## Property Description & Background

The subject property is contiguous tract of land totaling 480 acres, more or less, in the F. J. C. Smiley Survey, A-345, Liberty County, Texas owned by Copper Station Properties. The land is located 38 miles northeast of Houston and 9 miles east of Cleveland off FM 2518. From the intersection of FM 787 and SH 321/105 in Cleveland travel north then east on FM 787 approximately 8 miles to FM 2518. Turn right and travel south 0.4 mile to County Road 2184 (Nevels Ferry Rd.). Turn left and proceed 1.6 miles east to a gated road on the right.

Figure 1. Location Map
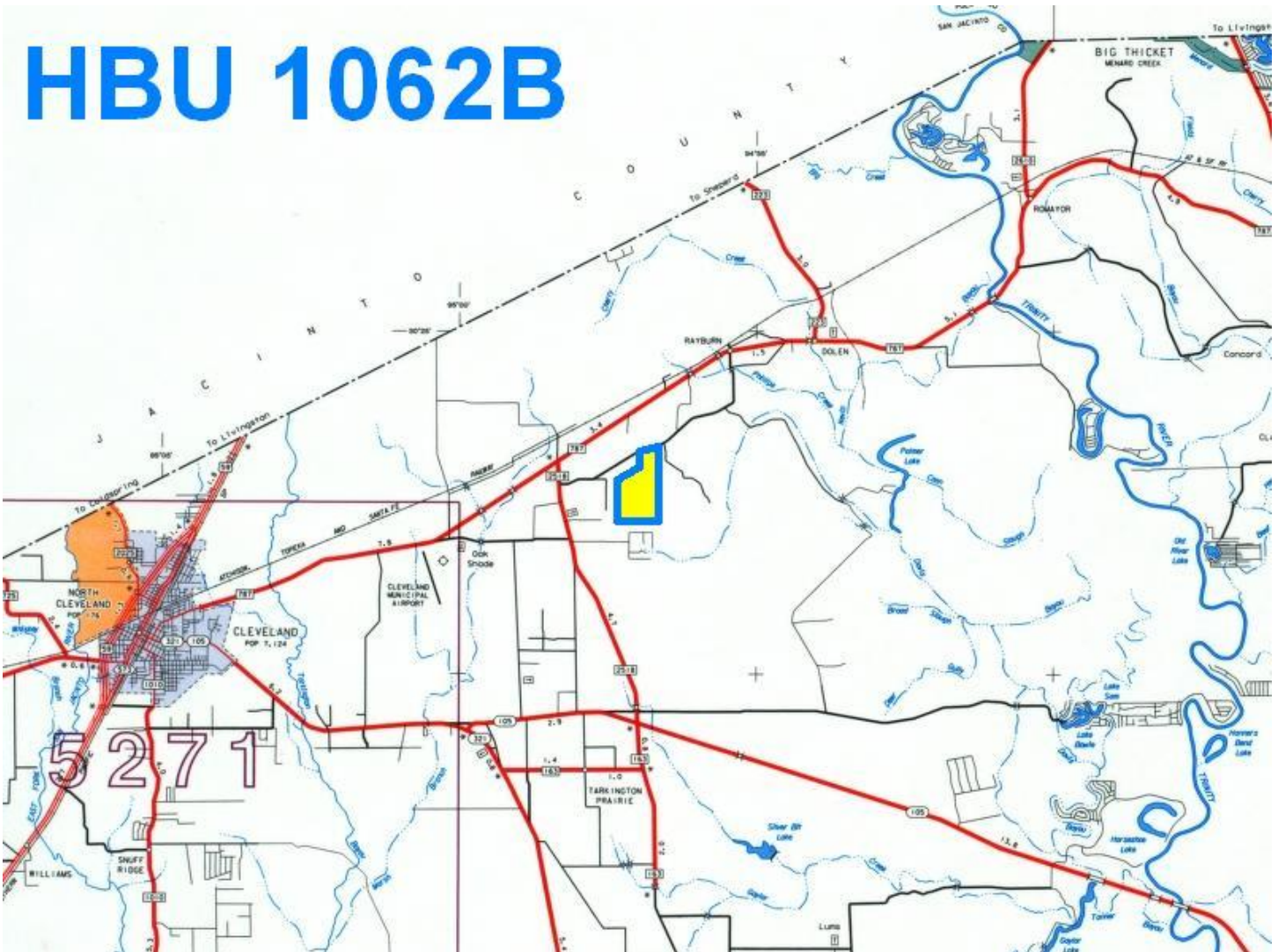
HBU 1062B is situated on level ground with an e average elevation of approximately150 feet above mean sea level. The land is situated just west and above of the stream terrace bluff for the Trinity River bottomlands. There are no mapped drains on the property.

The General Soil Map published in the Soil Survey of Liberty County, Texas (USDA NRCS) identifies the soils on the subject property as the part of the *Kirbyville-Waller-Sorter* unit. The general description for the soils is: "*Nearly level, somewhat poorly drained and poorly drained, moderately permeable and slowly permeable, loamy soils.*" The primary series, the Kirbyville fine sandy loam and the Otanya fine sandy loam near the county road and the Sorter-Dallardsville Complex throughout the majority of the tract have high timber productivity potential for pine and hardwoods (50 year site index of 90 to 100 for loblolly pine and up to 90 for sweetgum and water oak). Severe management limitations are listed for the Sorter series due to wetness

Timber Inventory Methods and Description

HBU 1062B is treated as one timber stand. The land is comprised of 460 acres of MERCHANTABLE TIMBER and 19.9 acres of NON-FOREST areas. The northern section of the property is predominantly an unthinned loblolly pine plantation. South along both sides of the road the forest is comprised of naturally seeded loblolly pine and hardwood. The western part of the property is mostly hardwood trees. (NOTE: red color on photograph indicates pine timber.)

