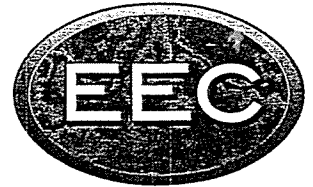


**PRELIMINARY SUBSURFACE
EXPLORATION REPORT
BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO
EEC PROJECT NO. 1012072**



EARTH ENGINEERING
CONSULTANTS, INC.

May 2, 2001

Great Plains Investment Group, LLC
4529 South Stover Street
Fort Collins, Colorado 80525

Re: Preliminary Subsurface Exploration Report
Buffalo Creek Development
Wellington, Colorado
EEC Project No. 1012072

Mr. Donaldson:

Enclosed, herewith, are the results of the preliminary subsurface exploration completed by Earth Engineering Consultants, Inc. personnel for the referenced project. In summary, the subsurface soils encountered in the test borings consisted of lean clay with varying amounts of sand changing to cleaner sands and gravels with depth. Groundwater was encountered in only one of the completed borings at a depth of approximately 14½ feet below present site grade.

Based on the materials observed in the completed test borings, it is our opinion lightly loaded residential structures could be supported on conventional footing foundations bearing on the near surface low plasticity cohesive or essentially granular soils. Care will be required to see that footing foundations are supported on suitable strength materials. The near surface granular and/or low plasticity cohesive materials could also be used for direct support of floor slabs and pavements. Preliminary geotechnical recommendations concerning design and construction of foundations and support of floor slabs and pavements are presented in the text of the attached report.

EEC Project No. 1012072
May 2, 2001
Page 2

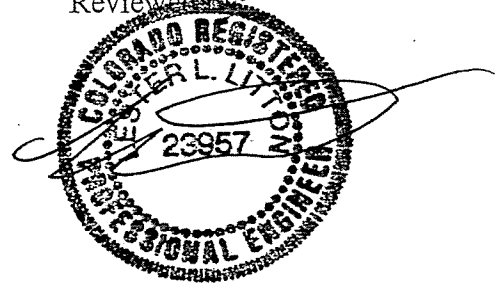
We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the enclosed report, or if we can be of further service to you in any other way, please do not hesitate to contact us.

Very truly yours,
Earth Engineering Consultants, Inc.



Wolfram von Carlowitz, E.I.T.
Staff Engineer

Reviewed by



Lester L. Litton, P.E.
Principal Engineer

**PRELIMINARY SUBSURFACE EXPLORATION REPORT
BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO
EEC PROJECT NO. 1012072**

May 2, 2001

INTRODUCTION

The preliminary subsurface exploration for the proposed Buffalo Creek residential development to be located in the SW $\frac{1}{4}$ of Section 28, Township 9 North, Range 68 West of the 6th P.M. in Larimer County, Colorado, has been completed. Fifteen (15) soil borings extending to depths of approximately 15 feet below present site grades were advanced in the proposed development area to obtain information on existing subsurface conditions. Individual boring logs and a diagram indicating the approximate boring locations are included with this report.

The proposed Buffalo Creek development includes approximately 160 acres to be developed as single-family residential. We expect the single-family structures will be one or two-story wood frame buildings with full basements. Foundation loads for the proposed residences are expected to be light with continuous wall loads less than 2.5 kips per lineal foot and individual column loads less than 30 kips. Floor loads are expected to be less than 100 psf. It is expected that low volumes of automobiles and light trucks will use the site roadways. Small grade changes are expected to develop final site grades for the development.

The purpose of this report is to describe the subsurface conditions encountered in the borings, analyze and evaluate the test data and provide preliminary geotechnical recommendations concerning design and construction of foundations and support of floor slabs and pavements.

EXPLORATION AND TESTING PROCEDURES

The boring locations were selected and established in the field by Earth Engineering Consultants, Inc. (EEC) personnel by estimating angles and distances from identifiable site references. The locations of the borings should be considered accurate only to the degree implied by the methods used to make the field measurements.

The borings were performed using a truck-mounted CME 45-drill rig equipped with a hydraulic head employed in drilling and sampling operations. The boreholes were advanced using 4-inch nominal diameter continuous flight augers. Samples of the subsurface materials encountered were obtained using split-barrel and California barrel sampling procedures in general accordance with ASTM Specification D-1586. In the split-barrel and California barrel sampling procedures, standard sampling spoons are driven into the ground by means of a 140-pound hammer falling a distance of 30 inches. The number of blows required to advance the samplers is recorded and is used to estimate the in-situ relative density of cohesionless soils and, to a lesser degree of accuracy, the consistency of cohesive soils. In the California barrel sampling procedure, relatively undisturbed samples are obtained in removable brass liners. All samples obtained in the field were sealed and returned to the laboratory for further examination, classification and testing.

Moisture content tests were performed on each of the recovered samples. In addition, selected samples were tested for fine content and plasticity by washed sieve analysis and Atterberg limits tests. Gradation analysis tests were performed on selected essentially sandy samples to determine grain size distribution. Swell/consolidation tests were completed on selected samples to evaluate the subgrade materials' tendency to change volume with variation in moisture content. In addition, a Hveem stabilometer R-Value was completed on a site representative sample to provide data on the remolded subgrade strength for pavement design. Results of the outlined tests are indicated on the attached boring logs and summary sheets.

As a part of the testing program, all samples were examined in the laboratory by an engineer and classified in accordance with the attached General Notes and the Unified Soil Classification System, based on the sample's texture and plasticity. The estimated group symbol for the Unified Soil

Classification System is shown on the boring logs and a brief description of that classification system is included with this report.

SITE AND SUBSURFACE CONDITIONS

The development parcel is located northeast of the intersection of Larimer County Roads 9 and 64 in Wellington, Colorado. The project site is presently undeveloped farm ground. Surface drainage is generally to the east towards Boxelder Creek with the maximum difference in ground surface elevation across the site estimated to be on the order of 15 to 20 feet.

An EEC field engineer was on-site during drilling to direct the drilling activities and evaluate the subsurface materials encountered. Field descriptions of the materials encountered were based on visual and tactual observation of disturbed samples and auger cuttings. The boring logs included with this report may contain modifications to the field logs based on results of laboratory testing and engineering evaluation. Based on results of field and laboratory evaluation, subsurface conditions can be generalized as follows.

Approximately 3 to 6 inches of vegetation and/or topsoil was encountered at the surface at the boring locations. The topsoil and/or vegetation was underlain by light to dark reddish brown lean clay with varying amounts of silt and sand. The sandy lean clay soils were generally medium stiff to stiff and exhibited low plasticity. Those soils showed low potential to change volume with fluctuations in moisture content at current moisture and density conditions. Softer soils were observed near existing ground surface in the borings completed near Boxelder Creek. The essentially cohesive soils extended to the bottom of borings B-2 and B-3 and to depths of approximately 3½ to 13½ feet below ground surface in the rest of the borings. The lean clay soils transitioned into clayey sands and cleaner sands and gravels with depth in thirteen of the completed borings. The essentially granular soils were medium dense to dense, colored reddish brown, and extended to the bottom of these borings at a depth of approximately 15½ feet below present site grades.

The stratification boundaries indicated on the boring logs represent the approximate location of changes in soil types; in-situ, the transition of materials may be gradual and indistinct.

GROUND WATER OBSERVATIONS

Observations were made while drilling to detect the presence and level of free water. Free water was observed in boring B-15 near the center of the site at a depth of approximately 14½ feet below ground surface. Free water was not observed in boring B-1 through B-14 at the time of drilling.

Perched and/or trapped water may be encountered in more permeable zones in the subgrade soils at times throughout the year. Perched water is commonly encountered in soils immediately overlying less permeable bedrock materials. Fluctuations in groundwater levels and in the location and amount of perched water may occur over time depending on variations in hydrologic conditions, irrigation activities on surrounding properties and other conditions not apparent at the time of this report. Water levels in the Boxelder Creek and irrigation ditches located on the site could affect groundwater levels in the general area.

ANALYSIS AND RECOMMENDATIONS

Site Preparation

All existing vegetation and/or topsoil should be removed from beneath fill, roadway or building subgrade areas. After stripping and completing all cuts and prior to placement of any fill, floor slabs or pavements, we recommend the exposed soils be scarified to a minimum depth of 9 inches, adjusted in moisture content and compacted to at least 95% of the material's maximum dry density as determined in accordance with ASTM Specification D-698, the standard Proctor procedure. The moisture content of the scarified materials should be adjusted to be within the range of $\pm 2\%$ of standard Proctor optimum moisture at the time of compaction.

Fill soils required to develop the building or pavement subgrades should consist of approved, low-volume change materials which are free from organic matter and debris. The near surface lean clay or essentially granular soils could be used as fill in these areas. We recommend the fill soils be placed in loose lifts not to exceed 9 inches thick, adjusted in moisture content as recommended for

the scarified materials and compacted to at least 95% of the material's standard Proctor maximum dry density.

