

## **Descriptive Summary of the Changes in Coastal New Hampshire, June 9, 1986, to June 12, 1993**

Forested lands dominated the landscape of coastal New Hampshire with over 3 million acres (approximately 40 percent of the land) covered by deciduous, evergreen, and mixed forests. At over 145,000 acres, forest loss constituted the greatest change detected by the C-CAP land cover analysis in New Hampshire. The majority of the 145,000 acres of forest conversion documented between 1986 and 1993 was attributed to human development. Forest changes due to development pressures were evidenced by the direct conversion of over 20,000 acres of forest to high and low intensity development. Transitional forest changes included over 70,000 acres converted to grassland and over 55,000 acres to scrub/shrub as forested areas were cleared and prepared for development.

When forests are converted to low intensity development, such as residential neighborhoods, the impact to the affected forests may be less because, typically, 20 to 50 percent of the vegetative cover remains in residential neighborhoods through the incorporation of large yards, parks, and trees. High intensity development, such as industrial parks, parking lots, and highways, impacts once-forested areas severely as the area is no longer predominated by vegetation; rather the landscape is dominated by buildings and paved surfaces. As of 1993, combined high and low intensity developed areas characterized over 345,000 acres or 5 percent of the data set.

A smaller component of forest change captured in the New Hampshire data set was indicative of the cyclic silviculture process, which involves the harvest and reforestation of evergreen tree stands. These changes were captured as forests changing to grasslands, the grasslands growing to scrub/shrub, and the scrub/shrub eventually returning to mature forests. However, silviculture is not a major industry in this part of New Hampshire and only a small portion of the landscape, about 3,000 acres, appeared to be in the cycle.

Below are three tables. The first two tables contain a data summary for the time 1 and time 2 images. These images were used to create the change image and their tables include; land cover classes, the number of pixels present in each class, and their corresponding values in acres.

The third table is a complete change matrix for time 1 and time 2 images and includes a smaller, generalized table, which groups similar classes together. Table three compares each class from time 1 to time 2 and illustrates the change that took place between classes. The table presents the total acres for each class, the total percent that each class represents, the total acres that changed, and the percent of change they represent.

Tabular Summary: New Hampshire, June 9, 1986

	<b>CLASS</b>	<b>PIXELS</b>	<b>ACRES</b>	<b>PERCENT</b>
0	Background	0	0	0.00%
1	Unclassified	0	0	0.00%
2	High Intensity Developed	679048	151016	1.93%
3	Low Intensity Developed	745143	165715	2.12%
4	Cultivated Land	50162	11156	0.14%
5	Grassland	2383805	530144	6.77%
6	Deciduous Forest	8485039	1887021	24.11%
7	Evergreen Forest	1007946	224161	2.86%
8	Mixed Forest	5099480	1134093	14.49%
9	Scrub/Shrub	1240354	275847	3.52%
10	Palustrine Forested Wetland	902497	200710	2.56%
11	Palustrine Scrub/Shrub Wetland	589141	131021	1.67%
12	Palustrine Emergent Wetland	290762	64664	0.83%
13	Estuarine Forested Wetland	0	0	0.00%
14	Estuarine Scrub/Shrub Wetland	0	0	0.00%
15	Estuarine Emergent Wetland	138157	30725	0.39%
16	Unconsolidated Shore	102866	22877	0.29%
17	Bare Land	93157	20718	0.26%
18	Water	13379822	2975591	38.02%
19	Palustrine Aquatic Bed		0	0.00%
20	Estuarine Aquatic Bed		0	0.00%
21	Tundra		0	0.00%
22	Snow/Ice		0	0.00%
	<b>TOTAL</b>	<b>35187379</b>	<b>7825460</b>	<b>100.00%</b>

