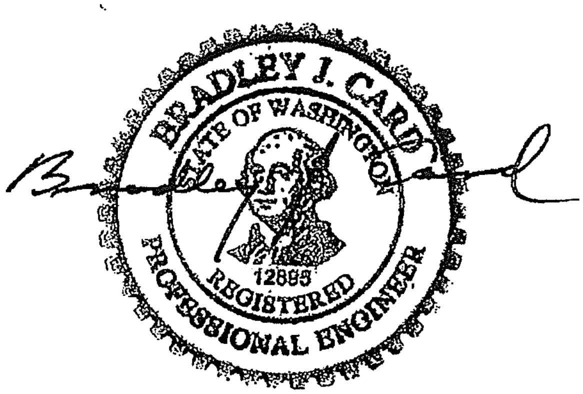
REPORT ON GEOTECHNICAL INVESTIGATION

8710 and 8860 Thorp Prairie Road
Cle Elum, Washington



May 2012

Job No. 12089A

Prepared by

PLSA Engineering & Surveying
1120 West Lincoln Avenue
Yakima, Washington 98902
(509) 575-6990

REPORT ON GEOTECHNICAL INVESTIGATION

8710 and 8860 Thorp Prairie Road
Cle Elum, Washington

INTRODUCTION

CDPC, LLC retained PLSA Engineering and Surveying to perform a geotechnical investigation of two contiguous parcels totaling approximately 65 acres at 8710 and 8860 Thorp Prairie Road, Cle Elum, Washington.

This report summarizes the results of our geotechnical investigation and offers our recommendations for soil bearing values and site preparation for mobilizing soil support. The investigation consisted of visual inspection of the area and excavation of five soil test pits using a Bobcat mini-excavator. Geotechnical engineers from PLSA, experienced with local soil conditions, logged each test pit and observed and field classified the soils found.

Included in this report are the following:

- Soils logs and field classifications of the soils encountered in the five test pits.
- Groundwater presence.
- Estimated frost penetration.
- Recommended footing depth.
- Recommended footing trench preparation.
- Soil bearing recommendations.
- Structural fill recommendations.
- Parking lot site preparation and paving recommendations.
- Seismic zone information.
- Storm water infiltration rate.
- Liquefaction Potential
-

LAND USE AND SURFACE CONDITIONS

A formerly timbered area of approximately 65 acres has been cleared and then used as a hayfield for many years. The property is bordered by Thorp Prairie Road on the west, a steep ravine on the north, Kittitas Reclamation District Canal followed by a steep bluff on the east, and timbered property on the south. A farmhouse, barn, outbuildings, and equipment are found in the northwest corner of the site with the balance being gently sloping open ground. Electric and telephone utilities are available.

The default seismic soil classification for the location is Site Class D. Based on Soil Site Class D, the USGS reports the following seismic parameters for designs using the provisions of the 2009 International Building Code:

Table 1. Seismic Design Parameters

	0.2 Second	1.0 Second
Maximum Considered Earthquake (MCE) Spectral Acceleration	S_s=0.623	S_1=0.210
Site Coefficient	F_a=1.301	F_v=1.981
MCE Adjusted for Site Class effects (Site Class D)	S_{MS}=0.811	S_{M1}=0.415
Design Spectral Acceleration	S_{DS}=0.541	S_{D1}=0.277

LIQUEFACTION POTENTIAL

Liquefaction is a phenomenon caused by a rapid increase in pore water pressure in loose soils that reduces the effective stress between soil particles to near zero. This rapid increase in pore water pressure can cause a loss of soil shear strength. This location has no history of liquefaction.

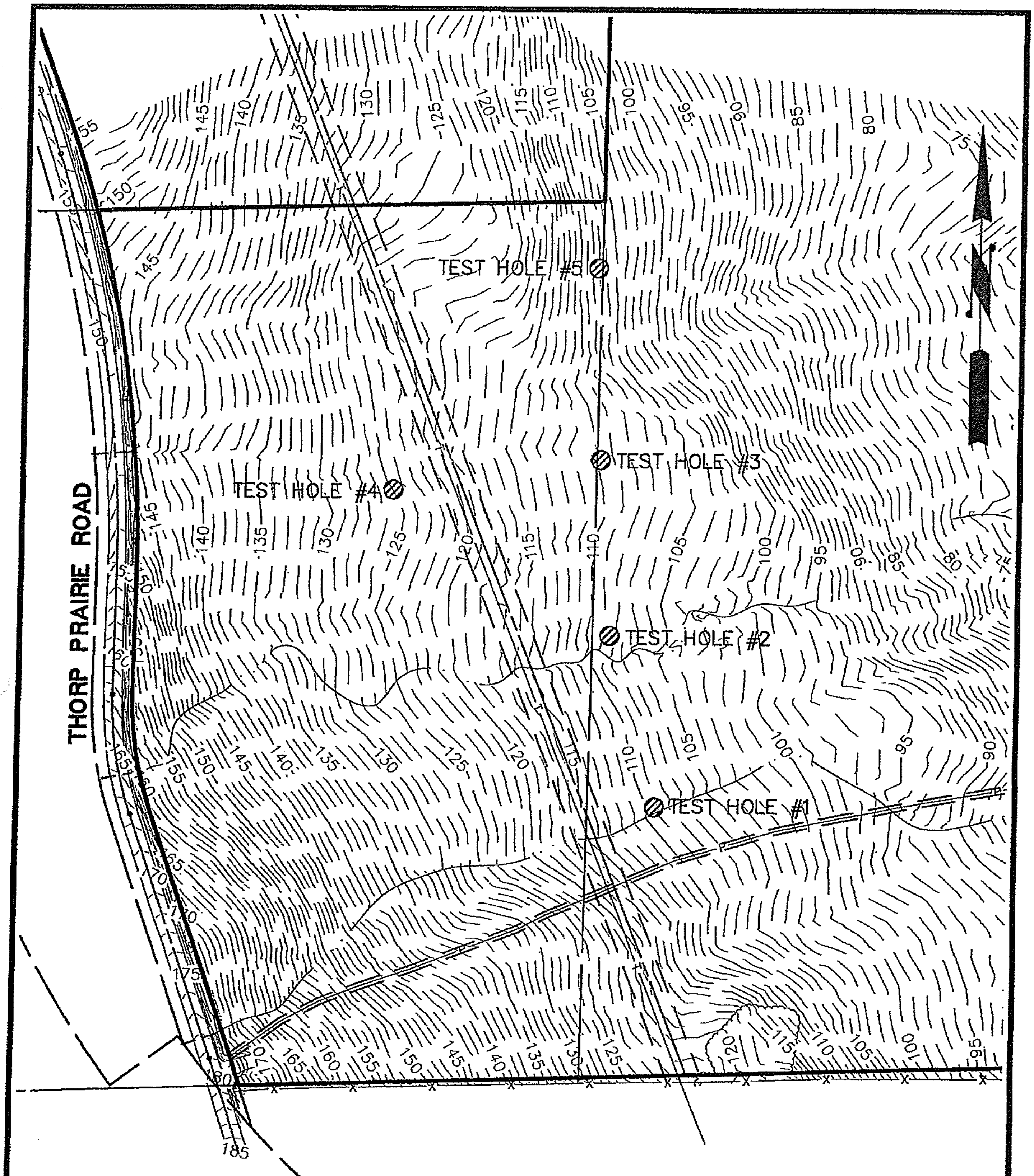
SUB-SURFACE CONDITIONS

Test pit logs may be found in Plates 1 through 5. Test Pit locations are depicted in Figure 1. Soils encountered in the five test pits were similar with all having a surface stratum of moist silty clay down to a stratum of clay, cobbles, and gravel encountered at 5 to 7 feet below ground surface (bgs) where backhoe refusal was met. Free groundwater was encountered at approximately 3 feet below the ground surface in four of the test pits. USDA Soil Conservation Service (SCS) classifies the soil as "Swauk-Qualla complex", which is predominantly highly plastic clay. See Appendix I, NRCS Soil Engineering Properties.