Care should be taken after preparation of the subgrades to avoid disturbing the subgrade materials. Positive drainage should be developed away from the structures and across and away from the pavement edges to avoid wetting of subgrade materials. Subgrade materials allowed to become wetted subsequent to construction of the residences and/or pavements can result in unacceptable performance of those improvements.

Footing Foundations

Based on materials observed at the boring locations, it is our opinion the proposed single-family residences could be supported on conventional footing foundations bearing on the natural site soils or newly placed and compacted fill developed as outlined above.

We recommend footing foundations extend through any existing vegetation and/or topsoil and bear on the natural, medium dense clayey sand, stiff essentially cohesive or newly placed and compacted fill soils. For design of footing foundations bearing in the natural site soils or newly placed and compacted fill, maximum net allowable total load soil bearing pressures in the range of 1,500 to 2,500 psf appear usable. The net bearing pressure refers to the pressure at foundation bearing level in excess of the minimum surrounding overburden pressure. Total load should include full dead and live loads.

Exterior foundations and foundations in unheated areas should be located at least 30 inches below adjacent exterior grade to provide frost protection. Formed continuous footings should have a minimum width of 12 inches and isolated column foundations a minimum width of 24 inches. Trenched foundations or grade beam foundations could be used in the near surface soils. If used, we recommend trenched foundations have a minimum width of 12 inches and formed continuous foundations have a minimum width of 8 inches.

EEC Project No. 1012072

May 2, 2001

Page 6

Care should be taken during construction to avoid disturbing the foundation bearing materials. Any materials which are loosened or disturbed by the construction activities or materials which become dry and desiccated or wet and softened should be removed and replaced or reworked in place prior to construction of the footing foundations.

Care should be taken at the time of construction to evaluate the proposed bearing soils, particularly near the Boxelder Creek drainage way. If soft or loose zones are observed in the subgrades, the footings should be extended to suitable strength soils or overexcavation/backfill techniques used to develop acceptable foundation bearing.

We estimate the long-term settlement of footing foundations designed and constructed as outlined above would be less than 1 inch.

Floor Slab Subgrades

We recommend all existing vegetation/topsoil be removed from beneath the floor slab areas. After stripping and completing all cuts and prior to placement of any floor slabs or fill, the exposed subgrades should be scarified, adjusted in moisture content and recompacted as outlined for "Site Development."

Fill soils required to develop the floor slab subgrades should consist of approved, low-volume change materials which are free from organic matter and debris. The near surface soils could be used for fill beneath floor slabs. Those materials should be placed and compacted as outlined for the site fill soils.

Care should be taken after development of the floor slab subgrades to prevent disturbance of the in-place materials. Materials which are loosened or disturbed by construction activities or materials which become wet and softened or dry and desiccated should be reworked prior to placement of the overlying floor slabs.

Below Grade Areas

We recommend a perimeter drain system be installed around all below grade areas to reduce the potential for development of hydrostatic loads on below grade walls and/or infiltration of surface water into below grade areas. In general, a perimeter drain system would consist of perforated metal or plastic pipe placed around the exterior perimeter of the structure and sloped to drain to a sump or free outfall where reverse flow cannot occur in the system. The perimeter drain should be surrounded by an appropriate granular filter soil and either the filter soil or the drain line should be encased in a filter fabric to reduce the potential for an influx of fines into the system.

Backfill placed above the exterior perimeter drain should consist of approved, low-volume change materials which are free from organic matter and debris. The on-site essentially granular or low-plasticity cohesive soils could be used as fill in these areas. The top 2 feet of the backfill should be an essentially cohesive material to reduce the potential for an influx of water into the below grade drain system. We recommend those fill soils be placed in loose lifts not to exceed 9 inches thick, adjusted in moisture content and compacted to at least 95% of the material's standard Proctor maximum dry density. The moisture content of the backfill soils should be adjusted to be within the range of $\pm 2\%$ of standard Proctor optimum moisture.

Basement walls will be subject to lateral earth pressures. Below grade walls for residential structures are commonly designed using active lateral stress distribution analysis. The active lateral stress analysis includes an assumption of slight wall rotation (deflection), typically assumed to be 0.5% of the height of the wall. Using the active stress analysis, we recommend the below grade walls be designed an equivalent fluid pressure of 35 pounds per cubic. That equivalent fluid pressure does not include a factor of safety nor an allowance for hydrostatic loads. Surcharge loads or point loads placed in the wall backfill would also add to the lateral pressures on the below grade walls.

Pavement Subgrades

All existing vegetation and/or topsoil should be removed from pavement areas. After stripping and completing all cuts and prior to placement of any fill or pavements, we recommend the exposed soils be scarified to a minimum depth of 9 inches, adjusted in moisture content and compacted to at least 95% of the material's maximum dry density as determined in accordance with the standard Proctor procedure. The moisture content of the scarified soils should be adjusted to be within the range of $\pm 2\%$ of standard Proctor optimum moisture.

Fill materials required to develop the pavement subgrades should consist of approved, low-volume change materials, free from organic matter and debris. The near surface clayey sand and gravel or sandy clay soils could be used for fill in these areas. We recommend those fill soils be placed in loose lifts not to exceed 9 inches thick, adjusted in moisture content and compacted to at least 95% of the material's standard Proctor maximum dry density.

After completion of the pavement subgrades, care should be taken to prevent disturbance of those materials prior to placement of the overlying pavements. Soils which are disturbed by construction activities should be reworked in-place or, if necessary, removed and replaced prior to placement of overlying fill or pavements.

Pavements

Pavement section design is based on subgrade support and estimated traffic. At this time, we do not have information on estimated traffic for the pavement design. The Hveem stabilometer R-value test has been completed and yielded a value of 25. We will complete the pavement design when the traffic estimates become available. For preliminary estimates, "local" streets will likely include 3 to 4 inches of hot bituminous pavement over 6 to 8 inches of aggregate base and "collector" streets will likely include 4 to 5 inches of hot bituminous pavement over 8 to 12 inches of aggregate base.

GENERAL COMMENTS

The analysis and recommendations presented in this report are based upon the data obtained from the soil borings performed at the indicated locations and from any other information discussed in this report. This report does not reflect any variations which may occur between borings or across the site. The nature and extent of such variations may not become evident until construction. If variations appear evident, it will be necessary to re-evaluate the recommendations of this report.

It is recommended that the geotechnical engineer be retained to review the plans and specifications so that comments can be made regarding the interpretation and implementation of our geotechnical recommendations in the design and specifications. It is further recommended that the geotechnical engineer be retained for testing and observations during earthwork and foundation construction phases to help determine that the design requirements are fulfilled.

This report has been prepared for the exclusive use of The Great Plains Investment Group, LLC for specific application to the project discussed and has been prepared in accordance with generally accepted geotechnical engineering practices. No warranty, express or implied, is made. In the event that any changes in the nature, design or location of the project as outlined in this report are planned, the conclusions and recommendations contained in this report shall not be considered valid unless the changes are reviewed and the conclusions of this report modified or verified in writing by the geotechnical engineer.

DRILLING AND EXPLORATION

DRILLING & SAMPLING SYMBOLS:

SS: Split Spoon - 1 3/8" I.D., 2" O.D., unless otherwise noted
 ST: Thin-Walled Tube - 2" O.D., unless otherwise noted
 R: Ring Barrel Sampler - 2.42" I.D., 3" O.D. unless otherwise noted
 PA: Power Auger
 HA: Hand Auger
 DB: Diamond Bit = 4", N, B
 AS: Auger Sample
 HS: Hollow Stem Auger

PS: Piston Sample
 WS: Wash Sample
 FT: Fish Tail Bit
 RB: Rock Bit
 BS: Bulk Sample
 PM: Pressure Meter
 WB: Wash Bore

Standard "N" Penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch O.D. split spoon, except where noted.

WATER LEVEL MEASUREMENT SYMBOLS:

WL : Water Level
 WCI: Wet Cave in
 DCI: Dry Cave in
 AB : After Boring

WS : While Sampling
 WD : While Drilling
 BCR: Before Casing Removal
 ACR: After Casting Removal

Water levels indicated on the boring logs are the levels measured in the borings at the time indicated. In pervious soils, the indicated levels may reflect the location of ground water. In low permeability soils, the accurate determination of ground water levels is not possible with only short term observations.

