Transportation & Environment
Council Committee
Agenda
March 16, 2016
Auburn Hall – Community Room

5:30 P.M.

I. **Call to Order and Introductions**

II. **Minutes of previous meeting**

III. **Public Woodlot Management Ordinance**

IV. **Solid Waste and Recycling Contract**

V. **MMWAC**

VI. **Recreation and Special Events Committee**

VII. **Summer Street Extension Reconstruction**

VIII. **Committee recommendations**

IX. **Staff updates**

   a. **Route 4**

X. **Public Comment**

XI. **Next meeting agenda setting, April 20, 2016**

City of Auburn
Public Woodlot Management Ordinance
Conservation Commission draft 1.28.16

Section 1 – Preamble.

The City of Auburn hereby adopts the following public wood lot management ordinance in order to regulate the forest management on public lands within the city, including properties used by various individual departments.

Section 2 – Authority.

This ordinance is enacted pursuant to the Home Rule Authority granted to the city in accordance with the provisions of 30-A M.R.S.A. §3001.

Section 3 – Definitions.

3.1 **Best Management Practices (BMPs)** - voluntary outcome-based guidelines established by Maine Forest Service to maintain water quality and minimize sedimentation of water courses

3.2 **Community Forest**- The sum of 1.Street trees within or upon the limits of any city road, public right of way or any highway within the meaning of 30-A.M.R.S.A. §3281; 2. Public trees included as part of landscaping at public buildings or parks; 3. Public woodlots i.e. parcels which include forested acres which provide or have potential to provide wildlife habitat, forest products, recreation, educational opportunities and other amenities.

3.3 **Designated Representative**- individual identified as responsible for overseeing forest management activities related to a timber harvesting operation. Principal contact with the forester supervising the harvest operation.

3.4 **Forest Management Plan**- A site specific document written by a professional forester with input from the landowner which establishes direction and goals for the management of a forest land area. The plan will specify all silvicultural practices and activities that support the landowner objectives and minimizes adverse environmental impact. Forest management plans normally include a description of the land and forest, inventory information, and management prescriptions. Forest management plans are typically updated every ten years.

3.5 **Harvest Plan-** A document prepared by a professional forester describing activities involved in a timber harvest, including but not limited to: maps of access routes, cut locations, principle trails to be used to remove harvested material, water crossings, log landings; cutting prescriptions and controls; buffer zones; BMPs to be used; and special considerations sufficient to support the objectives of the Forest Management Plan, and provide direction to the qualified logging professional conducting the operation under supervision of the forester.

3.6 **Professional Forester**- An individual qualified and licensed to practice forestry in the State of Maine. (Forest management in Maine is limited to licensed professional foresters.)

3.7 **Public Trees**-All trees located upon any public property owned by the city, including public property currently used by any individual departments.

3.8 **Public Woodlot** – The portion of the community forest not including street trees within or upon the limits of any city road, public right of way, or any highway within the meaning of 30-A M.R.S.A. §3281 and public trees included as part of landscaping at public buildings or parks. Public woodlots are parcels which include forested acres which provide or have potential to provide wildlife habitat, forest products, recreation, educational opportunities and other amenities.

3.9 **Qualified Logging Professional**- a logger trained according to Sustainable Forestry Initiative (SFI) Standard by an organization recognized by Maine's Sustainable Forestry Initiative Implementation Committee, including Maine Certified Logging Professional (CLP).

3.10 **Stakeholde**r- stakeholders include a range of persons, including city council, school committee, staff of individual city departments, adjacent landowners (abutters), and community members.

3.11 Any term or word of this ordinance which is not defined in this section shall have a meaning consistent with Title 30-A, M.R.S.A., to the extent that such term is defined in that Title; any terms that are not defined in that Title shall have a meaning consistent with common usage.

Section 4 – Development of a Forest Management Plan.

The city council or its' designated administrative board or staff member shall ensure that a forest management plan is written for any public woodlot(s) that are intended to be managed. The forest management plan shall be written by a professional forester with documented input from the individual department responsible for the management of the public woodlot and other stakeholders, in order to define management objectives to be addressed in the plan. The management plan should address multiple uses, including but not limited to biodiversity, control of invasive species, education activities, forest inventory, recreation, special places, timber harvesting, water quality, wildlife habitat, and any other appropriate considerations. The management plan should be updated every ten years and conform to the current stewardship guidelines as defined by the Maine Forest Service.

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Section 5- Conducting a Harvest

A). The city council or its' designated administrative board(s) shall approve any timber harvesting.

B). The harvest will be supervised by a professional forester who shall provide regular written progress reports to the designated representative member of the individual department responsible for the public woodlot. The designated representative shall be empowered to suspend the operation if objectives are not being met.

C). The harvest shall be conducted by qualified logging professionals.

D). The harvest will be conducted according to a harvest plan, written by a professional forester and approved by the designated representative, that supports the objectives of the forest management plan and provides direction to the qualified logging professional conducting the operation. The harvest plan will include BMPs to safeguard water quality.

E). Stakeholders, at minimum abutters, elected city officials, appropriate administrative board members and appropriate staff shall be notified 30 days prior to commencement of a harvest.

F). Within 90 days of completion of a harvest, a review will be conducted including the forester, designated representative and appropriate stakeholders, in order to evaluate the operation's outcomes. A written review shall be prepared for the city council or its' designated administrative board.