Figure 2.   Aerial Photograph
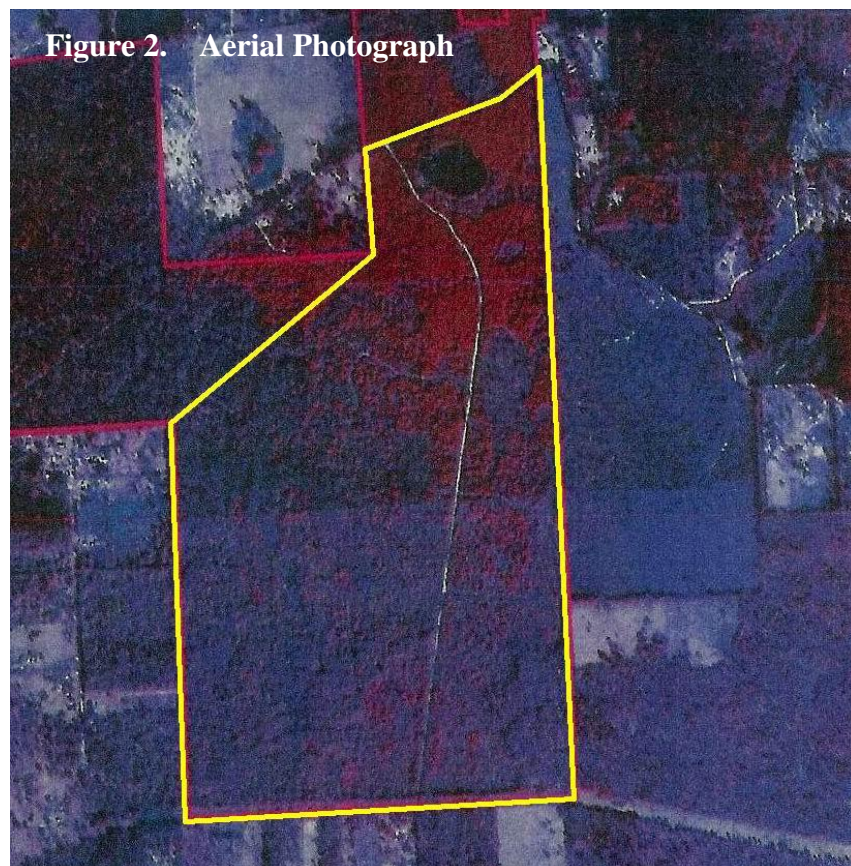
Data were collected from 74 variable radius sample points using a 10 BAF prism arranged in a 7 chain by 10 chain layout. Samples were not taken in the primary road-way, the pipeline or the pond. The sample intensity for the 460 acres is 1 point per 6.2 acres.

All trees in each sampling unit measuring at least 4.5" dbh were tallied. Tree data included species, product, grade (if applicable), dbh (one-inch class to the nearest inch), total tree height (nearest foot), merchantable height for sawlogs and chip-n-saw (random length to the nearest foot), stopper height (nearest foot) for trees with top defect or non-merchantability, ending or top diameter (nearest inch) for trees with top defect or non-merchantability and growth measurements.

Individual tree data were collected on hand written tally sheets, recording the tree information by sampling point and stand number. Trees tallied in the inventory sample were assigned to one of five Species Groups. Timber product specifications and pricing were outlined for each group as follows. (The primary species are listed for each group.)

Table 1. Species Groups Specifications and Prices.

PINE (ALL PINE SPP.)	PULPWOOD		CHIP-N-SAW	SMALL SAWLOGS	LARGE SAWLOGS
MIN DBH	4.5"		8.0"	10.0"	13.6"
MIN PULPWOOD TOP	3.0"			3.0"	3.0"
MIN SAWLOG TOP	—		5.0"	8.0"	8.0"
MIN LENGTH	16'		27'	16'	16'
STUMPAGE PRICE ($/TON)	STANDING	TOPWOOD	$18	$30	$40
	$5	$4			

OAK (ALL OAK SPP.)	PULPWOOD		SAWLOGS
MIN DBH	4.5"		11.6"
MIN PULPWOOD TOP	4.0"		
MIN SAWLOG TOP	—		9.0"
STUMPAGE PRICE ($/TON)	STANDING	TOPWOOD	$12
	$4	$4	

GUM (SWEETGUM & BLACKGUM)	PULPWOOD		SAWLOGS
MIN DBH	4.5"		11.6"
MIN PULPWOOD TOP	4.0"		
MIN SAWLOG TOP	—		9.0"
STUMPAGE PRICE ($/TON)	STANDING	TOPWOOD	$12
	$4	$4	

MISCELANEOUS HARDWOOD (ASH, HICKORY, MAPLE & ELM)	PULPWOOD		SAWLOGS
MIN DBH	4.5"		11.6"
MIN PULPWOOD TOP	4.0"		
MIN SAWLOG TOP	—		9.0"
STUMPAGE PRICE ($/TON)	STANDING	TOPWOOD	$12
	$4	$4	

LOW GRADE HARDWOOD (CHINESE TALLOW & MINOR HDWDS)	PULPWOOD
MIN DBH	4.5"
MIN PULPWOOD TOP	4.0"
MIN SAWLOG TOP	—
STUMPAGE PRICE ($/TON)	$4

The minimum length for all hardwood products is 16 feet. Trees that failed to meet minimum merchantability specifications were tallied as "Culls".

Stumpage prices used in the timber appraisal reflect the current market in southeastern Texas. The most recent issues of Texas Timber Price Trends and TimberMart South were used as guides for the pricing. The prices are primarily based on recent timber sales and personal communications.

Data were collected on the subject property tract in early June 2006 by Bryant Forestry personnel. All cruisers have extensive timber inventory experience. The project leader is Charles

M Bryant, BS & MS in forestry from SFASU, 26 years of experience as forestry professional in Texas, Certified Forester, Society of American Forester and owner of Bryant Forestry.