Tabular Summary: New Hampshire, June 12, 1993

	<b>CLASS</b>	<b>PIXELS</b>	<b>ACRES</b>	<b>PERCENT</b>
0	Background	0	0	0.00%
1	Unclassified	0	0	0.00%
2	High Intensity Developed	737522	164020	2.10%
3	Low Intensity Developed	828989	184362	2.36%
4	Cultivated Land	53585	11917	0.15%
5	Grassland	2716623	604160	7.72%
6	Deciduous Forest	8342046	1855220	23.71%
7	Evergreen Forest	882934	196359	2.51%
8	Mixed Forest	4769522	1060713	13.55%
9	Scrub/Shrub	1359213	302281	3.86%
10	Palustrine Forested Wetland	854113	189950	2.43%
11	Palustrine Scrub/Shrub Wetland	596726	132708	1.70%
12	Palustrine Emergent Wetland	313817	69791	0.89%
13	Estuarine Forested Wetland	0	0	0.00%
14	Estuarine Scrub/Shrub Wetland	0	0	0.00%
15	Estuarine Emergent Wetland	139431	31009	0.40%
16	Unconsolidated Shore	105838	23538	0.30%
17	Bare Land	88360	19651	0.25%
18	Water	13398660	2979781	38.08%
19	Palustrine Aquatic Bed	0	0	0.00%
20	Estuarine Aquatic Bed	0	0	0.00%
21	Tundra	0	0	0.00%
22	Snow/Ice	0	0	0.00%
	<b>TOTALS</b>	<b>35187379</b>	<b>7825460</b>	<b>100.00%</b>

Change Matrix and Tabular Summary: New Hampshire, from June 9, 1986 to June 12, 1993

	FROM / TO	High Intensity Developed	Low Intensity Developed	Cultivated Land	Grassland	Deciduous Forest	Evergreen Forest	Mixed Forest	Scrub/Shrub	Palustrine Forested Wetland	Palustrine Scrub/Shrub Wetland	Palustrine Emergent Wetland	Estuarine Forested Wetland	Estuarine Scrub/Shrub Wetland	Estuarine Emergent Wetland	Unconsolidated Shore	Bare Land	Water	Palustrine Aquatic Bed	Estuarine Aquatic Bed	Tundra	Snow/ice	Total Acres	Changed				
2	High Intensity Developed	190888	0	2	79	10	0	0	12	1	3	5	0	0	0	1	2	5	0	0	0	0	0	181,017	135	High Intensity Developed		
3	Low Intensity Developed	169	165906	0	186	523	15	64	820	4	16	14	0	0	0	3	5	14	7	0	0	0	0	165,715	523	Low Intensity Developed		
4	Cultivated Land	4	11,038	96	9	0	0	3	13	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	11,156	118	Cultivated Land	
8	Grassland	4,783	2,554	620	8,897	0	20	134	302	16	454	630	0	0	0	48	50	1,098	485	0	0	0	0	0	336,144	14,869	Grassland	
6	Deciduous Forest	11,353	4,195	471	21,552	0	922	20	134	16	454	630	0	0	0	14	335	420	0	0	0	0	0	0	1,687,625	45,688	Deciduous Forest	
7	Evergreen Forest	1,668	3,755	16	11,127	540	194,358	1,250	9853	12	267	71	0	0	0	28	51	344	830	0	0	0	0	0	224,161	29,808	Evergreen Forest	
8	Mixed Forest	3,055	7679	25	38,325	2873	88	105,858	27,123	107	300	56	0	0	0	49	34	530	697	0	0	0	0	0	1,124,095	79,746	Mixed Forest	
9	Scrub/Shrub	1,823	1,889	50	149,10	8,152	301	2,201	24,556	136	518	777	0	0	0	24	24	438	423	0	0	0	0	0	275,847	29,981	Scrub/Shrub	
10	Palustrine Forested Wetland	254	886	2	1894	72	37	124	1470	188,846	215,1	3578	0	0	0	63	19	52	1533	0	0	0	0	0	200,799	11,863	Palustrine Forested Wetland	
11	Palustrine Scrub/Shrub Wetland	117	106	20	103	19	6	19	24	26	183,842	1335	0	0	0	36	17	21	366	0	0	0	0	0	131,622	2,880	Palustrine Scrub/Shrub Wetland	
12	Palustrine Emergent Wetland	74	60	16	66	38	18	56	51	70	502	62433	0	0	0	87	39	146	1010	0	0	0	0	0	64,664	2,231	Palustrine Emergent Wetland	
13	Estuarine Forested Wetland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Estuarine Forested Wetland
14	Estuarine Scrub/Shrub Wetland	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Estuarine Scrub/Shrub Wetland
15	Estuarine Emergent Wetland	0	3	0	11	8	1	8	4	2	8	26	0	0	0	30,987	18	0	87	0	0	0	0	0	30,725	199	Estuarine Emergent Wetland	
16	Unconsolidated Shore	0	0	0	18	92	16	16	100	0	0	0	0	0	0	40	22	22,662	47	717	0	0	0	0	22,873	415	Unconsolidated Shore	
17	Bare Land	29	273	75	2711	150	13	55	409	8	74	130	0	0	0	15	103	18,958	70	0	0	0	0	0	29,718	4,158	Bare Land	
18	Water	26	53	1	217	70	106	112	150	18	142	890	0	0	0	34	708	17	297,940	0	0	0	0	0	2,975,891	2,851	Water	
19	Palustrine Aquatic Bed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Palustrine Aquatic Bed
20	Estuarine Aquatic Bed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Estuarine Aquatic Bed
21	Tundra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Tundra
22	Snow/ice	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	Snow/ice
	Total Acres	164,021	184,362	11,977	604,161	1,888,225	196,398	1,060,718	302,280	189,948	132,798	69,791	0	0	0	31,009	23,638	19,851	2,979,781	0	0	0	0	0	4,852,426	0	Total Acres	
	Percent of Total	3.38%	3.80%	0.25%	12.49%	38.23%	4.05%	21.88%	6.23%	3.91%	2.73%	1.44%	0.00%	0.00%	0.00%	0.49%	0.49%	0.41%	61.41%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0	Percent of Total	
	Total Acres that Changed (Y2-Y1)	13,004	18,647	761	74,017	-31,801	-27,802	-73,381	26,434	-10,760	1,687	5,127	0	0	0	283	681	-1,067	4,189	0	0	0	0	0	222,830	222,830	Total Acres that Changed	
	Percent Change	8.61%	11.29%	6.82%	13.96%	-1.69%	-12.40%	-6.47%	9.58%	-5.96%	1.29%	7.92%	0	0	0	0.92%	2.89%	-5.15%	0.14%	0	0	0	0	0	4.59%	4.59%	Percent Change	