DESCRIPTIVE SOIL CLASSIFICATION

Soil Classification is based on the Unified Soil Classification system and the ASTM Designations D-2488. Coarse Grained Soils have more than 50% of their dry weight retained on a #200 sieve; they are described as: boulders, cobbles, gravel or sand. Fine Grained Soils have less than 50% of their dry weight retained on a #200 sieve; they are described as: clays, if they are plastic, and silts if they are slightly plastic or non-plastic. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size. In addition to gradation, coarse grained soils are defined on the basis of their relative in-place density and fine grained soils on the basis of their consistency. Example: Lean clay with sand, trace gravel, stiff (CL); silty sand, trace gravel, medium dense (SM).

CONSISTENCY OF FINE-GRAINED SOILS

Unconfined Compressive Strength, Qu, psf	Consistency
< 500	Very Soft
500 - 1,000	Soft
1,001 - 2,000	Medium
2,001 - 4,000	Stiff
4,001 - 8,000	Very Stiff
8,001 - 16,000	Very Hard

RELATIVE DENSITY OF COARSE-GRAINED SOILS:

N-Blows/ft	Relative Density
0-3	Very Loose
4-9	Loose
10-29	Medium Dense
30-49	Dense
50-80	Very Dense
80 +	Extremely Dense

PHYSICAL PROPERTIES OF BEDROCK

DEGREE OF WEATHERING:

Slight Slight decomposition of parent material on joints. May be color change.
 Moderate Some decomposition and color change throughout.
 High Rock highly decomposed, may be extremely broken.

HARDNESS AND DEGREE OF CEMENTATION:

Limestone and Dolomite:

Hard Difficult to scratch with knife.
 Moderately Can be scratched easily with knife.
 Hard Cannot be scratched with fingernail.
 Soft Can be scratched with fingernail.

Shale, Siltstone and Claystone:

Hard Can be scratched easily with knife, cannot be scratched with fingernail.
 Moderately Can be scratched with fingernail.
 Hard
 Soft Can be easily dented but not molded with fingers.

Sandstone and Conglomerate:

Well Cemented Capable of scratching a knife blade.
 Cemented Can be scratched with knife.
 Poorly Cemented Can be broken apart easily with fingers.



UNIFIED SOIL CLASSIFICATION SYSTEM

Criteria for Assigning Group Symbols and Group names Using Laboratory Tests			Soil Classification		
			Group Symbol	Group Name	
Coarse-Grained Soils more than 50% retained on No. 200 sieve	Gravels more than 50% of coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines	$Cu \geq 4$ and $< Cc \leq 3^E$	GW	Well-graded gravel ^F
		Gravels with Fines more than 12% fines	$Cu < 4$ and/or $1 > Cc > 3^E$	GP	Poorly-graded gravel ^F
	Sands 50% or more coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines	Fines classify as ML or MH	GM	Silty gravel, G,H
			Fines classify as CL or CH	GC	Clayey Gravel ^{F,G,H}
		Sands with Fines more than 12% fines	Fines classify as ML or MH	SM	Silty sand ^{G,H,I}
			Fines classify as CL or CH	SC	Clayey sand ^{G,H,I}
Fine-Grained Soils 50% or more passes the No. 200 sieve	Silt and Clays Liquid Limit less than 50	inorganic	$PI > 7$ and plots on or above "A"Line ^J	CL	Lean clay ^{K,L,M}
		organic	$PI < 4$ or plots below "A"Line ^J	ML	Silt ^{K,L,M}
			Liquid Limit - oven dried < 0.75	OL	Organic clay ^{K,L,M,N}
			Liquid Limit - not dried		Organic silt ^{K,L,M,O}
	Silt and Clays Liquid Limit 50 or more	inorganic	PI plots on or above "A"Line	CH	Fat clay ^{K,L,M}
			PI plots below "A"Line	MH	Elastic Silt ^{K,L,M}
		organic	Liquid Limit - oven dried < 0.75	OH	Organic clay ^{K,L,M,P}
			Liquid Limit - not dried		Organic silt ^{K,L,M,O}

Highly organic soils Primarily organic matter, dark in color, and organic odor PT Peat

^ABased on the material passing the 3-in. (75-mm) sieve

^BIf field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

^CGravels with 5 to 12% fines required dual symbols:

GW-GM well graded gravel with silt
 GW-GC well-graded gravel with clay
 GP-GM poorly-graded gravel with silt
 GP-GC poorly-graded gravel with clay

^DSands with 5 to 12% fines require dual symbols:

SW-SM well-graded sand with silt
 SW-SC well-graded sand with clay
 SP-SM poorly graded sand with silt
 SP-SC poorly graded sand with clay

$C_u = D_{60}/D_{10}, C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

^EIf soil contains $\geq 15\%$ sand, add "with sand" to group name.

^FIf fines classify as CL-ML, use dual symbol GC-CM, or SC-SM.

^GIf fines are organic, add "with organic fines" to group name.

^HIf soil contains $> 15\%$ gravel, add "with gravel" to group name.

^IIf Atterberg limits plots shaded area, soil is a CL-ML, cilty clay.

^KIf soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel", whichever is predominant.

^LIf soil contains $\geq 30\%$ plus No. 200 predominantly sand, add "sandy" to group name.

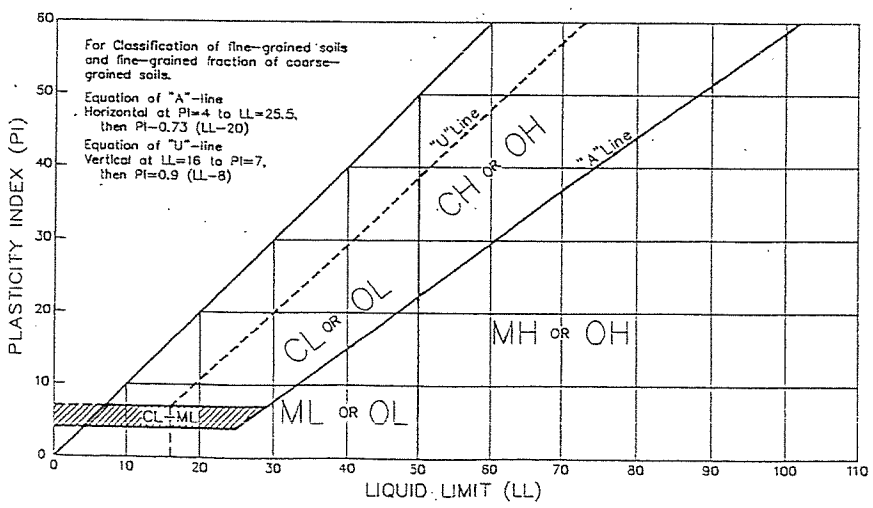
^MIf soil contains $\geq 30\%$ plus No. 200 predominantly gravel, add "gravelly" to group name.

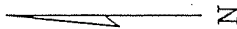
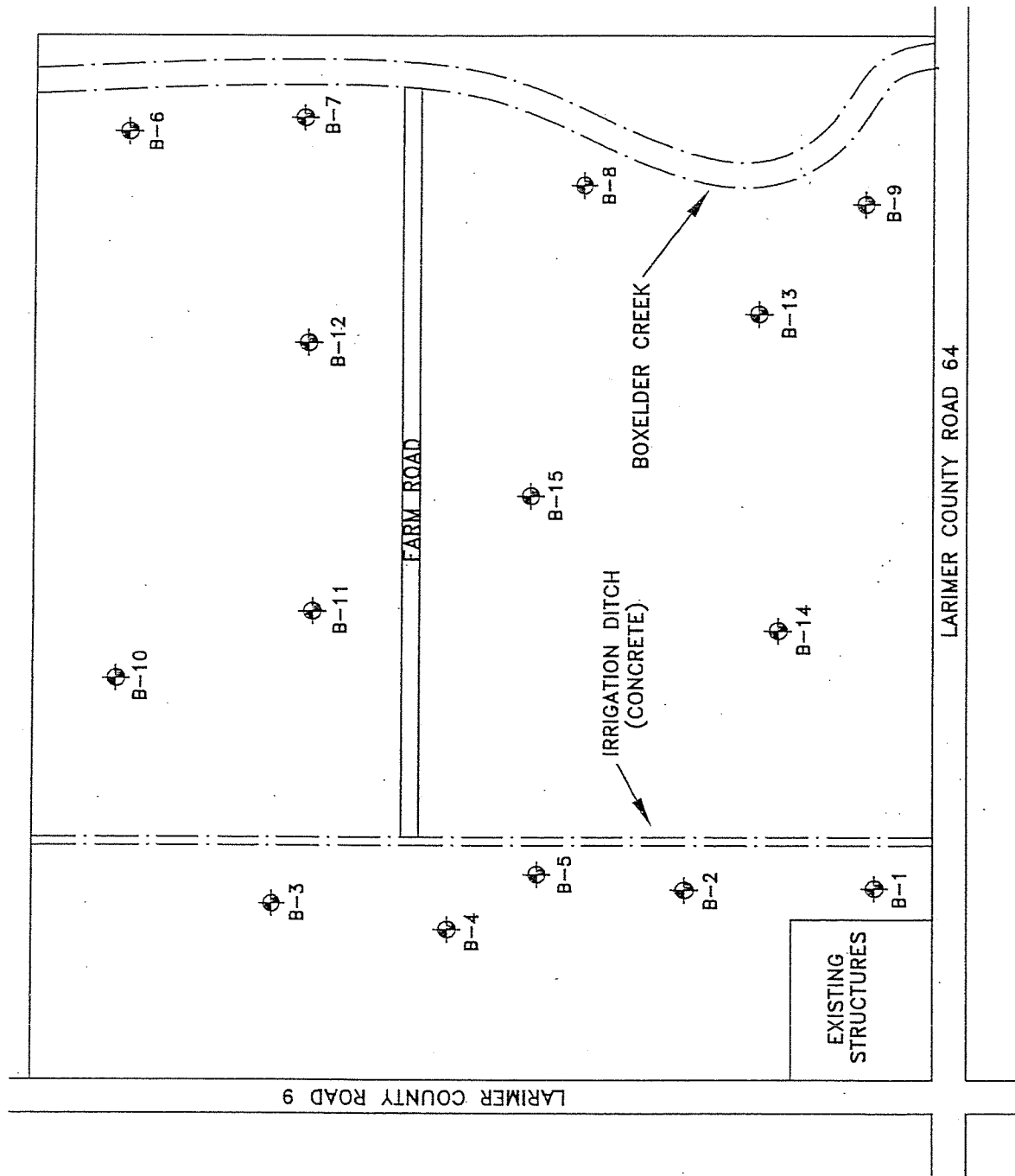
^N $PI \geq 4$ and plots on or above "A" line.