Frost action is usually severe in the area due to the water holding capacity of the silty clay soils. Frost penetration for the project location is estimated at 36 inches. Frost damage may be minimized by placing footings a minimum of 36 inches below finished grade and by placing footings on fill of free draining soil such as crushed rock.

SOIL BEARING RECOMMENDATIONS

Plastic clay soils, such as that reported by NRCS to be on the site, tend to shrink and swell with changing moisture content and are increasingly unstable as moisture content increases. There are strategies for increasing soil stability. One such strategy is mixing the soil with lime which increases stability. Lime is a by-product of controlled atmosphere storage used by the nearby fruit industry and is often available for hauling cost. Another strategy is to excavate to a depth where soil moisture is relatively constant and therefore shrink and swell are minimized. Upon reaching a depth at which soil moisture variation is small, geotexile fabric and possibly geogrid is placed to provide separation between the selected fill material and the clay and to increase shear strength of the clay so as to support the contemplated load. All of these strategies require



JUNE 7, 2012
JOB NO. 12089

PLSA ENGINEERING-SURVEYING-PLANNING 1120 WEST LINCOLN YAKIMA, WASHINGTON (509) 575-6990	**TEST PIT LOCATIONS** **8860 THORP PRAIRIE ROAD** **CLE ELUM, WASHINGTON** PREPARED FOR C.D.C.P.

investigation beyond the scope of this geotechnical investigation and the cost is greater relative to sites having soils more suitable for supporting structures or paving.

PLSA understands that a single story industrial/commercial building with up to 8-10 foot wall height and having fabric roof covering are contemplated.

The silty clay soil present exhibits moisture holding capacity. Soils relied on for slab support and which are persistently too moist for the subgrade to be compacted to 95 of maximum density as determined by ASTM D-1557 are recommended to be prepared by placing geotextile fabric, such as Mirafi 500X, on the proof rolled subgrade. Place a drainage layer over the geotextile consisting of a minimum of 12 inches of 3/4-inch minus, free-draining, cohesionless, crushed rock compacted in layers to 95 percent of maximum density as determined by ASTM D-1557. This subgrade preparation should achieve a subgrade reaction value, K_S, of 180.

If the 95 percent compaction of the subgrade is achievable, the geotextile fabric may be omitted.

Silty clay soil in footing trenches is expected to contain too much moisture to achieve 95 percent compaction as determined by ASTM D-1557, and to resist drying by aeration. Footing trench preparation is recommended as follows: Excavate footing trenches to reach the stratum containing cobbles and gravel and a minimum of 2 feet wider than the footing. Proof roll the exposed trench bottom, place geotextile fabric such as Mirafi 500X across the trench bottom and a minimum one foot up each side. Then place a drainage layer of a minimum of 12 inches of compact, cohesionless, free-draining, granular material, such as 3/4-inch minus crushed rock compacted in 4 inch lifts to 95 percent of ASTM D-1557 up to desired footing grade.

Using a recommended minimum footing width of two feet and the footing trench preparation method recommended above, satisfactory soil support for loadings up to 2,000 pounds per square foot (psf) should be achieved.

NRCS reports a significantly higher Plasticity Index and a relatively high shrink/swell potential. This could result in volume change in soils supporting footings or slabs. This is manifested by settlement or expansion. This volume change can be minimized by placing footings at depth where the cobbles and gravel is encountered and moisture content of the soil remains constant within a narrow range. Alternatively, footings and slabs can be placed on free draining fill extending down to a depth selected to minimize seasonal changes in soil moisture content. For buildings having footing loads equivalent to that of a residence, basement depth is usually sufficient to achieve a location of relatively stable moisture content.

All roof and surface drainage is recommended to be directed away from the footings. Buildings should be elevated or placed on structural fill as necessary to provide slope to insure adequate drainage.

STRUCTURAL FILL

Structural fill should not be placed over debris that may be poorly consolidated or contain organic material or metal which may decompose and settle with time. All such unsuitable materials should be removed and replaced with additional structural fill as described herein. All areas to receive structural fill are recommended to be stripped of all vegetation, organic material, demolition debris, and trash and proof rolled to 95 percent of maximum density as determined by ASTM D-1557 for a depth of 6 inches before placing fill.

The undisturbed soil supporting structural fill should be near optimum moisture content for compaction. Add water or dry the soil by processing as necessary to achieve moisture content suitable for compaction. Fill subgrade soils too wet to be adequately compacted should be dried to a suitable moisture content before receiving structural fill, or the structural fill should be placed over geotextile fabric, such as Mirafi 500X followed by geogrid reinforcement.

Imported soil used for structural fill is recommended to be cohesionless, free draining, non-plastic material with a maximum particle size of two inches, or other material as approved by a geotechnical engineer from this office.

All structural fill should be placed and compacted in layers not exceeding 6 inches in thickness. Water should be added as needed to achieve satisfactory moisture content for compaction.

Recommended compaction for structural fill is 95 percent of maximum density as determined by ASTM D-1557. All fill shall be firm and stable. It is further recommended that all soil compaction as recommended herein be monitored using a nuclear density gauge.

Excavations resulting from removal of underground structures such as septic tanks and petroleum tanks are recommended to be backfilled using procedures described for structural fill.

Structural fill placed as described above is expected to provide bearing support equivalent to that for footing trenches in the native silty clay soil, which have been prepared as recommended herein.

STORM WATER INFILTRATION

Storm water infiltration rate is affected by the degree of soil compaction. The infiltration rate for uncompacted native soil typically found at the location studied is less than ¼ inch per hour. Infiltration rate testing is recommended before design of a storm water management system relying on percolation into the ground for disposal. Construction of a grassy swale(s) to receive storm water has promise of being an economical storm water management choice.

PAVING RECOMMENDATIONS

All areas to be paved should be cleared of all grass, roots, trash, metal and organic materials down to full depth below the paving mat. The exposed soil surface should then be proof rolled to 90 percent of maximum compaction as determined by ASTM D-1557 using a mechanical vibratory compactor. If soil is too wet to achieve compaction and cannot be effectively dried, place geotextile fabric such as Mirafi 500X over the prepared subgrade. Place compact base material and asphaltic concrete paving as described below

The following specification is our recommendation for paving and subgrade: Asphaltic Concrete Paving shall conform to Washington State Department of Transportation Standard

Specifications 2004, Division 5, Class HMA ½. Compact the subgrade and any fill to 95 percent of maximum compaction as determined by ASTM D-1557. Areas subject to truck traffic shall be a minimum of 3 inches of asphaltic concrete placed over a minimum of 12 inches of free-draining, compact, granular base material conforming to the particle size distribution found in the Standard Specifications, Division 9 for HMA ½.

Asphaltic concrete paving placed on parking lot areas used exclusively by automobiles may be reduced to two inches compacted thickness.