Section 6 – Harvest revenues.
Net Revenues generated from any timber harvests shall allocated as follows:

20% to an account to be used to improve the community forest
20% to the Community Cords account
30% to an account for the support of the department managing the harvested woodlot i.e. Conservation Commission, Parks Department, School Department, etc.
30% to General Revenue

Exception. When deemed necessary by the city council, this provision may be waived by a super majority vote of the city council with five affirmative council votes, on a project basis.

Section 7 – Prohibition.
No person shall prune, plant, cut down, remove, or alter a public tree. See Section 7 below.

Section 8 - Guidelines for cutting or altering of public shade trees.

After a public hearing, the city council or its' designated administrative board shall have the authority to adopt, amend, or modify this ordinance. Thereafter, the city council or it's designated administrative board shall use those guidelines in making decisions pursuant to this ordinance.

Section 9 – Violations and penalties.

a) Any violator of any provision of this article shall be subject to a civil penalty payable to the city. Each act of violation shall constitute a separate offense.

b) Should any public tree be destroyed, the person causing the destruction shall also make restitution to the city in an amount equal to the cost to the city of removing the destroyed tree plus its replacement value.

c) Whenever the municipal arborist determines there are reasonable grounds to believe there has been a violation of any provisions of this article, he/she may initiate enforcement proceedings in accordance with the citation system established in article VIII of chapter 2.

d) In addition to the remedies set forth above, the municipal arborist, on behalf of the city, may seek an abatement of the violation, or injunctive relief, including an award of penalties and reasonable attorney fees, from the district court or the superior court.

e) The court also may order a violator of this article to reimburse the city for the cost of any action that was necessary to correct violations of the ordinance. If the city is the prevailing party in an enforcement action, it shall be awarded reasonable attorney's fees and costs.

Section10 - Severability.
The provisions of this ordinance shall be severable. If any portion of this ordinance is held to be invalid, the remainder of this ordinance and its application thereof shall not be affected.

Phone: 207-892-6562

SOUTHERN MAINE FORESTRY SERVICES, INC.

P.O. Box 910 • North Windham, Maine 04062

Timber Cruise Report

and

Forest Management Plan

Prepared for

The City of Auburn

Auburn, Maine

Prepared by:

Charles N. Love, Jr.
Licensed Forester #3293
May 6, 2009

Client Partners in Forest Management Since 1981

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DESCRIPTION

The property consists of 554 acres. 480 acres are productive forest land. Parcels are located on Mt.Apatite Road, Small Road, Mine Road, S.Main Street, Broad Street, Sherwood Drive, Forest Ave., Harris Street, Auburn Heights and Andrew Drive in the City of Auburn, Androscoggin County, Maine. The property is listed on the town tax assessor's Map 213; Lot 014, Map 250; Lot 095, Map 191; Lot 101; Map 200; Lot 028; Map 182; Lot 003; Map 240; Lot 322; Map 337; Lot 023.

The terrain is rolling to flat with occasional small wet areas. There are a few small brook crossings and some wet areas but no unusual restrictions or hazards exist for timber harvesting. The soils are moderately well drained. The soils provide good to excellent sites for tree growth and wildlife habitat.

Access is provided by Mt.Apatite Road, Small Road, Mine Road, S.Main Street, Broad Street, Sherwood Drive, Forest Ave., Harris Street, Auburn Heights

Ideally open areas will be used as staging areas and minor road improvements may have to be done to accommodate today's trucks.

FOREST HISTORY

During the late 1700's and 1800's, the entire property was used for agricultural purposes such as cropland, hayland and pasture. Evidence of this exists in form of stone walls and old wire fence. In the late 1800's to early 1900's, agricultural use of most of the land was abandoned. As time went on, mature forest developed. The applies especially to the more marginal pasture land, including gullies, drainage's and ledges.

Harvesting has taken place in different forms for many years. Most of this occurred prior to the city acquiring the land on the South main Street and Broad Street properties. Mt. Apatite has had some harvesting 10-15 years ago and 25-30 years prior to that in the northern part of the lot.

There is little evidence of harvesting over the school properties with the exception of trail work.

MANAGEMENT OBJECTIVES

The goals of The City of Auburn are to conserve productive timberland. The city wishes to manage the property so as to maintain in perpetuity an aesthetic, productive woodland. Included in their goals are: improved forest growth and productivity, improved wildlife habitat, maintaining open space, and limited recreational potential. All of these goals are attainable with little or no detriment to each other.

PERTINENT LAWS AND REGULATIONS

Shoreland zoning; The Auburn Water District enforces shoreland zoning on any properties inside the Lake Auburn Watershed. Within 75 feet of any brooks, no more than 40% or less than 60 square feet of basal area can be harvested within 250 feet of a great pond within a ten year period. This law will have little or no impact on the goals or recommendations for the management of this property.

Clearcutting; Clearcuts of five acres in size or greater are regulated by the state of Maine. All areas where heavy cutting or overstory removals were conducted have abundant advanced regeneration present. An overstory removal of existing regeneration is not a clear-cut according to Maine state law. Therefore clear cutting regulations have no impact on the management goals or recommendations for this property.

Hiring a consulting forester to administer the sale of timber as recommended within the plan will ensure compliance with all Maine State laws. A copy of Maine State laws regulating timber harvesting are found in the appendix. The town ordinances should also be checked for possible new rules affecting the harvest of timber before doing so.

NON-TIMBER RESOURCES

Endangered species/ Exemplary Communities; No endangered species were identified during the inspection of this property.

Fish and wildlife Habitats; Specific wildlife habitat management recommendations are found in each stand description. The forest management recommendations within this plan will positively affect the stream quality by maintaining and enhancing a vigorous stable forest along the streams.
Water Quality and Wetlands; Extreme care should be taken when working next to wetlands. Pre designating all skid trails and working when soils are dry or frozen will minimize impact.