^O $PI \leq 4$ or plots below "A" line.

^PPI plots on or above "A" line.

^QPI plots below "A" line.





N

NOT TO SCALE

BORING LOCATION DIAGRAM
 BUFFALO CREEK DEVELOPMENT - WELLINGTON, COLORADO
 EEC PROJECT # 1012072 MAY 2001

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072		LOG OF BORING B-1					DATE: MAY 2001				
RIG TYPE: CME 45		SHEET 1 OF 1					WATER DEPTH				
FOREMAN: SG		START DATE	4/18/01	WHILE DRILLING		None					
AUGER TYPE: 4" CFA		FINISH DATE	4/18/01	AFTER DRILLING		None					
SPT HAMMER: Manual		SURFACE ELEV	N/A	24 HOUR		N/A					
SOIL DESCRIPTION	TYPE	D (FEET)	N (BLOWS/FT)	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
							LL	PI		PRESSURE	% @ 500 PSF
TOPSOIL AND VEGETATION		1									
SANDY LEAN CLAY (CL) light to dark brown medium stiff to stiff calcareous		2									
	CS	3	8	6000	19.7	102.7	40	21	59.3	<500 psf	None
		4									
	SS	5	10	7500	21.1						
		6									
		7									
		8									
		9									
	SS	10	6	4000	20.9						
		11									
	12										
	13										
CLAYEY SAND AND GRAVEL (SC-GC) reddish brown medium dense		14									
	SS	15	24	-	2.1						
BOTTOM OF BORING 15.5'		16									
		17									
		18									
		19									
		20									
		21									
		22									
		23									
		24									
		25									

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072		LOG OF BORING B-2					DATE: MAY 2001				
RIG TYPE: CME 45		SHEET 1 OF 1					WATER DEPTH				
FOREMAN: SG		START DATE		4/18/01		WHILE DRILLING		None			
AUGER TYPE: 4" CFA		FINISH DATE		4/18/01		AFTER DRILLING		None			
SPT HAMMER: Manual		SURFACE ELEV		N/A		24 HOUR		N/A			
SOIL DESCRIPTION	TYPE	D (FEET)	N (BLOWS/FT)	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
							LL	PI		PRESSURE	% @ 500 PSF
TOPSOIL AND VEGETATION		1									
SANDY LEAN CLAY (CL) light to dark brown/reddish brown medium stiff to stiff calcareous with clayey sand lenses		2									
	SS	3	12	9000+	15.7						
		4									
	SS	5	8	6500	20.3						
		6									
		7									
		8									
		9									
	SS	10	8	3500	20.9						
		11									
		12									
		13									
		14									
	SS	15	7	3000	22.7						
	BOTTOM OF BORING 15.5'		16								
		17									
		18									
		19									
		20									
		21									
		22									
		23									
		24									
		25									

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072		LOG OF BORING B-3					DATE: MAY 2001				
RIG TYPE: CME 45		SHEET 1 OF 1					WATER DEPTH				
FOREMAN: SG		START DATE		4/18/01		WHILE DRILLING		None			
AUGER TYPE: 4" CFA		FINISH DATE		4/18/01		AFTER DRILLING		None			
SPT HAMMER: Manual		SURFACE ELEV		N/A		24 HOUR		N/A			
SOIL DESCRIPTION	TYPE	D (FEET)	N (BLOWS/FT)	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
							LL	PI		PRESSURE	% @ 500 PSF
TOPSOIL AND VEGETATION		1									
SANDY LEAN CLAY (CL) light to dark brown/reddish brown medium stiff to stiff calcareous		2									
	SS	3	14	9000+	15.6						
		4									
	CS	5	8	7000	19.7	101.0	41	22	79.7	700 pf	0.3%
		6									
		7									
		8									
		9									
	SS	10	9	6000	19.3						
		11									
		12									
		13									
		14									
	SS	15	11	6000	-						
	BOTTOM OF BORING 15.5'		16								
		17									
		18									
		19									
		20									
		21									
		22									
		23									
		24									
		25									

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072

DATE: MAY 2001

LOG OF BORING B-4

SHEET 1 OF 1

WATER DEPTH

RIG TYPE: CME 45

FOREMAN: SG

AUGER TYPE: 4" CFA

SPT HAMMER: Manual

START DATE

4/18/01

WHILE DRILLING

None

FINISH DATE

4/18/01

AFTER DRILLING

None

SURFACE ELEV

N/A

24 HOUR

N/A

SOIL DESCRIPTION	TYPE	D (FEET)	N (BLOWS/FT)	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
							LL	PI		PRESSURE	% @ 500 PSF
TOPSOIL AND VEGETATION		1									
SANDY LEAN CLAY (CL) reddish brown to brown medium to very stiff calcareous increasing sand with depth	SS	2									
		3	20	9000+	12.0						
		4									
		5	6	9000+	13.3						
	CS	6									
		7									
		8									
		9									
		10	9	6000	13.3	114.1	34	19	49.3	600 psf	0.1%
		11									
SAND AND GRAVEL (SP-GP) reddish brown medium dense	SS	12									
		13									
		14									
		15	20	-	9.4						
BOTTOM OF BORING 15.5'		16									
		17									
		18									
		19									
		20									
		21									
		22									
		23									
		24									
		25									

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072		LOG OF BORING B-5					DATE: MAY 2001				
RIG TYPE: CME 45		SHEET 1 OF 1					WATER DEPTH				
FOREMAN: SG		START DATE		4/18/01		WHILE DRILLING		None			
AUGER TYPE: 4" CFA		FINISH DATE		4/18/01		AFTER DRILLING		None			
SPT HAMMER: Manual		SURFACE ELEV		N/A		24 HOUR		N/A			
SOIL DESCRIPTION	TYPE	D (FEET)	N (BLOWS/FT)	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
							LL	PI		PRESSURE	% @ 500 PSF
TOPSOIL AND VEGETATION		1									
SANDY LEAN CLAY (CL) brown medium to very stiff calcareous increasing sand with depth		2									
	SS	3	22	9000+	12.4						
		4									
	SS	5	9	7000	14.8						
		6									
		7									
		8									
		9									
	SS	10	8	5500	19.7						
	SAND (SP) reddish brown medium dense with gravel		11								
		12									
		13									
		14									
SS		15	16	-	2.8						
BOTTOM OF BORING 15.5'		16									
		17									
		18									
		19									
		20									
		21									
		22									
		23									
		24									
		25									

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072		LOG OF BORING B-6					DATE: MAY 2001				
RIG TYPE: CME 45		SHEET 1 OF 1					WATER DEPTH				
FOREMAN: SG		START DATE		4/18/01		WHILE DRILLING		None			
AUGER TYPE: 4" CFA		FINISH DATE		4/18/01		AFTER DRILLING		None			
SPT HAMMER: Manual		SURFACE ELEV		N/A		24 HOUR		N/A			
SOIL DESCRIPTION	TYPE	D (FEET)	N (BLOWS/FT)	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
							LL	PI		PRESSURE	% @ 500 PSF
TOPSOIL AND VEGETATION		--									
		1									
SANDY LEAN CLAY (CL)		--									
dark brown		2									
medium stiff to stiff											
calcareous	SS	3	4	4500	7.9						
increasing sand with depth		4									
	SS	5	3	6500	10.5						
		6									
		7									
		8									
		9									
	SS	10	8	7000	20.1						
		11									
		12									
SAND (SP)		13									
reddish brown		14									
dense											
with gravel	SS	15	45		2.8						
BOTTOM OF BORING 15.5'		16									
		17									
		18									
		19									
		20									
		21									
		22									
		23									
		24									
		25									