The inventory processor used in this analysis, *TCruise, Version 4.0 (Sep 2004),* was developed by Dr, Thomas Matney at Mississippi State University and distributed by Haaglof. Profile equations developed by Matney and Parker for individual Southeastern U.S. tree species were used to calculate volume.

Timber Inventory Results

The property consists of approximately 480 acres with 460 acres of merchantable timber and 20 acres of non-forest land. The total estimated combined (pine & hardwood) timber value for the tract is **$281,766;** equivalent to $587 per acre for the entire tract acreage.

The sampling error for total merchantable timber value is ± 16.9% @ the 95% confidence level. The confidence interval is $234,002 to $329,498.

The sampling error for total merchantable timber volume is ±13.6% @ the 95% confidence level. Statistics for other important timber measures of the inventory are presented in the following table.

Table 2. Means, sampling errors and confidence intervals for pine & hardwood combined timber data

	Mean	*Sampling Error*	*Lower Limit*	*Upper Limit*
Number of Trees	178.8 trees/ac	±18.4%	146.0 trees/ac	211.7 trees/ac
Basal Area	73.0 sq ft/ac	± 12.9%	63.5 sq ft/ac	82.4 sq ft/ac
Avg. DBH	8.1"	± 4.7%	7.8"	8.5"
Total Volume	59.2 tons/ac	± 13.6%	51.1 tons/ac	67.2 tons/ac
Total Value	$612.53/ac	± 16.9%	$508.70/ac	$716.30/ac

Table 2 does not include data for NON-MERCHANTABLE TREES.

Sixty-one percent of the trees growing on the tract are pine and 39% are hardwood species (61:39). Figure 3 (Page 8) illustrates the distribution of trees by the timber product classes. Note that PINE PULPWOOD and HARDWOOD PULPWOOD combined account for almost ¾ of the trees. The higher value pine products (CHIP-N-SAW, SMALL PINE SAWLOGS, PINE SAWLOGS and HARDWOOD SAWLOGS) account for 18% of the trees.

The average total number of trees per acre is 195, indicating moderately high stocking. The forest is 92% merchantable (only 8% of the trees are NON-MERCHANTABLE including many PREMERCHANTABLE TREES).

Figure 4 (Page 8) shows the distribution of basal area across the timber product classes. Timber basal area is an indicator of stand density and is a function of the **number** _and_ **size** of trees in the forest. Specifically basal area is the sum of the cross-sectional areas of each tree on one acre.

Hence, the smaller sized products (PINE AND HARDWOOD PULPWOOD) begin to give way to the higher value, larger diameter products (pulpwood accounts for ¾ of the trees but less than ⅔ of the basal area). The percentage of PINE SAWLOGS and SMALL PINE SAWLOGS almost doubled increasing from 10% of the trees to 18% of the basal area.

The average total basal area is 76 square feet per acre, indicating moderate stand density. Pine stand density is 43 square feet per acre – NOTE: pine stocking is much higher in the northeastern and eastern sections of the tract than in the western section.

Tree height is added to the function to calculate timber volume. Figure 4 (Page 9) shows the distribution of timber volume in Tons. Predominance of the pine sawlog classes continues to emerge. New product categories, PINE and HARDWOOD TOPWOOD, are derived from the sawlog trees. Topwood is the portion of the tree that is utilized for pulpwood after sawtimber is merchandized. The pine sawlog categories (including topwood) comprise almost ¼ of the total timber volume.

The average total PINE timber volume is 36 tons per acre, roughly 1¼ truck loads per acre. Hardwoods add another 23 tons per acre.

Timber value is assigned to the timber volume on a stair-stepped regression. That is, value increases at an uneven rate with jumps that are triggered by product thresholds rather than by gradual gradations. Some smoothing of the value to volume and tree size ratio is realized in "log sorts" offered (or required) by certain mills but "blended" pricing results in the more typical stair-stepped value-to-dbh gradations.

The pine sawlog categories (including topwood) generate over ½ of the total timber value (52%).

Pine trees account for 79% of the timber value, hardwoods only 21%. **The average total timber value for all trees is $612.50 per acre.**

The pine value is $482.30 per acre.

Table 3. HBU 1062B _Current_ Pine Summary

TREES	BASAL AREA	TONS	VALUE	DBH
110.8/ac	42.6 sq ft/ac	36.0 tons/ac	$482.30/ac	8.1"
50,569	19,519	16,584	$221,891	

(more pine & hardwood information beginning on page 11)

Table 4. Timber Inventory Results for the Copper Station HBU 1062B Tract

460 acres

		per acre				
		trees	basal area	tons	stumpage	avg dbh
Pine	pine pulpwood	78.5	23.1	17.9	$89.50	7.2
	chip-n-saw	12.8	5.3	4.3	$77.30	8.7
	small pine sawlogs	16.3	10.9	6.8	$203.90	11.1
	pine sawlogs	2.3	3.1	2.3	$92.70	15.6
	pine topwood			4.7	$18.90	
	nonmerch pine	0.9	0.2			
	total	**110.8**	**42.6**	**36.0**	**$482.30**	**8.1**
Hardwood	hardwood pulpwood	64.2	23.6	16.3	$65.10	7.7
	hardwood sawlogs	4.7	6.9	4.7	$56.60	16.0
	hardwood topwood			2.1	$8.50	
	nonmerch hardwood	15.6	3.2			5.9
	total	**84.5**	**33.7**	**23.1**	**$130.20**	**7.8**
Total		**195.3**	**76.3**	**59.1**	**$612.50**	**8.0**