Recreation; Recreation is a very important use of the property. Maintaining agricultural, educational and recreational programs are part of the long term goals. Several trails are located on the property. The trails and property are open to the public.

Aesthetics; Managing the property for timber maintains a vigorous healthy stand of timber with multiple age classes which helps maintain aesthetics. Actively managing the forest for the production of forest products in close proximity to a residential neighborhood demonstrates responsible management is compatible with recreation and aesthetics.

TIMBER INVENTORY PROCEDURE

The maps drawn for this plan were developed using information from several sources. Roads and streams were taken from our data base. Property lines were digitized from the town tax maps. Aerial photos were used to identify prominent stand types. Stand type lines were taken from field maps produced while inventorying the timber.

Variable plot or point sampling was the method used for this timber inventory. Point sampling measures the relative density of trees rather than the actual number of trees on a fixed area (fixed

area sampling). Point sampling assumes that there is an equal stocking expressed as basal area (square feet of stump area) for each tree measured regardless of size. Since large trees have more basal area large trees are more intensively sampled than small trees. Point sampling is desirable because larger more valuable trees are more intensively sampled and it is relatively quick and efficient to use.

Inventory samples were systematically spaced on a grid 300 feet by 300 feet apart on Mt.Apatite. Each sample represents approximately 2.07 acres. All other properties were sampled at a spacing of 200 feet by 200 feet. Each sample represents approximately .92 acres. All stands visually estimated to have commercial round wood volume exceeding five cords per acre were inventoried. Those stands estimated to have less volume than that were walked through to evaluate stand conditions.

A 20 basal area factor (BAF) prism was used for this inventory. All trees six inches in diameter or larger were recoreded by two inch diameter class. Merchantable height was recorded by the number of eight foot sticks of pulp to a four inch top or the number of eight foot logs based on the utilization standards for each species. Sample data was then calculated using Two Dogs brand software. All volumes are expressed in standard cords and thousand board feet (MBF), international scale. Desirable, young stems likely to produce high value sawlogs or veneer in the future are identified as growing stock, although their current value is that of pulpwood. This is to distinguish them from other stems of poorer quality that are likely to remain as pulpwood or other low value products.

Log utilization standards for standing trees

Species	Diameter in inches	Small end
Spruce and fir	8	6
White birch	8	7
Red oak	10	9
All other hardwoods	12	10
All other softwoods	10	8

TIMBER

For both the short and long term management, a combination of the shelterwood and selection methods of silviculture is recommended with a cutting cycle of 10 years. That is, on the average each area should be cut every ten years. A fairly short cutting cycle allows more of the potential mortality to be salvaged and also allows for more conservative thinning.

It should be pointed out that the recommendations are based on current conditions to attain the owner's current goals. Should conditions, such as markets, or as the landowner's needs change, the recommendations should be modified to reflect those changes. For example, it makes no sense to sell high valued timber when markets for that timber are weak. Waiting will have little effect on forest growth, but could greatly increase the income realized. Alternatively, should the owner's needs change, there is timber available for cutting. Cutting sooner than planned may not maximize the timber value, but may be the owner's best financial choice and can be done without damaging the long term productivity of the forest.

SILVICULTURAL SYSTEMS

Shelterwood

The shelterwood system is an even-age system of silviculture. That is, all of the trees in the forest stands are near the same age. In this system, the stands are thinned periodically until they are mature. Once mature, they are thinned in a manner that will encourage the establishment of seedlings of desirable species. These seedlings then develop under the "sheltering" overstory. As the seedlings develop, that sheltering overstory is removed in one or more harvest cuts.

By extending the removal period to two, three or more cutting cycles a forest managed by a shelterwood may take on the appearance of a forest managed under the selection system. The difference is somewhat academic, but does affect which trees are selected for cutting and when they are cut.

Selection

In the selection system, individual stems and groups of stems are selected for cutting. Thinning and harvest are combined in this system. Reproduction becomes established in openings created when groups are cut, and uneven or all-age forest stands result. If only small openings are made in the canopy, reproduction will be only of species that are tolerant of shade. Larger openings, at least as wide as the surrounding trees are tall, will allow some stems of intermediate and shade intolerant species to become established. A cutting cycle of ten years is recommended. In the most intensive applications of this system, precommercial thinning and weeding is conducted within groups of young stems. This is generally done following a commercial harvest and is restricted to those areas that do not have a competing overstory. The regeneration component in this forest is relatively young. Precommercial thinning is not likely to be needed as a cultural treatment within the time that this plan covers.

FOREST DESCRIPTION AND RECOMMENDATIONS

Currently, the 480 forested are acres growing 87,514 board feet of sawtimber, and 164.3 cords of pulpwood and firewood per year. Looked at in a standard measure, the total merchantable growth is 339.3 cords per year, or .71 cords per acre, per year. The value of this growth is approximately $27,059.88 which is $56.37 per acre per year. These values are good for forests in this area. Management treatments that result in focussing growth on high value trees such as white pine and red oak will maintain or increase this high per acre value of the growth. A selection harvest removing weaker low quality trees will release or allow seedlings of desirable species to become established.

Map 213; Lot 014 - Mt. Apatite; 325 Acres

The forest can be considered to have four forest stands, one hardwood, one softwood and two mixedwood stand.

