South Lake Thin DxP

Stewardship Timber Sale

Logging Feasibility Report

South Nestucca EA

Hebo Ranger District

Siuslaw National Forest

Yamhill County, Oregon

Deborah Williams

District Ranger

6/24/16

Date

Prepared by:

Alex Wickham

Forester, Alex Wickham

6/23/2016

Date

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1. Sale Description:

The South Lake Thin Stewardship is a commercial thinning containing approximately 150 acres of off-site timber species planted after the 1910 Mt. Hebo fire. The project is located in the Three Rivers Watershed and encompasses the Cedar Creek sub-drainage to the NE of Hebo, OR. The sale is comprised of two (2) units with fifteen (15) subdivisions:

Sale Units and Location		
Unit	County	Location (PLSS)
58	Yamhill	S 1/2 Sec. 19, N 1/2 Sec. 30, T4S, R8W, Surveyed, W.M.
60	Yamhill	W 1/2 Sec. 30, T4S, R8W - E 1/2 Sec. 25, T4S, R9W, Surveyed, W.M.

*Reference the South Lake Thin Stewardship Timber Sale Map, Appendix A (pg.10)

The timber species composition of these units are dominantly **Douglas-fir** (*Pseudotsuga menziesii*) with minor sub components of **western hemlock** (*Tsuga heterophylla*), **Sitka spruce** (*Picea sitchensis*), **red alder** (*Alnus rubra*), and **western redcedar** (*Thuja plicata*). **Pacific yew** (*Taxus brevifolia*) is a known species to conserve and protect in this area. Pacific yew **WAS** observed during stand exams, cruising and logging systems analyses within Subdivision 60Y along the edge of a gap opening. It is identified with white flagging. Any Pacific yew found during logging operations will not be felled. Minimum diameter at breast height (DBH) for trees to be harvested is 7.0". Trees less than 7.0" DBH will be protected where practical.

The age of the timber in the sale area is approximately 80-105 years. Harvesting is estimated to produce 2,922 MBF for the sale area with approximately 20 MBF/Acre. Ground base skidding and skyline logging systems will be utilized in the removal of timber based on terrain features and unit accessibility.

Trimble GPS mobile devices were used to determine harvest acres and temporary road lengths. Collected unit traverse data was transferred to ArcGIS and ArcMap Version 10.3.1 was utilized to calculate areas, slope, and logging system placement. Trimble GPS mobile devices meet Region 6 acreage determination standards.

2. Resource Management Objectives:

The stand prescriptions, unit layout, logging and transportation plans are designed to meet the following resource objectives:

- Develop stands into late-successional habitat consistent with the Northwest Forest Plan and the Northern Coast Range Adaptive Management Area Late Successional Reserve Assessment.
- Manage riparian reserves consistent with the Northwest Forest Plan's Aquatic Conservation Strategy.

- Protect water quality and fish habitat in all streams.
- Minimize soil disturbance during all phases of harvest activity.
- Protect T&E wildlife species by limiting operating seasons.
- Provide forest products to meet local demand.

3. Unit Logging Summary and Yarding Method:

The sale is designed with two logging systems; skyline, and ground base. Skyline yarding encompasses approximately 34% of the sale and the remaining 66% is ground base.

There are areas that will need multi-span configurations to yard the unit or portions of them. A yarder with a 50 foot tower height, capable of lifting 20,000 lbs. and transporting logs at least 1,600 feet was used in the analysis. A secondary yarding system was also analyzed utilizing a shotgun 2-drum Yoader for unit areas with shorter yarding distances. A carriage with multi-span and slack-pulling capabilities was used in the analysis. Tail anchor trees are necessary on most skyline corridors. Multiple stump anchors may be needed for some landing locations. The existing trees in younger stands may be too small in diameter and existing stumps too decayed to use.

Ground based yarding shall be limited to slopes of 30 percent or less and use designated skid trails. All designated skid trails must be approved by the sale administrator. Localized areas within ground base designated sections may have slopes greater than 30 percent. Facilitate tree removal by tipping felled logs towards designated skid trails and utilizing winch cables on ground base equipment.

All units are accessed via Forest Service Road 1400 and 1428. New temporary roads and existing temporary roads extend from FSR 1400 and 1428 into the sale units where feasible to facilitate timber removal.

Sale Units		GIS Acres			Rounded Acres (TIM)			Estimated Volumes			Skid Trails			Corridors			Landings
Unit	Subdivision	GB Acres	Sky Acres	Total Acres	GB Acres	Sky Acres	Total Acres	Prior Harvest	Est. Vol/Ac	Est. Unit Vol.	# in unit	Avg. length	Max length	# in unit	Avg. length	Max length	# in unit
58	58A	19.00	7.07	26.07	19	7	26	No	25	652	23	263	716	10	331	620	8
	58B	9.21	5.03	14.24	9	5	14	Thinned	12	171	11	206	375	11	249	427	5
	58C	6.71	3.52	10.22	7	4	10	Part light thin	25	256	11	271	800	4	384	478	3
	58D	3.91	0.68	4.59	4	1	5	No	25	115	2	458	679				1
	58E	21.04	3.99	25.02	21	4	25	Thinned	12	300	15	293	864	6	380	513	6
	58F	3.45	1.41	4.86	3	1	5	No	25	122	3	304	592	3	189	229	1
	58G	1.59	0.46	2.05	2	0	2	No	25	51	2	224	304				1
	58H	3.80		3.80	4		4	Thinned	12	46	5	298	744				1
	58R	6.73		6.73	7		7	No	25	168							
60	60U		5.37	5.37		5	5	Thinned	12	64				4	585	682	1
	60V		6.73	6.73		7	7	No	25	168				8	416	713	
	60W	4.53	2.99	7.52	5	3	8	Thinned	12	90	6	265	649	4	516	750	1
	60X		2.60	2.60		3	3	No	25	65				5	583	982	
	60Y	11.45	4.44	15.90	11	4	16	No	25	397	15	224	472	6	267	382	5
	60Z	7.21	6.67	13.88	7	7	14	Thinned	12	167	11	229	457	13	278	477	4
		98.63	50.97	149.60													
Unit	Subdivision	GB Acres	Sky Acres	Total Acres	GB Acres	Sky Acres	Total Acres	Prior Harvest	Avg. Vol/AC	Total Vol.	Skid Trail	Avg. length	Max length	Corridor	Avg. length	Max length	Landing
2	**15**	**98.63**	**50.97**	**149.60**	**99**	**51**	**150**		**20**	**2832**	**104**	**276**	**864**	**74**	**380**	**982**	**37**

Logging System Breakout		
Log Sys.	**Acres**	**%**
GB	99	66%
Sky	51	34%
Total	**150**	**100%**

Volume Breakout			
Units	**Acres**	**Est. Volume**	**% Vol. Distr.**
Thinned	70	838	30%
Unthinned	80	1994	70%
Total	**150**	**2832**	**100%**

New Temp Road		
Unit	**Rd ID**	**Length (ft)**
58	58-1a	189
58	58-5	440
60	60-1	210
60	60-2	3012
60	60-3	309
60	60-4	836
	Total	**4996**

Existing Road		
Unit	**Rd ID**	**Length (ft)**
58	58-1	399
58	58-2	254
58	58-3	588
58	58-4	755
60	60-0	Open
	Total	**1996**

4. Recommended Logging System:

Skyline and Ground Base

The Yarder and Carriage table shows the specifications of the logging systems that were used in the analysis for this project. These systems are recommended because they are available, capable of meeting the resource management objectives and logging system requirements, reduce the number of intermediate supports needed, and are capable of doing the job economically. All skyline profiles and recommended yarding equipment were analyzed with the SkylineXL 15.1 Skyline Profile and Payload Analysis program.

Yarder		Tower height (ft)	Yarder (HP)		
Thunderbird 6150, spcm		50	230		
Operating line	Line Dia (in)	Line type	Weight (lb/ft)	Design tension (lbs)	Line length (ft)
skyline	0.875	Swaged	1.7	31600	2000
mainline	0.625	Swaged	0.87	16133	2300
haulback	0.5	EIPS	0.46	8900	4300
slackpulling	0	0	0	0	0
Yarder		Tower height (ft)	Yarder (HP)		
Yoader, shotgun - 2 drum		40	230		
Operating line	Line Dia (in)	Line type	Weight (lb/ft)	Design tension (lbs)	Line length (ft)
skyline	0.75	Swaged	1.25	23100	1000
mainline	0.625	Swaged	0.87	16133	1500
haulback	0	0	0	0	0
slackpulling	0	0	0	0	0
Carriage		Weight (lbs)	Carriage (HP)	Skyline clamp	Slack pull method
Acme 20s, pass shack		2150	20	yes	carriage
Line	Min Dia (in)	Max Dia (in)	Length (ft)	Dia (in)	# drums required
skyline	0.75	1.375			2
mainline	0.5	0.75			Multispan capable
dropline			0	0	yes

***Other equipment**—Hardware for rigging tailtrees (2 sets) and intermediate supports (3 sets); crawler tractor for landing clearing; equipment for a guyline and tailhold anchors; a Delimber or Dangle-Head Processor; ground-based equipment for yarding logs on designated slopes of 30 percent or less; and a loader/shovel.

The following personnel, in addition to the Field Representative/Side Rod, are normally required for full operational capacity of a Skyline/Ground base logging unit:

- 1 Hooktender
- 1 Rigging slinger
- 1 Choker setter w/radio
- 1 Choker setter
- 1 Yarder engineer
- 1 Loader operator
- 1 Delimber/Dangle Head Processor operator
- 1 Landing chaser

K-G.4.2# Contract Provision:

TABLE PURSUANT TO K-G.4.2# - YARDING/SKIDDING REQUIREMENTS *(05/2005)*

Purchaser shall submit for Forest Service approval a Yarding/Skidding Plan prior to the start of felling operations. Requirements other than those specified in the following table may be approved. When appropriate, such approval shall include adjustments in Current Contract Rates and revision of the Sale Area Map. In no such case shall the adjustments result in Current Contract Rates less than Base Rates. Location of all skid roads and trails, tractor roads, skyline corridors, mechanized harvester trails, forwarder roads, and other log skidding facilities, shall be approved prior to their use or construction.

See table below for requirements.

YARDING/SKIDDING REQUIREMENTS	SUBDIVISIONS
If included in your Technical Proposal and accepted by the Forest Service, a skyline system must be capable of: • keeping one end of the log suspended during inhaul (logs may drag on the ground within 100 feet slope distance of tailholds and 50 feet slope distance of landings). • lateral yarding up to 75 feet • keeping the entire length of logs fully suspended above the ground 50 feet each side of protected Streamcourses during inhaul when yarding across protected Streamcourses. Skyline corridors/cableways: • maximum width of 12 feet • minimum spacing of 120 feet at the far end • no more than 20 percent of the canopy would be removed in any given 1,000-foot reach of stream when passing through riparian buffers.	All
Skips are designated within subdivisions. Skyline corridors and skid trails may be approved through skips to facilitate logging operations.	58B, 58E, 60U, 60W, 60Z
Yarder tail holds may be allowed within the Hebo Inventoried Roadless Area (IRA)with approval of the Regional Forester. The removal of commercial products is prohibited. Tail hold trees may be felled and left in place to mitigate saftey hazards.	58A

If included in your Technical Proposal and accepted by the Forest Service, a ground-base machine must be capable of keeping one end of the log suspended during skidding. Skid trails: • maximum width of 15 feet • average trail spacing of 100 feet The ground-base machine will not be allowed on slopes greater than 30 percent. Where practical, machine shall travel on slash.	All
Prior to yarding, Forest Service shall approve Included Timber pursuant to K-C.3.5.5#.	All
The tops shall be severed or broken off from at least 20 percent of the felled trees prior to yarding. These severed or broken tops shall be left on site (not yarded or removed) scattered over 80 percent of the cutting unit. A top is defined as that portion of the tree 6 inches DIB or smaller on the large end.	All

*Reference Appendix B & C for Payload Analysis and Logging System Maps.

5. Logging Plan Narrative:

- All unit boundaries are marked with blue boundary tags, blue ribbon and orange paint.
- All subdivision boundaries are marked with blue boundary tags, blue ribbon, and orange paint to delineate between separate silviculture treatments within single units.
- All landings are marked with yellow tags and Blue/White striped flagging.
- All temporary spurs (existing and new) are marked with yellow tags and Blue/White striped flagging.
- Minor clearing is required for some landings.
- Landings are located to minimize yarding over buffered streams and headwalls.
- All roads and landings will be reviewed on the ground by a District Hydrologist and the Forest Transportation Planner for the timber sale appraisal and contract.
- Perennial and intermittent streams and headwalls are adjacent and/or within the units. These streams and headwalls are buffered. Buffer boundaries are marked on the ground to protect slope stability and water quality. Full log suspension is required over streams and headwalls.

- Skyline landings generally use fan-shaped and parallel settings, with most turnroads using single-span configurations. Tailholding on opposing slopes is emphasized, where opportunities exist, to reduce the need for intermediate supports.

- Where yarding occurs over stream buffers, some areas may lack the deflection necessary to obtain full suspension of logs during whole-tree yarding. Shorter log lengths will be required over these areas.

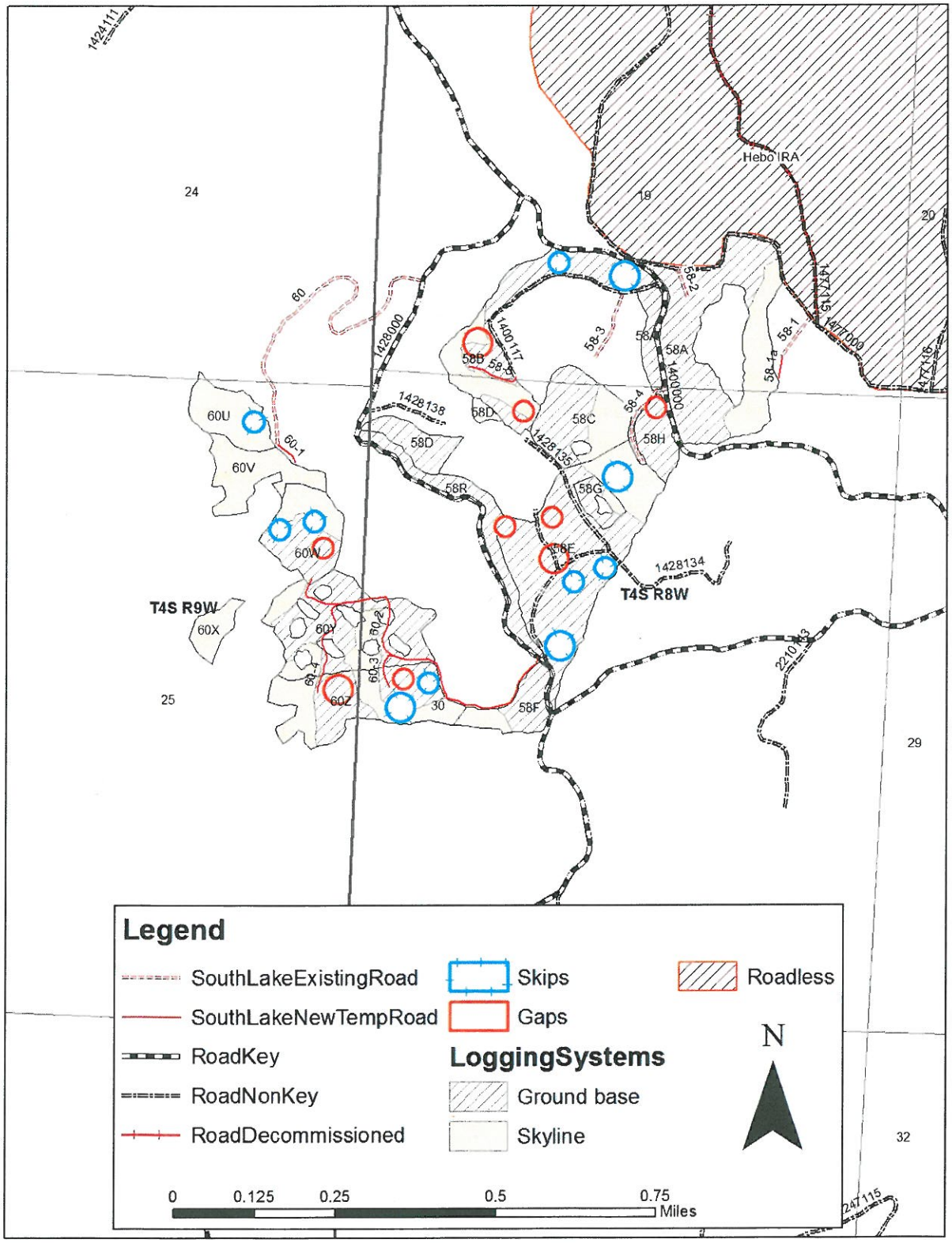
- Some ground-based logging is planned in all of the timber sale units. All units will require some loader/shovel logging along roadways or on landings.

- Directional felling may be needed in several units. Extra tagline may be needed in areas that require directional felling.

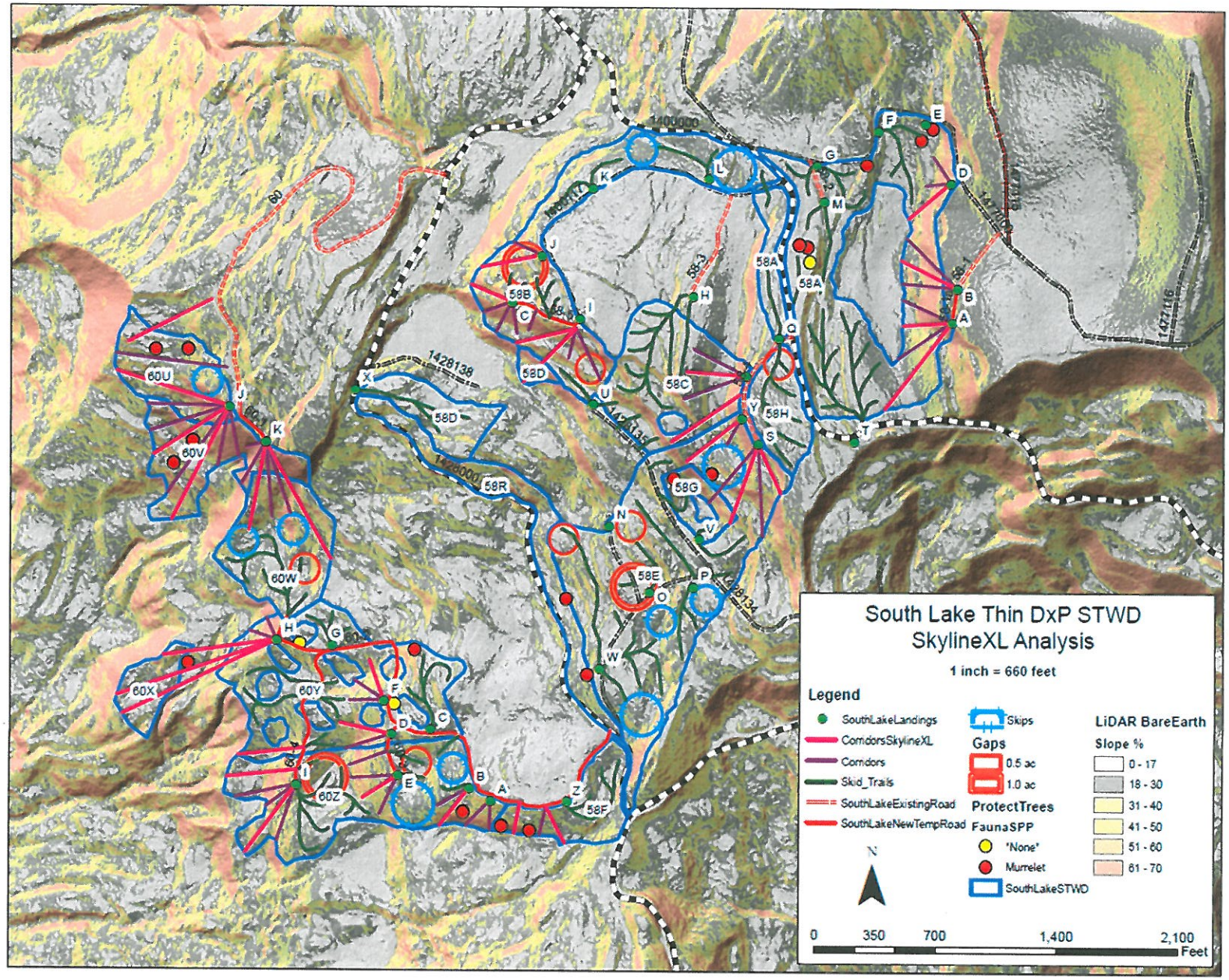
- Subdivisions 58B, 58E, 58H, 60W, and 60Z contain ½ acre and 1 acre **gaps**. All gaps have GPS coordinates and are identified on sale area maps. Create one-acre gaps by cutting all Designated Cut Species meeting the contract specifications **within 118 feet of a tree marked with double bands of blue tracer paint at breast height and two blue tracer paint marks below stump height.** Create half-acre gaps by cutting all Designated Cut Species meeting the contract specifications **within 83 feet of a tree marked with a single band of blue tracer paint at breast height and a blue tracer paint mark below stump height. ** The gap center designated tree will have at least a 3 foot high stump left to aid in sale administration harvest inspection. "HS" (High Stump) is painted on each stump with blue tracer paint between 3 feet and ground level**.**

- Subdivisions 58B, 58E, 60U, 60W, and 60Z contain ½ and 1 acre **skips**. All skips have GPS coordinates and are identified on the sale area maps. Skip boundaries are posted just as unit boundaries with blue flagging, blue boundary tags, and tracer paint. **White tracer paint** was utilized to mark skip boundary trees to delineate between unit boundaries and skips. Skips were located within the unit to minimize impacts to logging systems and timber removal. Corridors and skid trails will be allowed through skips if required with approval by sale administration.