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072		LOG OF BORING B-7					DATE: MAY 2001				
RIG TYPE: CME 45		SHEET 1 OF 1					WATER DEPTH				
FOREMAN: SG		START DATE		4/18/01		WHILE DRILLING		None			
AUGER TYPE: 4" CFA		FINISH DATE		4/18/01		AFTER DRILLING		None			
SPT HAMMER: Manual		SURFACE ELEV		N/A		24 HOUR		N/A			
SOIL DESCRIPTION	TYPE	D (FEET)	N (BLOWS/FT)	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
							LL	PI		PRESSURE	% @ 500 PSF
TOPSOIL AND VEGETATION		--									
SANDY LEAN CLAY (CL) reddish brown to brown soft to medium stiff calcareous		1									
		2									
	SS	3	4	500	10.0						
CLAYEY SAND (SC) reddish brown loose to medium dense		4									
	SS	5	3	500	10.4						
		6									
		7									
		8									
SAND AND GRAVEL (SP-GP) reddish brown medium dense to dense		9									
	CS	10	31	-	2.4						
		11									
		12									
		13									
		14									
	SS	15	45	-	1.8						
BOTTOM OF BORING 15.5'		16									
		17									
		18									
		19									
		20									
		21									
		22									
		23									
		24									
		25									

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072		LOG OF BORING B-3					DATE: MAY 2001				
RIG TYPE: CME 45		SHEET 1 OF 1					WATER DEPTH				
FOREMAN: SG		START DATE		4/18/01		WHILE DRILLING		None			
AUGER TYPE: 4" CFA		FINISH DATE		4/18/01		AFTER DRILLING		None			
SPT HAMMER: Manual		SURFACE ELEV		N/A		24 HOUR		N/A			
SOIL DESCRIPTION	TYPE	D (FEET)	N (BLOWS/FT)	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
							LL	PI		PRESSURE	% @ 500 PSF
TOPSOIL AND VEGETATION		1									
SANDY LEAN CLAY (CL) reddish brown to brown soft to medium stiff calcareous		2									
	SS	3	3	500	10.1						
CLAYEY SAND (SC) reddish brown loose to medium dense		4									
	SS	5	3	500	19.1						
		6									
		7									
SAND AND GRAVEL (SP-GP) reddish brown medium dense to dense		8									
		9									
	SS	10	15	-	2.7						
		11									
BOTTOM OF BORING 15.5'		12									
		13									
	SS	14									
		15	40	-	2.1						
		16									
		17									
		18									
		19									
		20									
		21									
		22									
		23									
		24									
		25									

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072

DATE: MAY 2001

LOG OF BORING B-9

SHEET 1 OF 1

WATER DEPTH

RIG TYPE: CME 45	START DATE	4/18/01	WHILE DRILLING	None
FOREMAN: SG	FINISH DATE	4/18/01	AFTER DRILLING	None
AUGER TYPE: 4" CFA	SURFACE ELEV	N/A	24 HOUR	N/A
SPT HAMMER: Manual				

SOIL DESCRIPTION	TYPE	D (FEET)	N (BLOWS/FT)	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
							LL	PI		PRESSURE	% @ 500 PSF
TOPSOIL AND VEGETATION		1									
SANDY LEAN CLAY (CL) reddish brown to brown medium stiff to stiff calcareous increasing sand with depth	SS	2									
		3	6	4000	22.4						
	SS	4									
		5	14	4000	19.7						
SAND AND GRAVEL (SP-GP) reddish brown medium dense to dense	CS	6									
		7									
		8									
	SS	9									
		10	50/10	-	3.6		19	5	12.2		
		11									
BOTTOM OF BORING 15.5'	SS	12									
		13									
		14									
		15	50/11	-	-						
		16									
		17									
		18									
		19									
		20									
		21									
22											
23											
24											
25											

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072		LOG OF BORING B-10					DATE: MAY 2001				
RIG TYPE: CME 45		SHEET 1 OF 1					WATER DEPTH				
FOREMAN: SG		START DATE		4/18/01		WHILE DRILLING		None			
AUGER TYPE: 4" CFA		FINISH DATE		4/18/01		AFTER DRILLING		None			
SPT HAMMER: Manual		SURFACE ELEV		N/A		24 HOUR		N/A			
SOIL DESCRIPTION	TYPE	D (FEET)	N (BLOWS/FT)	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
							LL	PI		PRESSURE	% @ 500 PSF
TOPSOIL AND VEGETATION		--									
		1									
SANDY LEAN CLAY (CL)		--									
reddish brown to brown		2									
medium stiff to stiff		--									
calcareous	SS	3	11	6000	19.2						
		4									
		--									
	CS	5	14	3000	10.2						
CLAYEY SAND (SC)		--									
reddish brown		6									
medium dense		7									
		--									
SAND AND GRAVEL (SP-GP)		8									
reddish brown		--									
medium dense to dense		9									
		--									
	SS	10	44	-	1.9						
		11									
		12									
		13									
		14									
		--									
	SS	15	17	-	10.6						
		16									
		17									
		18									
		19									
		20									
		--									
		21									
		22									
		23									
		24									
		--									
		25									
BOTTOM OF BORING 15.5'											

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072		LOG OF BORING B-11					DATE: MAY 2001				
RIG TYPE: CME 45		SHEET 1 OF 1					WATER DEPTH				
FOREMAN: SG		START DATE		4/18/01		WHILE DRILLING		None			
AUGER TYPE: 4" CFA		FINISH DATE		4/18/01		AFTER DRILLING		None			
SPT HAMMER: Manual		SURFACE ELEV		N/A		24 HOUR		N/A			
SOIL DESCRIPTION	TYPE	D (FEET)	N (BLOWS/FT)	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
							LL	PI		PRESSURE	% @ 500 PSF
TOPSOIL AND VEGETATION		1									
SANDY LEAN CLAY (CL) reddish brown to brown stiff to very stiff calcareous increasing sand with depth		2									
	SS	3	6	7000	17.0						
		4									
	SS	5	8	9000	14.7						
		6									
SAND AND GRAVEL (SP-GP) reddish brown medium dense to dense		7									
		8									
	SS	9									
		10	27	-	2.2						
		11									
BOTTOM OF BORING 15.5'		12									
		13									
		14									
	SS	15	40/10	-	8.1						
		16									
	17										
	18										
	19										
	20										
	21										
	22										
	23										
	24										
	25										

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072

DATE: MAY 2001

LOG OF BORING B-12

SHEET 1 OF 1

WATER DEPTH

RIG TYPE: CME 45

FOREMAN: SG

AUGER TYPE: 4" CFA

SPT HAMMER: Manual

START DATE

4/18/01

WHILE DRILLING

None

FINISH DATE

4/18/01

AFTER DRILLING

None

SURFACE ELEV

N/A

24 HOUR

N/A

SOIL DESCRIPTION

TYPE

D
(FEET)

N
(BLOWS/FT)

QU
(PSF)

MC
(%)

DD
(PCF)

A-LIMITS
LL PI

-200
(%)

SWELL
PRESSURE % @ 500 PSF

TOPSOIL AND VEGETATION

1

SANDY LEAN CLAY (CL)

2

reddish brown to brown

stiff to very stiff

calcareous

increasing sand with depth

SS

3

11

9000+

20.1

4

SS

5

23

9000+

15.4

6

7

8

9

SAND AND GRAVEL (SP-GP)

reddish brown

medium dense to dense

SS

10

40

-

2.1

11

12

13

14

SS

15

40

-

7.3

BOTTOM OF BORING 15.5'