PLSA ENGINEERING & SURVEYING
1120 WEST LINCOLN AVENUE
YAKIMA, WA 90902
(509) 575-6990

EXCAVATION LOG NO.: 1

BY: BJC/SG
DATE: 5/29/12
JOB NO. 12089A
ELEVATION:
LOCATION: SOUTH END PROP. NORTH OF BURIED ELECTRIC POWER LINE

SURFACE CONDITIONS: GRASS

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1 2 3				CH	DARK BROWN CLAY	WET
4 5 6				CH	TAN CLAY	FREE GROUNDWATER
7 8 9 10 11 12 13 14 15				CH	CLAY, COBBLES, GRAVEL - BACKHOE REFUSAL EXCAVATION TERMINATED	

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EXCAVATION LOG NO.: 2

BY: BJC/SG
JOB NO. 12089A
LOCATION: NORTH OF TEST PIT NO. 1

DATE: 5/29/12
ELEVATION:

SURFACE CONDITIONS: GRASS

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1						
				CH	DARK BROWN CLAY	MOIST
2						
3						WET
					FREE GROUNWATER	WET
						MOIST
4				CH	BROWN CLAY, COBBLES, GRAVEL & CLAY	
5						
					BACKHOE REFUSAL EXCAVATION TERMINATED	
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

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YAKIMA, WA 90902
(509) 575-6990

EXCAVATION LOG NO.: 3

BY: BJC/SG
JOB NO. 12089A
LOCATION: NORTH OF TEST PIT NO. 2

DATE: 5/29/12
ELEVATION:

SURFACE CONDITIONS: ALFALFA

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1				CH	CLAY	MOIST
2						
3				CH	CLAY & BOULDERS	FREE GROUNDWATER
4				CH	CLAY & COBBLES	WET
5						
				CH	RED/BROWN CLAY, COBBLES & BOULDERS	VERY MOIST
6					BACKHOE REFUSAL EXCAVATION TERMINATED	
7						
8						
9						
10						
11						
12						
13						
14						
15						

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EXCAVATION LOG NO.: 4

BY: BJC/SG
DATE: 5/29/12
JOB NO. 12089A
ELEVATION:
LOCATION: NORTH OF TEST PIT NO. 3

SURFACE CONDITIONS: ALFALFA

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1				CH	CLAY SOME COBBLES	DRY
2						
3				CH	RED/BROWN CLAY WITH COBBLES	MOIST
4				CH	LARGE BOULDERS (3) WITH CLAY	MOIST
5						
					BACKHOE REFUSAL EXCAVTION TERMINATED	
6						
7						
8						
9						
10						
11						
12						
13						
4						
15						

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1120 WEST LINCOLN AVENUE
YAKIMA, WA 90902
(509) 575-6990

EXCAVATION LOG NO.: 5

BY: BJC/SG
DATE: 5/29/12
JOB NO. 12089A
ELEVATION:
LOCATION: NORTH OF TEST PIT NO. 3

SURFACE CONDITIONS: ALFALFA

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1						
				CH	DARK BROWN CLAY	MOIST
2						
3						
					FREE GROUNDWATER	WET
4				CH	RED/BROWN CLAY WITH SOME COBBLES & GRAVEL	MOIST
5						
6						
7						
					EXCAVATION TERMINATED	
8						
9						
10						
11						
12						
13						
14						
15						

APPENDIX I

NRCS SOIL ENGINEERING PROPERTIES

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
831:												
Qualla	0-7	Loam	CL-ML, CL	A-4	0	0	100	90-100	85-100	65-85	20-30	5-10
	7-28	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	65-85	25-35	5-15
	28-38	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	65-85	25-35	5-15
	38-42	Clay loam	CL	A-7	0	0	90-100	90-100	85-100	75-100	40-50	15-25
	42-60	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0-5	90-100	90-100	85-100	75-100	35-45	15-20
832:												
Qualla	0-7	Loam	CL-ML, CL	A-4	0	0	100	90-100	85-100	65-85	20-30	5-10
	7-28	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	65-85	25-35	5-15
	28-38	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	65-85	25-35	5-15
	38-42	Clay loam	CL	A-7	0	0	90-100	90-100	85-100	75-100	40-50	15-25
	42-60	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0-5	90-100	90-100	85-100	75-100	35-45	15-20
833:												
Swauk	0-5	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	80-95	60-80	25-30	5-10
	5-18	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0	85-100	75-100	70-95	55-80	35-45	15-20
	18-31	Clay, gravelly clay	CH	A-7	0	0	75-100	70-100	65-95	50-80	50-60	25-35
	31-60	Gravelly clay loam, clay loam	CL, SC	A-6, A-7	0	0-5	75-100	65-95	60-90	40-75	35-45	15-20
835:												
Swauk	0-5	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	80-95	60-80	25-30	5-10
	5-18	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0	85-100	75-100	70-95	55-80	35-45	15-20
	18-31	Clay, gravelly clay	CH	A-7	0	0	75-100	70-100	65-95	50-80	50-60	25-35
	31-60	Gravelly clay loam, clay loam	CL, SC	A-6, A-7	0	0-5	75-100	65-95	60-90	40-75	35-45	15-20
Qualla	0-7	Loam	CL-ML, CL	A-4	0	0	100	90-100	85-100	65-85	20-30	5-10
	7-28	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	65-85	25-35	5-15
	28-38	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	65-85	25-35	5-15
	38-42	Clay loam	CL	A-7	0	0	90-100	90-100	85-100	75-100	40-50	15-25
	42-60	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0-5	90-100	90-100	85-100	75-100	35-45	15-20

Table 8.--Engineering Properties--Continued

Map symbol and soil name	Depth	USDA texture	Classification: Unified	Classification: AASHTO	Fragments >10 inches	Fragments 3-10 inches	Percentage passing sieve number-- 4	10	40	200	Liquid limit	Plasticity index
	In				Pct	Pct					Pct	
825:												
Pachneum	0-8	Ashy loam	ML	A-4	0	0	100	95-100	90-100	75-85	20-35	NP-5
	8-18	Ashy loam, ashy silt loam	ML	A-4	0	0	100	95-100	90-100	75-85	20-35	NP-5
	18-26	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	75-85	35-45	15-25
	26-33	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	75-85	35-45	15-20
	33-47	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	75-85	35-45	15-20
	47-60	Clay loam, silty clay loam	CL	A-6, A-7	0	0	100	95-100	90-100	75-85	35-45	15-20
828:												
Swauk	0-5	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	80-95	60-80	25-30	5-10
	5-18	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0	85-100	75-100	70-95	55-80	35-45	15-20
	18-31	Clay, gravelly clay	CH	A-7	0	0	75-100	70-100	65-95	50-80	50-60	25-35
	31-60	Gravelly clay loam, clay loam	CL, SC	A-6, A-7	0	0-5	75-100	65-95	60-90	40-75	35-45	15-20
829:												
Swauk	0-5	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	80-95	60-80	25-30	5-10
	5-18	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0	85-100	75-100	70-95	55-80	35-45	15-20
	18-31	Clay, gravelly clay	CH	A-7	0	0	75-100	70-100	65-95	50-80	50-60	25-35
	31-60	Gravelly clay loam, clay loam	CL, SC	A-6, A-7	0	0-5	75-100	65-95	60-90	40-75	35-45	15-20
830:												
Swauk	0-5	Loam	CL-ML, CL	A-4	0	0	95-100	85-100	80-95	60-80	25-30	5-10
	5-18	Clay loam, gravelly clay loam	CL	A-6, A-7	0	0	85-100	75-100	70-95	55-80	35-45	15-20
	18-31	Clay, gravelly clay	CH	A-7	0	0	75-100	70-100	65-95	50-80	50-60	25-35
	31-60	Gravelly clay loam, clay loam	CL, SC	A-6, A-7	0	0-5	75-100	65-95	60-90	40-75	35-45	15-20
Qualla	0-7	Loam	CL-ML, CL	A-4	0	0	100	90-100	85-100	65-85	20-30	5-10
	7-28	Silt loam, loam	CL, CL-ML	A-4, A-6	0	0	100	90-100	85-100	65-85	25-35	5-15
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PLSA ENGINEERING & SURVEYING

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August 7, 2012

CDPC, LLC
SRM Development, LLC
111 North Post, Suite 200
Spokane, WA 99201

Attn: Larry Jenkins

Re: Supplemental Geotechnical Report
8710 and 8860 Thorp Prairie Road
Cle Elum, Washington

Gentlemen:

Three copies of our supplemental geotechnical report for the referenced location in Cle Elum, Washington are enclosed. PLSA soils laboratory tests for plasticity index (PI) obtained substantially lower values than those reported by NRCS for the site. This lower PI value is indication that the soils are more suitable for the contemplated construction.