FROM / TO	Developed	Cultivated	Grassland	Forested	Scrub/Shrub	Wetlands	Bare	Water	Total Acres	Changed	Developed
Developed	316,138	7	265	150	110	46	26	12	316,758	621	Developed
Cultivated	1	11,038	90	0	14	0	0	0	11,157	119	Cultivated
Grassland	7,336	620	515,378	1,162	3,535	1,148	1,148	490	536,814	15,439	Grassland
Forested	20,336	50	70,588	3,200,785	55,430	1,610	1,412	3,450	3,443,628	162,844	Forested
Scrub/Shrub	4,038	70	15,012	9,154	374,698	2,374	500	1,418	407,478	14,252	Scrub/Shrub
Wetlands	1,201	33	2,063	400	4,505	417,933	343	5,005	427,128	9,297	Wetlands
Bare	318	75	2,730	309	484	292	38,174	287	43,679	4,506	Bare
Water	62	11	2,711	300	294	1,095	725	2,970,040	2,974,246	5,224	Water
Total Acres	349,448	11,938	606,642	3,302,448	438,978	424,378	43,328	2,962,309	4,852,426	220,673	Total Acres
Percent of Total (Y2>Total)	7.20%	0.25%	12.64%	68.86%	9.06%	8.79%	0.89%	61.46%		4.58%	
Total Change (Y2-Y1)	32,691	781	78,028	-141,179	28,798	-3,742	-381	4,963		220,673	
Percent Change	10.32%	7.80%	14.71%	-4.19%	7.85%	-0.84%	-0.89%	6.14%		4.58%	