460 acres

		tract total			
		trees	basal area	tons	stumpage
Pine	pine pulpwood	36094	10630	8236	$41,179
	chip-n-saw	5893	2424	1976	$35,568
	small pine sawlogs	7515	5035	3126	$93,789
	pine sawlogs	1067	1430	1066	$42,632
	pine topwood			2180	$8,723
	nonmerch pine	391	84		
	total	**50960**	**19603**	**16584**	**$221,891**
Hardwood	hardwood pulpwood	29529	10878	7485	$29,942
	hardwood sawlogs	2160	3170	2169	$26,030
	hardwood topwood			976	$3,903
	nonmerch hardwood	7190	1492		
	total	**38879**	**15540**	**10630**	**$59,875**
Total		**89839**	**35143**	**27214**	**$281,766**

Figure 3. HBU 1062B Timber Stand Composition – Trees by Timber Product

**HBU 1062B
Copper Station Properties
Trees by Timber Product**
(trees/acre & % of all trees)

pine pulpwood, 78.5, 41%

nonmerch hardwood, 15.6, 8%

rdwood sawlogs, 4.7, 2%

chip-n-saw, 12.8, 7%

small pine sawlogs, 16.3, 8%

pine sawlogs, 2.3, 1%

nonmerch pine, 0.9, <1%

hardwood pulpwood, 64.2, 33%
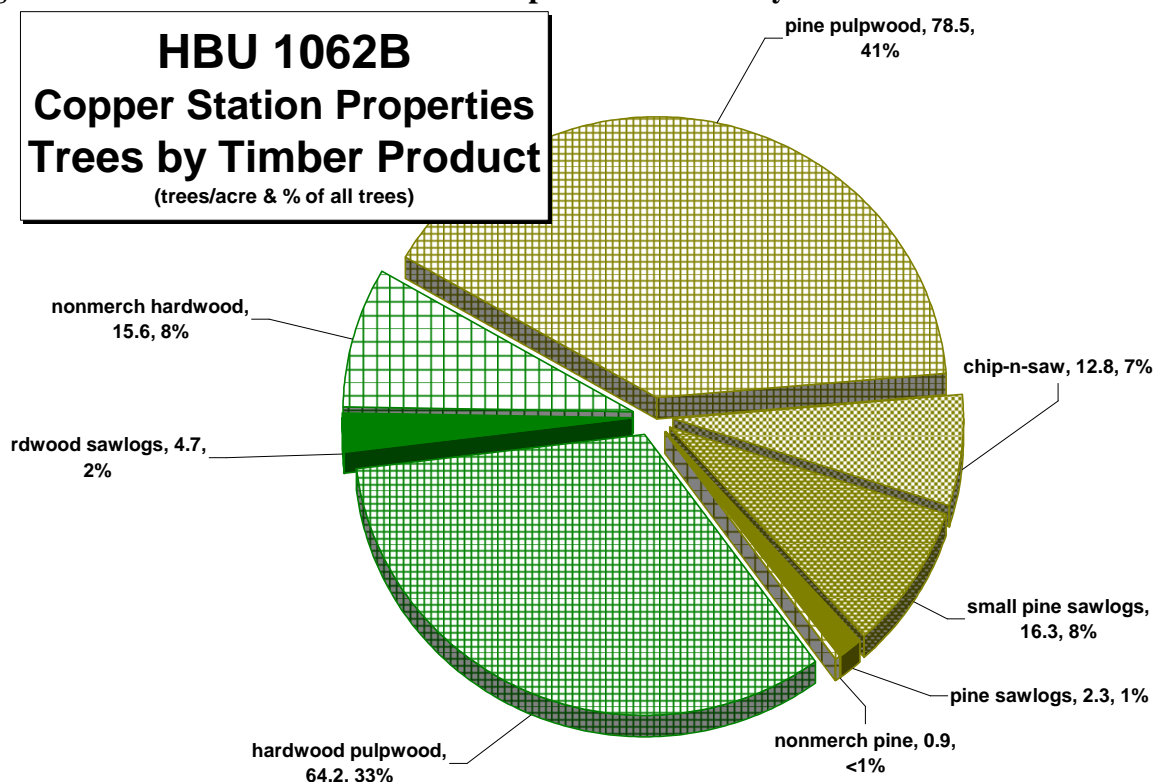
Figure 4. HBU 1062B Timber Stand Density – Basal Area by Timber Product