16

17

18

19

20

21

22

23

24

25

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072		LOG OF BORING B-13					DATE: MAY 2001				
RIG TYPE: CME 45		SHEET 1 OF 1					WATER DEPTH				
FOREMAN: SG		START DATE		4/18/01		WHILE DRILLING		None			
AUGER TYPE: 4" CFA		FINISH DATE		4/18/01		AFTER DRILLING		None			
SPT HAMMER: Manual		SURFACE ELEV		N/A		24 HOUR		N/A			
SOIL DESCRIPTION	TYPE	D (FEET)	N (BLOWS/FT)	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
							LL	PI		PRESSURE	% @ 500 PSF
TOPSOIL AND VEGETATION		1									
SANDY LEAN CLAY (CL) reddish brown to brown medium stiff to stiff calcareous increasing sand with depth		2									
	CS	3	9	3500	19.4	107.8	26	12	70.0	<500 psf	None
		4									
	SS	5	12	5500	27.3						
		6									
		7									
		8									
		9									
	SS	10	19	-	3.4						
	SAND AND GRAVEL (SP-GP) reddish brown medium dense to dense		11								
		12									
		13									
		14									
SS		15	50	-	2.5						
BOTTOM OF BORING 15.5'		16									
		17									
		18									
		19									
		20									
		21									
		22									
		23									
		24									
		25									

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072

DATE: MAY 2001

LOG OF BORING B-14

SHEET 1 OF 1

WATER DEPTH

RIG TYPE: CME 45

FOREMAN: SG

AUGER TYPE: 4" CFA

SPT HAMMER: Manual

START DATE

4/18/01

WHILE DRILLING

None

FINISH DATE

4/18/01

AFTER DRILLING

None

SURFACE ELEV

N/A

24 HOUR

N/A

SOIL DESCRIPTION

TYPE

D

N

QU

MC

DD

A-LIMITS

-200

SWELL

(FEET)

(BLOWS/FT)

(PSF)

(%)

(PCF)

LL

PI

(%)

PRESSURE

% @ 500 PSF

TOPSOIL AND VEGETATION

SANDY LEAN CLAY (CL)

reddish brown to brown

stiff to very stiff

calcareous

increasing sand with depth

SS

SS

SAND AND GRAVEL (SP-GP)

reddish brown

medium dense to dense

SS

SS

BOTTOM OF BORING 15.5'

**BUFFALO CREEK DEVELOPMENT
WELLINGTON, COLORADO**

PROJECT NO: 1012072	DATE: MAY 2001
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LOG OF BORING B-15	SHEET 1 OF 1
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RIG TYPE: CME 45	START DATE: 4/18/01	WHILE DRILLING	WATER DEPTH: 14.5'
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FOREMAN: SG	FINISH DATE: 4/18/01	AFTER DRILLING	-
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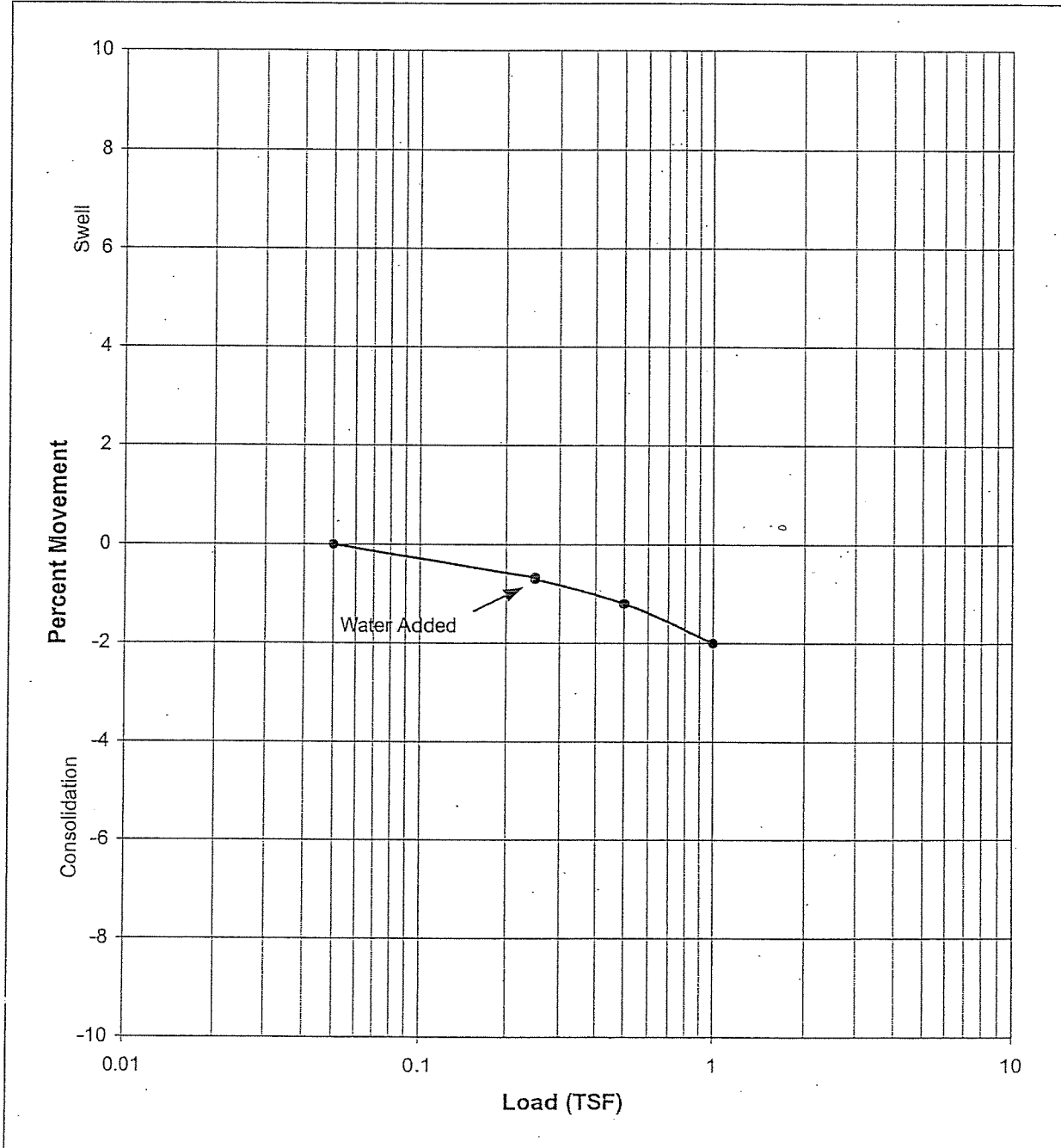
AUGER TYPE: 4" CFA	SURFACE ELEV: N/A	24 HOUR	N/A
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SPT HAMMER: Manual	-	-	-
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SOIL DESCRIPTION	TYPE	D (FEET)	N (BLOWS/FT)	QU (PSF)	MC (%)	DD (PCF)	A-LIMITS		-200 (%)	SWELL	
							LL	PI		PRESSURE	% @ 500 PSF
TOPSOIL AND VEGETATION		1									
SANDY LEAN CLAY (CL) reddish brown to brown stiff to very stiff calcareous increasing sand with depth		2									
	SS	3	9	9000+	15.3						
		4									
	SS	5	13	9000	19.7						
		6									
SAND AND GRAVEL (SP-GP) reddish brown medium dense		7									
		8									
		9									
	CS	10	18	-	3.7		19	5	22.8		
		11									
	12										
	13										
	14										
	SS	15	25	-	6.4						
BOTTOM OF BORING 15.5'		16									
		17									
		18									
		19									
		20									
		21									
		22									
		23									
		24									
		25									

SWELL / CONSOLIDATION TEST RESULTS

Material Description: Dark Brown Sandy Lean Clay		
Sample Location: B-1, S-1 @ 2.0'		
Liquid Limit: 40	Plasticity Index: 21	% Passing #200: 59.3
Beginning Moisture: 18.0%	Dry Density: 102.7 pcf	Ending Moisture: 19.0%
Swell Pressure: <500 psf	% Swell @ 500 psf:	None

