, Zinc, Manganese, Iron, Copper, Boron).

June 22, 2004

LAB No: SP 405930-11

B. Tree and Shrub Backfill Mix

1.	Native (site) soil	66%
2.	Nitrogen Fertilized Organic Material	33%
3.	Commercial Fertilizer (8-8-4)	1 lb./cu. yd.
4.	Iron	2 oz./cu. yd.
5.	Zinc	1 oz./cu. yd.
6.	Manganese	1 oz./cu. yd.

When planting specifications do not call for a separate backfill mix then backfill the holes that are excavated to install containerized plants using the native (site) soil amended according to the preplant recommendations given on page 1.

III. Leaching Requirement

It is recommended that you periodically add N-pHURIC to the irrigation water to obtain a water pH of 5.0 to facilitate the leaching of Sodium.

IV. Post-Plant Fertilization - lbs./1000 sq. ft.

Nitrogen	3/4 lb.
Phosphorus	1/3 lb.
Potassium	1/3 lb.

The actual post-plant requirements for fertilizers and soil amendments will vary depending upon the specific site conditions. Periodic post-plant analyses can be used to assure proper soil conditions and balanced levels of plant nutrition.

V. Irrigation

Make certain that the irrigation water being applied is penetrating to a depth slightly greater than the root zone of the plants being grown. Water with a frequency needed to maintain moist soil at all times - never wet for long periods and never let the soil dry out.

Application Notes

The application instructions listed below apply only if the material(s) is recommended in this report on page 1. Materials not included in the recommendations are excluded either because the analyses data did not indicate a need or the analysis to determine if a need existed was not requested.

Organic Materials

Nitrolized redwood compost is preferred but other organic mixes may be substituted depending upon the site requirements. Organic materials should be spread uniformly over the surface soils and when possible should be incorporated to a depth of two to three inches.

Limestone, Dolomite & Sulfur

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches.

Gypsum

This material should be broadcast uniformly over surface soils for water penetration. For best results do not incorporate.

Preplant Phosphorous, Zinc, Manganese, Iron & Copper

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches. Post-plant applications can be surface applied for water penetration.

Nitrogen, Potassium & Magnesium

These materials are highly water soluble and can be applied uniformly over the surface soils for water penetration or they can be incorporated with the other materials. Magnesium sources for plant nutrition include Epsom salts (Magnesium Sulfate), and the double salt of Potassium-Magnesium Sulfate (Sulfate of Potash-magnesia).



ANALYTICAL CHEMISTS

June 22, 2004

Lab ID : SP 405930-11
Customer ID: 2-18569

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Sampled On : June 9, 2004
Sampled By : Ninyo and Moore
Received On : June 10, 2004
Depth : 0-18"
Meth. Irrg. : S.S. Sprinklers

Description : B11 41+00
Project : Flood Control District/Laveen Channel

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation				
			Very Low	Moderately Low	Optimum	Moderately High	Very High
Primary Nutrients							
Nitrate-Nitrogen	2.2 PPM	10 - 70					
Phosphorus	ND PPM	12 - 60					
Potassium (Exch)	70 PPM	81 - 500					
Potassium (Sol)	0.11 meq/L	0.25 - 1.0					
Secondary Nutrients							
Calcium (Exch)	2900 PPM	---					
Calcium (Sol)	1.00 meq/L	2.0 - 50					
Magnesium (Exch)	190 PPM	---					
Magnesium (Sol)	0.5 meq/L	1.5 - 60					
Sodium (Exch)	120 PPM	---					
Sodium (Sol)	7.33 meq/L	See SAR					
Sulfate	2.1 meq/L	0.6 - 20					
Micro Nutrients							
Zinc	0.1 PPM	0.7 - 50					
Manganese	1.6 PPM	1.4 - 50					
Iron	7.4 PPM	8.0 - 100					
Copper	0.3 PPM	0.2 - 15					
Boron	0.39 PPM	0.3 - 2.1					
Chloride	4.54 meq/L	0.1 - 4.0					
CEC	16.8 meq/100g	Variable					
% Base Saturation							
CEC - Calcium	86.3 %	60 - 80					
CEC - Magnesium	9.5 %	10 - 20					
CEC - Potassium	1.0 %	2 - 5					
CEC - Sodium	3.0 %	0 - 5					
CEC - Hydrogen	0.0 %	0 - 3					
pH	8.6 ---	5.8 - 8.2					

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Table continued next page...