Thank you for allowing us to have been of service.

Sincerely,

Brad Card

Brad Card, P.E.
Principal Engineer

BC:jc
Enclosures

1120 West Lincoln Avenue • Yakima, Washington 98902 • (509) 575-6990 • FAX (509) 575-6993

REPORT ON SUPPLEMENTAL GEOTECHNICAL INVESTIGATION

8710 and 8860 Thorp Prairie Road
Cle Elum, Washington

BRADLEY J. CARD
STATE OF WASHINGTON
12895
REGISTERED
PROFESSIONAL ENGINEER

August 2012

Job No. 12089A

Prepared by

PLSA Engineering & Surveying
1120 West Lincoln Avenue
Yakima, Washington 98902
(509) 575-6990

REPORT ON SUPPLEMENTAL GEOTECHNICAL INVESTIGATION

8710 and 8860 Thorp Prairie Road
Cle Elum, Washington

INTRODUCTION

Increase in size and scope of the earthwork needed to accommodate the project created need for additional geotechnical information from the CDPC project site. Accordingly, PLSA Engineering and Surveying performed a supplemental geotechnical investigation of the two contiguous parcels totaling approximately 65 acres at 8710 and 8860 Thorp Prairie Road, Cle Elum, Washington.

This report summarizes the results of this geotechnical investigation and offers our recommendations for soil bearing values and site preparation for mobilizing soil support. The investigation consisted of visual inspection of the area and excavation of nine soil test pits using a 47000 pound, CAT 320 Excavator. Geotechnical engineers from PLSA, experienced with local soil conditions, logged each test pit and observed and field classified the soils found.

Included in this report are the following:

- Soils logs and field classifications of the soils encountered in the test pits.
- Ground water presence.
- Recommended footing depth.
- Recommended footing trench preparation.
- Soil bearing recommendations.
- Structural fill recommendations.
- Parking lot site preparation and paving recommendations.
- Storm water infiltration rate.
- Liquefaction potential

LAND USE AND SURFACE CONDITIONS

A formerly timbered area of approximately 65 acres has been cleared and then used as a hayfield for many years. The property is bordered by Thorp Prairie Road on the west, a steep ravine on the north, Kittitas Reclamation District Canal followed by a steep bluff on the east, and timbered property on the south. A farmhouse, barn, outbuildings, and equipment are found in the northwest corner of the site with the balance being gently sloping open ground. Electric and telephone utilities are available.

The default seismic soil classification for the location is Site Class D. Based on Soil Site Class D, the USGS reports the following seismic parameters for designs using the provisions of the 2009 International Building Code:

Table 1. Seismic Design Parameters

	0.2 Second	1.0 Second
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LIQUEFACTION POTENTIAL

Liquefaction is a phenomenon caused by a rapid increase in pore water pressure in loose soils that reduces the effective stress between soil particles to near zero. This rapid increase in pore water pressure can cause a loss of soil shear strength. There is seasonal perched groundwater at the surface of the firmly cemented soils encountered at 5 to 10 feet below the ground surface in the test pits. This perched groundwater was present in May 2012 but had disappeared in July. Free groundwater at the site is not encountered until approximately 300 feet below the ground surface according to the log of a well on the premises, so liquefaction is not a factor. See Appendix I, Well Log. This location has no history of liquefaction.

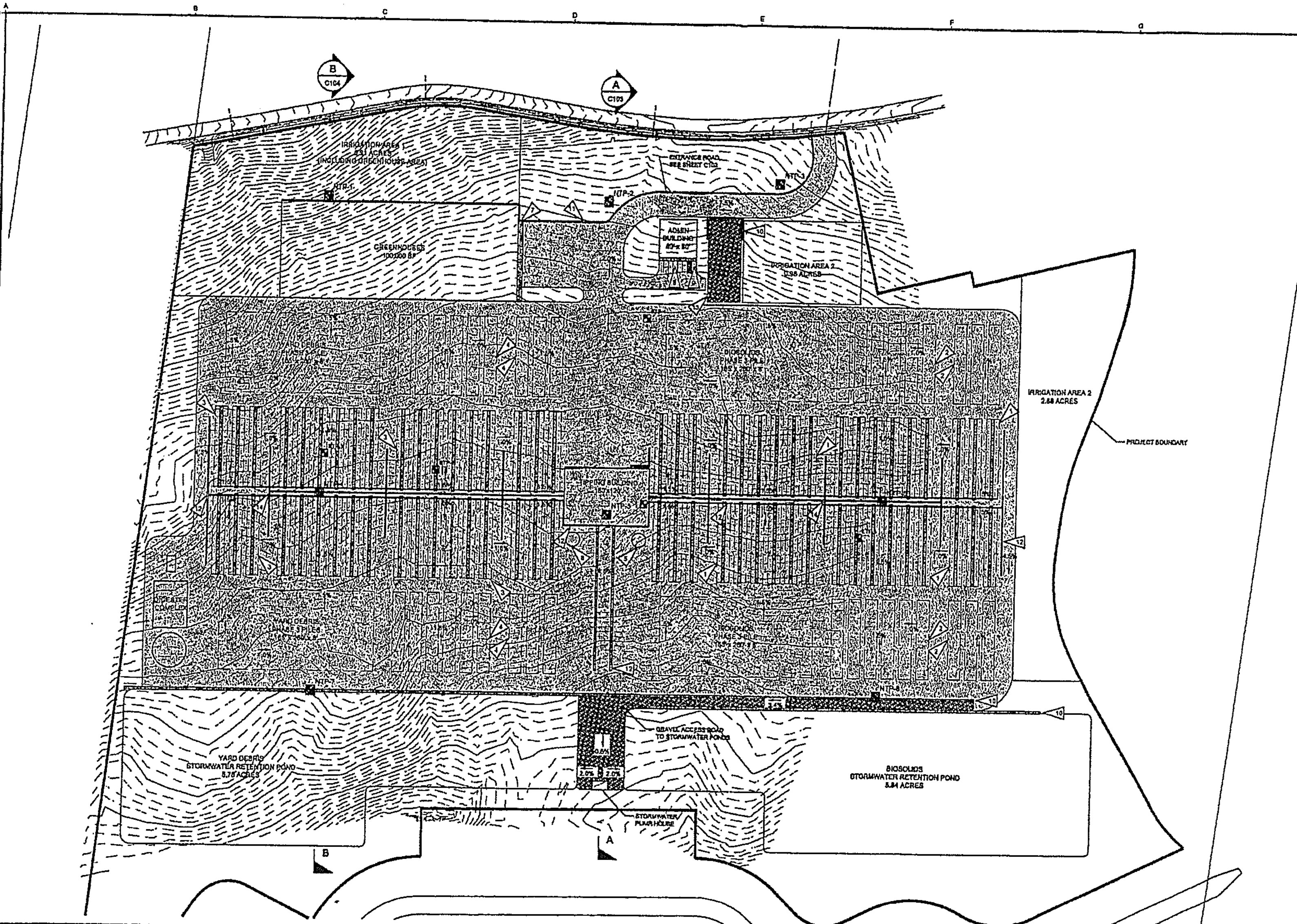
SUB-SURFACE CONDITIONS

Test pit logs may be found in Plates NTP1 through NTP8 and the swale test pit log. Test Pit locations are depicted in drawing C101 attached. Soils encountered in the eight test pits were similar with all having a surface stratum of moist silty clay down to a stratum of clay, cobbles, and gravel encountered at 5 to 10 feet below ground surface (bgs) where excavator refusal was met. USDA Soil Conservation Service (SCS) classifies the soil as "Swauk-Qualla complex", which is predominantly highly plastic clay.