APPENDIX A:
South Lake Thin Stewardship Small Timber Sale Area Map



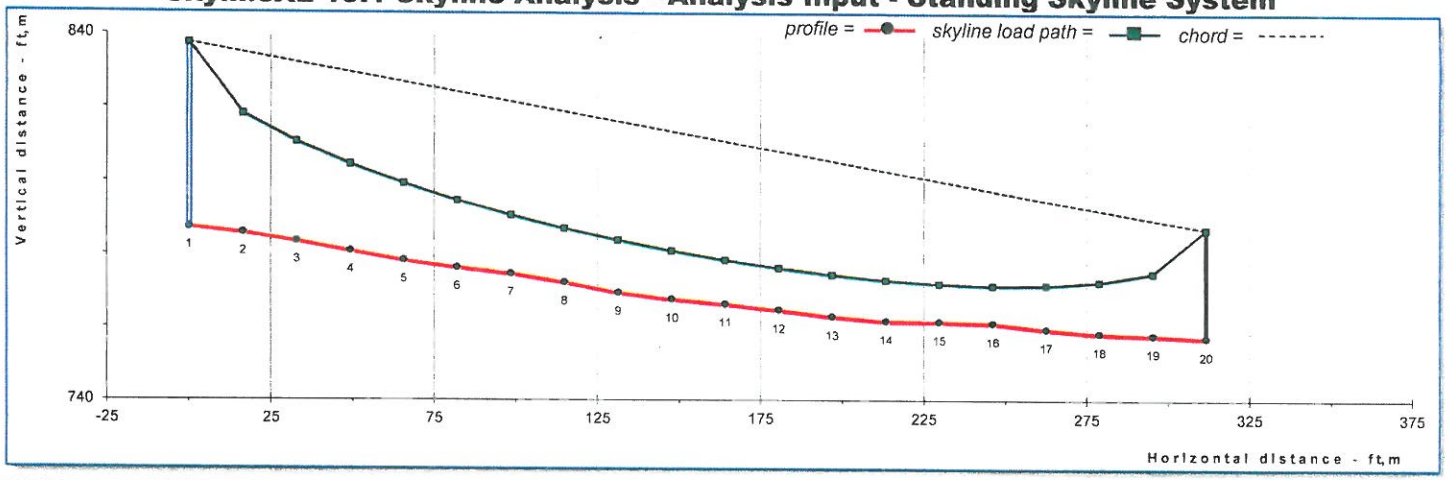
APPENDIX B:
Logging System Maps



APPENDIX C:
Payload Analysis

Multiple skyline corridors in each subdivision were analyzed with SkylineXL 15.1. One analyzed corridor per subdivision is include in the LFR. Additional analyses may be requested from the Hebo Ranger District Timber Department.

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Thunderbird 6150, spcm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
22,845	2

Supports Table	At terrain point	Rigging height (ft)
head spar	1	50
tail spar	20	30
int support 1		
int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	19

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

Analysis name: Unit 58A
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 1
Analyst: Wickham

LIVE sky selections	Lift-drop location at terrain point
○ Specified clearance	1
◉ Lift only	2
○ Drop only	3
	4
	5

The above options for LIVE skyline analysis only

58A

58A

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 1
Analysis name: Unit 58A

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Thunderbird 6150, spcm, 50-ft twr	Acme 20S, pass shack	22,845	2	1

STANDING skyline rigging lengths table...

HB required

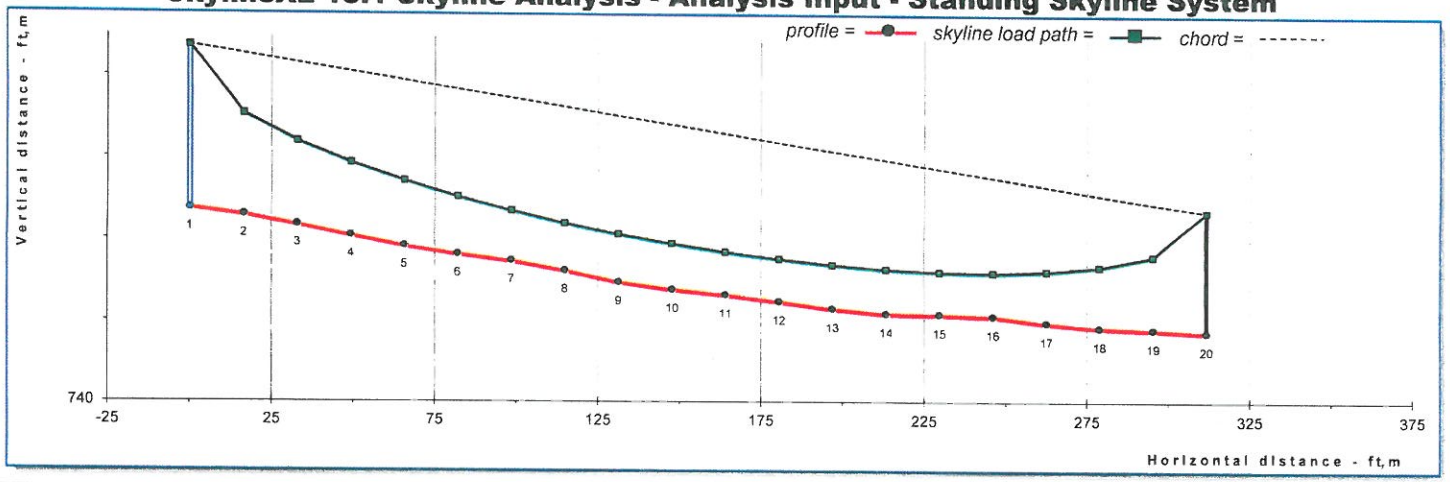
Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	2,000	470	adequate					
mainline	2,300	400	adequate	16.1%				
haulback	4,300	730	adequate	Un-stretched skyline line length - (ft)			320.45	157

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	22,845	22,845	9,973	16,133	-	32.3	22.0	-
3	33	24,905	22,845	17,819	16,133	-	27.0	17.1	-
4	49	26,081	22,845	23,361	16,133	-	23.7	13.9	-
5	66	27,210	22,845	27,129	16,133	-	21.1	11.4	-
6	82	27,921	22,845	29,614	16,133	-	18.5	8.9	-
7	98	26,730	22,845	31,600	15,957	-	16.1	6.8	-
8	115	24,628	22,845	31,600	14,753	-	14.8	5.8	-
9	131	24,868	22,845	31,600	14,132	-	14.4	5.1	-
10	148	25,174	22,845	31,600	13,879	-	13.3	4.0	-
11	164	24,775	22,845	31,600	13,739	-	12.1	3.0	-
12	180	24,484	22,845	31,600	13,477	-	11.5	2.5	-
13	197	25,492	22,845	31,600	13,329	-	11.5	2.3	-
14	213	27,742	22,845	31,600	13,443	-	11.2	1.8	-
15	230	29,049	22,845	31,600	13,929	-	10.4	1.1	-
16	246	28,700	22,845	31,600	13,999	-	10.3	1.4	-
17	262	30,998	22,845	31,600	13,550	-	12.0	2.8	-
18	279	35,446	22,845	31,600	12,952	-	14.2	4.6	-
19	295	41,514	22,845	31,600	10,962	-	17.1	7.3	-

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Yoader, shotgun - 2 drum	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
14,062	12

Supports Table	At terrain point	Rigging height (ft)
head spar	1	40
tail spar	20	30
int support 1		
int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	19

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

Analysis name: Unit 58A
Units: English
Data source: GIS
Analysis phase: 1
Pro date: 5/5/2016
Pro name: 1
Analyst: Wickham

LIVE sky selections
- ○ Specified clearance
- ◉ Lift only
- ○ Drop only

Lift-drop location at terrain point..
1
2
3
4
5

The above options for LIVE skyline analysis only

58A

58A

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 1 | Units: English | Profile date: 5/5/16
Analysis name: Unit 58A | Analyst: Wickham
Data source: GIS

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Yoader, shotgun - 2 drum, 40-ft twr	Acme 20S, pass shack	14,062	12	1

STANDING skyline rigging lengths table...

HB required

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	1,000	460	adequate					
mainline	1,500	390	adequate	12.9%				
haulback		720	not adequate!	Un-stretched skyline line length - (ft)			317.93	157

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	22,956	22,956	9,876	16,133	-	24.8	14.9	-
3	33	24,765	22,956	18,855	16,133	-	20.5	10.9	-
4	49	23,235	22,956	23,100	14,562	-	17.9	8.5	-
5	66	20,235	20,235	23,100	12,223	-	16.0	6.7	-
6	82	18,528	18,528	23,100	10,927	-	14.1	4.8	-
7	98	16,372	16,372	23,100	9,934	-	12.3	3.4	-
8	115	14,812	14,812	23,100	8,992	-	11.6	2.9	-
9	131	14,767	14,767	23,100	8,440	-	11.7	2.8	-
10	148	14,780	14,767	23,100	8,147	-	11.2	2.1	-
11	164	14,377	14,377	23,100	7,932	-	10.4	1.5	-
12	180	14,062	14,062	23,100	7,648	-	10.3	1.5	-
13	197	14,609	14,062	23,100	7,492	-	10.7	1.6	-
14	213	15,836	14,062	23,100	7,467	-	10.9	1.5	-
15	230	16,617	14,062	23,100	7,703	-	10.4	1.1	-
16	246	16,526	14,062	23,100	7,725	-	10.6	1.7	-
17	262	18,095	14,062	23,100	7,502	-	12.6	3.3	-
18	279	21,147	14,062	23,100	7,244	-	15.0	5.3	-
19	295	25,723	14,062	23,100	6,227	-	18.0	8.1	-

58A

SkylineXL 15.1 Skyline Analysis - Profile Input Table

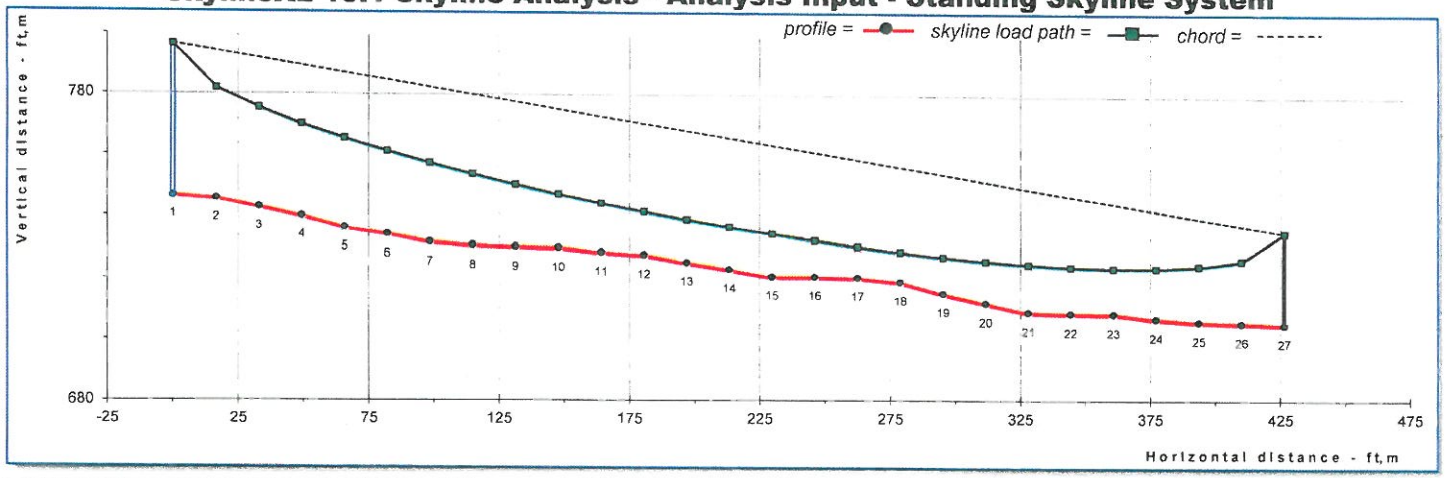
Select measurement type: *English*

Terrain pt	Slope dist (ft)	% slope (+/-)	Horiz - (ft)	Vert - (ft)	Notes
1			0.0	787.5	
	16.5	-9.4%			
2			16.4	785.9	
	16.6	-13.9%			
3			32.8	783.6	
	16.6	-16.5%			
4			49.2	780.9	
	16.6	-15.7%			
5			65.6	778.3	
	16.5	-12.1%			
6			82.0	776.3	
	16.5	-9.5%			
7			98.4	774.7	
	16.6	-14.6%			
8			114.8	772.3	
	16.6	-16.9%			
9			131.2	769.5	
	16.5	-11.3%			
10			147.6	767.7	
	16.5	-8.0%			
11			164.0	766.4	
	16.5	-9.7%			
12			180.4	764.8	
	16.5	-11.0%			
13			196.8	763.0	
	16.4	-7.3%			
14			213.2	761.8	
	16.4	-1.2%			
15			229.6	761.6	
	16.4	-2.6%			
16			246.0	761.2	
	16.5	-9.7%			
17			262.4	759.6	
	16.4	-7.0%			
18			278.8	758.4	
	16.4	-3.0%			
19			295.2	757.9	
	16.4	-4.5%			
20			311.6	757.2	

Profile name
1
Profile azimuth - deg
Profile date
5/5/2016
Analyst
Wickham
Start elevation - (ft)
787
Profile data source
GIS

Profile reversed?
no

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Thunderbird 6150, spcm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
12,027	14

Supports Table	At terrain point	Rigging height (ft)
head spar	1	50
tail spar	27	30
int support 1		
int support 2		
int support 3		

Analysis name: Unit 58B
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 4
Analyst: Wickham

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	26

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

LIVE sky selections
- ○ Specified clearance
- ◉ Lift only
- ○ Drop only

Lift-drop location at terrain point...
1
2
3
4
5

The above options for LIVE skyline analysis only

58B

58B

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 4
Analysis name: Unit 58B

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Thunderbird 6150, spcm, 50-ft twr	Acme 20S, pass shack	12,027	14	1

STANDING skyline rigging lengths table...

HB required

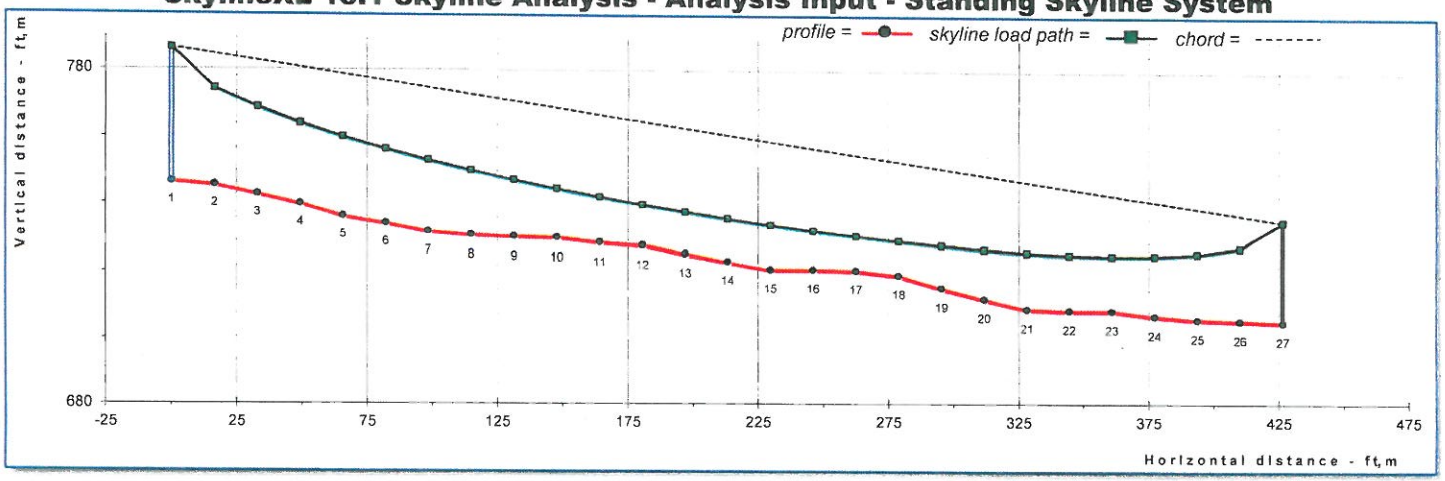
Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	2,000	590	adequate					
mainline	2,300	510	adequate	14.5%				
haulback	4,300	970	adequate	Un-stretched skyline line length - (ft)			432.44	215

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	25,728	25,728	21,150	16,133	-	36.3	26.0	-
3	33	24,708	24,708	31,600	14,418	-	32.6	22.5	-
4	49	18,567	18,567	31,600	10,753	-	30.2	20.2	-
5	66	16,874	16,874	31,600	9,276	-	29.3	19.2	-
6	82	14,849	14,849	31,600	8,232	-	27.2	17.2	-
7	98	14,700	14,700	31,600	7,775	-	25.8	15.5	-
8	115	14,420	14,420	31,600	7,536	-	23.2	12.9	-
9	131	14,273	14,273	31,600	7,472	-	20.3	10.2	-
10	148	13,386	13,386	31,600	7,444	-	17.5	7.8	-
11	164	13,632	13,386	31,600	7,415	-	15.9	6.2	-
12	180	12,448	12,448	31,600	7,293	-	13.9	4.9	-
13	197	12,306	12,306	31,600	7,090	-	13.8	4.7	-
14	213	12,027	12,027	31,600	6,911	-	13.5	4.5	-
15	230	13,627	12,027	31,600	6,927	-	13.7	3.9	-
16	246	14,067	12,027	31,600	7,335	-	11.6	2.2	-
17	262	13,788	12,027	31,600	7,638	-	10.0	1.1	-
18	279	12,098	12,027	31,600	7,217	-	9.7	1.5	-
19	295	12,421	12,027	31,600	6,897	-	12.0	3.3	-
20	312	12,690	12,027	31,600	6,642	-	13.9	5.0	-
21	328	15,067	12,027	31,600	6,761	-	15.8	6.0	-
22	344	16,629	12,027	31,600	7,156	-	15.4	5.6	-
23	361	17,003	12,027	31,600	7,544	-	15.1	5.7	-
24	377	19,527	12,027	31,600	7,767	-	16.7	7.0	-
25	394	23,696	12,027	31,600	8,098	-	18.4	8.4	-
26	410	30,753	12,027	31,600	7,977	-	20.6	10.5	-

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Yoader, shotgun - 2 drum	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
5,700	14

Supports Table	At terrain point	Rigging height (ft)
head spar	1	40
tail spar	27	30
int support 1		
int support 2		
int support 3		

Analysis name: Unit 58B
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 4
Analyst: Wickham

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	26

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

LIVE sky selections
- ○ Specified clearance
- ◉ Lift only
- ○ Drop only

Lift-drop location at terrain point...
1
2
3
4
5

The above options for LIVE skyline analysis only

58B

58B

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 4
Analysis name: Unit 58B

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Yoader, shotgun - 2 drum, 40-ft twr	Acme 20S, pass shack	5,700	14	1

STANDING skyline rigging lengths table...