STAND I- HW3B- Hardwood sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
204.0	77.2	10.2	137.2	154.9	0.25

Location: This stand occupies the majority of the lot and runs in a north south direction. It is irregular shaped stand with old wire fence, ribbon and scattered blazes identifying the boundary line.

Terrain and Soils: The terrain is rolling to flat. Soils are classified as Hollis and Sutton fine sandy loams and provide good to average sites for tree growth. This soil type is moderately well drained.

Access: Access for this stand is provided by Mt. Apatite Road, Mine Road or Small Road. Mt. Apatite Road allows access for the majority of the stand with the least amount of improvements required. Small Road may be required to use to access the northern area of the stand with very little improvements required. Timber from Stand I will be removed using established skid trails that pass through the stand to access the entire area. Two landings will have to be established to due the size of the stand and lot.

Composition and Quality: This stand is composed primarily of red oak, eastern white pine, red maple, white ash, white birch and beech. Scattered popple, hemlock and sugar maple are also present. The timber is of sawlog size and good to average quality. The stand is adequately stocked.

Regeneration: Regeneration is abundant and primarily composed of white ash, red maple, sugar maple, fir and white pine.

Recommendations: Some areas of this stand were harvested 10-15 years ago. There appears to also have been some harvesting 10-15 years prior to that. Neither harvest covered the entire stand. It is recommended that trees of poor quality, damaged, diseased or suppressed be harvested. As much beech and popple should be removed. This stand has more potential than what it is currently producing. Trees that should be left behind should consist of higher quality white pine, red oak, sugar maple and white ash. Any potential hazards should also be removed. This should be done under the supervision of a licensed forester. Areas that have advanced regeneration should be avoided. Through the use of whole tree chipping TSI (timber stand improvement) can also be done simultaneously. This is essentially a weeding of smaller diameter trees that are chipped and sold as biomass. The remaining timber should be allowed to grow another 10-12 years. This would involve removing approximately 20-30% of the stand volume and produce 800-1200 cords.

Volume Estimate:

Species	Board Feet	Cords
White pine	281,400	81.2
White Pine Pallet	26,600	
Red Oak, veneer	25,000	
Red Oak	288,800	
Sugar Maple	6,000	
Misc. Hardwood	41,800	1,254
White Ash	37,200	
White Birch	4,000	
Popple		34.4
Hemlock		114.8
Totals	710,800	1,484.4
per acre	3,484	7.2
Total cords per acre		14.1

STAND II- WPHWHE3B- Mixedwood Sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
70.4	95.2	10.4	160.7	189.2	0.42

Location: This is an irregular shaped stand that lies north of Small Road. It is intersected by Stand I (see map) and runs in a east/west direction. There is old wire fence wall acting as the eastern boundary and a Small Road serves as its western boundary.

Terrain and Soils: The terrain is gently rolling to flat with scattered ledgy outcrops. There are some wet areas in this stand that can only be operated when the ground is very dry or frozen. Soils are classified as Hollis and Scantic very stony fine sandy loams. This soil type is moderately well drained.

Access: Access is provided by skid trails to be established that lead to either Mt. Apatite Road or Small Road.

Composition and Quality: This stand is primarily composed of white pine, red oak, white ash, and hemlock. The quality of the timber is fair to good. This stand is well stocked.

Regeneration: A light understory of white pine, red maple, hemlock, balsam fir, spruce, red oak and white pine makes up the regeneration.

Recommendations: It is recommended that trees of poor quality, damaged, diseased or suppressed be harvested. 60% of the hemlock should be removed. This stand would be more productive growing eastern white pine and red oak. Also, the majority of the mature red maple present has some form of rot and should be removed. Much of the white birch is mature and in

decline. This would leave behind the better quality white pine, red oak, white ash and sugar maple. This would involve removing 20-30% of the stand volume and produce 200-300 cords leaving a residual basal area of approximately 80 square feet per acre.

Volume Estimate:

Species	Board Feet	Cords
White pine	158,400	67
White Pine Pallet	6,600	
Red Oak, veneer	3,800	
Red Oak	84,600	
Sugar Maple	6,200	
Hemlock	18,600	200
White Ash	13,400	
Misc. Hardwood	9,600	464.8
White Birch	7,000	
Totals	308,200	731.8
per acre	4,378	10
Total cords per acre		18.8

STAND III-WP3B -Softwood sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
6.2	88.0	10.9	135.1	266.8	0.32

Location: This small pine stand is located in two sperate areas in the westerly side of the lot (see stand map).

Terrain and Soils: The terrain is flat to rolling. There are scattered drainage's and wet areas in this stand. Soils are of the Hollis and Suffield series (see appendix), which provides good to average soils for timber.

Access: Access will be provided by establishing skid trails. Modifications may have to be made to accommodate today's logging equipment and access areas that were not harvested. This will help avoid wet areas and disturbing sensitive areas.

Composition and Quality: This stand is composed primarily of white pine. Red oak and red maple are also present. The pine is of sawlog size and good to average quality. The stand is well stocked.

Regeneration: The understory is made up of white pine, red spruce, balsam fir, hemlock, white ash, red oak makes up the regeneration. It is of sapling to pole size and good quality.

Recommendations: A selection system removing suppressed, damaged and low quality trees is recommended. There are scattered pockets of blowdown near the southern boundary line. The

area should be marked by a professional forester to avoid damage to younger seedlings and saplings. This harvest would produce 20-30 cords and reduce the basal area to approximately 75-80 sq.ft per acre.