Frost action is usually severe in the area due to the water holding capacity of the silty clay soils. Frost penetration for the project location is estimated at 36 inches. Frost damage may be minimized by placing footings a minimum of 36 inches below finished grade and by placing footings on fill of free draining soil such as crushed rock.

LABORATORY RESULTS

Soil samples were collected from each test pit at the time of excavation. Gradation analysis was performed on each sample. The percentage passing the #200 sieve ranged from 39 to 5.1. Atterberg limit and plasticity index determinations were performed on samples from Test Pit Number NTP 1 and NTP 4, which are representative of those soils exhibiting plasticity. Plasticity indexes (PI) for these samples are 5 and 7 respectively. Copies of the soil tests may be found in Appendix II. The PI values found are substantially lower than those reported by NRCS.



NOTES:

1. BIOSOLIDS PHASE 1 PILES, 105'x25'x8' (LxWxH). 36 TOTAL
2. BIOSOLIDS PHASE 2 PILES, 165'x25'x8' (LxWxH). 18 TOTAL
3. YARD DEBRIS PHASE 1 PILES, 165'x25'x8' (LxWxH). 36 TOTAL
4. YARD DEBRIS PHASE 2 PILES, 165'x25'x8' (LxWxH). 18 TOTAL
5. 40,000 GALLON BIOSOLIDS LEACHATE STORAGE TANK
6. 40,000 GALLON YARD DEBRIS LEACHATE STORAGE TANK
7. CONCRETE SIDEWALK
8. 10'x20' PARKING STALLS (TYP OF 8)
9. 10'x20' HANDICAP PARKING STALL
10. MODULAR GRAVITY RETAINING WALL
11. UPHILL DRAINAGE DITCH
12. REINFORCED CONCRETE WALL
13. ODOR CONTROL BIOFILTER
14. MATERIALS CONVEYOR

LEGEND:

- AC PAVING PER DETAIL____
- CONCRETE
- GRAVEL ROADWAY PER DETAIL____
- SURFACE DRAINAGE DIRECTION
- ETP-1 APPROXIMATE EXISTING TEST PIT LOCATION
- NTP-1 APPROXIMATE NEW TEST PIT LOCATION

80% SUBMITTAL

USE OF DOCUMENTS

THIS DOCUMENT, INCLUDING THE INCORPORATED DESIGNS, IS AN INSTRUMENT OF SERVICE FOR THIS PROJECT AND SHALL NOT BE USED FOR ANY OTHER PROJECT WITHOUT THE WRITTEN AUTHORIZATION OF KENNEDY/JENKS CONSULTANTS ©.

NO.	REVISION	DATE	BY

SCALES
IF THIS BAR IS NOT DIMENSION SHOWN, ADJUST SCALES ACCORDINGLY.

DESIGNED TJA
DRAWN TJA
CHECKED PLVM

SRM
CLE ELUM, WASHINGTON
PACIFICLEAN COMPOSTING FACILITY
Kennedy/Jenks Consultants
200 SW MARKET ST., SUITE 500, PORTLAND, OR 97201

GRADING AND PAVING PLAN

FILE NAME 1201008000C101.DWG
JOB NO. —
DATE JULY 2012
SHEET C101 OF

JEFF HART 7/15/2012 3:24 PM
P:\Eng\1201\1291003.00_SRM_Development\1291008000c101.dwg

SOIL BEARING RECOMMENDATIONS

Using a recommended minimum footing width of two feet and the footing trench preparation which includes 95 percent compaction as determined by ASSTM D 1557, and producing a firm and stable subgrade, satisfactory soil support for loadings in native soil up to 2,000 pounds per square foot (psf) should be achieved.

The low plasticity clay soils encountered may shrink or swell with changing moisture content and are increasingly unstable as moisture content increases. PLSA understands that a substantial amount of site grading that will extend several feet into the firmly cemented, rocky soils is contemplated. Thoroughly mixing the stiff clay surface stratum with an equal or greater volume of the excavated cemented gravels would contribute to producing material suitable for forming a stable subgrade to support the construction. Structural fill produced by mixing the on-site soils as described will mobilize satisfactory bearing for loads up to 3,500 psf. The excavated areas containing the exposed firmly cemented gravels can produce satisfactory soil bearing up to 10,000 psf.

The native silty clay soil present and structural fill containing this soil type is not free-draining and has high moisture holding capacity. Soils relied on for slab support and which are persistently too moist for the subgrade to be compacted to 95 of maximum density as determined by ASTM D-1557 are recommended to be prepared by placing geotextile fabric, such as Mirafi 500X, on the proof rolled subgrade. Place a drainage layer over the geotextile consisting of a minimum of 12 inches of 3/4-inch minus, free-draining, cohesionless, crushed rock compacted in layers to 95 percent of maximum density as determined by ASTM D-1557. This subgrade preparation should achieve a subgrade reaction value, K_S, of 200.

If the 95 percent compaction producing a firm and stable subgrade is achievable, the geotextile fabric may be omitted.

All roof and surface drainage is recommended to be directed away from the footings. Buildings should be elevated or placed on structural fill as necessary to provide slope to insure adequate drainage.

STRUCTURAL FILL

Structural fill should not be placed over debris that may be poorly consolidated or contain organic material or metal which may decompose and settle with time. All such unsuitable materials should be removed and replaced with additional structural fill as described herein. All areas to receive structural fill are recommended to be stripped of all vegetation, organic material, demolition debris, and trash and proof rolled to 95 percent of maximum density as determined by ASTM D-1557 for a depth of 6 inches before placing fill.

The undisturbed soil supporting structural fill should be near optimum moisture content for compaction. Add water or dry the soil by processing as necessary to achieve moisture content suitable for compaction. Fill subgrade soils too wet to be adequately compacted should be dried to a suitable moisture content before receiving structural fill, or the structural fill should be placed over geotextile fabric, such as Mirafi 500X followed by geogrid reinforcement.

The excavated gravels and cobbles thoroughly mixed with an equal or less volume of the silty clay topsoil would produce material suitable for structural fill.

Imported soil used for structural fill is recommended to be cohesionless, free draining, non-plastic material with a maximum particle size of two inches, or other material as approved by a geotechnical engineer from this office.

All structural fill should be placed and compacted in layers not exceeding 6 inches in thickness. Water should be added as needed to achieve satisfactory moisture content for compaction.

Recommended compaction for structural fill is 95 percent of maximum density as determined by ASTM D-1557. All fill shall be firm and stable. It is further recommended that all soil compaction as recommended herein be monitored using a nuclear density gauge.

Excavations resulting from removal of underground structures such as septic tanks and petroleum tanks are recommended to be backfilled using procedures described for structural fill.

STORM WATER INFILTRATION

Storm water infiltration rate is affected by the degree of soil compaction. The infiltration rate for uncompacted native soil typically found at the location studied is less than ¼ inch per hour. Infiltration rate testing of soils that have been disturbed or compacted is recommended before design of a storm water management system relying on percolation into the ground for disposal. Tillage enhances infiltration. Construction of a grassy swale(s) to receive storm water has promise of being an economical storm water management choice.