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	1,000	580	adequate					
mainline	1,500	500	adequate	12.2%				
haulback		960	not adequate!	Un-stretched skyline line length - (ft)			430.19	215

HB required

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	25,288	25,288	23,100	15,871	-	28.6	18.6	-
3	33	15,059	15,059	23,100	9,015	-	25.8	16.0	-
4	49	10,809	10,809	23,100	6,482	-	24.2	14.5	-
5	66	9,564	9,564	23,100	5,406	-	23.9	14.0	-
6	82	8,147	8,147	23,100	4,654	-	22.4	12.7	-
7	98	7,853	7,853	23,100	4,249	-	21.6	11.6	-
8	115	7,533	7,533	23,100	4,018	-	19.5	9.5	-
9	131	7,332	7,332	23,100	3,914	-	17.1	7.2	-
10	148	6,722	6,722	23,100	3,819	-	14.8	5.4	-
11	164	6,737	6,722	23,100	3,729	-	13.7	4.2	-
12	180	6,050	6,050	23,100	3,607	-	12.2	3.3	-
13	197	5,890	5,890	23,100	3,435	-	12.4	3.5	-
14	213	5,700	5,700	23,100	3,299	-	12.6	3.7	-
15	230	6,470	5,700	23,100	3,292	-	13.0	3.3	-
16	246	6,641	5,700	23,100	3,450	-	11.3	1.9	-
17	262	6,496	5,700	23,100	3,567	-	10.0	1.1	-
18	279	5,753	5,700	23,100	3,377	-	10.0	1.7	-
19	295	5,940	5,700	23,100	3,220	-	12.5	3.8	-
20	312	6,170	5,700	23,100	3,130	-	14.6	5.7	-
21	328	7,438	5,700	23,100	3,221	-	16.8	6.9	-
22	344	8,350	5,700	23,100	3,448	-	16.6	6.6	-
23	361	8,719	5,700	23,100	3,682	-	16.4	6.9	-
24	377	10,319	5,700	23,100	3,890	-	18.0	8.3	-
25	394	13,003	5,700	23,100	4,204	-	19.7	9.6	-
26	410	17,826	5,700	23,100	4,394	-	21.7	11.6	-

58B

SkylineXL 15.1 Skyline Analysis - Profile Input Table

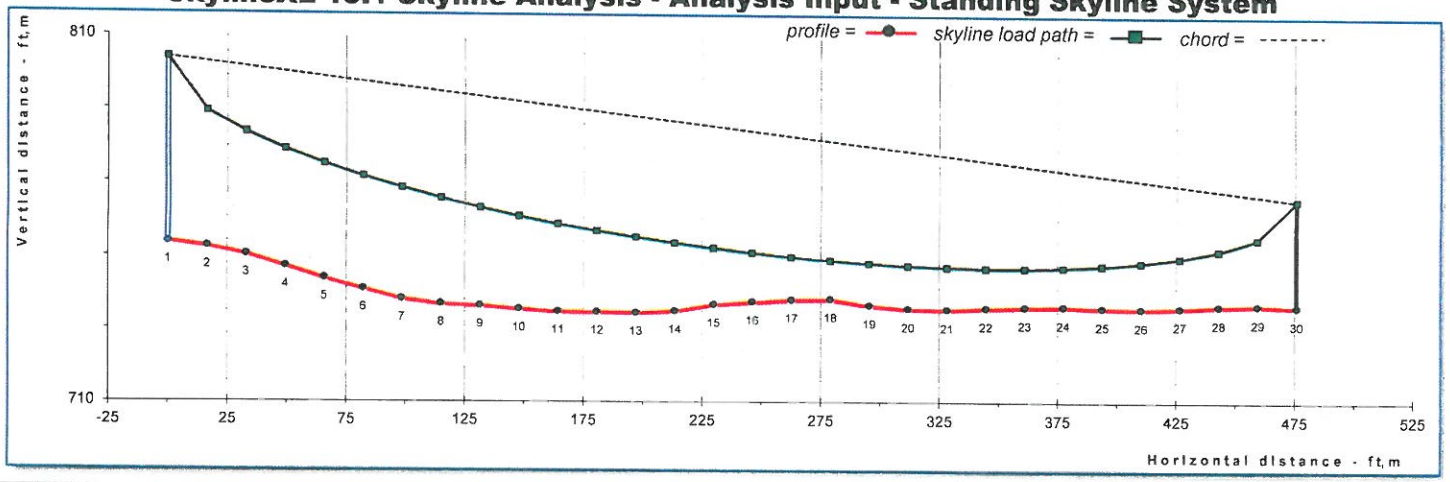
Select measurement type: *English*

Terrain pt	Slope dist (ft)	% slope (+/-)	Horiz - (ft)	Vert - (ft)	Notes
1			0.0	746.6	
	16.4	-6.1%			
2			16.4	745.6	
	16.6	-17.1%			
3			32.8	742.8	
	16.7	-17.7%			
4			49.2	739.9	
	16.8	-23.4%			
5			65.6	736.1	
	16.5	-12.9%			
6			82.0	734.0	
	16.6	-15.3%			
7			98.4	731.5	
	16.4	-6.3%			
8			114.8	730.5	
	16.4	-3.2%			
9			131.2	730.0	
	16.4	-2.0%			
10			147.6	729.7	
	16.5	-8.3%			
11			164.0	728.3	
	16.4	-4.8%			
12			180.4	727.5	
	16.6	-14.6%			
13			196.8	725.1	
	16.6	-13.6%			
14			213.2	722.9	
	16.6	-14.5%			
15			229.6	720.5	
	16.4	-0.1%			
16			246.0	720.5	
	16.4	-1.9%			
17			262.4	720.2	
	16.5	-8.5%			
18			278.8	718.8	
	16.8	-23.3%			
19			295.2	715.0	
	16.7	-19.3%			
20			311.6	711.8	
	16.7	-18.5%			
21			328.0	708.8	
	16.4	-2.4%			
22			344.4	708.4	
	16.4	-0.4%			
23			360.8	708.3	
	16.5	-9.9%			
24			377.2	706.7	
	16.4	-6.1%			
25			393.6	705.7	
	16.4	-2.2%			
26			410.0	705.3	
	16.4	-3.2%			
27			426.4	704.8	

Profile name
4
Profile azimuth - deg
Profile date
5/5/2016
Analyst
Wickham
Start elevation - (ft)
747
Profile data source
GIS

Profile reversed?
no

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Thunderbird 6150, spcm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
12,333	12

Supports Table	At terrain point	Rigging height (ft)
head spar	1	50
tail spar	30	30
int support 1		
int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	29

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

Analysis name: Unit 58C
Units: English
Data source: GIS
Analysis phase: 1
Pro date: 5/5/2016
Pro name: 2
Analyst: Wickham

LIVE sky selections
- ○ Specified clearance
- ◉ Lift only
- ○ Drop only

Lift-drop location at terrain point.
1
2
3
4
5

The above options for LIVE skyline analysis only

58C

58C

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 2
Analysis name: Unit 58C

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Thunderbird 6150, spcm, 50-ft twr	Acme 20S, pass shack	12,333	12	1

STANDING skyline rigging lengths table...

HB required

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	2,000	640	adequate					
mainline	2,300	560	adequate	7.9%				
haulback	4,300	1,060	adequate	Un-stretched skyline line length - (ft)			479.30	239

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	26,968	26,968	19,927	16,133	-	36.8	26.4	-
3	33	25,799	25,799	31,600	14,328	-	33.1	23.0	-
4	49	19,795	19,795	31,600	10,506	-	31.8	21.7	-
5	66	16,771	16,771	31,600	8,567	-	31.3	21.1	-
6	82	14,708	14,708	31,600	7,326	-	30.7	20.6	-
7	98	14,175	14,175	31,600	6,706	-	30.5	20.1	-
8	115	13,761	13,761	31,600	6,332	-	29.0	18.5	-
9	131	12,935	12,935	31,600	6,047	-	27.0	16.7	-
10	148	12,544	12,544	31,600	5,814	-	25.6	15.3	-
11	164	12,553	12,544	31,600	5,678	-	24.2	13.8	-
12	181	12,333	12,333	31,600	5,623	-	22.4	12.1	-
13	197	12,674	12,333	31,600	5,598	-	20.8	10.4	-
14	213	13,628	12,333	31,600	5,608	-	18.7	7.9	-
15	230	13,473	12,333	31,600	6,052	-	15.5	5.3	-
16	246	13,756	12,333	31,600	6,269	-	13.5	3.6	-
17	263	13,925	12,333	31,600	6,550	-	11.8	2.1	-
18	279	12,782	12,333	31,600	6,625	-	10.6	1.7	-
19	295	13,302	12,333	31,600	6,455	-	11.5	2.3	-
20	312	14,025	12,333	31,600	6,424	-	11.8	2.3	-
21	328	14,966	12,333	31,600	6,519	-	11.6	1.9	-
22	345	15,625	12,333	31,600	6,773	-	11.0	1.3	-
23	361	16,323	12,333	31,600	7,038	-	10.6	1.1	-
24	377	16,774	12,333	31,600	7,224	-	10.8	1.4	-
25	394	18,026	12,333	31,600	7,305	-	11.6	2.1	-
26	410	20,046	12,333	31,600	7,401	-	12.7	2.9	-
27	427	22,653	12,333	31,600	7,599	-	13.8	3.8	-
28	443	26,066	12,333	31,600	7,734	-	15.3	5.3	-
29	459	31,977	12,333	31,600	6,785	-	18.3	8.3	-

58C

SkylineXL 15.1 Skyline Analysis - Profile Input Table

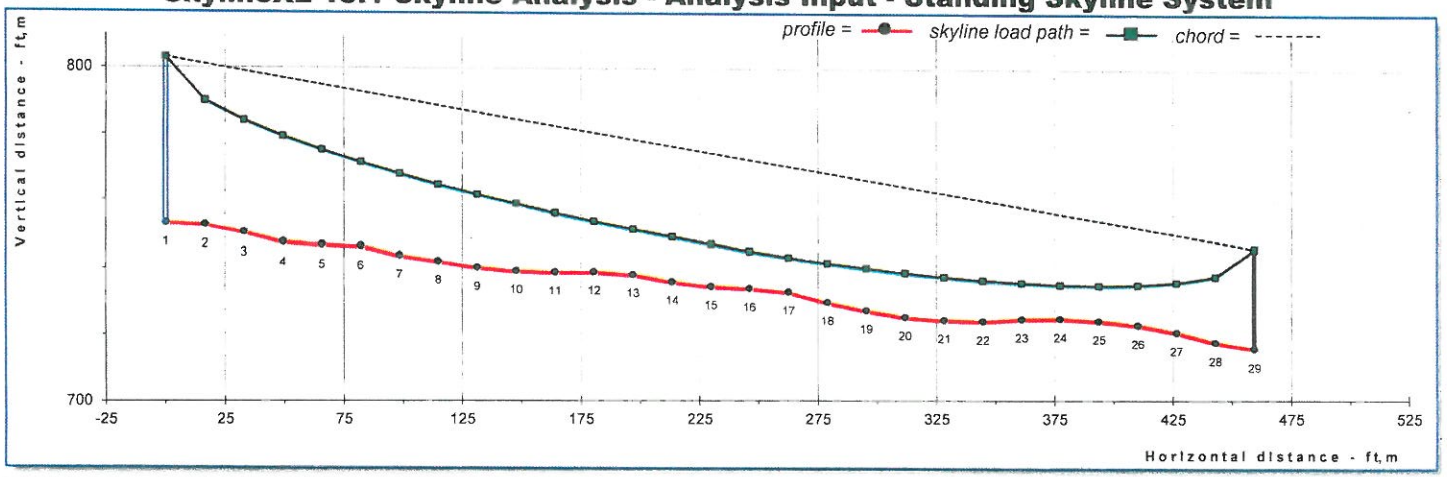
Select measurement type: English

Terrain pt	Slope dist (ft)	% slope (+/-)	Horiz - (ft)	Vert - (ft)	Notes
1			0.0	754.0	
	16.5	-8.1%			
2			16.4	752.6	
	16.5	-13.0%			
3			32.8	750.5	
	16.7	-20.3%			
4			49.2	747.2	
	16.7	-20.1%			
5			65.6	743.9	
	16.7	-17.8%			
6			82.0	741.0	
	16.6	-16.8%			
7			98.4	738.2	
	16.5	-7.7%			
8			114.9	736.9	
	16.4	-3.0%			
9			131.3	736.4	
	16.4	-5.7%			
10			147.7	735.5	
	16.4	-4.4%			
11			164.1	734.8	
	16.4	-0.9%			
12			180.5	734.7	
	16.4	-1.0%			
13			196.9	734.5	
	16.4	3.3%			
14			213.3	735.0	
	16.5	11.0%			
15			229.7	736.8	
	16.4	4.4%			
16			246.1	737.5	
	16.4	3.6%			
17			262.5	738.1	
	16.4	1.3%			
18			278.9	738.3	
	16.5	-10.6%			
19			295.3	736.6	
	16.4	-5.5%			
20			311.7	735.7	
	16.4	-1.4%			
21			328.1	735.5	
	16.4	2.4%			
22			344.5	735.9	
	16.4	2.1%			
23			360.9	736.2	
	16.4	0.8%			
24			377.3	736.3	
	16.4	-2.2%			
25			393.7	735.9	
	16.4	-0.9%			
26			410.1	735.7	
	16.4	2.0%			
27			426.5	736.0	
	16.4	3.3%			
28			442.9	736.5	
	16.4	1.1%			
29			459.3	736.7	
	16.4	-2.7%			
30			475.7	736.3	

Profile name
2
Profile azimuth - deg
Profile date
5/5/2016
Analyst
Wickham
Start elevation - (ft)
754
Profile data source
GIS

Profile reversed?
no

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Thunderbird 6150, spcm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
9,560	17

Supports Table	At terrain point	Rigging height (ft)
head spar	1	50
tail spar	29	30
int support 1		
int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	28

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

Analysis name: Unit 58E
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 2
Analyst: Wickham

LIVE sky selections
- ○ Specified clearance
- ◉ Lift only
- ○ Drop only

Lift-drop location at terrain point...
1
2
3
4
5

The above options for LIVE skyline analysis only

58E

58E

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 2
Analysis name: Unit 58E

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Thunderbird 6150, spcm, 50-ft twr	Acme 20S, pass shack	9,560	17	1

STANDING skyline rigging lengths table...

HB required

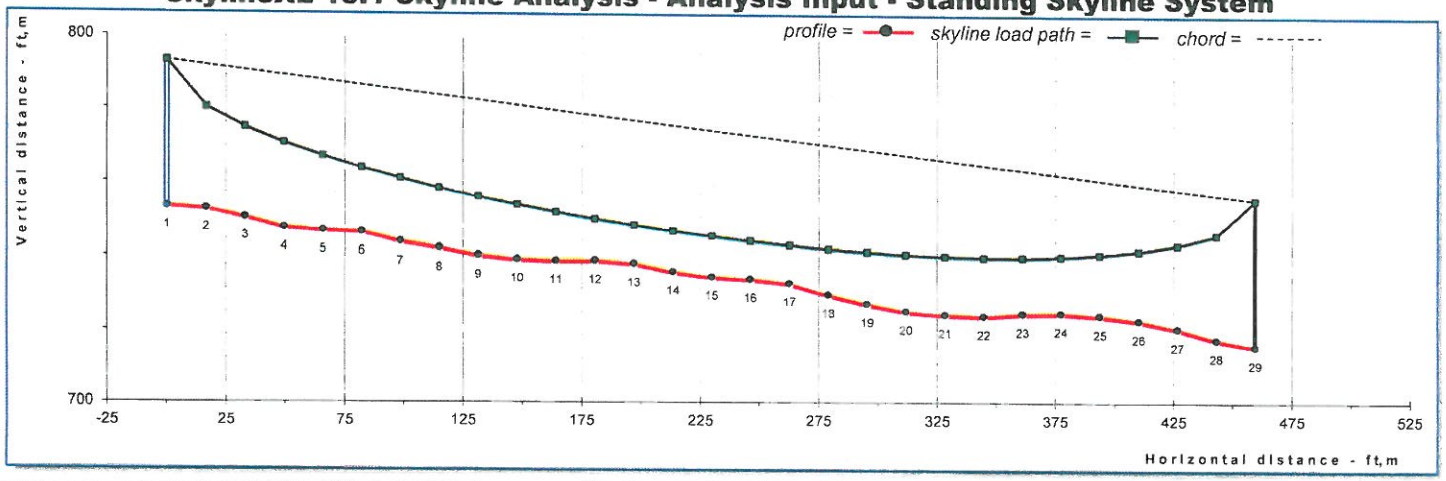
Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	2,000	620	adequate					
mainline	2,300	550	adequate	12.5%				
haulback	4,300	1,030	adequate	Un-stretched skyline line length - (ft)			463.63	231

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	27,694	27,694	26,868	16,133	-	37.6	27.2	-
3	33	20,467	20,467	31,600	11,383	-	34.0	23.8	-
4	49	17,723	17,723	31,600	9,195	-	32.1	21.6	-
5	66	15,713	15,713	31,600	8,094	-	28.5	18.1	-
6	82	12,860	12,860	31,600	7,169	-	25.1	15.2	-
7	98	12,209	12,209	31,600	6,587	-	24.2	14.2	-
8	115	11,231	11,231	31,600	6,142	-	22.6	12.7	-
9	131	11,106	11,106	31,600	5,888	-	21.4	11.4	-
10	148	11,112	11,106	31,600	5,782	-	19.6	9.5	-
11	164	11,325	11,106	31,600	5,811	-	17.3	7.2	-
12	180	10,875	10,875	31,600	5,921	-	14.7	5.1	-
13	197	10,007	10,007	31,600	5,820	-	13.1	4.1	-
14	213	10,240	10,007	31,600	5,713	-	13.1	3.8	-
15	230	10,743	10,007	31,600	5,755	-	12.4	2.9	-
16	246	10,666	10,007	31,600	5,883	-	11.0	1.9	-
17	263	9,560	9,560	31,600	5,694	-	10.3	1.8	-
18	279	9,746	9,560	31,600	5,498	-	11.7	2.9	-
19	295	10,026	9,560	31,600	5,392	-	12.7	3.7	-
20	312	10,889	9,560	31,600	5,448	-	13.4	3.9	-
21	328	11,739	9,560	31,600	5,645	-	13.0	3.5	-
22	345	13,292	9,560	31,600	5,922	-	12.4	2.5	-
23	361	14,161	9,560	31,600	6,527	-	11.0	1.4	-
24	377	14,940	9,560	31,600	7,078	-	10.3	1.1	-
25	394	15,905	9,560	31,600	7,437	-	10.7	1.7	-
26	410	16,914	9,560	31,600	7,585	-	12.2	3.3	-
27	427	18,860	9,560	31,600	7,441	-	15.1	6.1	-
28	443	25,794	9,560	31,600	7,105	-	19.9	10.2	-

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Yoader, shotgun - 2 drum	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
6,172	17

Supports Table	At terrain point	Rigging height (ft)
head spar	1	40
tail spar	29	40
int support 1		
int support 2		
int support 3		

Analysis name: Unit 58E
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 2
Analyst: Wickham

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	28

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

LIVE sky selections
- ○ Specified clearance
- ◉ Lift only
- ○ Drop only

Lift-drop location at terrain point...
1
2
3
4
5

The above options for LIVE skyline analysis only

58E

58E

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 2
Analysis name: Unit 58E

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Yoader, shotgun - 2 drum, 40-ft twr	Acme 20S, pass shack	6,172	17	1

STANDING skyline rigging lengths table...