June 22, 2004

Ninyo & Moore

Lab ID : SP 405930-11

Customer ID: 2-18569

Description : B11 41+00

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation								
			Satisfactory	Possible Problem	Moderate Problem	Increasing Problem					
Others											
Soil Salinity	1.02 mmhos/cm	0.5 - 2.0									
SAR	8.5	0.1 - 6									
Limestone	2.9 %	0 - 0.1									
			0	1	2	3	4	5	6		
Lime Requirement	0.0 Tons/AF	---									
			Very Low		Moderately Low		Optimum		Moderately High		Very High
Moisture	2.9 %	1/2 Satn. %									
			Loamy Sand	Sandy Loam	Loam	Silt Loam	Clay Loam	Clay	Organic		
Saturation	27.3 %	20 - 60									

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
 Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Soil pH & Limestone levels are important to consider when making plant selections. Soil pH levels above 7.0 are not suitable for acid loving plants. Soils containing limestone are not suitable for plants sensitive to Limestone.

FRUIT GROWERS LABORATORY, INC.

Darrell H. Nelson, President

DHN:jrj



ANALYTICAL CHEMISTS

June 22, 2004

Lab #: SP 405930-12

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Recommendations for Flood Control District/Laveen Channel

Sample Description: B12 Basin

The following report presents the results of analyses conducted on your soil. See page 4 for sample information and analyses results. The following recommendations are based upon the current conditions of the soil. All application recommendations are for each 1,000 square feet of growing area. Please be sure to read the standard application notes presented on page 3.

I. Plant Selection

The analyses of this soil indicates the following plant selection requirements:

- A. Select only non-acidic loving plants for this soil.
B. Select only those plants that have a slight or greater tolerance to free limestone for planting at this site.
C. Select only those plants that have a slight or greater tolerance to Salinity for planting at this site.

II. Preplant Soil Amendments and Fertilizers

A. Turf and Groundcover

Table with 2 columns: Amendment/Fertilizer and Application Rate. Includes items like Soil amendments, Organic, Limestone, Soil Sulfur, and various Fertilizers (Nitrogen, Phosphorus, Potassium, Magnesium, Zinc, Manganese, Iron, Copper, Boron).

June 22, 2004

LAB No: SP 405930-12

B. Tree and Shrub Backfill Mix

1.	Native (site) soil	66%
2.	Nitrogen Fertilized Organic Material	33%
3.	Commercial Fertilizer (8-8-4)	1 lb./cu. yd.
4.	Iron	2 oz./cu. yd.
5.	Zinc	1 oz./cu. yd.
6.	Manganese	1 oz./cu. yd.

When planting specifications do not call for a separate backfill mix then backfill the holes that are excavated to install containerized plants using the native (site) soil amended according to the preplant recommendations given on page 1.

III. Leaching Requirement

It is recommended that you periodically add N-pHURIC to the irrigation water to obtain a water pH of 5.0 to facilitate the leaching of Sodium.

IV. Post-Plant Fertilization - lbs./1000 sq. ft.

Nitrogen	1 lb.
Phosphorus	1/4 lb.
Potassium	1/4 lb.

The actual post-plant requirements for fertilizers and soil amendments will vary depending upon the specific site conditions. Periodic post-plant analyses can be used to assure proper soil conditions and balanced levels of plant nutrition.

V. Irrigation

Make certain that the irrigation water being applied is penetrating to a depth slightly greater than the root zone of the plants being grown. Water with a frequency needed to maintain moist soil at all times - never wet for long periods and never let the soil dry out.

Application Notes

The application instructions listed below apply only if the material(s) is recommended in this report on page 1. Materials not included in the recommendations are excluded either because the analyses data did not indicate a need or the analysis to determine if a need existed was not requested.

Organic Materials

Nitrolized redwood compost is preferred but other organic mixes may be substituted depending upon the site requirements. Organic materials should be spread uniformly over the surface soils and when possible should be incorporated to a depth of two to three inches.

Limestone, Dolomite & Sulfur

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches.

Gypsum

This material should be broadcast uniformly over surface soils for water penetration. For best results do not incorporate.

Preplant Phosphorous, Zinc, Manganese, Iron & Copper

These materials should be broadcast uniformly over the surface soils and then incorporated to a depth of two to three inches. Post-plant applications can be surface applied for water penetration.

Nitrogen, Potassium & Magnesium

These materials are highly water soluble and can be applied uniformly over the surface soils for water penetration or they can be incorporated with the other materials. Magnesium sources for plant nutrition include Epsom salts (Magnesium Sulfate), and the double salt of Potassium-Magnesium Sulfate (Sulfate of Potash-magnesia).