PAVING RECOMMENDATIONS

All areas to be paved should be cleared of all grass, roots, trash, metal and organic materials down to full depth below the paving mat. The exposed soil surface should then be proof rolled to 90 percent of maximum compaction as determined by ASTM D-1557 to produce a firm and stable subgrade. If soil is too wet to achieve compaction and cannot be effectively dried, place geotextile fabric such as Mirafi 500X over the prepared subgrade. Place compact base material and asphaltic concrete paving as described below:

The following specification is our recommendation for paving and subgrade: Asphaltic Concrete Paving shall conform to Washington State Department of Transportation Standard Specifications 2004, Division 5, Class HMA ½. Compact the subgrade and any fill to 95 percent of maximum compaction as determined by ASTM D-1557. Areas subject to truck and heavy equipment traffic are recommended to be a minimum of 4 inches of asphaltic concrete placed over a minimum of 12 inches of free-draining, compact, granular base material conforming to the particle size distribution found in the Standard Specifications, Division 9 for HMA ½.

Asphaltic concrete paving placed on parking lot areas used exclusively by automobiles may be reduced to two inches compacted thickness.

LSA ENGINEERING & SURVEYING
1120 WEST LINCOLN AVENUE
YAKIMA, WA 90902
(509) 575-6990

EXCAVATION LOG NO.: NTP1

BY: BJC/SG
JOB NO. 12089A
LOCATION: NTP1

DATE: 7/26/21
ELEVATION:

SURFACE CONDITIONS: GRASS

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1 2 3 4 5 6 7				CL	SILTY, SANDY CLAY SOME BOULDERS	(DENSE)
8 9 10				GM	PARTIALLY CEMENTED, SILTY SAND & COBBLES	(MOIST DENSE)
11 12 13 14 15				GM	EXCAVATOR REFUSAL FIRMLY CEMENTED COBBLES, GRAVEL & SILTY SAND	

PLSA ENGINEERING & SURVEYING
1120 WEST LINCOLN AVENUE
YAKIMA, WA 90902
(509) 575-6990

EXCAVATION LOG NO.: SWALE

BY: BJC/SG
DATE: 7/26/21
JOB NO. 12089A
ELEVATION:
LOCATION: SWALE BETWEEN NTP1 & NTP2

SURFACE CONDITIONS: GRASS

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1						
2				CL	STIFF CLAY	(DRY, DENSE)
3						
4						
5						
6						
7				GC	CEMENTED COBBLES AND GRAVEL EXCAVATOR REFUSAL	
8						
9						
10						
11						
12						
13						
14						
15						

PLSA ENGINEERING & SURVEYING
1120 WEST LINCOLN AVENUE
YAKIMA, WA 90902
(509) 575-6990

EXCAVATION LOG NO.: NTP2

BY: BJC/SG
JOB NO. 12089A
LOCATION: NTP2

DATE: 7/26/21
ELEVATION:

SURFACE CONDITIONS: GRASS

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1				ML	SILTY SAND AND GRAVEL	(DRY)
2 3 4 5 6 7				ML	FIRMLY CEMENTED SILT	(DRY, DENSE)
8				GM	FIRMLY CEMENTED COBBLES & GRAVEL	(MOIST DENSE)
9 10 11 12 13 14 15					EXCAVATOR REFUSAL	

PLSA ENGINEERING & SURVEYING
1120 WEST LINCOLN AVENUE
YAKIMA, WA 90902
(509) 575-6990

EXCAVATION LOG NO.: NTP3

BY: BJC/SG
JOB NO. 12089A
LOCATION: NTP3

DATE: 7/26/21

ELEVATION:

SURFACE CONDITIONS: ALFALFA

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1				ML	SILT	
2 3 4 5				CL	CLAY	(MOIST DENSE)
6 7 8				GM	FIRMLY CEMENTED COBBLES, GRAVEL & CLAY	(MOIST DENSE)
9 10 11 12 13 14 15					EXCAVATOR REFUSAL	

PLSA ENGINEERING & SURVEYING
1120 WEST LINCOLN AVENUE
YAKIMA, WA 90902
(509) 575-6990

EXCAVATION LOG NO.: NTP4

BY: BJC/SG
DATE: 7/26/21
JOB NO. 12089A
ELEVATION:
LOCATION: NTP4

SURFACE CONDITIONS: ALFALFA

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1				CL	STIFF CLAY	(DENSE)
2						
3						
4						
5						
6						
7						
8						
9				GC	BOULDERS, COBBLES, CEMENTED SAND & CLAY EXCAVATOR REFUSAL	(MOIST DENSE)
10						
11						
12						
13						
14						
15						

PLSA ENGINEERING & SURVEYING
1120 WEST LINCOLN AVENUE
YAKIMA, WA 90902
(509) 575-6990

EXCAVATION LOG NO.: NTP5

BY: BJC/SG
JOB NO. 12089A
LOCATION: NTP5

DATE: 7/26/21
ELEVATION:

SURFACE CONDITIONS: WEEDS

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1				GC	CLAYEY SILT, GRAVEL AND COBBLES	(DRY, DENSE)
2						
3						
4						
5						
6					EXCAVATOR REFUSAL	
7						
8						
9						
10						
11						
12						
13						
15						

PLSA ENGINEERING & SURVEYING
1120 WEST LINCOLN AVENUE
YAKIMA, WA 90902
(509) 575-6990

EXCAVATION LOG NO.: NTP6

BY: BJC/SG
JOB NO. 12089A
LOCATION: NTP6

DATE: 7/26/21

ELEVATION:

SURFACE CONDITIONS: ALFALA

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1				CL	SILTY CLAY	(DRY, DENSE)
2						
3						
4						
5						
6						
7						
8				GM	FIRMLY CEMENTED SILT & COBBLES EXCAVATOR REFUSAL	(DRY, DENSE)
9						
10						
11						
12						
13						
14						
15						

PLSA ENGINEERING & SURVEYING
1120 WEST LINCOLN AVENUE
YAKIMA, WA 90902
(509) 575-6990

EXCAVATION LOG NO.: NTP7

BY: BJC/SG
JOB NO. 12089A
LOCATION: NTP7

DATE: 7/26/21
ELEVATION:

SURFACE CONDITIONS: GRASS

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1				CL	STIFF SILTY CLAY	(DRY)
2						
3						
4				GC	FIRMLY CEMENTED CLAY, SAND, GRAVEL & COBBLES	(DRY, DENSE)
5						
6					EXCAVATOR REFUSAL	
7						
8						
9						
10						
11						
12						
13						
.4						
15						

PLSA ENGINEERING & SURVEYING
1120 WEST LINCOLN AVENUE
YAKIMA, WA 90902
(509) 575-6990

EXCAVATION LOG NO.: NTP8

BY: BJC/SG
JOB NO. 12089A
LOCATION: NTP8

DATE: 7/26/21
ELEVATION:

SURFACE CONDITIONS: ALFAFA

DEPTH IN FEET	MOISTURE CONTENT %	UNIT WEIGHT	SAMPLE	SYMBOL	DESCRIPTION	REMARKS
1				CL	STIFF CLAY	(DRY, DENSE)
2						
3						
4						
5						
6				GM	FIRMLY CEMENTED SAND & COBBLES	(MOIST DENSE)
					EXCAVATOR REFUSAL	
7						
8						
9						
10						
11						
12						
13						
14						
15						