**HBU 1062B
Copper Station
Properties
Basal Area
by Timber Product**
(sq ft/acre & % of total basal area)

nonmerch hardwood, 3.2, 4%

pine pulpwood, 23.1, 30%

hardwood sawlogs, 6.9, 9%

chip-n-saw, 5.3, 7%

hardwood pulpwood, 23.6, 32%

small pine sawlogs, 10.9, 14%

nonmerch pine, 0.2, <1%

pine sawlogs, 3.1, 4%
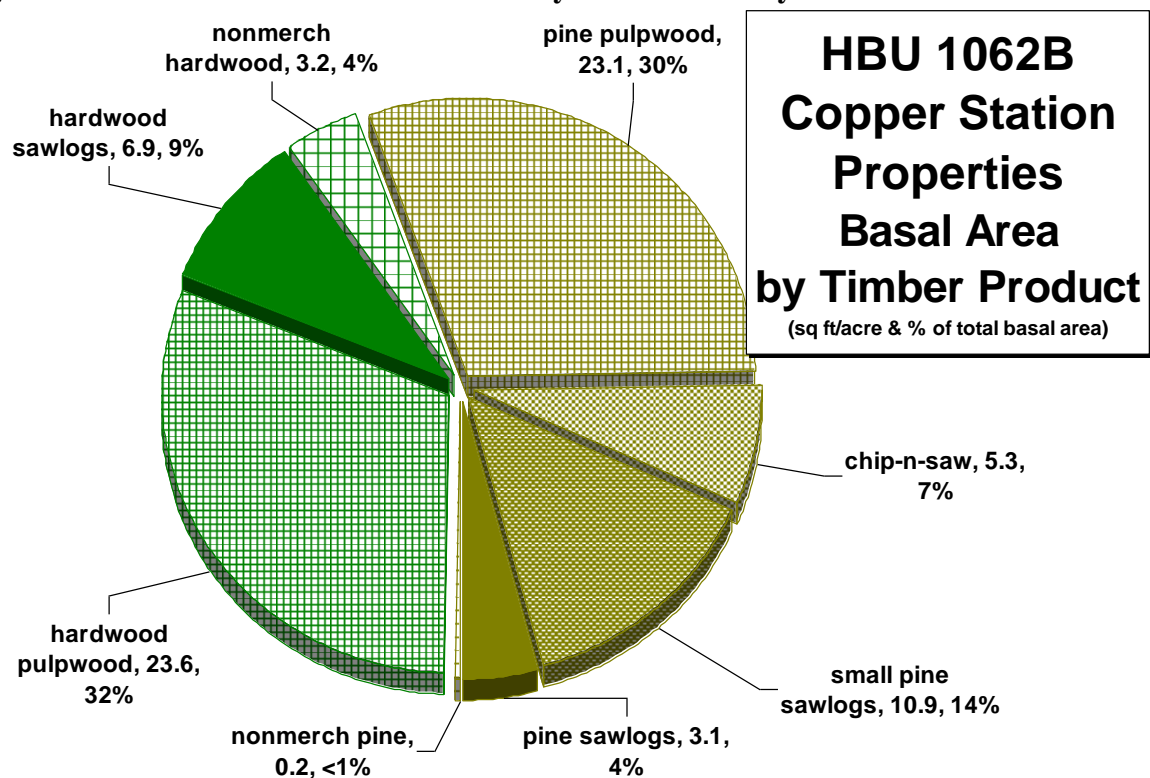
Figure 5. HBU 1062B Timber Volume – Tons by Timber Product

hardwood topwood, 2.1, 4%

pine pulpwood, 17.9, 29%

hardwood sawlogs, 4.7, 8%

HBU 1062B Copper Station Properties Volume by Timber Product
(tons/acre & % of total tons)

chip-n-saw, 4.3, 7%

hardwood pulpwood, 16.3, 28%

small pine sawlogs, 6.8, 12%

pine topwood, 4.7, 8%

pine sawlogs, 2.3, 4%
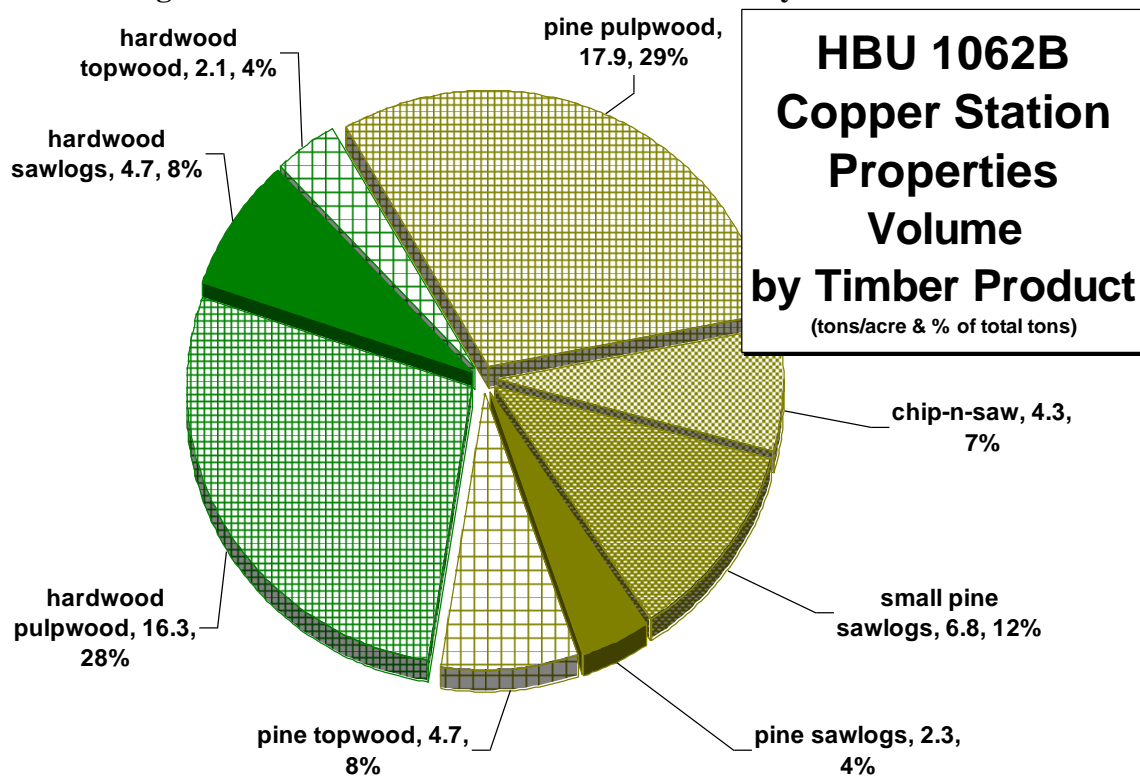
Figure 6. HBU 1062B Timber Value – Dollars by Timber Product

pine pulpwood, $89.50, 15%

chip-n-saw, $77.30, 13%

hardwood topwood, $8.50, 1%

HBU 1062B Copper Station Properties Value by Timber Product
($/acre & % of total timber value)