Volume Estimate:

Species	Board Feet	Cords
White pine	24,600	12
White pine,pallet	2,400	
Red Oak	7,200	
Misc. hardwood	1,800	33
Totals	36,000	45
per acre	5,806	7.3
Total cords per acre		19

STAND IV - WP3B -Mixedwood sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
43.9	101.0	12.6	147.4	301.3	0.38

Location: This is an irregular shaped stand that is located in the southern end of the parcel.

Terrain and Soils: The terrain is rolling with scattered wet areas. Soils are of Suffield and Scantic series (see appendix), all of which provide good to average soils for timber.

Access: Mt. Apatite Road will be the primary access road for this stand. A network of trails will need to be established to accommodate today's skidders. Many of the old trails will be used where possible. These trails will form a watershed type pattern feeding into a central landing.

Composition and Quality: This stand is composed primarily of white pine, red oak, white ash and scattered hardwoods. The timber is of sawlog size and of fair to good quality. The stand is well stocked.

Regeneration: Regeneration is abundant and is composed of white pine, balsam fir, hemlock, white birch, hemlock, red oak and red maple.

Recommendations: This stand would benefit from a selective harvest. There are lower quality trees that should be removed. Trees with disease or damage should also be removed. Also, trees that needed to provide access will also need to be removed. This would produce approximately 200-300 cords and a residual basal area of 75-80 square feet per acre.

Volume Estimate:

Species	Board Feet	Cords
White pine	192,000	22
White pine,pallet	4,200	
Red Oak, veneer	9,200	
Red Oak	64,000	
Sugar Maple	5,400	
White Ash	4,000	
Hemlock	3,000	88
Misc. hardwood	2,800	298.2
Totals	284,600	408.2
per acre	6,483	9.3
Total cords per acre		22.3

Note: These volumes and stumpage estimates are based on long term forest management harvesting under good market and weather conditions.

Estimated Total Value of standing timber -Mt. Apatite - $410,893.65

Currently, the 21.4 acres is growing 7,235 board feet of sawtimber, and 16.1 cords of pulpwood and firewood per year. Looked at in a standard measure, the total merchantable growth is 30.6 cords per year, or 1.4 cords per acre, per year. The value of this growth is approximately $2,041.30 which is $95.38 per acre per year. These values are good for forests in this area. Management treatments that result in focussing growth on high value trees such as white pine and red oak will maintain or increase this high per acre value of the growth. A selection harvest removing weaker low quality trees will release or allow seedlings of desirable species to become established.

The forest can be considered to have two forest stands, one hardwood and one mixedwood stand.

Map 250-095; Pettengill Park - 21.4 Forested Acres

STAND I - HW3B - Hardwood Sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
16.7	102.0	11.3	146.0	109.5	0.72

Location: This is an irregular shaped stand that covers the majority of the property. Stand II is smaller 1-2 acre mixedwood units that are spread out, the remaining acreage is all stand I. Boundary lines were extremely difficult to locate and not all have been identified. There are two iron pipes at the northern corners of the lot.

Terrain and Soils: The terrain is rolling with scattered wet areas and gullies. Soils are of Elmwood, Ninigret, Adams and Buxton series (see appendix), all of which provide good to average soils for timber.

Access: Pettengil Park Road will be the primary access road for this stand. A network of trails will need to be established to accommodate today's skidders. Many of the old trails will be used where possible. These trails will form a watershed type pattern feeding into a central landing located behind the northeast corner of the gym.

Composition and Quality: This stand is composed primarily of red oak, white ash, white birch, scattered white pine and popple. The timber is of sawlog size and of fair to good quality. The stand is adequately is well stocked.

Regeneration: Regeneration is abundant and is composed of white pine, red oak, white ash, white birch, hemlock, and red maple.

Recommendations: This stand would benefit from a light selective harvest.There are lower quality trees that should be removed. Trees with disease or damage should also be removed. The popple in this stand is mature and in some cases has started to decline. This would produce 90-120 cords and leave a residual basal area of approximately 75-80 square feet per acre. This would also benefit younger saplings.

Volume Estimate:

Species	Board Feet	Cords
White pine	2,400	
Red Oak, Veneer	5,200	
Red Oak	22,700	
White Ash	7,900	
White Birch	2,400	
Hemlock		15
Popple		77
Misc. Hardwood	2,200	152
Totals	42,800	244
per acre	2,563	14.6
Total cords per acre		19.7

STAND II - HEHWPO3B -Mixedwood sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
4.7	113.3	12.1	141.2	131.0	0.94

Location: This stand is in small 1-2 acre units located in the northeastern section of the lot. There is one part of this stand located behind the southwestern side of the maintenance building. The remaining acres are in the northeast portion of the lot.

Terrain and Soils: The terrain is rolling with scattered areas and gullies. Soils are of Suffield, Buxton, Scantic and Hollis series (see appendix), all of which provide good to average soils for timber.

Access: Pettengil Park Road will be the primary access road for this stand. A network of trails will need to be established to accommodate today's skidders. Many of the old trails will be used where possible. These trails will form a watershed type pattern feeding into a central landing located behind the gym.

Composition and Quality: This stand is composed primarily of hemlock, popple, soft maple, red oak, white ash and white pine. The timber is of sawlog size and of fair to good quality. The stand is well stocked.

Regeneration: Regeneration is abundant and is composed of white pine, balsam fir, hemlock, white birch, hemlock, and red maple.

Recommendations: This stand would benefit from a light selective harvest. There are lower quality trees that should be removed. Trees with disease or damage should also be removed. The popple in this stand is mature and in some cases has started to decline. This would produce 30-40 cords and leave a residual basal area of approximately 75-80 square feet per acre. This would also benefit younger saplings.