HB required

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	1,000	630	adequate					
mainline	1,500	540	adequate	8.2%				
haulback		1,020	not adequate!	Un-stretched skyline line length - (ft)			462.03	231

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	25,870	25,870	19,525	16,133	-	27.7	17.6	-
3	33	17,727	17,727	23,100	10,433	-	24.7	14.9	-
4	49	14,843	14,843	23,100	7,934	-	23.2	13.1	-
5	66	12,783	12,783	23,100	6,726	-	20.3	10.2	-
6	82	10,096	10,096	23,100	5,815	-	17.5	8.2	-
7	98	9,403	9,403	23,100	5,166	-	17.3	7.7	-
8	115	8,476	8,476	23,100	4,697	-	16.2	6.8	-
9	131	8,235	8,235	23,100	4,367	-	15.7	6.1	-
10	148	8,103	8,103	23,100	4,178	-	14.6	4.9	-
11	164	8,119	8,103	23,100	4,098	-	12.9	3.2	-
12	180	7,674	7,674	23,100	4,107	-	11.0	1.8	-
13	197	6,894	6,894	23,100	3,923	-	10.1	1.4	-
14	213	6,962	6,894	23,100	3,751	-	10.8	1.8	-
15	230	7,161	6,894	23,100	3,660	-	10.8	1.5	-
16	246	7,006	6,894	23,100	3,654	-	10.1	1.1	-
17	263	6,172	6,172	23,100	3,422	-	10.2	1.7	-
18	279	6,252	6,172	23,100	3,224	-	12.3	3.4	-
19	295	6,394	6,172	23,100	3,088	-	14.0	4.8	-
20	312	6,878	6,172	23,100	3,042	-	15.4	5.8	-
21	328	7,343	6,172	23,100	3,072	-	15.8	6.0	-
22	345	8,228	6,172	23,100	3,145	-	16.0	5.8	-
23	361	8,698	6,172	23,100	3,372	-	15.2	5.3	-
24	377	9,129	6,172	23,100	3,537	-	15.4	5.7	-
25	394	9,750	6,172	23,100	3,589	-	16.6	7.1	-
26	410	10,517	6,172	23,100	3,495	-	18.9	9.4	-
27	427	11,953	6,172	23,100	3,118	-	22.7	13.1	-
28	443	16,403	6,172	23,100	2,189	-	28.4	18.2	-

58E

SkylineXL 15.1 Skyline Analysis - Profile Input Table

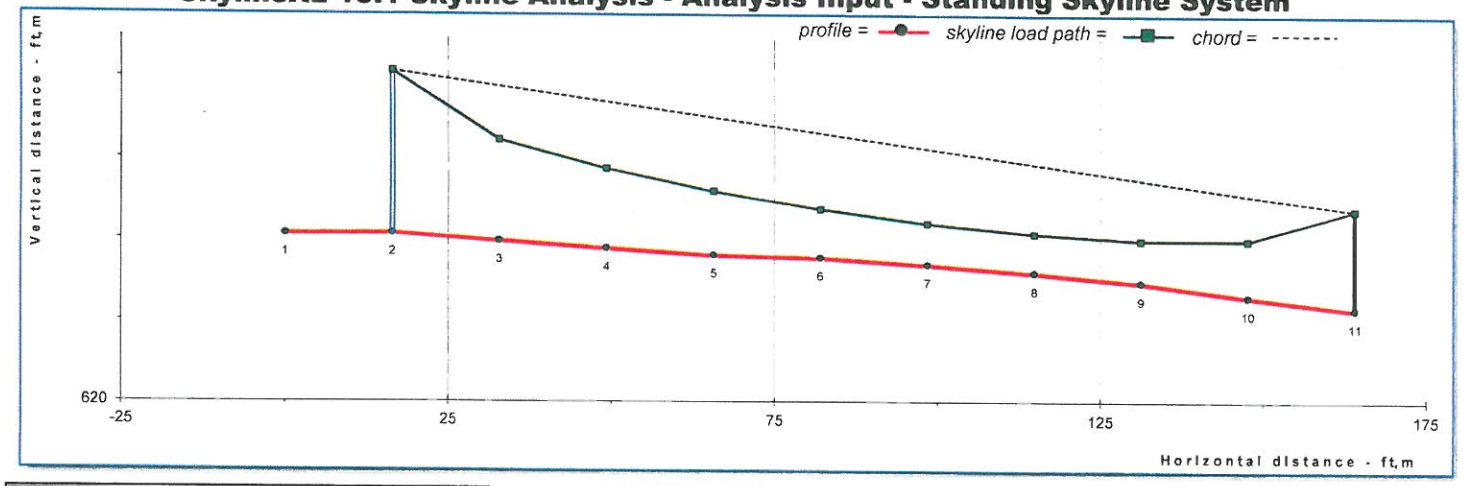
Select measurement type: English

Terrain pt	Slope dist (ft)	% slope (+/-)	Horiz - (ft)	Vert - (ft)	Notes
1			0.0	753.1	
	16.4	-3.5%			
2			16.4	752.5	
	16.6	-13.7%			
3			32.8	750.2	
	16.6	-17.2%			
4			49.2	747.4	
	16.4	-4.2%			
5			65.6	746.7	
	16.4	-2.4%			
6			82.0	746.3	
	16.6	-15.6%			
7			98.4	743.7	
	16.5	-9.8%			
8			114.8	742.1	
	16.5	-11.4%			
9			131.2	740.2	
	16.4	-6.1%			
10			147.6	739.2	
	16.4	-2.3%			
11			164.0	738.8	
	16.4	0.4%			
12			180.4	738.9	
	16.4	-4.8%			
13			196.8	738.1	
	16.6	-13.5%			
14			213.3	735.9	
	16.5	-8.4%			
15			229.7	734.5	
	16.4	-3.4%			
16			246.1	733.9	
	16.4	-6.4%			
17			262.5	732.8	
	16.7	-18.9%			
18			278.9	729.7	
	16.6	-15.1%			
19			295.3	727.2	
	16.5	-12.2%			
20			311.7	725.2	
	16.4	-5.5%			
21			328.1	724.3	
	16.4	-2.2%			
22			344.5	723.9	
	16.4	4.3%			
23			360.9	724.6	
	16.4	0.7%			
24			377.3	724.7	
	16.4	-4.5%			
25			393.7	724.0	
	16.5	-8.0%			
26			410.1	722.7	
	16.6	-13.5%			
27			426.5	720.5	
	16.7	-18.1%			
28			442.9	717.5	
	16.5	-11.9%			
29			459.3	715.6	

Profile name
2
Profile azimuth - deg
Profile date
5/5/2016
Analyst
Wickham
Start elevation - (ft)
753
Profile data source
GIS

Profile reversed?
no

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Yoader, shotgun - 2 drum	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
23,054	3

Supports Table	At terrain point	Rigging height (ft)
head spar	2	40
tail spar	11	25
int support 1		
int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	3	10

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

Analysis name: Unit 58F
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 1
Analyst: Wickham

LIVE sky selections
- ○ Specified clearance
- ◉ Lift only
- ○ Drop only

Lift-drop location at terrain point...
1
2
3
4
5

The above options for LIVE skyline analysis only

58F

58F

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 1 | Units: English | Profile date: 5/5/16
Analysis name: Unit 58F | Analyst: Wickham
Data source: GIS

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Yoader, shotgun - 2 drum, 40-ft twr	Acme 20S, pass shack	23,054	3	1

STANDING skyline rigging lengths table...

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	1,000	290	adequate					
mainline	1,500	220	adequate	22.8%				
haulback				Un-stretched skyline line length - (ft)			154.98	75

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
3	33	23,054	23,054	10,135	16,133	-	25.0	15.0	-
4	49	25,199	23,054	17,426	16,133	-	19.8	10.0	-
5	66	27,295	23,054	21,209	16,133	-	15.9	6.2	-
6	82	26,366	23,054	23,100	16,123	-	12.1	3.0	-
7	98	25,061	23,054	23,100	15,127	-	10.3	1.5	-
8	115	24,449	23,054	23,100	14,306	-	9.7	1.1	-
9	131	23,757	23,054	23,100	13,073	-	10.5	2.1	-
10	148	27,545	23,054	23,100	11,665	-	14.0	5.1	-

58F

SkylineXL 15.1 Skyline Analysis - Profile Input Table

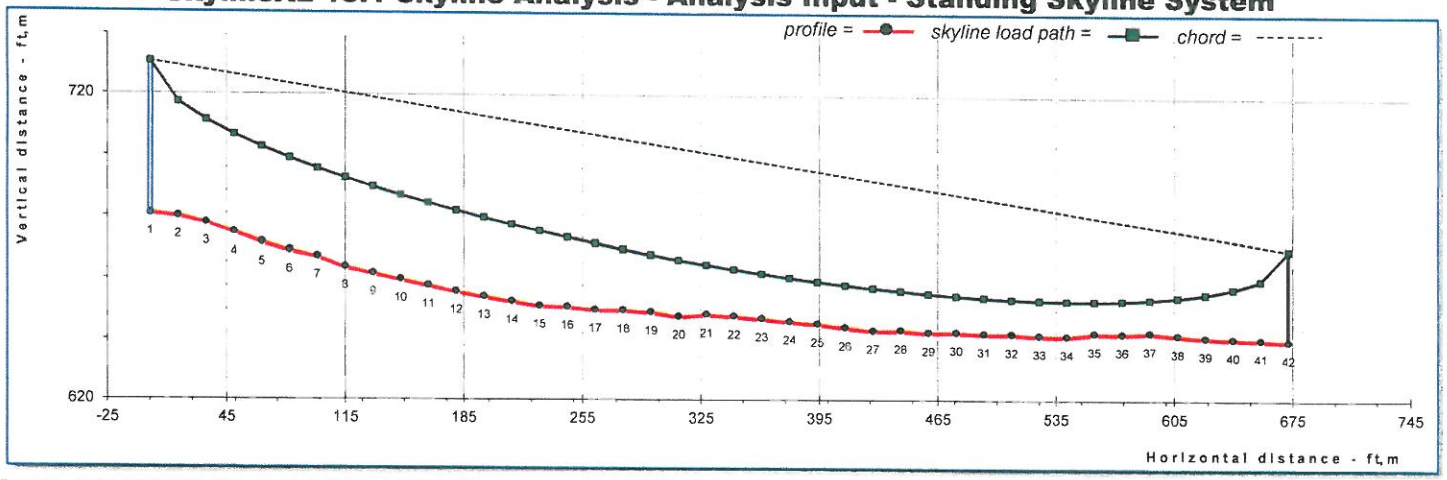
Select measurement type: *English*

Terrain pt	Slope dist (ft)	% slope (+/-)	Horiz - (ft)	Vert - (ft)	Notes
1			0.0	661.3	
	16.4	1.2%			
2			16.4	661.5	
	16.5	-11.6%			
3			32.8	659.6	
	16.5	-10.8%			
4			49.2	657.8	
	16.5	-9.6%			
5			65.6	656.2	
	16.4	-3.9%			
6			82.0	655.6	
	16.5	-10.1%			
7			98.4	653.9	
	16.5	-12.2%			
8			114.8	651.9	
	16.6	-14.3%			
9			131.2	649.5	
	16.8	-21.6%			
10			147.6	646.0	
	16.7	-18.6%			
11			164.0	642.9	

Profile name
1
Profile azimuth - deg
Profile date
5/5/2016
Analyst
Wickham
Start elevation - (ft)
661
Profile data source
GIS

Profile reversed?
no

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Thunderbird 6150, spcm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
7,406	19

Supports Table	At terrain point	Rigging height (ft)
head spar	1	50
tail spar	42	30
int support 1		
int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	41

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

Analysis name: Unit 60U
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 1
Analyst: Wickham

LIVE sky selections
- Specified clearance
- Lift only
- Drop only

Lift-drop location at terrain point...
1
2
3
4
5

The above options for LIVE skyline analysis only

60U

60U

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 1
Analysis name: Unit 60U

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Thunderbird 6150, spcm, 50-ft twr	Acme 20S, pass shack	7,406	19	1

STANDING skyline rigging lengths table...

HB required

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	2,000	830	adequate					
mainline	2,300	760	adequate	9.1%				
haulback	4,300	1,460	adequate	Un-stretched skyline line length - (ft)			675.49	338

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	27,464	27,464	23,348	16,133	-	37.2	26.8	-
3	33	22,353	22,353	31,600	12,546	-	33.6	23.4	-
4	49	17,088	17,088	31,600	9,321	-	32.1	22.0	-
5	66	14,666	14,666	31,600	7,765	-	31.3	21.1	-
6	82	13,105	13,105	31,600	6,837	-	30.0	19.8	-
7	98	11,004	11,004	31,600	5,930	-	28.6	18.6	-
8	115	10,535	10,535	31,600	5,453	-	28.9	18.7	-
9	131	9,789	9,789	31,600	5,075	-	27.9	17.8	-
10	148	9,158	9,158	31,600	4,750	-	27.2	17.1	-
11	164	8,678	8,678	31,600	4,487	-	26.6	16.5	-
12	180	8,330	8,330	31,600	4,280	-	26.0	16.0	-
13	197	8,024	8,024	31,600	4,112	-	25.4	15.3	-
14	213	7,817	7,817	31,600	3,980	-	24.8	14.7	-
15	230	8,025	7,817	31,600	3,928	-	24.1	13.8	-
16	246	7,681	7,681	31,600	3,899	-	22.4	12.3	-
17	262	7,922	7,681	31,600	3,881	-	21.5	11.2	-
18	279	7,742	7,681	31,600	3,912	-	19.8	9.7	-
19	295	7,406	7,406	31,600	3,881	-	18.6	8.9	-
20	312	8,141	7,406	31,600	3,869	-	18.3	8.0	-
21	328	7,878	7,406	31,600	4,010	-	16.2	6.4	-
22	344	7,823	7,406	31,600	4,045	-	15.2	5.6	-
23	361	7,834	7,406	31,600	4,059	-	14.6	5.1	-
24	377	7,966	7,406	31,600	4,088	-	14.2	4.7	-
25	394	7,877	7,406	31,600	4,093	-	13.8	4.4	-
26	410	8,035	7,406	31,600	4,087	-	13.9	4.4	-
27	426	8,637	7,406	31,600	4,107	-	13.9	4.1	-
28	443	8,587	7,406	31,600	4,259	-	12.9	3.4	-
29	459	9,250	7,406	31,600	4,347	-	12.7	3.0	-
30	476	9,364	7,406	31,600	4,533	-	11.9	2.5	-
31	492	9,953	7,406	31,600	4,652	-	11.8	2.2	-
32	508	10,229	7,406	31,600	4,834	-	11.4	2.0	-
33	525	10,912	7,406	31,600	4,973	-	11.5	2.0	-
34	541	12,327	7,406	31,600	5,113	-	11.5	1.6	-
35	558	12,661	7,406	31,600	5,633	-	10.5	1.1	-
36	574	14,102	7,406	31,600	5,868	-	10.9	1.2	-
37	590	14,444	7,406	31,600	6,267	-	10.8	1.7	-
38	607	16,005	7,406	31,600	6,405	-	12.5	3.1	-
39	623	18,388	7,406	31,600	6,596	-	14.3	4.6	-
40	640	21,987	7,406	31,600	6,780	-	16.4	6.5	-
41	656	28,555	7,406	31,600	6,312	-	19.5	9.4	-

60 u

SkylineXL 15.1 Skyline Analysis - Profile Input Table

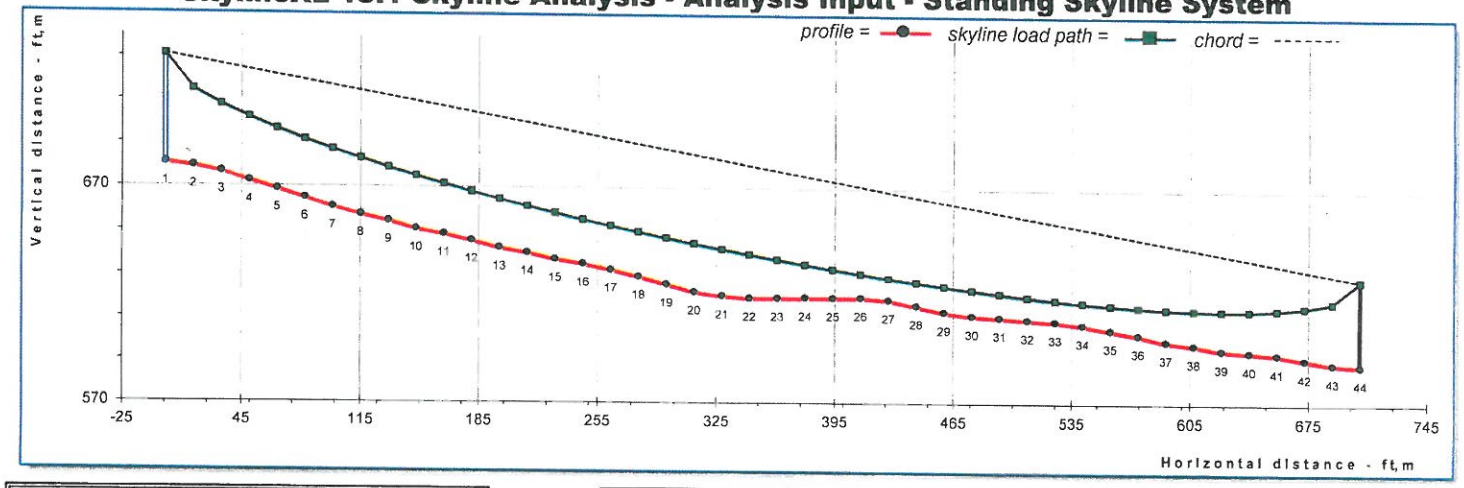
Select measurement type: English

Terrain pt	Slope dist (ft)	% slope (+/-)	Horiz - (ft)	Vert - (ft)	Notes
1			0.0	680.9	
	16.4	-5.9%			
2			16.4	680.0	
	16.5	-12.7%			
3			32.8	677.9	
	16.7	-19.7%			
4			49.2	674.7	
	16.7	-19.5%			
5			65.6	671.5	
	16.6	-14.5%			
6			82.0	669.1	
	16.5	-11.3%			
7			98.4	667.2	
	16.8	-20.9%			
8			114.8	663.8	
	16.5	-12.0%			
9			131.2	661.8	
	16.5	-12.3%			
10			147.6	659.8	
	16.5	-12.1%			
11			164.0	657.8	
	16.5	-11.4%			
12			180.4	655.9	
	16.5	-10.3%			
13			196.8	654.2	
	16.5	-9.9%			
14			213.2	652.6	
	16.5	-8.6%			
15			229.6	651.2	
	16.4	-1.5%			
16			246.0	650.9	
	16.4	-5.9%			
17			262.4	649.9	
	16.4	-0.6%			
18			278.8	649.8	
	16.4	-3.6%			
19			295.2	649.2	
	16.5	-8.7%			
20			311.6	647.8	
	16.4	3.8%			
21			328.0	648.4	
	16.4	-3.0%			
22			344.4	647.9	
	16.4	-5.0%			
23			360.8	647.1	
	16.4	-5.5%			
24			377.2	646.2	
	16.4	-4.7%			
25			393.6	645.4	
	16.4	-7.2%			
26			410.0	644.2	
	16.4	-6.0%			
27			426.4	643.2	
	16.4	0.5%			
28			442.8	643.3	
	16.4	-4.2%			
29			459.2	642.6	
	16.4	0.5%			
30			475.6	642.7	
	16.4	-3.2%			
31			492.0	642.2	
	16.4	-0.8%			
32			508.4	642.1	
	16.4	-2.9%			
33			524.8	641.6	
	16.4	-1.0%			
34			541.2	641.4	
	16.4	6.0%			
35			557.6	642.4	
	16.4	-1.2%			
36			574.0	642.2	
	16.4	2.7%			
37			590.4	642.6	
	16.4	-5.2%			
38			606.8	641.7	
	16.4	-4.1%			
39			623.2	641.0	
	16.4	-2.3%			
40			639.6	640.6	
	16.4	-1.6%			
41			656.0	640.3	
	16.4	-2.8%			
42			672.4	639.8	

Profile name
1
Profile azimuth - deg
Profile date
5/5/2016
Analyst
Wickham
Start elevation - (ft)
681
Profile data source
GIS

Profile reversed?
no

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Thunderbird 6150, spcm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
7,615	19

Supports Table	At terrain point	Rigging height (ft)
head spar	1	50
tail spar	44	40
int support 1		
int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	43

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

Analysis name: Unit 60V
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 1
Analyst: Wickham

LIVE sky selections
- ○ Specified clearance
- ◉ Lift only
- ○ Drop only

Lift-drop location at terrain point...
1
2
3
4
5

The above options for LIVE skyline analysis only

60V

60V

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 1
Analysis name: Unit 60V

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Thunderbird 6150, spcm, 50-ft twr	Acme 20S, pass shack	7,615	19	1

STANDING skyline rigging lengths table...