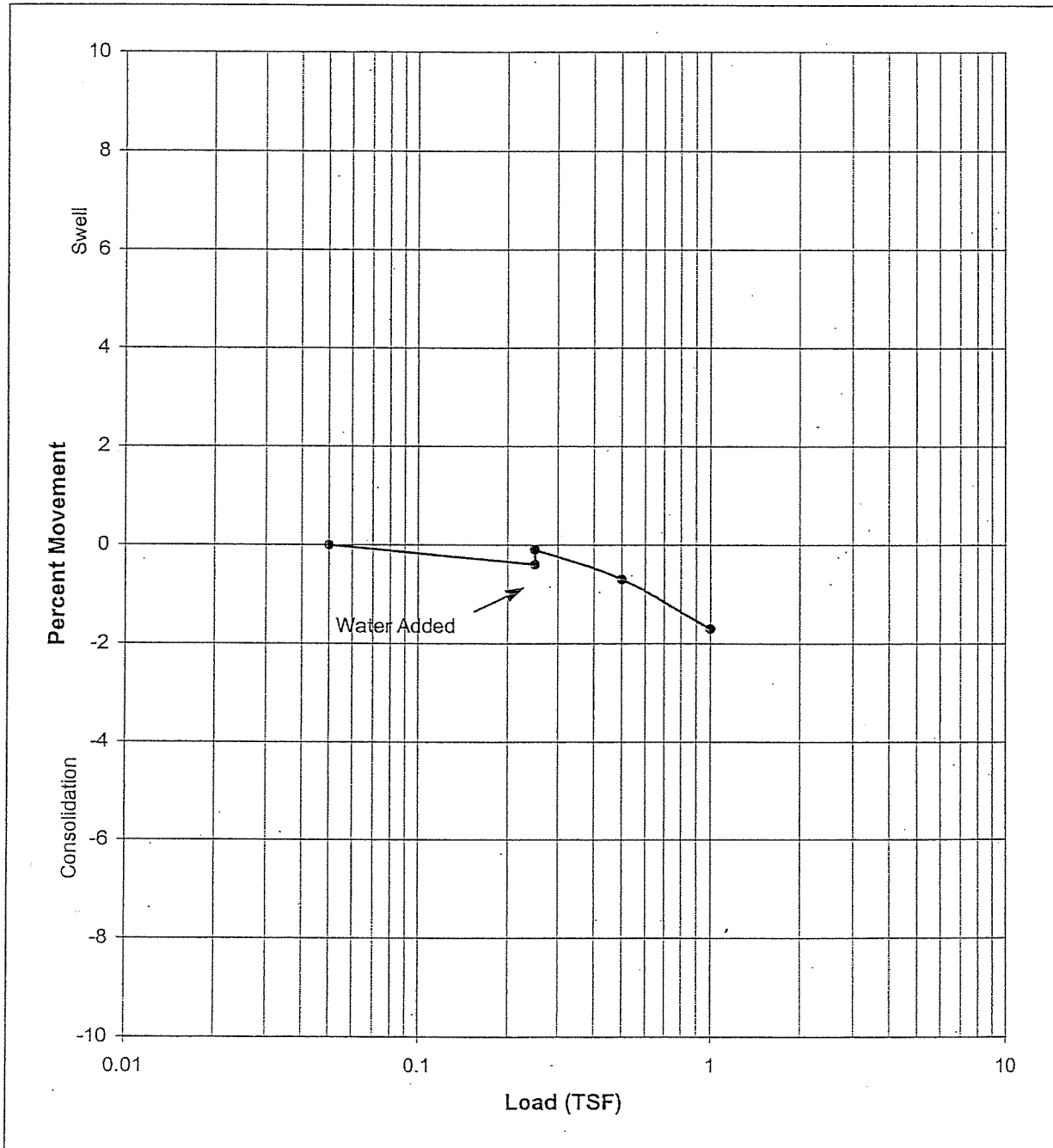


Project: Buffalo Creek Development
 Wellington, Colorado
 Project No.: 1012072
 Date: May 2001



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Dark Brown Lean Clay with Sand		
Sample Location: B-3, S-2 @ 4.0'		
Liquid Limit: 41	Plasticity Index: 22	% Passing #200: 79.7
Beginning Moisture: 18.5%	Dry Density: 101.0 pcf	Ending Moisture: 25.3%
Swell Pressure: 700 psf	% Swell @ 500 psf:	0.3%

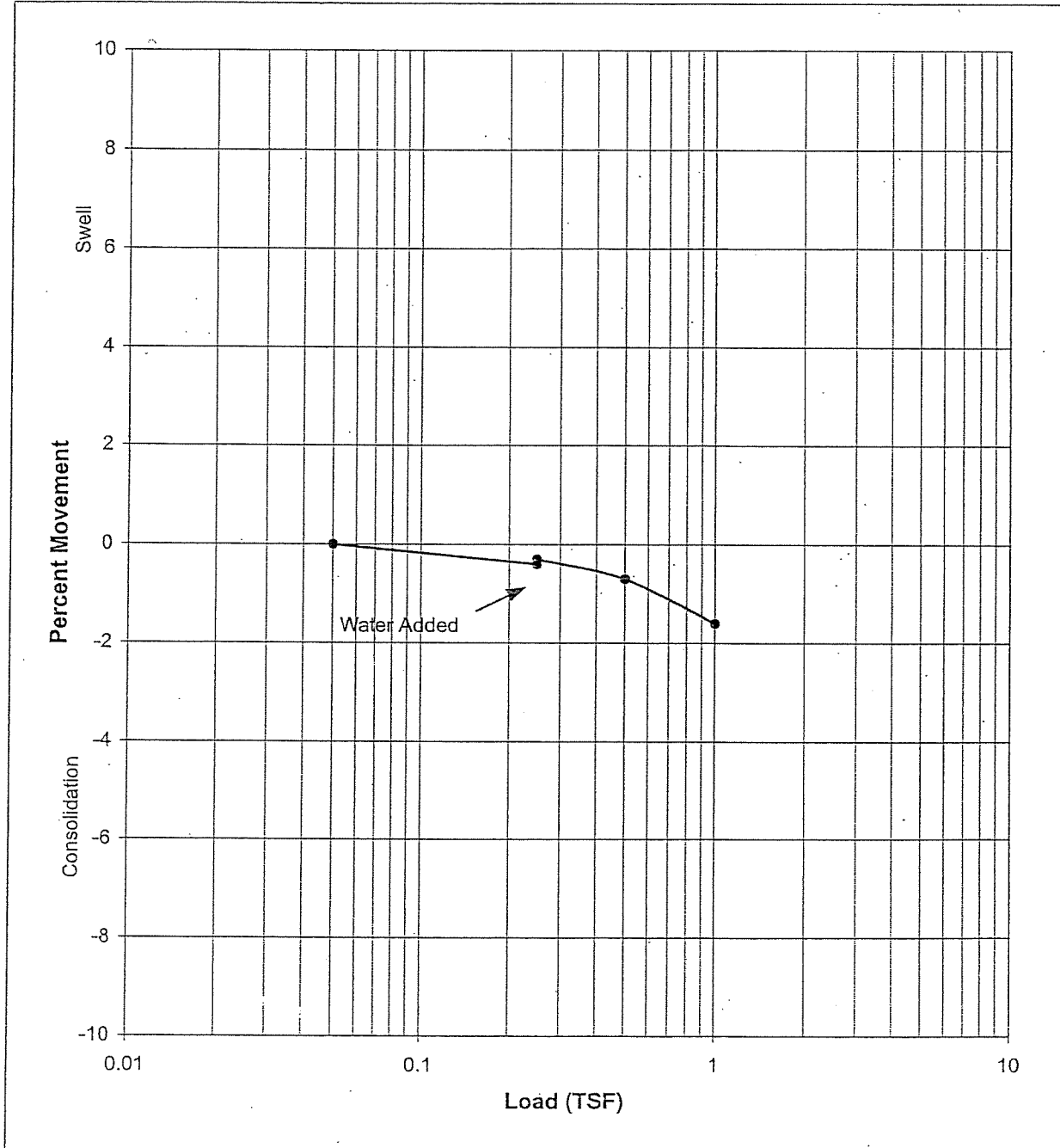


Project: Buffalo Creek Development
 Wellington, Colorado
 Project No.: 1012072
 Date: May 2001



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Reddish Brown Clayey Sand		
Sample Location: B-4, S-3 @ 9.0'		
Liquid Limit: 34	Plasticity Index: 19	% Passing #200: 49.3
Beginning Moisture: 17.6%	Dry Density: 114.1 pcf	Ending Moisture: 17.1%
Swell Pressure: 600 psf	% Swell @ 500 psf:	0.1%