Volume Estimate:

Species	Board Feet	Cords
White pine	6,000	8
White pine,pallet	800	
Red Oak	6,200	
White Ash	1,000	
Hemlock		26.3
Popple		32
Misc. hardwood		18.3
Totals	14,000	84.6
per acre	2,978	18
Total cords per acre		23.9

Note: These volumes and stumpage estimates are based on long term forest management harvesting under good market and weather conditions.

Estimated Total Value of standing timber -Pettengill Park - $25,083.80

Map 191; Lot 101 - South Main Street - 24 Acres

Currently, the 21.4 acres is growing 1,606 board feet of sawtimber, and 5.2 cords of pulpwood and firewood per year. Looked at in a standard measure, the total merchantable growth is 8.4 cords per year, or .35 cords per acre, per year. The value of this growth is approximately $472.57 which is $19.69 per acre per year. These values are good for forests in this area. Management treatments that result in focussing growth on high value trees such as white pine and red oak will maintain or increase this high per acre value of the growth. A selection harvest removing weaker low quality trees will release or allow seedlings of desirable species to become established.

The forest can be considered to have two forest stands, both mixedwood stands.

STAND I-HWWP3C - Mixedwood sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
21.1	46.2	11.6	63.2	76.1	0.25

Location: Stand II is smaller 1-2 acre mixedwood units that are spread out along the northeastern border, the remaining acreage is all stand I. Boundary lines were extremely difficult to locate and not all have been identified. A few corner pins suggest there have been surveys conducted on adjacent properties.

Terrain and Soils: The terrain is rolling with scattered wet areas. Soils are of Hollis, Hartland, and Belgrade series (see appendix), all of which provide good to average soils for timber.

Access: South Main Street will be the primary access road for this stand. There would have to be road improvements done to access this timber. This would include a culvert and several loads of gravel. There are some established skid trails that should be utilized in the future. These trails would feed into the landing area near South main Street.

Composition and Quality: This stand is composed primarily of white pine, red oak, red maple, popple and white ash. The timber is of sawlog size and of average quality. The stand is under stocked.

Regeneration: Regeneration is abundant and is composed of white pine, red oak, white ash, white birch, hemlock, and red maple.

Recommendations: This lot was heavily cut 25-30 years ago. The majority of the merchantable trees were removed. Trees that were left were too small or of such low value they were passed over. There is excessive rutting. There could be some timber stand improvement done to improve the current condition and productivity. This would also release existing regeneration. The revenue from this harvest would be close too or slightly exceed the cost of the excavation work.

Volume Estimate:

Species	Board Feet	Cords
White pine	23,900	19.3
Red Oak, veneer	2,400	
White Ash	7,000	
Hemlock		6
Popple		11
Misc. hardwood		80
Totals	33,300	116.3
per acre	1,578.2	5.5
Total cords per acre		8.6

STAND II-WPROHE3B - Mixedwood sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
2.9	83.3	10.5	138.0	181.0	0.36

Location: Stand II is located along the northern boundary line in small 1-2 acre patches.

Terrain and Soils: The terrain is rolling with scattered wet areas. Soils are of Hartland, Belgrade and Hollis series (see appendix), all of which provide good to average soils for timber.

Access: South Main Street will be the primary access road for this stand. There would have to be road improvements done to access this timber. This would include a culvert and several loads of gravel. There are some established skid trails that should be utilized in the future. These trails would feed into the landing area near South main Street.

Composition and Quality: This stand is composed primarily of red oak, white pine, hemlock and popple. The timber is of sawlog size and of good to excellent quality. The stand is well stocked.

Regeneration: Regeneration is abundant and is composed of white pine, red maple, white ash, white birch and popple.

Recommendations: This lot was heavily cut 25-30 years ago. The majority of the merchantable trees were removed. Trees that were left were too small or of such low value they were passed over. There is excessive rutting. There could be some timber stand improvement done to improve the current condition and productivity. This would also release existing regeneration. The revenue from this harvest would be close too or slightly exceed the cost of the excavation work.

Volume Estimate:

Species	Board Feet	Cords
White Pine	8,400	9.3
White Pine,pallet	2,100	
Popple		2.5
Misc. hardwood		10.6
Totals	10,500	22.4
per acre	3,621	7.7
Total cords per acre		14.9

Note: These volumes and stumpage estimates are based on long term forest management harvesting under good market and weather conditions.

Estimated Total Value of standing timber -S. Main Street - $12,803.95

Map 182; Lot 003 - Broad Street - 17 Forested Acres

Currently, the 17 forested acres are growing 1,189 board feet of sawtimber, and 9.84 cords of pulpwood and firewood per year. Looked at in a standard measure, the total merchantable growth is 12.5 cords per year, or .72 cords per acre, per year. The value of this growth is approximately $570.06 which is $33.53 per acre per year. These values are good for forests in this area. Management treatments that result in focussing growth on high value trees such as white pine and red oak will maintain or increase this high per acre value of the growth. A selection harvest removing weaker low quality trees will release or allow seedlings of desirable species to become established.

The forest can be considered to have two forest stands, one hardwood and one mixedwood stand.

STAND I-ROPO3B -Hardwood small sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
15.1	88.0	9.4	183.1	78.7	0.63

Location: Stand II is smaller 1-2 acre mixedwood units that are spread out along the northeastern border, the remaining acreage is all stand I. Boundary lines were extremely difficult to locate and not all have been identified.