HB required

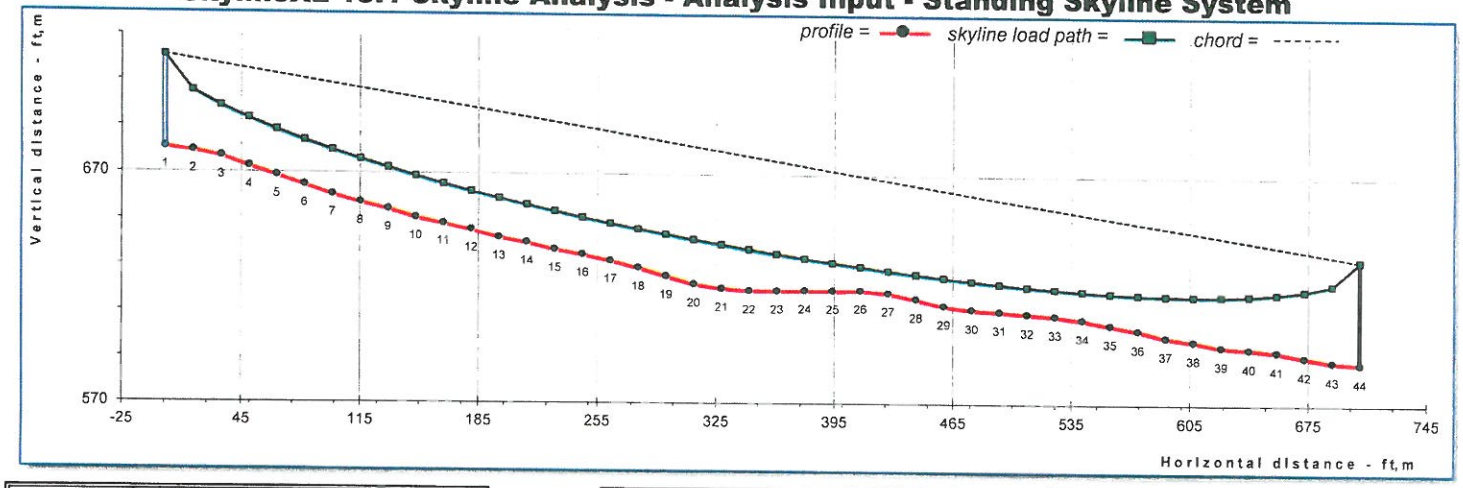
Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	2,000	890	adequate					
mainline	2,300	800	adequate	14.6%				
haulback	4,300	1,530	adequate	Un-stretched skyline line length - (ft)			713.65	357

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	24,490	24,490	16,486	16,133	-	35.2	24.9	-
3	33	25,831	24,490	29,464	16,133	-	30.6	20.6	-
4	49	21,142	21,142	31,600	12,983	-	29.0	19.1	-
5	66	17,456	17,456	31,600	10,641	-	27.6	17.8	-
6	82	14,966	14,966	31,600	9,101	-	26.7	16.9	-
7	98	13,701	13,701	31,600	8,164	-	26.3	16.5	-
8	115	12,768	12,768	31,600	7,525	-	25.5	15.7	-
9	131	11,397	11,397	31,600	6,860	-	24.4	14.8	-
10	148	11,267	11,267	31,600	6,546	-	24.3	14.5	-
11	164	10,516	10,516	31,600	6,214	-	23.1	13.4	-
12	181	9,711	9,711	31,600	5,834	-	22.4	12.9	-
13	197	9,791	9,711	31,600	5,669	-	22.5	12.7	-
14	213	9,116	9,116	31,600	5,424	-	21.4	11.9	-
15	230	9,190	9,116	31,600	5,309	-	21.3	11.6	-
16	246	8,719	8,719	31,600	5,146	-	20.4	10.9	-
17	263	8,304	8,304	31,600	4,939	-	20.2	10.8	-
18	279	7,847	7,847	31,600	4,683	-	20.5	11.1	-
19	295	7,615	7,615	31,600	4,461	-	21.4	11.9	-
20	312	8,047	7,615	31,600	4,431	-	22.3	12.4	-
21	328	8,366	7,615	31,600	4,474	-	21.5	11.5	-
22	345	8,929	7,615	31,600	4,593	-	20.1	9.9	-
23	361	9,351	7,615	31,600	4,814	-	17.7	7.6	-
24	377	9,607	7,615	31,600	5,088	-	15.3	5.4	-
25	394	10,174	7,615	31,600	5,355	-	13.2	3.4	-
26	410	9,964	7,615	31,600	5,698	-	10.9	1.8	-
27	427	9,315	7,615	31,600	5,691	-	10.0	1.4	-
28	443	9,096	7,615	31,600	5,512	-	10.7	2.2	-
29	459	9,760	7,615	31,600	5,516	-	11.8	2.8	-
30	476	10,512	7,615	31,600	5,638	-	11.8	2.5	-
31	492	10,806	7,615	31,600	5,838	-	11.0	1.9	-
32	509	11,405	7,615	31,600	6,062	-	10.5	1.3	-
33	525	11,395	7,615	31,600	6,254	-	9.9	1.1	-
34	541	11,254	7,615	31,600	6,223	-	10.3	1.7	-
35	558	11,564	7,615	31,600	6,170	-	11.5	2.7	-
36	574	11,468	7,615	31,600	5,995	-	12.9	4.1	-
37	591	12,719	7,615	31,600	5,998	-	15.2	5.8	-
38	607	13,017	7,615	31,600	5,975	-	16.3	7.1	-
39	623	15,009	7,615	31,600	6,082	-	18.5	8.7	-
40	640	16,461	7,615	31,600	6,288	-	19.5	9.6	-
41	656	17,566	7,615	31,600	6,231	-	21.1	11.4	-
42	673	20,823	7,615	31,600	5,891	-	24.5	14.6	-
43	689	28,119	7,615	31,600	4,616	-	28.9	18.5	-

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Yoader, shotgun - 2 drum	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
4,493	19

Supports Table	At terrain point	Rigging height (ft)
head spar	1	40
tail spar	44	45
Int support 1		
Int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	43

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

Analysis name: Unit 60V
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 1
Analyst: Wickham

LIVE sky selections	Lift-drop location at terrain point...
○ Specified clearance	1
◉ Lift only	2
○ Drop only	3
	4
	5

The above options for LIVE skyline analysis only

60V

60V

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 1 | Units: English | Profile date: 5/5/16
Analysis name: Unit 60V | Analyst: Wickham
Data source: GIS

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Yoader, shotgun - 2 drum, 40-ft twr	Acme 20S, pass shack	4,493	19	1

STANDING skyline rigging lengths table... *HB required*

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	1,000	890	adequate					
mainline	1,500	790	adequate	12.4%				
haulback		1,520	not adequate!	Un-stretched skyline line length - (ft)			711.58	357

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	23,368	23,368	12,834	16,133	-	25.9	15.9	-
3	33	21,968	21,968	23,100	14,798	-	21.6	12.3	-
4	49	16,318	16,318	23,100	10,613	-	20.5	11.1	-
5	66	13,020	13,020	23,100	8,399	-	19.4	10.2	-
6	82	10,820	10,820	23,100	6,953	-	18.9	9.7	-
7	98	9,715	9,715	23,100	6,073	-	18.9	9.6	-
8	115	8,890	8,890	23,100	5,466	-	18.5	9.1	-
9	131	7,748	7,748	23,100	4,874	-	17.8	8.6	-
10	148	7,567	7,567	23,100	4,548	-	18.0	8.6	-
11	164	6,950	6,950	23,100	4,247	-	17.1	7.9	-
12	181	6,292	6,292	23,100	3,909	-	16.8	7.7	-
13	197	6,276	6,276	23,100	3,724	-	17.2	7.8	-
14	213	5,740	5,740	23,100	3,504	-	16.5	7.4	-
15	230	5,724	5,724	23,100	3,368	-	16.8	7.4	-
16	246	5,350	5,350	23,100	3,215	-	16.2	7.0	-
17	263	5,025	5,025	23,100	3,036	-	16.4	7.3	-
18	279	4,688	4,688	23,100	2,833	-	17.0	7.9	-
19	295	4,493	4,493	23,100	2,652	-	18.3	9.1	-
20	312	4,719	4,493	23,100	2,595	-	19.5	9.8	-
21	328	4,872	4,493	23,100	2,588	-	19.1	9.2	-
22	345	5,177	4,493	23,100	2,632	-	18.0	7.9	-
23	361	5,377	4,493	23,100	2,730	-	16.0	6.0	-
24	377	5,504	4,493	23,100	2,871	-	13.8	4.1	-
25	394	5,781	4,493	23,100	2,988	-	12.2	2.5	-
26	410	5,643	4,493	23,100	3,164	-	10.2	1.1	-
27	427	5,245	4,493	23,100	3,126	-	9.6	1.1	-
28	443	5,102	4,493	23,100	2,994	-	10.7	2.1	-
29	459	5,451	4,493	23,100	2,963	-	12.1	3.1	-
30	476	5,863	4,493	23,100	3,006	-	12.5	3.1	-
31	492	6,055	4,493	23,100	3,110	-	11.9	2.7	-
32	509	6,382	4,493	23,100	3,204	-	11.8	2.5	-
33	525	6,388	4,493	23,100	3,282	-	11.6	2.5	-
34	541	6,347	4,493	23,100	3,251	-	12.3	3.4	-
35	558	6,578	4,493	23,100	3,216	-	13.8	4.7	-
36	574	6,603	4,493	23,100	3,117	-	15.5	6.4	-
37	591	7,379	4,493	23,100	3,112	-	18.1	8.5	-
38	607	7,649	4,493	23,100	3,082	-	19.6	10.1	-
39	623	8,918	4,493	23,100	3,138	-	22.1	12.0	-
40	640	9,919	4,493	23,100	3,218	-	23.3	13.2	-
41	656	10,778	4,493	23,100	3,103	-	25.3	15.3	-
42	673	13,021	4,493	23,100	2,767	-	29.0	18.8	-
43	689	17,912	4,493	23,100	1,633	-	33.6	23.1	-

60V

SkylineXL 15.1 Skyline Analysis - Profile Input Table

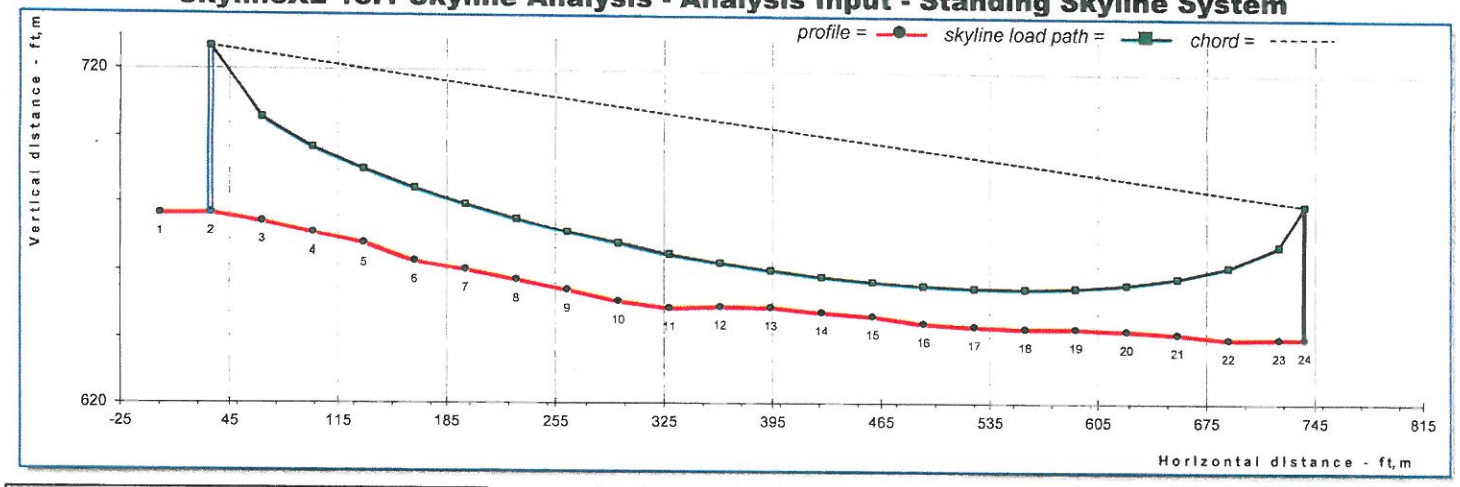
Select measurement type: *English*

Terrain pt	Slope dist (ft)	% slope (+/-)	Horiz - (ft)	Vert - (ft)	Notes
1			0.0	680.9	
	16.5	-9.1%			
2			16.4	679.4	
	16.6	-14.4%			
3			32.8	677.0	
	17.0	-26.3%			
4			49.2	672.7	
	16.8	-23.0%			
5			65.6	668.9	
	16.9	-23.6%			
6			82.0	665.0	
	16.9	-25.0%			
7			98.4	660.9	
	16.8	-20.7%			
8			114.9	657.5	
	16.7	-17.9%			
9			131.3	654.6	
	16.8	-22.7%			
10			147.7	650.9	
	16.6	-14.6%			
11			164.1	648.5	
	16.6	-17.2%			
12			180.5	645.7	
	16.8	-20.9%			
13			196.9	642.3	
	16.5	-13.3%			
14			213.3	640.1	
	16.7	-18.2%			
15			229.7	637.1	
	16.5	-12.9%			
16			246.1	635.0	
	16.6	-16.4%			
17			262.5	632.3	
	16.7	-19.1%			
18			278.9	629.2	
	16.8	-21.8%			
19			295.3	625.6	
	16.8	-21.1%			
20			311.7	622.1	
	16.5	-10.6%			
21			328.1	620.3	
	16.4	-6.1%			
22			344.5	619.3	
	16.4	0.3%			
23			360.9	619.3	
	16.4	1.1%			
24			377.3	619.5	
	16.4	-0.6%			
25			393.7	619.4	
	16.4	1.1%			
26			410.1	619.6	
	16.4	-6.9%			
27			426.5	618.5	
	16.6	-15.7%			
28			442.9	615.9	
	16.7	-17.8%			
29			459.3	613.0	
	16.5	-10.4%			
30			475.7	611.3	
	16.4	-5.0%			
31			492.1	610.5	
	16.4	-6.1%			
32			508.5	609.5	
	16.4	-5.2%			
33			524.9	608.7	
	16.5	-10.0%			
34			541.3	607.1	
	16.6	-14.0%			
35			557.7	604.8	
	16.6	-13.7%			
36			574.1	602.5	
	16.7	-18.1%			
37			590.5	599.5	
	16.5	-10.3%			
38			606.9	597.8	
	16.6	-14.6%			
39			623.3	595.4	
	16.4	-5.6%			
40			639.7	594.5	
	16.4	-6.9%			
41			656.1	593.4	
	16.6	-14.3%			
42			672.5	591.1	
	16.5	-12.5%			
43			688.9	589.1	
	16.4	-5.2%			
44			705.3	588.2	

Profile name
1
Profile azimuth - deg
Profile date
5/5/2016
Analyst
Wickham
Start elevation - (ft)
681
Profile data source
GIS

Profile reversed?
no

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Thunderbird 6150, spcm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
9,816	10

Supports Table	At terrain point	Rigging height (ft)
head spar	2	50
tail spar	24	40
int support 1		
int support 2		
int support 3		

Analysis name: Unit 60W
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 1
Analyst: Wickham

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	3	23

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

LIVE sky selections
- ○ Specified clearance
- ◉ Lift only
- ○ Drop only

Lift-drop location at terrain point...
1
2
3
4
5

The above options for LIVE skyline analysis only

60W

60W

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 1
Analysis name: Unit 60W

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Thunderbird 6150, spcm, 50-ft twr	Acme 20S, pass shack	9,816	10	1

STANDING skyline rigging lengths table...

HB required

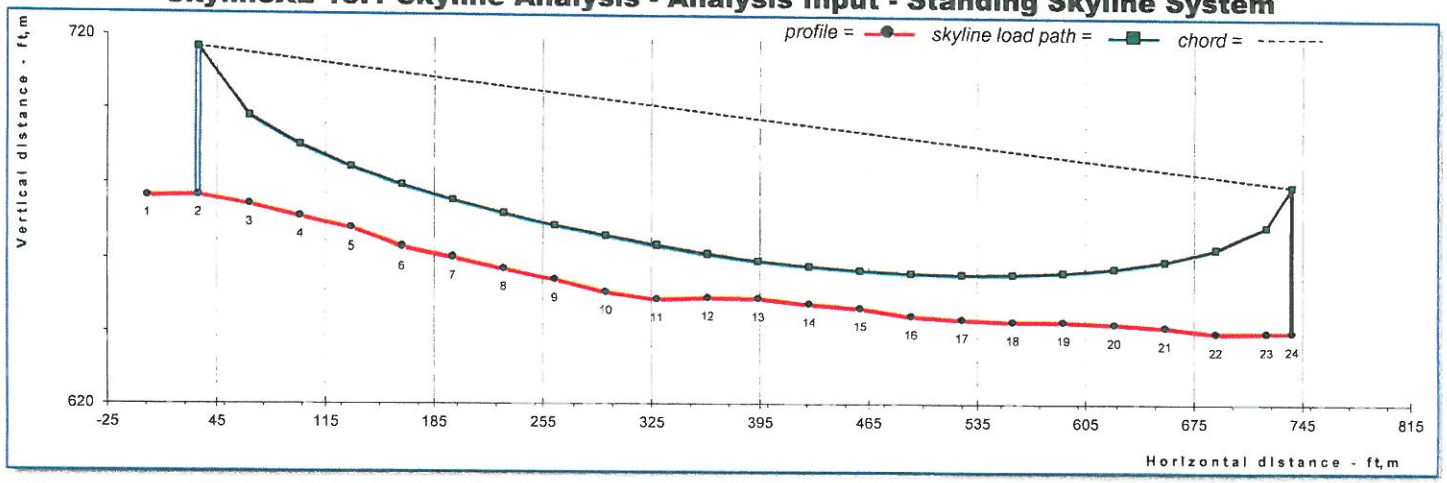
Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	2,000	890	adequate					
mainline	2,300	790	adequate	6.6%				
haulback	4,300	1,520	adequate	Un-stretched skyline line length - (ft)			708.13	354

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
3	66	29,408	29,408	29,858	16,133	-	31.4	21.1	-
4	98	20,158	20,158	31,600	10,865	-	25.9	15.8	-
5	131	15,309	15,309	31,600	8,449	-	22.3	12.6	-
6	164	13,544	13,544	31,600	7,092	-	21.5	11.6	-
7	197	12,023	12,023	31,600	6,401	-	19.1	9.4	-
8	230	11,002	11,002	31,600	5,856	-	17.7	8.1	-
9	262	10,104	10,104	31,600	5,389	-	16.9	7.4	-
10	295	9,816	9,816	31,600	5,015	-	16.9	7.2	-
11	328	10,135	9,816	31,600	4,861	-	15.9	5.9	-
12	361	10,188	9,816	31,600	5,051	-	13.0	3.3	-
13	394	10,034	9,816	31,600	5,193	-	10.9	1.7	-
14	426	10,188	9,816	31,600	5,151	-	10.5	1.3	-
15	459	10,037	9,816	31,600	5,142	-	10.1	1.1	-
16	492	10,450	9,816	31,600	4,979	-	11.3	1.9	-
17	525	10,957	9,816	31,600	5,026	-	11.5	2.0	-
18	558	11,815	9,816	31,600	5,137	-	11.8	2.2	-
19	590	12,610	9,816	31,600	5,340	-	12.2	2.6	-
20	623	13,724	9,816	31,600	5,414	-	13.8	4.2	-
21	656	15,287	9,816	31,600	5,373	-	16.6	6.8	-
22	689	19,292	9,816	31,600	5,025	-	21.5	11.2	-
23	722	29,003	9,816	31,600	2,930	-	27.7	17.2	-

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Yoader, shotgun - 2 drum	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
4,696	15

Supports Table	At terrain point	Rigging height (ft)
head spar	2	40
tail spar	24	40
int support 1		
int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	3	23

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

Analysis name: Unit 60W
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 1
Analyst: Wickham

LIVE sky selections	Lift-drop location at terrain point...
○ Specified clearance	1
◉ Lift only	2
○ Drop only	3
	4
	5

The above options for LIVE skyline analysis only

60W

60W

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 1
Analysis name: Unit 60W

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Yoader, shotgun - 2 drum, 40-ft twr	Acme 20S, pass shack	4,696	15	1

STANDING skyline rigging lengths table...