APPENDIX I

WELL LOG

WATER WELL REPORT

Original & 1st copy – Ecology, 2nd copy – owner, 3rd copy – driller

ECOLOGY

Construction/Decommission ("x" in circle) 411876

☒ Construction

○ Decommission ORIGINAL INSTALLATION Notice of Intent Number ______

CURRENT

Notice of Intent No. W-272480

Unique Ecology Well ID Tag No. BAE-642

Water Right Permit No. ______

Property Owner Name JANET WICKMAN

Well Street Address ______

City CLE ELUM County KITTITAS

Location SE 1/4-1/4 SW 1/4 Sec 14 Twn 19 R 16 EWM or WWM (circle one)

Lat/Long (s, t, r Still REQUIRED) Lat Deg ______ Lat Min/Sec ______ Long Deg ______ Long Min/Sec ______

Tax Parcel No. 19-16-14030-0001

PROPOSED USE: ☒ Domestic ☐ Industrial ☐ Municipal ☐ DeWater ☐ Irrigation ☐ Test Well ☐ Other ______

TYPE OF WORK: Owner's number of well (if more than one) ______

☒ New well ☐ Reconditioned Method: ☐ Dug ☐ Bored ☐ Driven

☐ Deepened ☐ Cable ☒ Rotary ☐ Jetted

DIMENSIONS: Diameter of well 6 inches, drilled 377 ft.

Depth of completed well 377 ft.

CONSTRUCTION DETAILS

Casing Installed: ☒ Welded 6" Diam. from +3 ft. to 150 ft.

☒ Liner installed 4" Diam. from -9 ft. to 377 ft.

☐ Threaded ______" Diam. from ______ ft. to ______ ft.

Perforations: ☒ Yes ☐ No

Type of perforator used SKILSAW

SIZE of perfs 6 in. by 1/4 in. and no. of perfs 80 from 277 ft. to 377 ft.

Screens: ☐ Yes ☒ No ☐ K-Pac Location ______

Manufacturer's Name ______

Type ______ Model No. ______

Diam. ______ Slot size ______ from ______ ft. to ______ ft.

Diam. ______ Slot size ______ from ______ ft. to ______ ft.

Gravel/Filter packed: ☐ Yes ☒ No ☐ Size of gravel/sand ______

Materials placed from ______ ft. to ______ ft.

Surface Seal: ☒ Yes ☐ No To what depth? 20 ft.

Material used in seal BENTONITE

Did any strata contain unusable water? ☐ Yes ☒ No

Type of water? ______ Depth of strata ______

Method of sealing strata off ______

PUMP: Manufacturer's Name ______

Type: ______ H.P. ______

WATER LEVELS: Land-surface elevation above mean sea level ______ ft.

Static level ~~[illegible]~~ 301 ft. below top of well Date 9/25/10

Artesian pressure ______ lbs. per square inch Date ______

Artesian water is controlled by ______ (cap, valve, etc.)

WELL TESTS: Drawdown is amount water level is lowered below static level

Was a pump test made? ☐ Yes ☒ No If yes, by whom? ______

Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.

Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.

Yield: ______ gal./min. with ______ ft. drawdown after ______ hrs.

Recovery data (time taken as zero when pump turned off) (water level measured from well top to water level)

Time	Water Level	Time	Water Level	Time	Water Level

Date of test ______

Bailer test ______ gal./min. with ______ ft. drawdown after ______ hrs.

Airtest 15 gal./min. with stem set at 360 ft. for 2 hrs.

Artesian flow ______ g.p.m. Date ______

Temperature of water ______ Was a chemical analysis made? ☐ Yes ☒ No

CONSTRUCTION OR DECOMMISSION PROCEDURE

Formation: Describe by color, character, size of material and structure, and the kind and nature of the material in each stratum penetrated, with at least one entry for each change of information. (USE ADDITIONAL SHEETS IF NECESSARY.)

MATERIAL	FROM	TO
DIRT	0	2
BROWN CLAY	2	14
YELLOW CLAY	14	27
BROWN CLAY & BOULDERS	27	32
LT TAN CLAY & BOULDERS	32	~~[illegible]~~ 67
BLACK BASALT	~~[illegible]~~ 67	74
BROKEN BASALT & BROWN CLAY	74	118
BROWN SANDSTONE	118	216
BROWN CLAY & BLACK BASALT	216	310
BLACK BASALT	310	341
FRACTURE BLACK BASALT	341	377

RECEIVED

MAY 06 2011

DEPARTMENT OF ECOLOGY CENTRAL REGIONAL OFFICE

Start Date 9/20/10 Completed Date 9/26/10

WELL CONSTRUCTION CERTIFICATION: I constructed and/or accept responsibility for construction of this well, and its compliance with all Washington well construction standards. Materials used and the information reported above are true to my best knowledge and belief.

☐ Driller ☐ Engineer ☐ Trainee Name (Print) CRAIG WAMSLEY

Driller/Engineer/Trainee Signature [signature]

Driller or trainee License No. 2428

IF TRAINEE, Driller's Licensed No. ______

Driller's Signature ______

Drilling Company HIDDEN RIVERS DRILLING INC

Address P.O. BOX 891

City, State, Zip SELAH, WA 98942

Contractor's Registration No. HIDDER*590K Date 9/26/10

Ecology is an Equal Opportunity Employer.

APPENDIX II

LABORATORY TEST RESULTS

PLSA Engineering and Surveying
1210 West Lincoln Ave.
Yakima, WA 98902
(509) 575-6990

Project: CDCP
Job #: 12089
Date: 8/3/12
Performed By: JC
Date of Test: ________

Plasticity Index

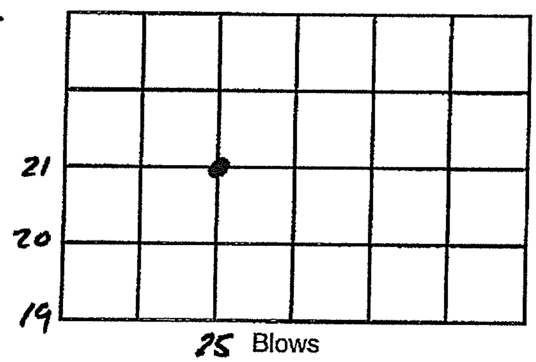
ASTM D4318

Liquid Limit

Can #	Wght. of Can	Wght. of Can + Wet Soil	Wght. Of can + Dry Soil	Moisture Content (%)	Blows
		33.8g	26.7g	21	25

Soil Description: NATIVE FINES
Sample Source: TP-#6 @ -6'

Flow Index: ________
Liquid Limit: 21



Plastic Limit

Can #	Wght. of Can (A)	Wght. of Can + Wet Soil (B)	Wght. Of can + Dry Soil (C)	$PL = \frac{B - C}{C - A} \times 100$
		18.6g	16.0g	14.0
		20.1g	16.7g	16.9
		22.1g	18.5g	16.3

Plasticity Index = PI = LL - PL = 21 - 16 = 5

PLSA Engineering and Surveying
1210 West Lincoln Ave.
Yakima, WA 98902
(509) 575-6990

Project: CDPC
Job #: 12089
Date: 8/3/12
Performed By: JC
Date of Test:

Plasticity Index

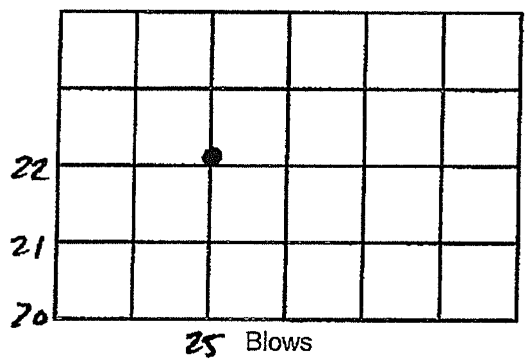
ASTM D4318

Liquid Limit

Can #	Wght. of Can	Wght. of Can + Wet Soil	Wght. Of can + Dry Soil	Moisture Content (%)	Blows
		35.1g	27.3g	22.2	25