Terrain and Soils: The terrain is rolling with scattered gullies. Soils are of Buxton, Charlton and Hollis series (see appendix), all of which provide good to average soils for timber.

Access: Broad Street will be the primary access road for this stand. These trails should feed into a landing area in the western side of the lot adjacent to broad Street.

Composition and Quality: This stand is composed primarily of red oak, red maple, beech and popple. The timber is of small sawlog size and of good to fair quality. The stand is well stocked.

Regeneration: Regeneration is abundant and is composed of white pine, red oak, white ash, white birch, sugar maple, and red maple.

Recommendations: A selection system removing suppressed, damaged and low quality trees is recommended. The area should be marked by a professional forester to avoid damage to younger seedlings and saplings. Special care should be taken when working around sensitive areas. This harvest would produce 35-45 cords and reduce the basal area to approximately 75-80 sq.ft per acre.

Volume Estimate:

Species	Board Feet	Cords
Red Oak, veneer	20,750	
White Ash	3,330	
White Birch	1,440	
Hemlock		6
Popple		74
Misc. hardwood		116
Totals	25,520	196
per acre	1,690	13
Total cords per acre		16.4

STAND II-WPROHE3B - Mixedwood sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
2.0	108.0	10.9	165.8	164.2	0.61

Location: Stand II is located along the western boundary line in small 1-2 acre patches with the exception of a half-acre patch in the northeastern corner.

Terrain and Soils: The terrain is rolling with scattered wet areas. Soils are of Buxton, Charlton Hollis series (see appendix), all of which provide good to average soils for timber.

Access: Broad Street will be the primary access road for this stand. These trails should feed into a landing area in the western side of the lot adjacent to broad Street.

Composition and Quality: This stand is composed primarily of red oak, white pine and red maple. The timber is of sawlog size and of good to excellent quality. The stand is well stocked.

Regeneration: Regeneration is abundant and is composed of white pine, red maple, white ash, hemlock and popple.

Recommendations: This lot was heavily cut 25-30 years ago. The majority of the merchantable trees were removed. Trees that were left were too small or of such low value they were passed over. There is excessive rutting. There could be some timber stand improvement done to improve the current condition and productivity. This would also release existing regeneration. The revenue from this harvest would be close too or slightly exceed the cost of the excavation work.

Volume Estimate:

Species	Board Feet	Cords
White Pine	5,520	
Red Oak	1,810	
Hemlock		22
Misc. hardwood		7
Totals	7,330	29
per acre	3,491	13.8
Total cords per acre		20.8

Note: These volumes and stumpage estimates are based on long term forest management harvesting under good market and weather conditions.

Estimated Total Value of standing timber -Broad Street - $15,766.00

School properties

Map 200; Lot-028 - Sherwood Heights - 43 Forested Acres

Currently, the 43 forested acres are growing 12,337 board feet of sawtimber, and 24.9 cords of pulpwood and firewood per year. Looked at in a standard measure, the total merchantable growth is 49.5 cords per year, or 1.2 cords per acre, per year. The value of this growth is approximately $3,234.34 which is $75.23 per acre per year. These values are good for forests in this area. Management treatments that result in focussing growth on high value trees such as white pine and red oak will maintain or increase this high per acre value of the growth. A selection harvest removing weaker low quality trees will release or allow seedlings of desirable species to become established.

The forest can be considered to have two forest stands, one hardwood, and one softwood.

STAND I- HW3B- Hardwood sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
32.7	87.0	11.3	126.0	94.9	0.58

Location: This stand occupies the majority of the lot and runs in a east west direction. It is irregular shaped stand with old wire fence, ribbon and scattered blazes identifying the boundary lines.

Terrain and Soils: The terrain is rolling to flat. Soils are classified as Hollis, Scantic, and Hartland fine sandy loams and provide good to average sites for tree growth. This soil type is moderately well drained.

Access: Access will require improvements to allow for today's trucks. A potential landing site would be behind right field behind the baseball field. There is a small strip of scrub between the school and the forest.

Composition and Quality: This stand is composed primarily of red oak, eastern white pine, red maple, white ash, white birch and beech. Scattered popple, hemlock and sugar maple are also present. The timber is of sawlog size and good to average quality. The stand is adequately stocked.

Regeneration: Regeneration is abundant and primarily composed of white ash, red maple, sugar maple, fir and white pine.

Recommendations: It is recommended a light selective harvest be done. Trees selected for harvest should be of low quality, damaged or have disease. Any safety hazards should also be removed. Any harvesting would ideally be done in the summer while students and staff are on vacation. This would produce 100-120 cords of mostly firewood grade hardwood. This would leave a residual stand basal area of approximately 70-80 square feet per acre.

Volume Estimate:

Species	Board Feet	Cords
White Pine	33,200	20
White Pine, pallet	2,600	
Red Oak, veneer	3,000	
Red Oak	23,600	
Sugar maple	1,400	
Soft maple	7,200	
White Ash	3,600	
Yellow Birch	1,400	
Hemlock		12
Popple		15
Misc. hardwood		400
Totals	76,000	447
per acre	2,498	13.7
Total cords per acre		18.7

STAND II- WP3B- Softwood sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
10.5	125.9	12.7	143.6	413.4	0.57

Location: This stand occupies the majority of the lot and runs in a east west direction. It is irregular shaped stand with old wire fence, ribbon and scattered blazes identifying the boundary lines.

Terrain and Soils: The terrain is rolling to flat. Soils are classified as Hollis, Scantic, and Hartland fine sandy loams and provide good to average sites for tree growth. This soil type is moderately well drained.