ANALYTICAL CHEMISTS

June 22, 2004

Lab ID : SP 405930-12
Customer ID: 2-18569

Ninyo & Moore
5710 Ruffin Road
San Diego, CA 92123-1013

Sampled On : June 9, 2004
Sampled By : Ninyo and Moore
Received On : June 10, 2004
Depth : 0-18"
Meth. Irrg. : S.S. Sprinklers

Description : B12 27+00
Project : Flood Control District/Laveen Channel

LANDSCAPE SOIL ANALYSIS

Test Description	Result		Optimum Range	Graphical Results Presentation				
				Very Low	Moderately Low	Optimum	Moderately High	Very High
Primary Nutrients								
Nitrate-Nitrogen	4.1	PPM	10 - 70					
Phosphorus	4	PPM	12 - 60					
Potassium (Exch)	110	PPM	81 - 500					
Potassium (Sol)	0.31	meq/L	0.25 - 1.0					
Secondary Nutrients								
Calcium (Exch)	3000	PPM	---					
Calcium (Sol)	2.67	meq/L	2.0 - 50					
Magnesium (Exch)	210	PPM	---					
Magnesium (Sol)	1.5	meq/L	1.5 - 60					
Sodium (Exch)	160	PPM	---					
Sodium (Sol)	15.1	meq/L	See SAR					
Sulfate	4.5	meq/L	0.6 - 20					
Micro Nutrients								
Zinc	0.2	PPM	0.7 - 50					
Manganese	2.8	PPM	1.4 - 50					
Iron	12.1	PPM	8.0 - 100					
Copper	0.5	PPM	0.2 - 15					
Boron	0.61	PPM	0.3 - 2.1					
Chloride	11.9	meq/L	0.1 - 4.0					
CEC	17.8	meq/100g	Variable					
% Base Saturation								
CEC - Calcium	84.8	%	60 - 80					
CEC - Magnesium	9.6	%	10 - 20					
CEC - Potassium	1.5	%	2 - 5					
CEC - Sodium	4.0	%	0 - 5					
CEC - Hydrogen	0.0	%	0 - 3					
				Strongly Acidic	Moderately Acidic	Near Neutral	Moderately Alkaline	Strongly Alkaline
pH	8.4	---	5.8 - 8.2					

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Table continued next page...

June 22, 2004

Ninyo & Moore

Lab ID : SP 405930-12

Customer ID: 2-18569

Description : B12 27+00

LANDSCAPE SOIL ANALYSIS

Test Description	Result	Optimum Range	Graphical Results Presentation								
			Satisfactory		Possible Problem		Moderate Problem		Increasing Problem		
Others											
Soil Salinity	2.24 mmhos/cm	0.5 - 2.0									
SAR	10.5	0.1 - 6									
Limestone	1.9 %	0 - 0.1									
			0	1	2	3	4	5	6		
Lime Requirement	0.0 Tons/AF	---									
			Very Low		Moderately Low		Optimum		Moderately High		Very High
Moisture	4.5 %	1/2 Satn. %									
			Loamy Sand	Sandy Loam	Loam	Silt Loam	Clay Loam	Clay	Organic		
Saturation	20.0 %	20 - 60									

Good Problem Indicates physical conditions and/or phenological and amendment requirements.
 Note: Color coded bar graphs have been used to provide you with 'AT-A-GLANCE' interpretations.

Soil pH & Limestone levels are important to consider when making plant selections. Soil pH levels above 7.0 are not suitable for acid loving plants. Soils containing limestone are not suitable for plants sensitive to Limestone.

FRUIT GROWERS LABORATORY, INC.

Darrell H. Nelson, President

DHN:jrj



ANALYTICAL CHEMISTS

SOIL ANALYSES TERMS

Primary Nutrients

Nitrogen

Nitrogen is essential to plant growth and is usually available in two forms:

a) Nitrate-Nitrogen - D.I. (de-ionized) water extractable

This is a water soluble form of nitrogen which is most readily available to plants but is also vulnerable to leaching.

b) Ammonium Nitrogen - potassium chloride extractable

The ammonium nitrogen found in soil is usually derived from decomposing organic matter and is readily absorbed by plants.

Phosphorus

Phosphorus is essential to plant growth. The sodium bicarbonate method is used to measure the available phosphorus in calcareous soils. The weak Bray is the more appropriate method to measure available phosphorus in soils having a pH of less than 6.

Potassium - Ammonium acetate (exchangeable) and saturated paste (water soluble) extractable.

Potassium is essential to plant growth. Ample levels of exchangeable potassium do not always result in optimum plant uptake. The rate at which exchangeable potassium becomes available to plants is influenced by soil type, pH, temperature and moisture content. The soluble potassium found in a soil is readily available for plant uptake.