small pine sawlogs, $203.90, 33%

hardwood sawlogs, $56.60, 9%

hardwood pulpwood, $65.10, 11%

pine topwood, $18.90, 3%

pine sawlogs, $92.70, 15%
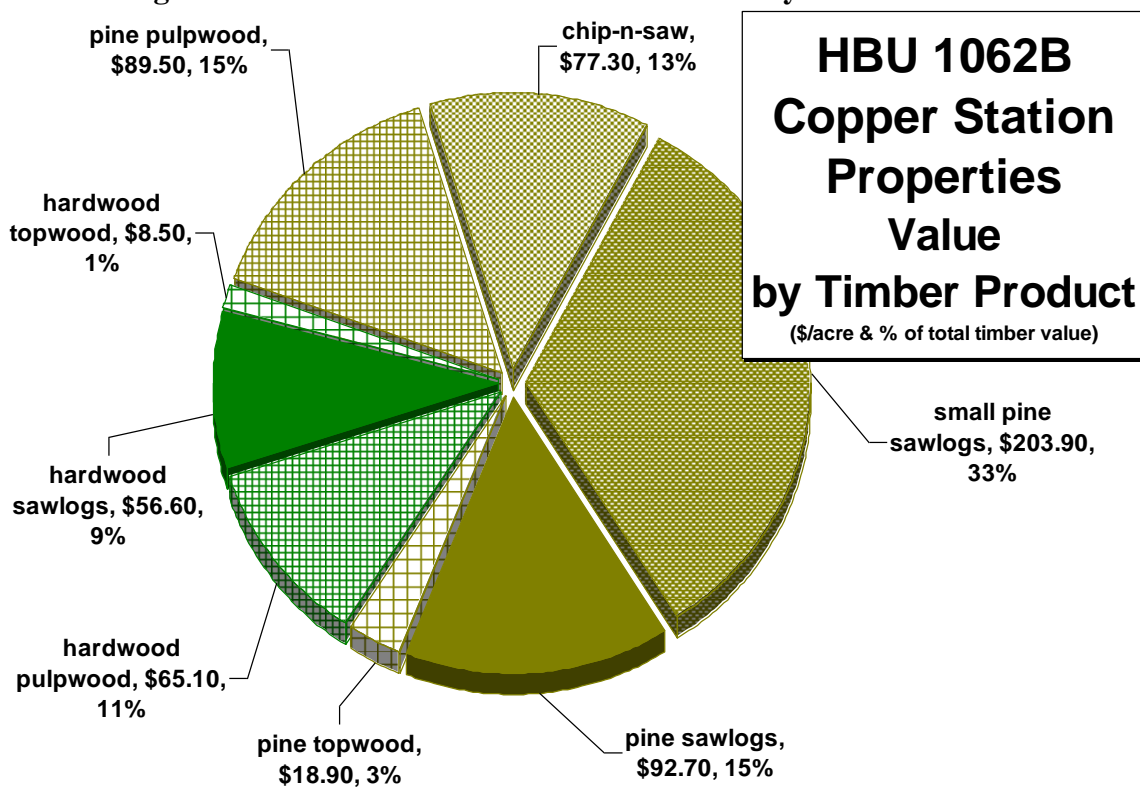
SUMMARY of TIMBER VALUE by TIMBER PRODUCT

The estimated total current timber value for the Southland Timberland **HBU 1062B** tract is **$281,766 ($587 per acre).**

Table 5.   HBU 1062B Current Timber Value

TIMBER TYPE AND PRODUCT	VOLUME (TONS)	% VOLUME	VALUE	% VALUE
PINE	**16,584**	**61%**	**$221,891**	**79%**
PINE PULPWOOD	8236	30%	$41,179	15%
PINE CHIP-N-SAW	1976	7%	$35,568	13%
SMALL PINE SAWLOGS	3126	11%	$93,789	33%
PINE SAWLOGS	1066	4%	$42,632	15%
PINE TOPWOOD	2180	8%	$8,723	3%
HARDWOOD	**10,630**	**39%**	**$59,875**	**21%**
HARDWOOD PULPWOOD	7485	28%	$29,942	11%
HARDWOOD SAWLOGS	2169	8%	$26,030	9%
HARDWOOD TOPWOOD	976	4%	$3,903	1%
TOTAL	**27,214**		**$281,766**	

5-YEAR PROJECTED TIMBER VALUE

A 5-year projection of the current merchantable timber value was calculated using growth rates from 35 measurements distributed across all acres on all merchantable stands and across the diameter classes. Growth measurements consist of the 5-year radial growth of the tree, bark thickness and dbh to the nearest 1/10th of an inch. The 2011 value projected value is **$676,050 ($1,408 per acre).** (NOTE: average pine tree increases from 8.1" to 10.0" dbh in 5 years.)

Table 6.   HBU 1062B 5-Year Timber Value (2011)

TIMBER TYPE AND PRODUCT	VOLUME (TONS)	% VOLUME	VALUE	% VALUE
PINE	**24,288**	**65%**	**$568,478**	**84%**
PINE PULPWOOD	1724	5%	$8,621	1%
PINE CHIP-N-SAW	4419	12%	$79,536	12%
SMALL PINE SAWLOGS	9419	25%	$282,556	42%
PINE SAWLOGS	4524	12%	$180,956	27%
PINE TOPWOOD	4202	11%	$16,809	2%
HARDWOOD	**13,312**	**35%**	**$107,572**	**16%**
HARDWOOD PULPWOOD	5191	14%	$20,764	3%
HARDWOOD SAWLOGS	6790	18%	$81,484	12%
HARDWOOD TOPWOOD	1331	4%	$5,324	1%
TOTAL	**37,600**		**$676,050**	