HB required

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	1,000	880	adequate					
mainline	1,500	780	adequate	5.2%				
haulback		1,510	not adequate!	Un-stretched skyline line length - (ft)			706.61	354

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
3	66	20,439	20,439	23,100	11,683	-	23.9	13.9	-
4	98	12,546	12,546	23,100	6,947	-	19.6	9.8	-
5	131	9,062	9,062	23,100	5,151	-	16.8	7.5	-
6	164	7,682	7,682	23,100	4,093	-	16.8	7.2	-
7	197	6,549	6,549	23,100	3,534	-	15.1	5.7	-
8	230	5,774	5,774	23,100	3,094	-	14.4	5.1	-
9	262	5,140	5,140	23,100	2,742	-	14.2	5.0	-
10	295	4,867	4,867	23,100	2,463	-	14.8	5.3	-
11	328	4,934	4,867	23,100	2,324	-	14.3	4.5	-
12	361	4,860	4,860	23,100	2,356	-	11.9	2.3	-
13	394	4,738	4,738	23,100	2,384	-	10.3	1.1	-
14	426	4,774	4,738	23,100	2,326	-	10.3	1.1	-
15	459	4,696	4,696	23,100	2,296	-	10.3	1.3	-
16	492	4,938	4,696	23,100	2,223	-	11.8	2.4	-
17	525	5,246	4,696	23,100	2,252	-	12.3	2.8	-
18	558	5,735	4,696	23,100	2,311	-	13.0	3.3	-
19	590	6,294	4,696	23,100	2,449	-	13.5	3.9	-
20	623	7,098	4,696	23,100	2,549	-	15.3	5.5	-
21	656	8,246	4,696	23,100	2,609	-	18.2	8.3	-
22	689	10,994	4,696	23,100	2,545	-	23.0	12.6	-
23	722	17,929	4,696	23,100	1,506	-	28.9	18.3	-

60W

SkylineXL 15.1 Skyline Analysis - Profile Input Table

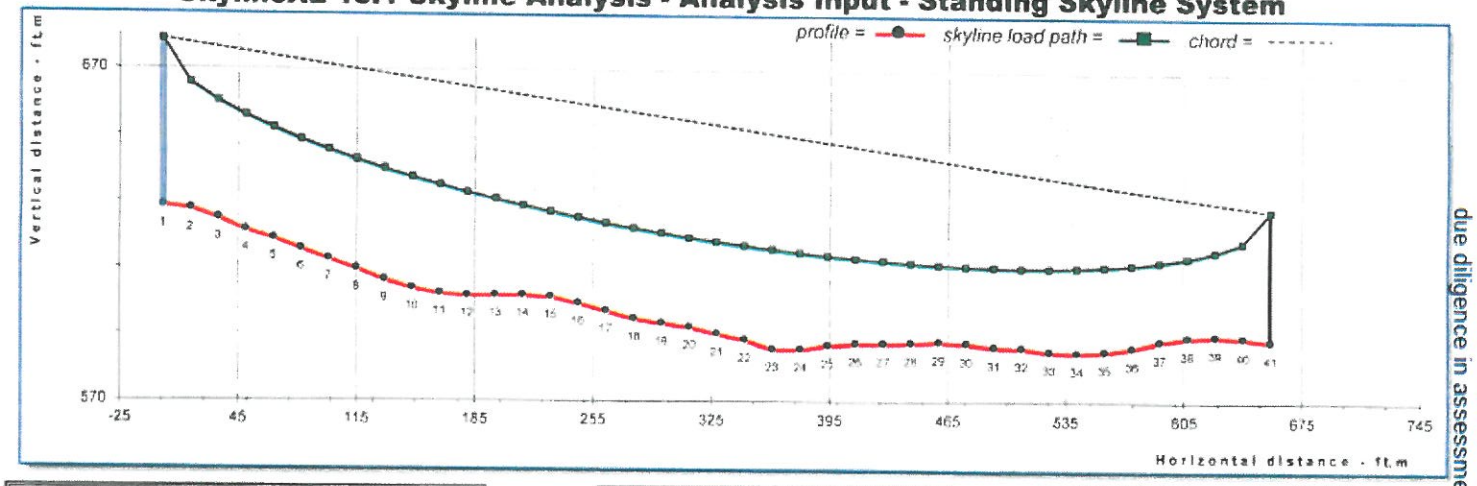
Select measurement type: *English*

Terrain pt	Slope dist (ft)	% slope (+/-)	Horiz - (ft)	Vert - (ft)	Notes
1			0.0	676.5	
	32.8	0.8%			
2			32.8	676.8	
	32.9	-7.6%			
3			65.6	674.3	
	33.0	-10.1%			
4			98.4	671.0	
	33.0	-9.9%			
5			131.2	667.8	
	33.2	-14.8%			
6			164.0	662.9	
	32.9	-7.8%			
7			196.8	660.4	
	32.9	-9.1%			
8			229.6	657.4	
	32.9	-9.1%			
9			262.4	654.4	
	33.0	-10.3%			
10			295.2	651.0	
	32.9	-6.2%			
11			328.0	649.0	
	32.8	1.4%			
12			360.8	649.4	
	32.8	-0.5%			
13			393.6	649.2	
	32.8	-4.6%			
14			426.4	647.7	
	32.8	-3.5%			
15			459.2	646.6	
	32.9	-6.7%			
16			492.0	644.4	
	32.8	-2.7%			
17			524.8	643.5	
	32.8	-1.6%			
18			557.6	642.9	
	32.8	-0.1%			
19			590.4	642.9	
	32.8	-1.8%			
20			623.2	642.3	
	32.8	-2.8%			
21			656.0	641.4	
	32.8	-4.8%			
22			688.8	639.8	
	32.8	0.3%			
23			721.6	639.9	
	16.4	0.5%			
24			738.0	640.0	

Profile name
1
Profile azimuth - deg
Profile date
5/5/2016
Analyst
Wickham
Start elevation - (ft)
677
Profile data source
GIS

Profile reversed?
no

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Thunderbird 6150, sprm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	5.0
log length - (ft)	17.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
3,974	22

LIVE sky selections	Lift-drop location at terrain point
○ Specified clearance	1
◉ Lift only	2
○ Drop only	3
	4
	5

The above options for LIVE skyline analysis only

Supports Table	At terrain point	Rigging height (ft)
head spar	1	50
tail spar	41	40
int support 1		
int support 2		
int support 3		

Analysis name: Unit 60X
Units: English
Data source: GIS
Analysis phase: 1
Pro date: 5/5/2016
Pro name: 1
Analyst: Wickham

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	40

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
full		1.1

Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

60X

Print date: 5/6/2016

Skyline Analysis - Phase 1

SkylineXL15.1.xlsm

Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

60X

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 1
Analysis name: Unit 60X

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Thunderbird B150, spcm, 50-ft twr	Acme 20S, pass shack	3,974	22	1

STANDING skyline rigging lengths table...

HB required

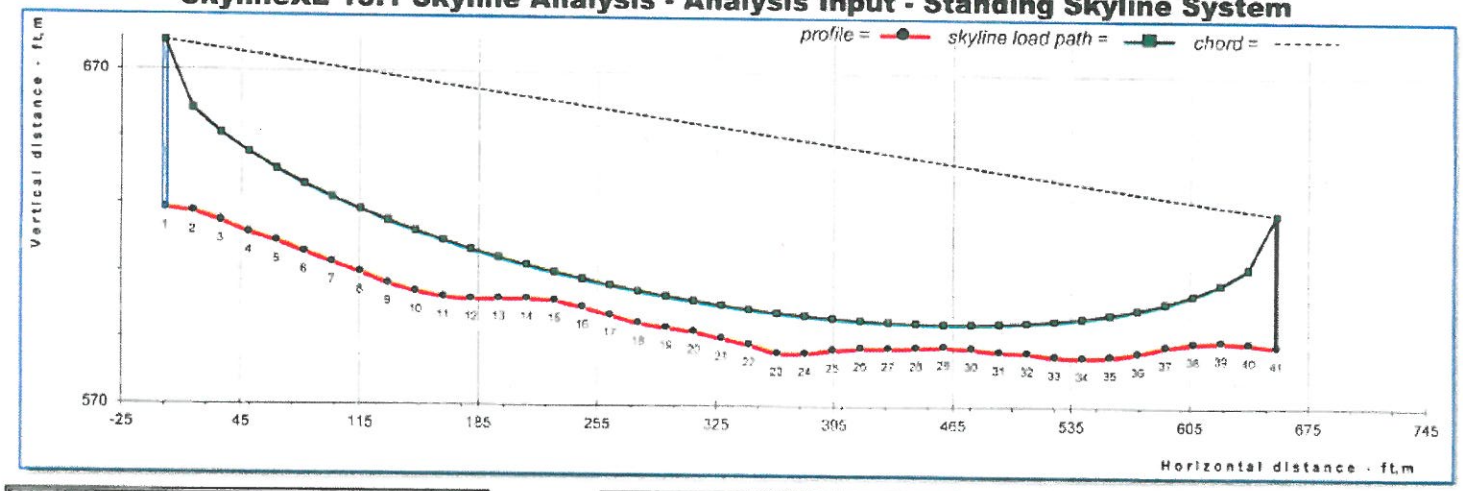
Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	2,000	840	adequate					
mainline	2,300	740	adequate	7.7%				
haulback	4,300	1,430	adequate	Un-stretched skyline line length - (ft)			658.20	330

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	20,953	20,953	31,600	9,167	-	37.9	Full	15.9
3	33	13,669	13,669	31,600	4,955	-	35.1	Full	13.1
4	49	10,662	10,662	31,600	3,504	-	34.2	Full	12.2
5	66	8,939	8,939	31,600	2,758	-	33.0	Full	11.0
6	82	7,800	7,800	31,600	2,300	-	32.9	Full	10.9
7	98	6,983	6,983	31,600	1,987	-	32.8	Full	10.8
8	115	6,367	6,367	31,600	1,759	-	32.9	Full	10.9
9	131	5,885	5,885	31,600	1,582	-	33.6	Full	11.6
10	148	5,499	5,499	31,600	1,444	-	33.5	Full	11.5
11	164	5,186	5,186	31,600	1,330	-	32.8	Full	10.8
12	180	4,936	4,936	31,600	1,236	-	31.2	Full	9.2
13	197	4,716	4,716	31,600	1,153	-	29.1	Full	7.1
14	213	4,536	4,536	31,600	1,081	-	27.1	Full	5.1
15	230	4,387	4,387	31,600	1,018	-	25.8	Full	3.8
16	246	4,267	4,267	31,600	962	-	26.0	Full	4.0
17	262	4,176	4,176	31,600	912	-	26.6	Full	4.6
18	279	4,095	4,095	31,600	865	-	27.4	Full	5.4
19	295	4,036	4,036	31,600	822	-	27.3	Full	5.3
20	312	4,006	4,006	31,600	782	-	27.0	Full	5.0
21	328	3,978	3,978	31,600	743	-	27.7	Full	5.7
22	344	3,974	3,974	31,600	706	-	28.3	Full	6.3
23	361	3,989	3,974	31,600	670	-	30.0	Full	8.0
24	377	4,017	3,974	31,600	635	-	29.0	Full	7.0
25	394	4,073	3,974	31,600	600	-	26.9	Full	4.9
26	410	4,129	3,974	31,600	564	-	25.6	Full	3.6
27	426	4,217	3,974	31,600	528	-	24.8	Full	2.8
28	443	4,333	3,974	31,600	490	-	24.0	Full	2.0
29	459	4,462	3,974	31,600	450	-	23.1	Full	1.1
30	476	4,659	3,974	31,600	407	-	23.1	Full	1.1
31	492	4,868	3,974	31,600	361	-	23.9	Full	1.9
32	508	5,133	3,974	31,600	313	-	24.0	Full	2.0
33	525	5,460	3,974	31,600	267	-	25.1	Full	3.1
34	541	5,874	3,974	31,600	238	-	25.5	Full	3.5
35	558	6,688	3,974	31,600	-	312	25.5	Full	3.5
36	574	7,466	3,974	31,600	-	500	24.9	Full	2.9
37	590	8,534	3,974	31,600	-	785	23.8	Full	1.8
38	607	10,142	3,974	31,600	-	1,269	24.0	Full	2.0
39	623	12,924	3,974	31,600	-	2,263	25.5	Full	3.5
40	640	19,564	3,974	31,600	-	5,367	28.9	Full	6.9

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Thunderbird 6150, spcm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	5.0
log length - (ft)	32.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
13,219	22

Supports Table	At terrain point	Rigging height (ft)
head spar	1	50
tail spar	41	40
int support 1		
int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	40

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

Analysis name: Unit 60X
Units: English
Data source: GIS
Analysis phase: 1
Pro date: 5/5/2016
Pro name: 1
Analyst: Wickham

LIVE sky selections
- Specified clearance
- Lift only
- Drop only

Lift-drop location at terrain point...
1
2
3
4
5

The above options for LIVE skyline analysis only

Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

60X

60X

Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 1
Analysis name: Unit 60X

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Thunderbird 6150, spcm, 50-ft tw	Acme 20S, pass shack	13,219	22	1

STANDING skyline rigging lengths table...

HB required

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	2,000	840	adequate					
mainline	2,300	740	adequate	7.7%				
haulback	4,300	1,430	adequate	Un-stretched skyline line length - (ft)			662.98	330

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	24,303	24,303	13,110	16,133	-	30.6	24.8	-
3	33	26,931	24,303	22,046	16,133	-	26.1	20.3	-
4	49	28,849	24,303	28,614	16,133	-	23.7	17.9	-
5	66	26,082	24,303	31,600	14,706	-	21.4	15.6	-
6	82	23,042	23,042	31,600	12,730	-	20.2	14.5	-
7	98	20,716	20,716	31,600	11,301	-	19.3	13.6	-
8	115	18,632	18,632	31,600	10,092	-	18.7	13.0	-
9	131	17,841	17,841	31,600	9,303	-	18.7	13.0	-
10	148	17,473	17,473	31,600	8,848	-	18.1	12.3	-
11	164	17,685	17,473	31,600	8,658	-	16.9	11.0	-
12	180	18,128	17,473	31,600	8,704	-	14.8	8.8	-
13	197	18,228	17,473	31,600	8,955	-	12.3	6.4	-
14	213	18,050	17,473	31,600	9,265	-	10.0	4.3	-
15	230	16,757	16,757	31,600	9,291	-	8.4	3.0	-
16	246	15,850	15,850	31,600	8,846	-	8.4	3.0	-
17	262	15,127	15,127	31,600	8,317	-	8.8	3.5	-
18	279	15,437	15,127	31,600	7,943	-	9.5	4.0	-
19	295	15,389	15,127	31,600	7,794	-	9.3	3.7	-
20	312	14,519	14,519	31,600	7,593	-	9.0	3.6	-
21	328	14,278	14,278	31,600	7,230	-	9.7	4.2	-
22	344	13,219	13,219	31,600	6,752	-	10.3	4.9	-
23	361	14,678	13,219	31,600	6,399	-	12.1	6.2	-
24	377	15,767	13,219	31,600	6,446	-	11.2	5.2	-
25	394	16,142	13,219	31,600	6,919	-	9.3	3.5	-
26	410	16,292	13,219	31,600	7,298	-	8.1	2.4	-
27	426	16,825	13,219	31,600	7,402	-	7.6	1.9	-
28	443	17,425	13,219	31,600	7,582	-	7.1	1.4	-
29	459	17,358	13,219	31,600	7,827	-	6.6	1.1	-
30	476	16,918	13,219	31,600	7,699	-	7.0	1.6	-
31	492	17,765	13,219	31,600	7,344	-	8.3	2.6	-
32	508	17,312	13,219	31,600	7,210	-	8.9	3.4	-
33	525	18,222	13,219	31,600	6,811	-	10.6	4.8	-
34	541	19,441	13,219	31,600	6,568	-	11.7	5.8	-
35	558	21,114	13,219	31,600	6,421	-	12.4	6.4	-
36	574	23,555	13,219	31,600	6,272	-	12.8	6.6	-
37	590	24,962	13,219	31,600	6,634	-	12.7	6.7	-
38	607	26,563	13,219	31,600	6,295	-	14.1	8.1	-
39	623	28,436	13,219	31,600	4,862	-	17.1	11.1	-
40	640	32,248	13,219	31,600	558	-	22.3	16.4	-