Secondary Nutrients

Calcium, Magnesium - Ammonium acetate (exchangeable) and saturated paste (water soluble) extractable.

These elements are essential to plant growth and also influence soil structure. See SAR.

Sodium - Ammonium acetate (exchangeable) and saturated paste (water soluble) extractable.

This element is not generally believed to be essential to plant growth. A high level of sodium in relation to calcium and magnesium will result in poor soil structure. See SAR.

Sulfate - Saturated paste (water soluble) extractable

Sulfur is an essential plant nutrient. Sulfate is a readily available form of sulfur in soil.

Micronutrients

Zinc, Manganese, Iron, Copper - DTPA extractable

These elements are essential to plant growth but are required in very small quantities.

Boron - Saturated paste (water soluble) extractable. A hot water extraction is used in the analysis of soils with very low levels of boron to determine deficiency potential.

Boron is an essential plant nutrient. Boron is required in very small quantities and can also be very toxic when present, even in slightly higher than needed levels.

Chloride - Saturated paste (water soluble) extractable

Chloride is essential to plant growth in quantities ranging from less than 150 ppm (0.015%) to over 1000ppm (0.1%), depending upon specific plant requirements. Actual chloride deficiencies are rare.

Cation Exchange Capacity (CEC)

The CEC is a measure of a soil's capacity to hold the positively charged ions of calcium, magnesium, potassium, sodium and hydrogen. The proper balance (ratio) of these elements has an important impact on soil structure and affects their availability for plant uptake.

Conversion Factors

* 1 acre foot of soil = 4,000,000 (approx lbs)

* PPM x 4 ~ lbs./acre ft

* Meq/l x eq. wt. = ppm

* $SO_4 \times 0.33 = S$

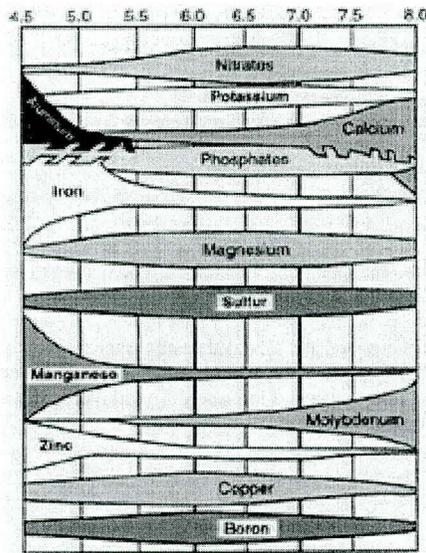
* $P \times 2.3 = P_2O_5$

* $K \times 1.2 = K_2O$

* $NO_3 \times 0.23 = N$

Soil pH - Measured on a saturated (water soluble) paste

Soil pH is a measure of a soil's relative acidity or alkalinity. A pH of 5.8 to 8.2 is suitable for a wide range of crops. How soil pH affects availability of plant nutrients and activity of micro-nutrients is outlined in the following table:



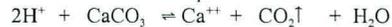
Other Analyses

Soil Salinity (ECe) - Measured on a saturated paste (water soluble) extract
Salinity is a measure of the total water soluble salt content of the soil.

SAR - Sodium Adsorption Ratio
A calculated ratio of soluble calcium and magnesium to sodium. This ratio is used to identify soil structural problems.

Limestone
This is a quantitative measure of the amount of calcium carbonate present in a soil. Many plants, especially perennials, are highly sensitive to low levels of limestone.

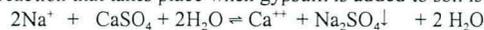
Lime Requirement
A quantitative measure made on soils with pH levels below 5.8. This determines the amount of limestone needed to adjust the soil pH to 6.5. The chemical reaction that takes place when lime is added to soil is as follows -:



Soil Moisture
This is a measurement of the amount of moisture present in a soil sample when received at the laboratory. The ample soil moisture % is in a range of $\pm 20\%$ of $\frac{1}{2}$ saturation.

Saturation %
The amount of water required to saturate 100 grams of soil. This value is approximately twice the field capacity of the soil. Soil saturation % serves as an approximation of soil texture and nutrient retention potential, in addition to its water holding capability

Gypsum Requirement
A measurement of the amount of pure (100%) gypsum needed to improve the rate of water infiltration into a soil. A gypsum requirement recommendation does not necessarily indicate a serious problem but indicates the amount required to maximize the water infiltration rate. The chemical reaction that takes place when gypsum is added to soil is as follows -:



Organic Matter
A quantitative measure of the organic content of a soil. Accurate measurement of low organic matter soils can be critical in the use of herbicides.