Pine & Hardwood Stand

Figure 7. Relative distribution of timber inventory parameters by Timber Product
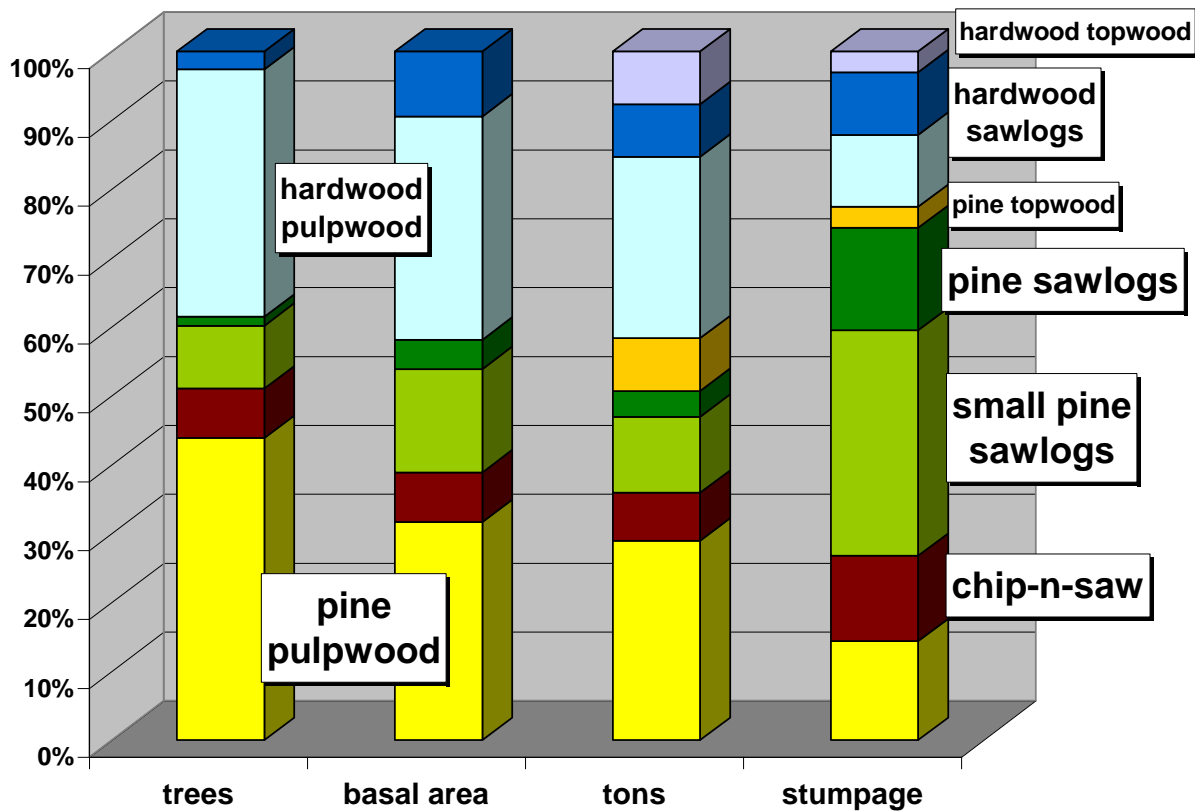
Figure 8 & 9. Distribution of trees and volume by Timber Product and DBH class

HBU 1062B
Copper Station Properties
current
Pine & Hardwood Trees

Legend:
- Hdwd Sawlogs
- Hdwd PW
- Pine Sawlogs
- Small Logs
- Chip-N-Saw
- Pine PW

HBU 1062B
Copper Station Properties
current
Timber Volume (tons)