60X

SkylineXL 15.1 Skyline Analysis - Profile Input Table

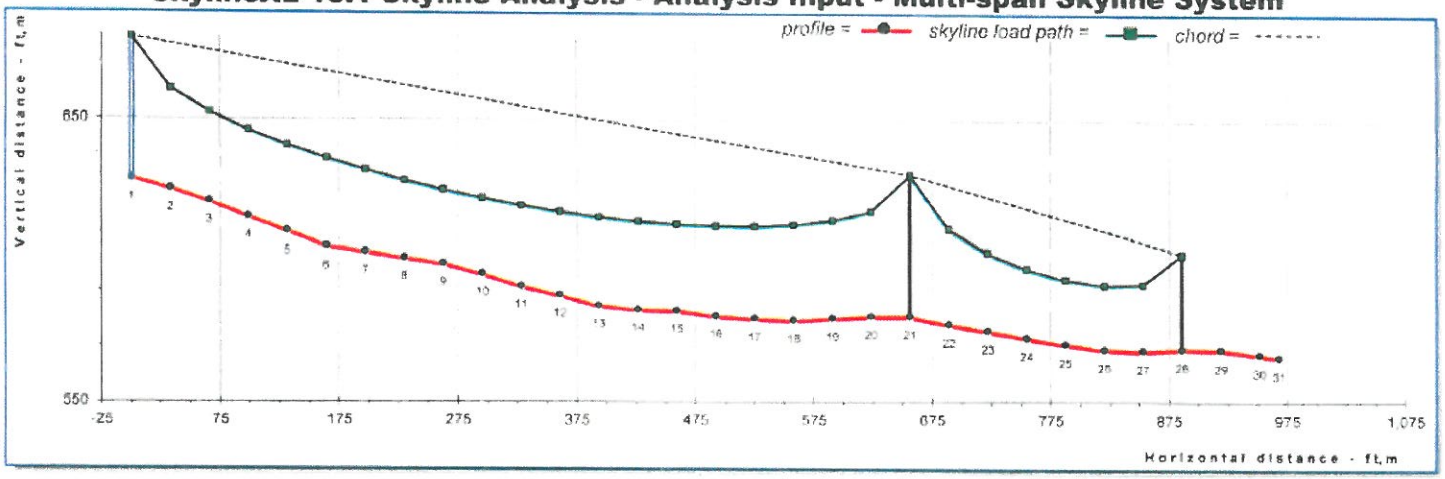
Select measurement type: English

Terrain pt	Slope dist (ft)	% slope +/-(	Horiz - (ft)	Vert - (ft)	Notes
1			0.0	628.8	
	16.4	-6.4%			
2			16.4	627.8	
	16.6	-16.5%			
3			32.8	625.1	
	16.8	-20.8%			
4			49.2	621.7	
	16.6	-17.8%			
5			65.6	618.1	
	16.7	-19.0%			
6			82.0	615.9	
	16.7	-18.1%			
7			98.4	612.9	
	16.7	-18.0%			
8			114.8	609.8	
	16.7	-20.0%			
9			131.2	606.6	
	16.5	-14.4%			
10			147.6	604.2	
	16.5	-6.7%			
11			164.0	602.6	
	16.4	3.6%			
12			180.4	602.0	
	16.4	0.6%			
13			196.8	602.1	
	16.4	0.1%			
14			213.2	602.1	
	16.4	3.0%			
15			229.6	601.6	
	16.5	11.5%			
16			246.0	599.7	
	16.6	14.0%			
17			262.4	597.4	
	16.5	14.5%			
18			278.8	595.3	
	16.5	-6.1%			
19			295.2	593.7	
	16.4	-6.9%			
20			311.6	592.6	
	16.5	12.2%			
21			328.0	590.5	
	16.5	-11.3%			
22			344.4	588.8	
	16.6	17.1%			
23			360.8	586.0	
	16.4	0.0%			
24			377.2	586.0	
	16.4	2.1%			
25			393.6	586.1	
	16.4	3.5%			
26			410.0	587.7	
	16.4	-0.2%			
27			426.4	587.7	
	16.4	1.2%			
28			442.8	587.9	
	16.4	1.1%			
29			459.2	588.2	
	16.4	2.7%			
30			475.6	587.8	
	16.4	6.7%			
31			492.0	586.7	
	16.4	-1.4%			
32			508.4	586.5	
	16.4	-5.7%			
33			524.8	585.4	
	16.4	1.9%			
34			541.2	585.1	
	16.4	7.7%			
35			557.6	585.5	
	16.4	6.6%			
36			574.0	586.6	
	16.5	12.1%			
37			590.4	588.6	
	16.4	6.6%			
38			606.8	589.7	
	16.4	2.5%			
39			623.2	590.1	
	16.4	-3.0%			
40			639.6	589.6	
	16.4	-5.9%			
41			656.0	588.6	

Profile name
Profile azimuth - deg
Profile date
5/5/2016
Analyst
Wickham
Start elevation - (ft)
629
Profile data source
GIS

Profile reversed?
no

SkylineXL 15.1 Skyline Analysis - Analysis Input - Multi-span Skyline System



Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

Analysis type	Selected yarder	Selected carriage
Multi-span	Thunderbird 6150, spcm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	5.0
log length - (ft)	17.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
3,974	11

Supports Table	At terrain point	Rigging height (ft)
head spar	1	50
tail spar	28	34
int support 1	21	50
int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	27

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
full		1.1

Analysis name: Unit 60X
Units: English
Data source: GIS
Analysis phase: 1
Pro date: 5/5/2016
Pro name: 2
Analyst: Wickham

LIVE sky selections
- Specified clearance
- Lift only
- Drop only

Lift-drop location at terrain point...
1
2
3
4
5

The above options for LIVE skyline analysis only

60X

Print date: 5/6/2016

Skyline Analysis - Phase 1

SkylineXL15.1 xlsm

Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

60X

SkylineXL 15.1 Skyline Analysis - Analysis Results - Multi-span Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 2
Analysis name: Unit 60X

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

MULTI-SPAN skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Multi-span	Thunderbird 6150, spcm, 50-ft twr	Acme 20S, pass shack	3,974	11	1

MULTI-SPAN skyline rigging lengths table...

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
				HB required	HB required			
skyline	2,000	1,060	adequate	7.4%	12.0%			
mainline	2,300	960	adequate					
haulback	4,300	1,850	adequate	Un-stretched skyline line length - (ft)			888.15	445

line capacities based on selected yarder

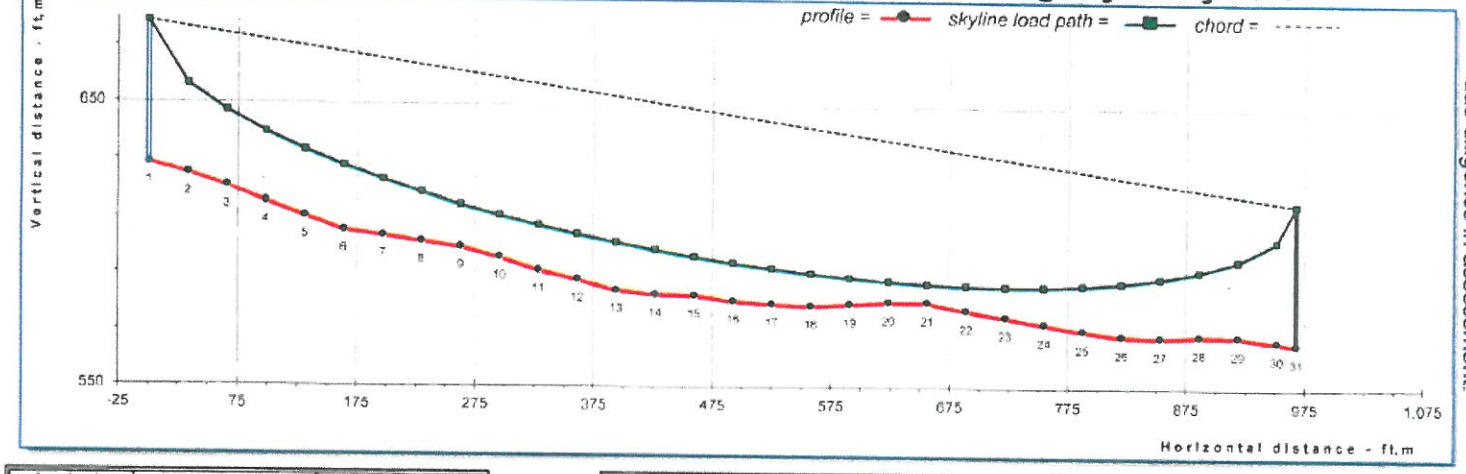
MULTI-SPAN skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	33	13,629	13,629	31,600	4,988	-	35.2	Full	13.2
3	66	8,933	8,933	31,600	2,824	-	31.6	Full	9.6
4	98	6,973	6,973	31,600	2,060	-	30.6	Full	8.6
5	131	5,868	5,868	31,600	1,659	-	30.4	Full	8.4
6	164	5,173	5,173	31,600	1,409	-	30.7	Full	8.7
7	197	4,703	4,703	31,600	1,234	-	28.3	Full	6.3
8	230	4,365	4,365	31,600	1,103	-	26.6	Full	4.6
9	262	4,160	4,160	31,600	995	-	25.4	Full	3.4
10	295	4,023	4,023	31,600	906	-	26.1	Full	4.1
11	328	3,974	3,974	31,600	828	-	27.9	Full	5.9
12	361	3,974	3,974	31,600	754	-	29.0	Full	7.0
13	394	4,053	3,974	31,600	683	-	30.9	Full	8.9
14	426	4,209	3,974	31,600	609	-	30.8	Full	8.8
15	459	4,471	3,974	31,600	528	-	30.1	Full	8.1
16	492	4,848	3,974	31,600	433	-	31.5	Full	9.5
17	525	5,453	3,974	31,600	319	-	32.3	Full	10.3
18	558	6,564	3,974	31,600	-	336	33.5	Full	11.5
19	590	8,279	3,974	31,600	-	787	34.4	Full	12.4
20	623	12,097	3,974	31,600	-	2,131	36.9	Full	14.9
	support loc								
22	689	12,389	3,974	31,600	4,564	-	33.6	Full	11.6
23	722	9,569	3,974	31,600	2,677	-	27.9	Full	5.9
24	754	8,666	3,974	31,600	1,868	-	24.9	Full	2.9
25	787	8,723	3,974	31,600	1,317	-	23.4	Full	1.4
26	820	9,767	3,974	31,600	732	-	23.1	Full	1.1
27	853	13,756	3,974	31,600	-	1,054	23.9	Full	1.9

60X

Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

Analysis type	Selected yarder	Selected carriage
Standing	Thunderbird 6150, spcm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	5.0
log length - (ft)	32.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
6,629	15

Supports Table	At terrain point	Rigging height (ft)
head spar	1	50
tail spar	31	50
Int support 1		
Int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	30

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

Analysis name: Unit 60X
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 2
Analyst: Wickham

LIVE sky selections	Lift-drop location at terrain point
Specified clearance	1
Lift only	2
Drop only	3
	4
	5

The above options for LIVE skyline analysis only

60X

Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

60X

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 2
Analysis name: Unit 60X

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Thunderbird 6150, spoon, 50 ft twr	Acme 20S, pass shack	6,629	15	1

STANDING skyline rigging lengths table...

HB required

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	2,000	1,170	adequate					
mainline	2,300	1,050	adequate	6.5%				
haulback	4,300	2,050	adequate	Un-stretched skyline line length - (ft)			970.35	480

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp bottom of log above TP-(ft)
2	33	24,634	24,634	31,600	12,809	-	31.4	25.6	-
3	66	16,732	16,732	31,600	8,605	-	26.5	20.7	-
4	98	13,152	13,152	31,600	6,713	-	24.5	18.6	-
5	131	10,986	10,986	31,600	5,585	-	23.3	17.5	-
6	164	10,198	10,198	31,600	4,977	-	22.8	16.9	-
7	197	9,477	9,477	31,600	4,766	-	19.7	13.8	-
8	230	8,936	8,936	31,600	4,591	-	17.2	11.3	-
9	262	8,200	8,200	31,600	4,416	-	15.1	9.3	-
10	295	7,468	7,468	31,600	4,060	-	14.9	9.2	-
11	328	7,103	7,103	31,600	3,698	-	16.0	10.2	-
12	361	6,653	6,653	31,600	3,454	-	16.0	10.3	-
13	394	6,668	6,653	31,600	3,255	-	16.9	11.0	-
14	426	6,785	6,653	31,600	3,255	-	15.6	9.7	-
15	459	6,629	6,629	31,600	3,324	-	13.6	7.9	-
16	492	6,721	6,629	31,600	3,269	-	13.4	7.5	-
17	525	6,675	6,629	31,600	3,300	-	12.4	6.6	-
18	558	7,282	6,629	31,600	3,369	-	11.4	5.5	-
19	590	7,715	6,629	31,600	3,608	-	9.2	3.4	-
20	623	8,101	6,629	31,600	3,904	-	7.4	1.7	-
21	656	7,929	6,629	31,600	4,097	-	6.4	1.1	-
22	689	7,981	6,629	31,600	3,814	-	8.6	3.1	-
23	722	8,085	6,629	31,600	3,625	-	10.6	5.0	-
24	754	8,342	6,629	31,600	3,408	-	13.2	7.4	-
25	787	8,821	6,629	31,600	3,207	-	16.0	10.1	-
26	820	9,756	6,629	31,600	3,053	-	18.8	12.8	-
27	853	11,196	6,629	31,600	2,985	-	20.9	14.8	-
28	886	12,913	6,629	31,600	2,869	-	22.6	16.8	-
29	919	15,487	6,629	31,600	1,977	-	27.0	21.1	-
30	951	26,249	6,629	31,600	-	6,360	35.7	30.2	-

60X

SkylineXL 15.1 Skyline Analysis - Profile Input Table

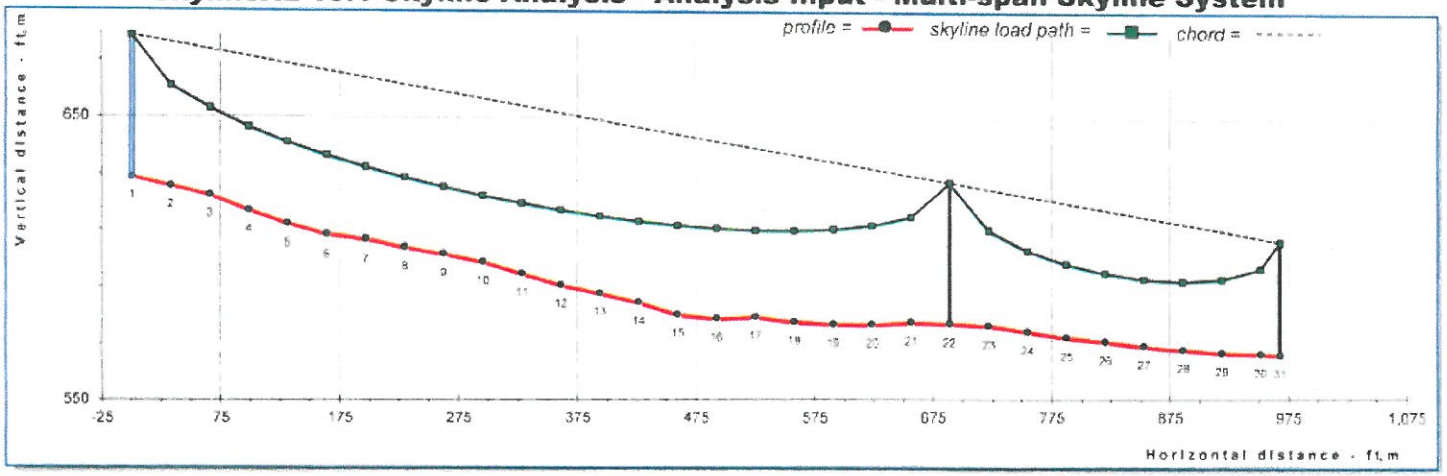
Select measurement type: English

Terrain pt	Slope dist (ft)	% slope (+/-)	Horiz - (ft)	Vert - (ft)	Notes
1			0.0	626.8	
	33.0	-11.6%			
2			32.8	623.2	
	33.1	-13.3%			
3			65.6	620.9	
	33.2	-16.2%			
4			98.4	615.5	
	33.2	-19.8%			
5			131.2	610.4	
	33.2	-15.1%			
6			164.0	605.4	
	32.9	-5.8%			
7			196.8	603.6	
	32.9	-6.6%			
8			229.6	601.6	
	32.9	-8.1%			
9			262.4	599.6	
	33.0	-10.8%			
10			295.2	595.0	
	33.1	-13.8%			
11			328.0	591.8	
	33.0	-9.8%			
12			360.8	588.1	
	33.0	-11.6%			
13			393.6	584.5	
	32.8	-4.2%			
14			426.4	583.1	
	32.8	-1.2%			
15			459.2	582.7	
	32.9	6.8%			
16			492.0	585.6	
	32.8	2.9%			
17			524.8	579.8	
	32.8	-1.7%			
18			557.6	579.2	
	32.8	2.1%			
19			590.4	579.8	
	32.8	2.3%			
20			623.2	580.5	
	32.8	0.0%			
21			656.0	580.5	
	32.9	-6.5%			
22			688.8	577.8	
	32.9	-7.0%			
23			721.6	575.5	
	32.9	-7.5%			
24			754.4	573.0	
	32.9	-6.9%			
25			787.2	570.7	
	32.9	1.5%			
26			820.1	571.2	
	32.8	-14.3%			
27			852.9	566.4	
	32.8	1.9%			
28			885.7	567.0	
	32.8	-0.6%			
29			918.5	566.7	
	32.9	-5.1%			
30			951.4	567.0	
	10.4	-6.7%			
31			957.8	566.9	

Profile name
2
Profile azimuth - deg
Profile date
1/5/2016
Analyst
Wechner
Start elevation - (ft)
626
Profile data source
GIS

Profile reversed?
no

SkylineXL 15.1 Skyline Analysis - Analysis Input - Multi-span Skyline System



Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

Analysis type	Selected yarder	Selected carriage
Multi-span	Thunderbird 6150, spcm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	5.0
log length - (ft)	17.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
3,546	12

Supports Table	At terrain point	Rigging height (ft)
head spar	1	50
tail spar	31	40
int support 1	22	50
int support 2		
int support 3		

Analysis name: Unit 60X
Units: English
Data source: GIS
Analysis phase: 1
Pro date: 5/5/2016
Pro name: 3
Analyst: Wickham

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	30

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
full		1.1

LIVE sky selections
- Specified clearance
- Lift only
- Drop only

Lift-drop location at terrain point...
1
2
3
4
5

The above options for LIVE skyline analysis only

60X

Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

60X

SkylineXL 15.1 Skyline Analysis - Analysis Results - Multi-span Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 3
Analysis name: Unit 60X

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

MULTI-SPAN skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Multi-span	Thunderbird 6150, spcm, 50-ft twr	Acme 20S, pass shack	3,546	12	1

MULTI-SPAN skyline rigging lengths table...

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1 (HB required)	Chord slope span 2 (HB required)	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	2,000	1,150	adequate					
mainline	2,300	1,050	adequate	7.5%	7.6%			
haulback	4,300	2,050	adequate	Un-stretched skyline line length - (ft)			968.78	486

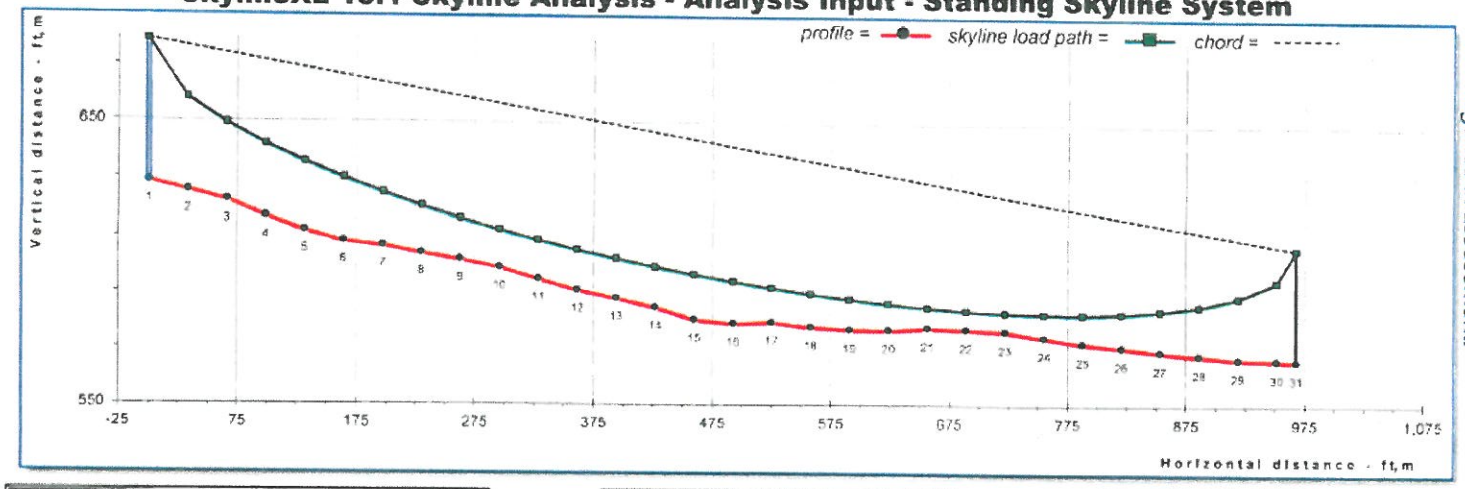
line capacities based on selected yarder

MULTI-SPAN skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	33	13,037	13,037	31,600	4,795	-	35.3	Full	13.3
3	66	8,478	8,478	31,600	2,746	-	30.7	Full	8.7
4	98	6,592	6,592	31,600	2,029	-	29.9	Full	7.9
5	131	5,513	5,513	31,600	1,650	-	29.4	Full	7.4
6	164	4,830	4,830	31,600	1,415	-	28.4	Full	6.4
7	197	4,364	4,364	31,600	1,251	-	25.7	Full	3.7
8	230	4,031	4,031	31,600	1,126	-	24.5	Full	2.5
9	262	3,798	3,798	31,600	1,027	-	23.4	Full	1.4
10	295	3,655	3,655	31,600	946	-	23.1	Full	1.1
11	328	3,573	3,573	31,600	875	-	24.4	Full	2.4
12	361	3,546	3,546	31,600	810	-	26.0	Full	4.0
13	394	3,579	3,546	31,600	750	-	26.8	Full	4.8
14	427	3,674	3,546	31,600	689	-	28.2	Full	6.2
15	459	3,840	3,546	31,600	626	-	31.1	Full	9.1
16	492	4,104	3,546	31,600	555	-	31.5	Full	9.5
17	525	4,499	3,546	31,600	470	-	30.3	Full	8.3
18	558	5,074	3,546	31,600	365	-	31.8	Full	9.8
19	591	5,998	3,546	31,600	262	-	33.1	Full	11.1
20	623	7,636	3,546	31,600	-	711	34.7	Full	12.7
21	656	11,526	3,546	31,600	-	1,956	37.0	Full	15.0
	support loc								
23	722	11,832	3,546	31,600	3,936	-	33.5	Full	11.5
24	755	8,787	3,546	31,600	2,246	-	28.7	Full	6.7
25	787	7,600	3,546	31,600	1,565	-	26.1	Full	4.1
26	820	7,182	3,546	31,600	1,152	-	24.2	Full	2.2
27	853	7,325	3,546	31,600	821	-	23.6	Full	1.6
28	886	8,063	3,546	31,600	490	-	24.1	Full	2.1
29	919	10,610	3,546	31,600	-	777	26.0	Full	4.0
30	951	19,226	3,546	31,600	-	4,609	30.2	Full	8.2

Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

Analysis type	Selected yarder	Selected carriage
Standing	Thunderbird 6150, spcm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	5.0
log length - (ft)	32.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
5,249	14

Supports Table	At terrain point	Rigging height (ft)
head spar	1	50
tail spar	31	40
int support 1		
int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	30

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

Analysis name: Unit 60X
Units: English
Data source: GIS
Analysis phase: 1
Pro date: 5/5/2016
Pro name: 3
Analyst: Wickham

LIVE sky selections
- Specified clearance
- Lift only
- Drop only

Lift-drop location at terrain point...
1
2
3
4
5

The above options for LIVE skyline analysis only

60 X

60X

Riparian crossing, full suspension 50' both sides of stream. Contractor due diligence in assessment.