Soil Description: NATIVE FINES
Sample Source: TP-#4

Flow Index:
Liquid Limit: 23



Plastic Limit

Can #	Wght. of Can (A)	Wght. of Can + Wet Soil (B)	Wght. Of can + Dry Soil (C)	$PL = \frac{B - C}{C - A} \times 100$
		19.7g	16.6g	15.7
		18.6g	15.3g	16.1
		20.1g	16.9g	15.9

Plasticity Index = PI = LL - PL = 23 - 16 = (7)

PLSA Engineering and Surveying
1210 West Lincoln Ave.
Yakima, WA 98902
(509) 575-6990

Project: CDPC
Job #: 12089
Date: 8/1/12
Performed By: JC
Sampled By: BC

Gradation Analysis

ASTM C136

Screen Size	Wght. Retained	% Retained	% Passing	Specifications
3/4"	0		100	
3/8"	9.2 g		98	
#4	14.6		95	
#10	32.7		89	
#20	90.4		72	
#40	90.1		55	
#100	140.6		28	
#200	65.7		15.1	
-#200	78.8			

Sample Wght: 522.1 g
Sample Number:
Sample Date:
Sample Source: NTP #1 - 10'
Sample Description:
Date Of Test:
Fineness modulus (nearest 0.01):

Wash	
Wght. Before Wash:	522.1
Wght. After Wash:	450.3
Wght. Washed Thru 200:	71.8

* Report percentages to the nearest whole number. Except passing 200 is less than 10%, report to 0.1%

PLSA Engineering and Surveying
1210 West Lincoln Ave.
Yakima, WA 98902
(509) 575-6990

Project: CDPC
Job #: 12089
Date: 8/1/12
Performed By: JC
Sampled By: BC

Gradation Analysis

ASTM C136

	Screen Size	Wght. Retained	% Retained	% Passing	Specifications
COARSE	3"/2"/1½	0/1.08/1.22		100/94/88	
	1"	.95		83	
	3/4"	.35		81	
	3/8"	.62		78	
	#4	2.02		67.6	
	-#4	13.01			
FINE	#4	0			
	#10	137.6g		50	
	#20	130.4		34	
	#40	99.6		21	
	#200	115.8		6.2	
	-#200	48.6			

Sample Wght: 19.25 LBS
Sample Number:
Sample Date:
Sample Source: TP 3 @ -6'
Sample Description:
Date Of Test:
Fineness modulus (nearest 0.01):

Wash	
Wght. Before Wash:	
Wght. After Wash:	
Wght. Washed Thru 200:	

* Report percentages to the nearest whole number. Except passing 200 is less than 10%, report to 0.1%

PLSA Engineering and Surveying
1210 West Lincoln Ave.
Yakima, WA 98902
(509) 575-6990

Project: CDPC
Job #: 12089
Date: 8/1/12
Performed By: JC
Sampled By: BC

Gradation Analysis

ASTM C136

Screen Size	Wght. Retained	% Retained	% Passing	Specifications
#4	0		100	
#10	8.4 g		99	
#20	52.4		91	
#40	46.4		83	
#100	164.0		58	
#200	122.8		39	
-#200	250.0			

Sample Wght: 644.0 g
Sample Number:
Sample Date:
Sample Source: TP-#4
Sample Description:
Date Of Test:
Fineness modulus (nearest 0.01):

Wash	
Wght. Before Wash:	644.0
Wght. After Wash:	442.4
Wght. Washed Thru 200:	201.6

* Report percentages to the nearest whole number. Except passing 200 is less than 10%, report to 0.1%

PLSA Engineering and Surveying
1210 West Lincoln Ave.
Yakima, WA 98902
(509) 575-6990

Project: CDPC
Job #: 12089
Date: 8/1/12
Performed By: JR
Sampled By: BC

Gradation Analysis

ASTM C136

	Screen Size	Wght. Retained	% Retained	% Passing	Specifications
COARSE	2" / 1½"	0/ .44		100/99	
	1"	1.51		93	
	3/4"	1.92		87	
	3/8"	3.13		76	
	#4	2.44		68	
	-#4	20.06			
FINE	#4	0		68	
	#10	20.3g		66	
	#20	66.9		59	
	#40	85.4		51	
	#200	303.6		21.0	
	-#200	212.9			

COARSE / FINES
Sample Wght: 29.50 LBS / 689.1g
Sample Number:
Sample Date:
Sample Source: TP#5 @ -5'
Sample Description:
Date Of Test:
Fineness modulus (nearest 0.01):

Wash	
Wght. Before Wash:	689.1
Wght. After Wash:	499.9
Wght. Washed Thru 200:	189.2

* Report percentages to the nearest whole number. Except passing 200 is less than 10%, report to 0.1%

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Project: CDPC
Job #: 12089
Date: 8/1/12
Performed By: JC
Sampled By: BC

Gradation Analysis

ASTM C136

Screen Size	Wght. Retained	% Retained	% Passing	Specifications
#4	0		100	
#10	14.6g		98	
#20	67.8		88	
#40	89.8		75	
#100	205.8		46	
#200	102.2		31.5	
-#200	220.8			

Sample Wght: 701.0g
Sample Number:
Sample Date:
Sample Source: TP-#6 @ -6'
Sample Description:
Date Of Test:
Fineness modulus (nearest 0.01):

Wash	
Wght. Before Wash:	701.0
Wght. After Wash:	508.4
Wght. Washed Thru 200:	192.6

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	Screen Size	Wght. Retained	% Retained	% Passing	Specifications
COARSE	2" / 1½"	0 / .55		100 / 98	
	1"	1.21		94	
	3/4"	1.39		89	
	3/8"	3.02		78	
	#4	2.99		67.5	
	-#4	19.01			
FINE	#4	0		67.5	
	#10	8.6 g		67	
	#20	60.2		60	
	#40	81.3		51	
	#200	275.4		21.6	
	-#200	200.9			

Sample Wght: COARSE 28.17 LBS / FINES 626.4g
Sample Number:
Sample Date:
Sample Source: TP-#7
Sample Description:
Date Of Test:
Fineness modulus (nearest 0.01):

Wash	
Wght. Before Wash:	626.4g
Wght. After Wash:	468.0
Wght. Washed Thru 200:	158.4

* Report percentages to the nearest whole number. Except passing 200 is less than 10%, report to 0.1%

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Gradation Analysis

ASTM C136

	Screen Size	Wght. Retained	% Retained	% Passing	Specifications
COARSE	2" / 1½"	0 / .85		100 / 96	
	1"	2.01		87	
	3/4"	.65		84	
	3/8"	.62		81	
	#4	3.81		64.2	
	-#4	14.25			
FINE	#4	0		64.2	
	#10	125.5		48	
	#20	130.6		32	
	#40	84.1		21	
	#200	127.7		5.1	
	-#200	40.0			

Sample Wght: COARSE 22.19 / FINES 567.9 g
Sample Number:
Sample Date:
Sample Source: TP-8 @ -6'
Sample Description:
Date Of Test:
Fineness modulus (nearest 0.01):

Wash	
Wght. Before Wash:	507.9
Wght. After Wash:	477.3
Wght. Washed Thru 200:	30.6

* Report percentages to the nearest whole number. Except passing 200 is less than 10%, report to 0.1%