Legend:
- Hdwd Sawlogs
- Hdwd PW
- Pine Sawlogs
- Small Logs
- Chip-N-Saw
- Pine PW
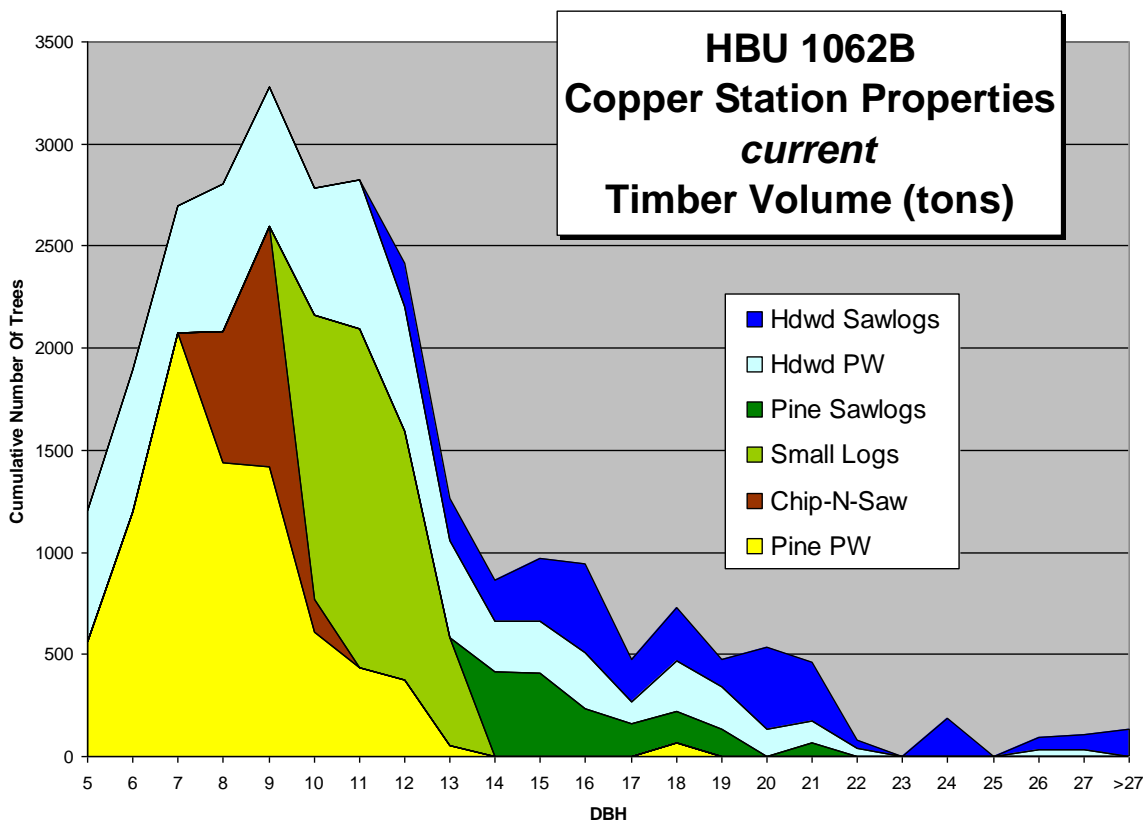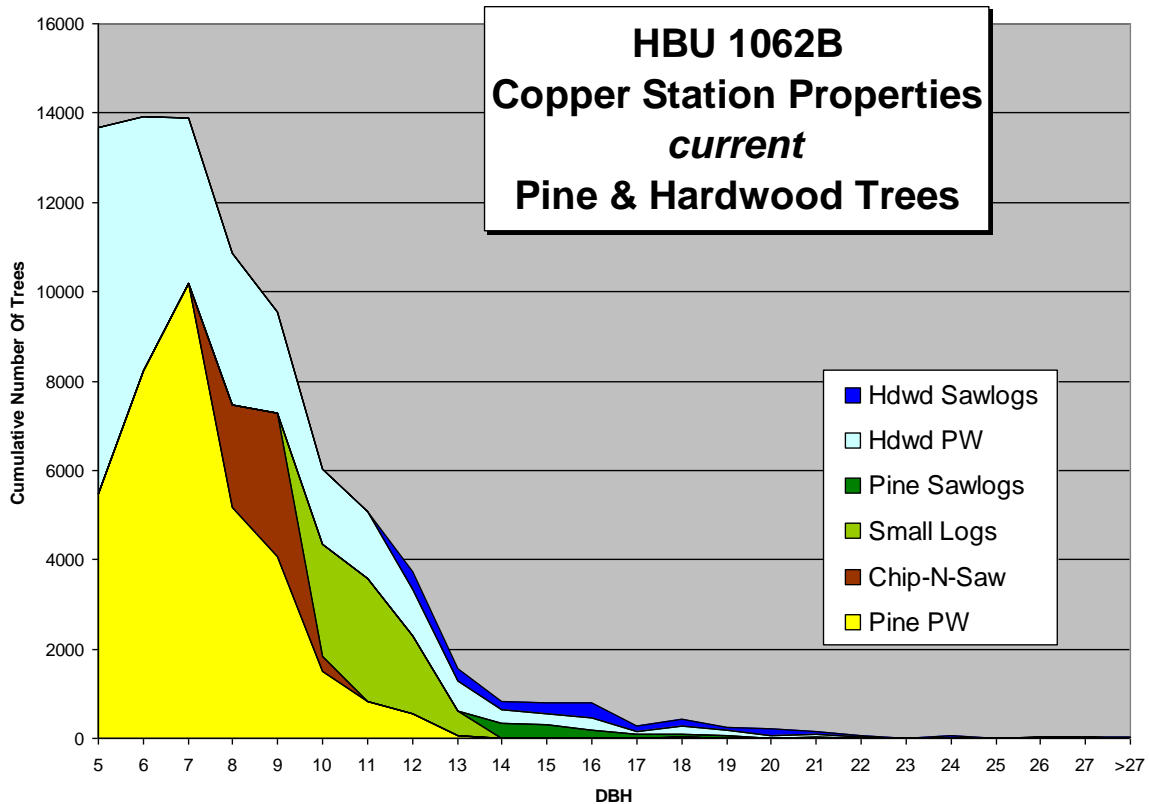
Table 7. Pine Stock & Stand Table

2006

460 acres DBH	Total Pine trees	total height	tons	Pine PW trees	total height	tons	Chip-N-Saw trees	total height	tons	Small Logs trees	total height	tons	Pine Sawlogs trees	total height	tons
5	5471	42	562	5471	42	562									
6	8231	41	1195	8231	41	1195									
7	10186	43	2075	10186	43	2075									
8	7479	49	2079	5164	47	1441	2315	53	638						
9	7290	51	2599	4054	47	1422	3236	55	1177						
10	4329	56	2163	1491	44	611	342	57	161	2496	63	1391			
11	3572	49	2094	840	47	438				2732	49	1656			
12	2301	52	1595	554	54	374				1747	52	1221			
13	607	55	583	67	54	53				540	55	530			
14	349	66	415										349	66	415
15	304	56	410										304	56	410
16	179	59	233										179	59	233
17	79	73	161										79	73	161
18	105	136	222	35	72	65							70	64	157
19	63	53	133										63	53	133
20															
21													25	70	65
22															
23															
24															
25															
26															
27															
>27															
∑	50545		16519	36093		8236	5893		1976	7515		4798	1069		1574

Table 8. Hardwood Stock & Stand Table

460 acres	Total Hdwd			Hdwd PW			Hdwd Sawlogs		
DBH	trees	total height	tons	trees	total height	tons	trees	total height	tons
5	8206	36	641	8206	36	641			
6	5699	39	697	5699	39	697			
7	3709	42	625	3709	42	625			
8	3384	40	726	3384	40	726			
9	2251	54	681	2251	54	681			
10	1710	48	619	1710	48	619			
11	1511	48	733	1511	48	733			
12	1422	49	820	1029	53	610	393	40	210
13	944	55	680	674	54	475	270	56	205
14	465	105	448	291	52	248	174	53	200
15	506	108	563	253	55	251	253	53	312
16	623	101	710	267	51	275	356	50	435
17	197	133	316	79	61	105	118	72	211
18	317	115	509	176	51	247	141	64	262
19	189	129	339	126	62	206	63	67	133
20	228	148	533	57	75	132	171	73	401
21	130	130	395	52	58	108	78	72	287
22	48	81	79	24	54	42	24	27	37
23									
24							59	59	185
25									
26				17	72	33	17	54	63
27	32	146	104	16	60	32	16	86	72
>27	28	75	133				28	75	133
∑	31599		10351	29531		7486	2161		3146