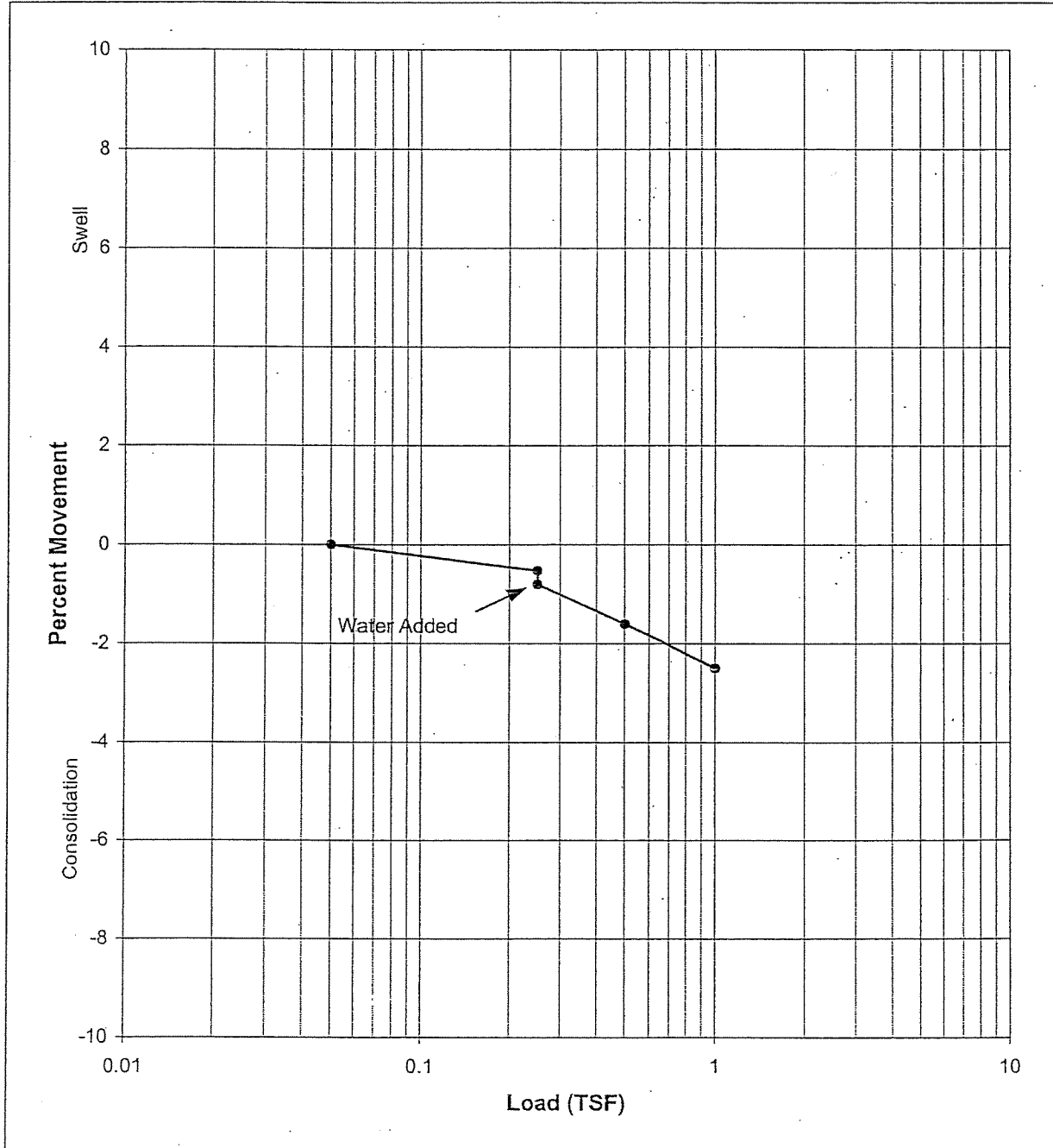


Project: Buffalo Creek Development
 Wellington, Colorado
 Project No.: 1012072
 Date: May 2001



SWELL / CONSOLIDATION TEST RESULTS

Material Description: Reddish Brown Sandy Lean Clay	
Sample Location: B-13, S-1 @ 2.0'	
Liquid Limit: 26	Plasticity Index: 12 % Passing #200: 70.0
Beginning Moisture: 18.0%	Dry Density: 107.8 pcf Ending Moisture: 18.3%
Swell Pressure: <500 psf.	% Swell @ 500 psf: None



Project: Buffalo Creek Development
 Wellington, Colorado
 Project No.: 1012072
 Date: May 2001



EARTH ENGINEERING CONSULTANTS, INC.

SUMMARY OF GRADATION TEST RESULTS

SAMPLE I.D.: B-9, S-3 @ 9'

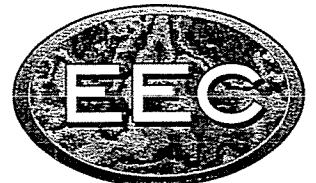
GRADATION OF AGGREGATE (AASHTO T-11, T-27)	
SIEVE SIZE	PERCENT PASSING
No. 4	69%
No. 10	38%
No. 40	22%
No. 200	12.2%

PROJECT: Buffalo Creek Development

Wellington, Colorado

EEC PROJECT NO: 1012072

DATE: May 2001



EARTH ENGINEERING CONSULTANTS, INC.

SUMMARY OF GRADATION TEST RESULTS

SAMPLE I.D.: B-15, S-3 @ 9'

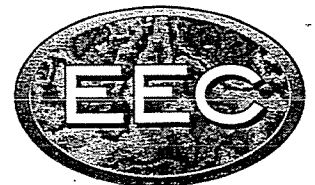
GRADATION OF AGGREGATE (AASHTO T-11, T-27)	
SIEVE SIZE	PERCENT PASSING
No. 4	82%
No. 10	63%
No. 40	42%
No. 200	22.8%

PROJECT: Buffalo Creek Development

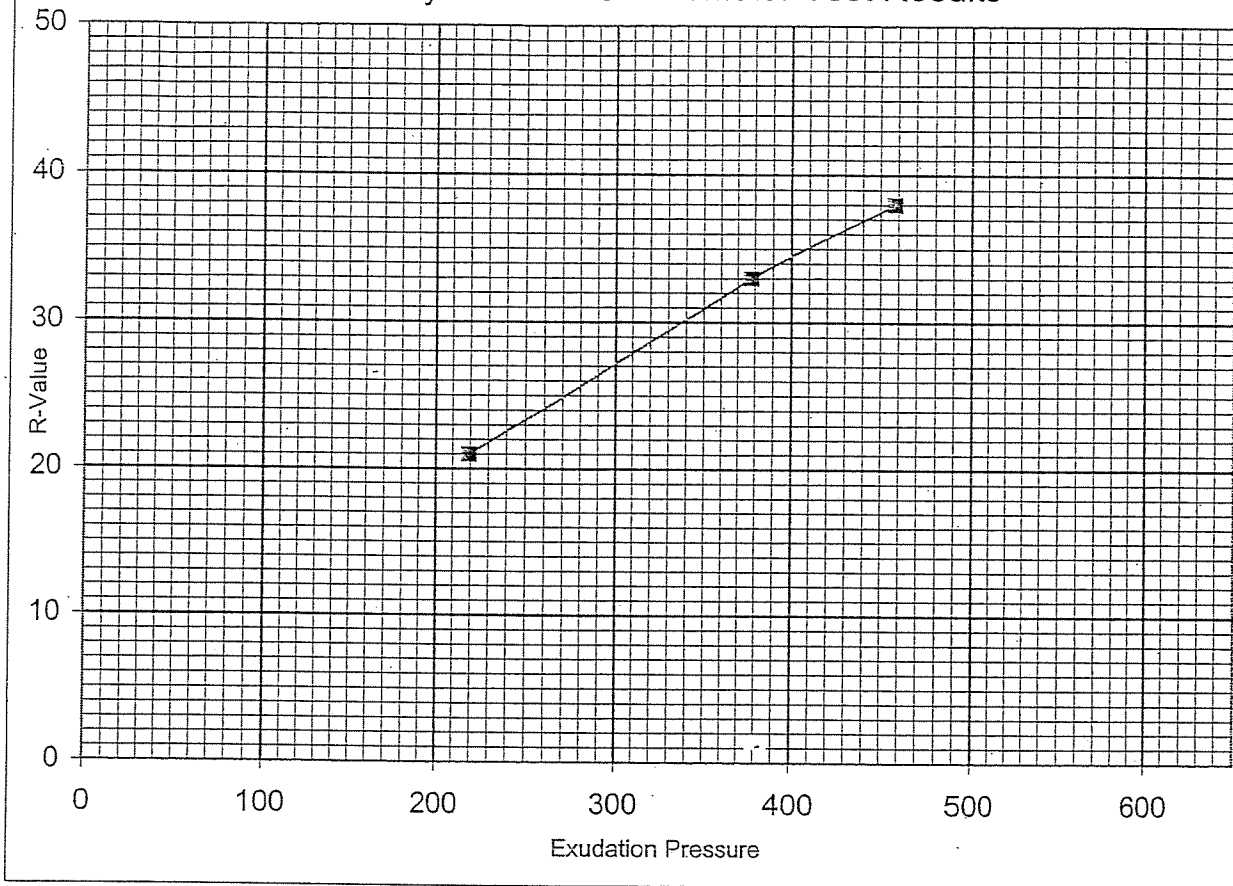
Wellington, Colorado

EEC PROJECT NO: 1012072

DATE: May 2001



Earth Engineering Consultants, Inc
Summary of Hvem Stabilometer Test Results



Material Designation: 1012072.1
 Sample Location: Composite
 Material Description: Brown Clayey Sand

Test No.	1	2	3	4	5
%Moisture	9.5	9.0	8.4		
Density (pcf)	129.8	133.9	135.0		
Exudation Pressure	219	378	458		
R-Value	21	33	38		

Recommended Design R-Value: 28

Project: Buffalo Creek Development
 Wellington, Colorado
 Project No: 1012072
 Date: May 2001