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 3
Analysis name: Unit 60X
Units: English
Analyst: Wickham
Data source: GIS
Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Thunderbird 6150, spcm, 50-ft twr	Acme 20S, pass shack	5,249	14	1

STANDING skyline rigging lengths table...

HB required

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	2,000	1,150	adequate					
mainline	2,300	1,050	adequate	7.5%				
haulback	4,300	2,050	adequate	Un-stretched skyline line length - (ft)			969.98	486

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	33	21,223	21,223	31,600	10,642	-	32.6	26.8	-
3	66	14,412	14,412	31,600	7,414	-	26.9	21.1	-
4	98	11,324	11,324	31,600	5,790	-	25.2	19.3	-
5	131	9,676	9,676	31,600	4,942	-	23.7	17.9	-
6	164	8,961	8,961	31,600	4,510	-	22.0	16.0	-
7	197	8,164	8,164	31,600	4,331	-	18.5	12.6	-
8	230	7,649	7,649	31,600	4,117	-	16.5	10.6	-
9	262	7,162	7,162	31,600	3,968	-	14.5	8.7	-
10	295	6,548	6,548	31,600	3,752	-	13.3	7.7	-
11	328	6,101	6,101	31,600	3,456	-	13.8	8.1	-
12	361	5,878	5,878	31,600	3,225	-	14.3	8.6	-
13	394	5,614	5,614	31,600	3,084	-	14.1	8.4	-
14	427	5,249	5,249	31,600	2,906	-	14.3	8.7	-
15	459	5,366	5,249	31,600	2,724	-	16.0	10.1	-
16	492	5,644	5,249	31,600	2,742	-	14.9	8.9	-
17	525	5,615	5,249	31,600	2,914	-	12.2	6.4	-
18	558	5,797	5,249	31,600	2,927	-	11.7	5.9	-
19	591	6,137	5,249	31,600	3,016	-	10.7	4.9	-
20	623	6,605	5,249	31,600	3,170	-	9.3	3.5	-
21	656	6,969	5,249	31,600	3,491	-	7.2	1.6	-
22	689	7,393	5,249	31,600	3,674	-	6.6	1.1	-
23	722	7,561	5,249	31,600	3,818	-	6.5	1.1	-
24	755	7,873	5,249	31,600	3,725	-	8.2	2.7	-
25	787	8,509	5,249	31,600	3,669	-	10.2	4.5	-
26	820	9,222	5,249	31,600	3,673	-	12.0	6.2	-
27	853	10,352	5,249	31,600	3,629	-	14.5	8.7	-
28	886	12,128	5,249	31,600	3,550	-	17.6	11.7	-
29	919	15,499	5,249	31,600	3,203	-	21.8	15.8	-
30	951	23,667	5,249	31,600	524	-	28.0	22.1	-

60X

SkylineXL 15.1 Skyline Analysis - Profile Input Table

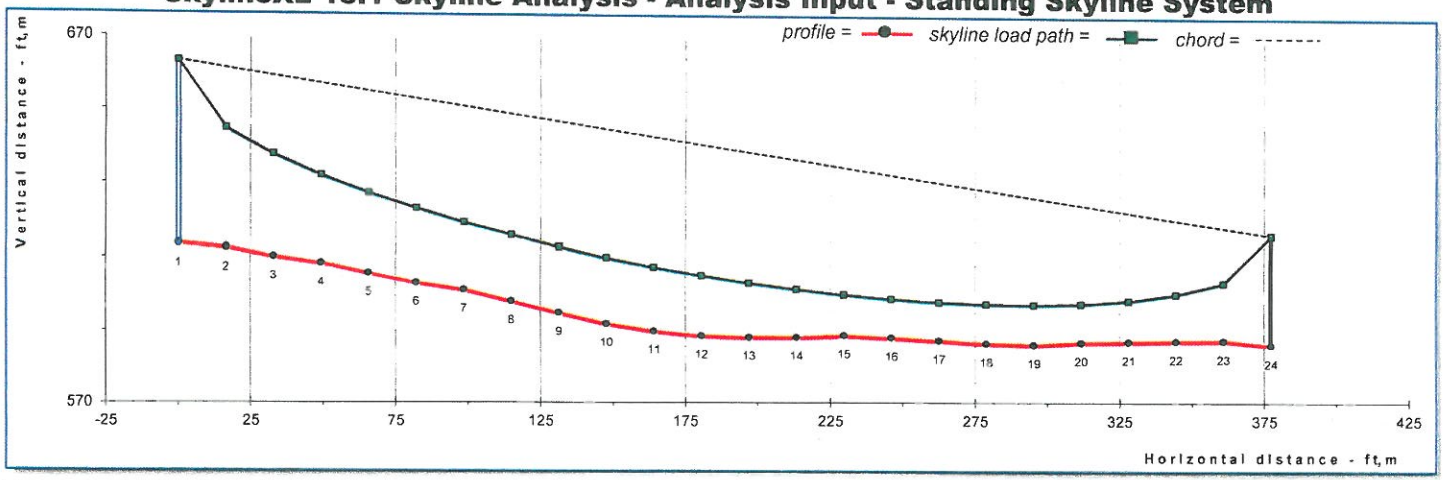
Select measurement type: English

Terrain pt	Slope dist (ft)	% slope (+/-)	Horiz - (ft)	Vert - (ft)	Notes
1			0.0	626.8	
2	33.0	-9.7%	32.6	623.6	
3	33.0	-10.2%	65.6	622.3	
4	33.3	-16.7%	98.4	616.8	
5	33.2	-14.7%	131.2	612.0	
6	33.0	-11.5%	164.0	608.2	
7	32.8	-4.7%	196.8	606.7	
8	32.9	-7.6%	229.6	604.1	
9	32.9	-7.0%	262.4	601.8	
10	32.9	-8.7%	295.2	599.0	
11	33.1	-12.4%	328.0	594.9	
12	33.1	-12.2%	360.8	590.9	
13	32.9	-8.0%	393.7	588.0	
14	33.0	-9.0%	426.5	584.8	
15	33.1	-13.5%	459.3	580.4	
16	32.8	-4.3%	492.1	579.0	
17	32.8	-1.4%	524.9	578.1	
18	32.8	-4.6%	557.7	577.6	
19	32.8	-2.9%	590.5	577.0	
20	32.8	-0.3%	623.3	576.9	
21	32.8	2.2%	656.1	577.6	
22	32.8	-1.4%	688.9	577.1	
23	32.8	2.1%	721.7	578.4	
24	32.8	4.3%	754.5	579.3	
25	32.8	6.4%	787.3	582.2	
26	32.8	4.4%	820.1	583.5	
27	32.8	-5.0%	852.9	580.2	
28	32.8	-4.0%	885.7	577.9	
29	32.8	-2.5%	918.5	576.8	
30	32.8	-1.1%	951.3	576.4	
31	16.4	-2.3%	967.7	576.0	

Profile name
1
Profile azimuth - deg
Profile date
5/5/2016
Analyst
Wickham
Stem elevation - (ft)
626
Profile data source
GPS

Profile reversed?
no

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Thunderbird 6150, spcm	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
19,413	10

Supports Table	At terrain point	Rigging height (ft)
head spar	1	50
tail spar	24	30
int support 1		
int support 2		
int support 3		

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	23

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

Analysis name: Unit 60Y
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 7
Analyst: Wickham

LIVE sky selections	Lift-drop location at terrain point
○ Specified clearance	1
◉ Lift only	2
○ Drop only	3
	4
	5

The above options for LIVE skyline analysis only

60Y

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 7
Analysis name: Unit 60Y

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Thunderbird 6150, spcm, 50-ft twr	Acme 20S, pass shack	19,413	10	1

STANDING skyline rigging lengths table...

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	2,000	540	adequate					
mainline	2,300	460	adequate	12.6%				
haulback	4,300	870	adequate	Un-stretched skyline line length - (ft)			384.67	190

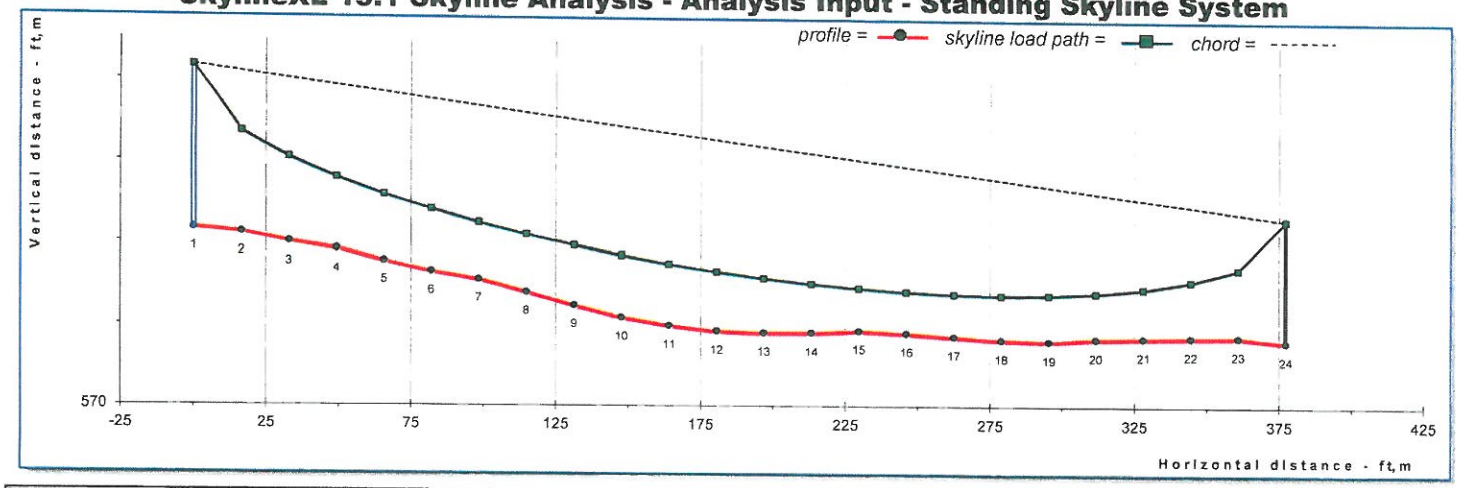
HB required

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	23,371	23,371	10,778	16,133	-	32.5	22.3	-
3	33	26,308	23,371	18,890	16,133	-	27.7	17.6	-
4	49	26,615	23,371	25,184	16,133	-	23.7	14.0	-
5	66	27,432	23,371	30,223	16,133	-	21.6	11.9	-
6	82	26,253	23,371	31,600	15,028	-	19.9	10.2	-
7	98	22,651	22,651	31,600	13,390	-	18.0	8.7	-
8	115	20,682	20,682	31,600	12,037	-	17.7	8.5	-
9	131	19,445	19,445	31,600	11,008	-	17.8	8.5	-
10	148	19,413	19,413	31,600	10,420	-	18.0	8.5	-
11	164	19,610	19,413	31,600	10,119	-	17.4	7.8	-
12	180	20,384	19,413	31,600	10,019	-	16.5	6.6	-
13	197	21,129	19,413	31,600	10,156	-	14.9	5.0	-
14	213	22,353	19,413	31,600	10,443	-	13.2	3.3	-
15	230	22,048	19,413	31,600	11,006	-	11.2	1.9	-
16	246	22,304	19,413	31,600	11,090	-	10.7	1.5	-
17	262	22,875	19,413	31,600	11,107	-	10.6	1.4	-
18	279	24,306	19,413	31,600	11,123	-	10.8	1.5	-
19	295	26,910	19,413	31,600	11,246	-	11.0	1.2	-
20	312	28,601	19,413	31,600	11,799	-	10.7	1.1	-
21	328	31,269	19,413	31,600	11,974	-	11.3	1.7	-
22	344	35,009	19,413	31,600	11,761	-	12.8	3.1	-
23	361	38,967	19,413	31,600	9,732	-	15.8	6.3	-

SkylineXL 15.1 Skyline Analysis - Analysis Input - Standing Skyline System



Analysis type	Selected yarder	Selected carriage
Standing	Yoader, shotgun - 2 drum	Acme 20S, pass shack

Log Geometry Table	
tag length - (ft)	10.0
log length - (ft)	40.0
log diameter - (in)	20.00

Min payload-(lbs)	At terrain point
11,439	11

LIVE sky selections	Lift-drop location at terrain point..
○ Specified clearance	1
◉ Lift only	2
○ Drop only	3
	4
	5

The above options for LIVE skyline analysis only

Supports Table	At terrain point	Rigging height (ft)
head spar	1	40
tail spar	24	30
int support 1		
int support 2		
int support 3		

Analysis name: Unit 60Y
Units: English
Data source: GIS
Analysis phase: 1

Pro date: 5/5/2016
Pro name: 7
Analyst: Wickham

Yarding Parameters Table	Inner dist terrain pt.	Outer dist terrain pt
yarding limits	2	23

landing cut (-) or fill (+) - (ft)	

Susp. type	Log Susp. and Clearance Table	Log clearance (ft)
partial		1.1

60Y

SkylineXL 15.1 Skyline Analysis - Analysis Results - Standing Skyline System

<< RESULTS BASED on MAP or GIS PROFILE >>

Profile name: 7
Analysis name: Unit 60Y

Units: English
Analyst: Wickham
Data source: GIS

Profile date: 5/5/16

STANDING skyline analysis summary table...

Skyline analysis type	Selected yarder	Selected carriage	Minimum payload-(lbs)	At terrain point	Analysis phase
Standing	Yoader, shotgun - 2 drum, 40-ft twr	Acme 20S, pass shack	11,439	11	1

STANDING skyline rigging lengths table...

HB required

Line	Capacity-(ft)	Required-(ft)	Notes	Chord slope span 1	Chord slope span 2	Chord slope span 3	Chord slope span 4	Average slope yarding dist for this analysis-(ft)
skyline	1,000	530	adequate					
mainline	1,500	450	adequate	9.9%				
haulback		860	not adequate!	Un-stretched skyline line length - (ft)			382.48	190

line capacities based on selected yarder

STANDING skyline analysis detail table, PHASE 1 analysis...

TP	Horizontal distance - (ft)	Net payload at TP - (lbs)	Net payload to landing - (lbs)	Skyline tension - (lbs)	Mainline tension - (lbs)	Haulback tension - (lbs)	Skyline clearance - (ft)	Log clearance - (ft)	Full susp. bottom of log above TP-(ft)
2	16	23,344	23,344	10,530	16,133	-	24.8	14.9	-
3	33	26,117	23,344	19,715	16,133	-	20.9	11.1	-
4	49	22,119	22,119	23,100	13,747	-	17.6	8.3	-
5	66	18,348	18,348	23,100	11,169	-	16.1	6.9	-
6	82	16,602	16,602	23,100	9,715	-	15.0	5.7	-
7	98	13,978	13,978	23,100	8,470	-	13.7	4.8	-
8	115	12,526	12,526	23,100	7,441	-	13.9	5.0	-
9	131	11,601	11,601	23,100	6,664	-	14.5	5.5	-
10	148	11,456	11,456	23,100	6,189	-	15.2	5.9	-
11	164	11,439	11,439	23,100	5,900	-	15.1	5.6	-
12	180	11,802	11,439	23,100	5,761	-	14.6	4.9	-
13	197	12,129	11,439	23,100	5,761	-	13.4	3.7	-
14	213	12,777	11,439	23,100	5,873	-	12.1	2.3	-
15	230	12,510	11,439	23,100	6,124	-	10.5	1.3	-
16	246	12,649	11,439	23,100	6,133	-	10.2	1.1	-
17	262	12,958	11,439	23,100	6,093	-	10.5	1.3	-
18	279	13,832	11,439	23,100	6,089	-	11.0	1.6	-
19	295	15,389	11,439	23,100	6,144	-	11.4	1.6	-
20	312	16,488	11,439	23,100	6,455	-	11.3	1.7	-
21	328	18,294	11,439	23,100	6,597	-	12.2	2.5	-
22	344	20,943	11,439	23,100	6,562	-	13.8	4.0	-
23	361	24,282	11,439	23,100	5,527	-	16.8	7.1	-

60Y

SkylineXL 15.1 Skyline Analysis - Profile Input Table

Select measurement type: English

Terrain pt	Slope dist (ft)	% slope (+/-)	Horiz - (ft)	Vert - (ft)	Notes
1			0.0	613.4	
	16.4	-6.8%			
2			16.4	612.3	
	16.6	-14.3%			
3			32.8	610.0	
	16.5	-10.1%			
4			49.2	608.3	
	16.6	-16.5%			
5			65.6	605.6	
	16.6	-15.6%			
6			82.0	603.0	
	16.5	-11.9%			
7			98.4	601.1	
	16.7	-18.6%			
8			114.8	598.0	
	16.7	-19.6%			
9			131.2	594.8	
	16.7	-18.4%			
10			147.6	591.8	
	16.5	-12.2%			
11			164.0	589.8	
	16.5	-7.9%			
12			180.4	588.5	
	16.4	-2.3%			
13			196.8	588.1	
	16.4	0.3%			
14			213.2	588.1	
	16.4	3.1%			
15			229.6	588.6	
	16.4	-3.6%			
16			245.0	588.0	
	16.4	-4.6%			
17			262.4	587.2	
	16.4	-5.1%			
18			278.8	586.4	
	16.4	-1.6%			
19			295.2	586.1	
	16.4	3.9%			
20			311.6	586.7	
	16.4	1.2%			
21			328.0	586.9	
	16.4	1.0%			
22			344.4	587.1	
	16.4	0.7%			
23			360.8	587.2	
	16.4	-7.1%			
24			377.2	586.0	

Profile name
7
Profile azimuth - deg
Profile date
5/5/2016
Analyst
Wickham
Start elevation - (ft)
613
Profile data source
GIS

Profile reversed?
no