Access: Access will require improvements to allow for today's trucks. A potential landing site would be behind right field behind the baseball field. There is a small strip of scrub between the school and the forest.

Composition and Quality: This stand is composed primarily of red oak, eastern white pine, red maple, white ash, white birch and beech. Scattered popple, hemlock and sugar maple are also present. The timber is of sawlog size and good to average quality. The stand is adequately stocked.

Regeneration: Regeneration is abundant and primarily composed of white ash, red maple, sugar maple, fir and white pine.

Recommendations: It is recommended a light selective harvest be done. Trees selected for harvest should be of low quality, damaged or have disease. Any safety hazards should also be removed. Any harvesting would ideally be done in the summer while students and staff are on vacation. This would produce 100-120 cords of mostly firewood grade hardwood. This would leave a residual stand basal area of approximately 70-80 square feet per acre.

Volume Estimate:

Species	Board Feet	Cords
White Pine	77,800	48
White Pine, pallet	5,200	
Red Oak	1,800	
White Ash	1,200	
White Birch	800	
Hemlock		12
Misc. hardwood	800	74
Totals	87,600	134
per acre	8,343	12.8
Total cords per acre		29.5

Note: These volumes and stumpage estimates are based on long term forest management harvesting under good market and weather conditions.

Estimated Total Value of standing timber -Sherwood heights - $50,607.00

Map 337; Lot-023 - East Auburn Elementary School - 18.6 Forested Acres

Currently, the 18.6 forested acres are growing 9,571 board feet of sawtimber, and 6.1 cords of pulpwood and firewood per year. Looked at in a standard measure, the total merchantable growth is 25.24 cords per year, or 1.4 cords per acre, per year. The value of this growth is approximately $2,336.61 which is $125.62 per acre per year. These values are good for forests in this area. Management treatments that result in focussing growth on high value trees such as white pine and red oak will maintain or increase this high per acre value of the growth. A selection harvest

removing weaker low quality trees will release or allow seedlings of desirable species to become established.

The forest can be considered to have two forest stands, one hardwood and one softwood stand.

STAND I- WP3B- Softwood Sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
6.1	112.5	14.5	97.0	450.0	0.37

Location: This is an irregular shaped stand that is centrally located on the property.

Terrain and Soils: The terrain is rolling to flat. Soils are classified as Scantic, Hollis and Belgrade fine sandy loams and provide good to average sites for tree growth. This soil type is moderately well drained.

Access: A potential landing site would be 80-100 feet north of the tennis court behind the parking lot. There is a small strip of scrub between the school lawn and the forest.

Composition and Quality: This stand is composed primarily of eastern white pine, red oak, white ash, red maple and beech. The timber is of sawlog size and good to average quality. The stand is adequately stocked.

Regeneration: Regeneration is abundant and primarily composed of white ash, red maple, red oak, sugar maple, fir and white pine.

Recommendations: It is recommended a light selective harvest be done. Trees selected for harvest should be of low quality, damaged or have disease. Any safety hazards should also be removed. Any harvesting would ideally be done in the summer while students and staff are on vacation. This would produce 40-50 cords and would leave a residual stand basal area of approximately 75-80 square feet per acre.

Volume Estimate:

Species	Board Feet	Cords
White Pine	44,740	12
White Pine, pallet	1,670	
Red Oak, veneer	1,150	
Red Oak	5,960	
Soft maple	2,170	
White Ash	2,960	
Misc. hardwood		40
Totals	58,650	52
per acre	9,615	8.2
Total cords per acre		27.4

STAND II- RO3B- Hardwood sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
12.6	88.3	10.7	142.6	153.0	0.30

Location: This stand occupies the majority of the lot and runs in a north south direction. It is irregular shaped stand with old wire fence, ribbon and scattered blazes identifying the boundary lines.

Terrain and Soils: The terrain is rolling to flat. Soils are classified as Hollis, Scantic and Belgrade fine sandy loams and provide good to average sites for tree growth. This soil type is moderately well drained.

Access: A potential landing site would be 80-100 feet north of the tennis court behind the parking lot. There is a small strip of scrub between the school lawn and the forest.

Composition and Quality: This stand is composed primarily of red oak, eastern white pine, red maple, white ash, white birch and beech. The timber is of sawlog size and good to average quality. The stand is adequately stocked.

Regeneration: Regeneration is abundant and primarily composed of red oak, white ash, red maple, sugar maple and white pine.

Recommendations: It is recommended a light selective harvest be done. Trees selected for harvest should be of low quality, damaged or have disease. Any safety hazards should also be removed. Any harvesting would ideally be done in the summer while students and staff are on vacation. This would produce 30-40 cords of mostly firewood grade hardwood. This would leave a residual stand basal area of approximately 70-80 square feet per acre.

Volume Estimate:

Species	Board Feet	Cords
White Pine	7,890	4
White Pine, pallet	1,610	
Red Oak, veneer	3,120	
Red Oak	32,100	
White Ash		
Hard Maple	1,490	
Popple		5
Misc. hardwood	2,760	88
Totals	48,970	97
per acre	3,887	7.7
Total cords per acre		15.5

Note: These volumes and stumpage estimates are based on long term forest management harvesting under good market and weather conditions.

Estimated Total Value of standing timber -E.Auburn Elementary - $32,714.50

Map 240; Lot-322 - Edward Little High School - 31 Forested Acres

Currently, the 31 forested acres are growing 5,556 board feet of sawtimber, and 8.6 cords of pulpwood and firewood per year. Looked at in a standard measure, the total merchantable growth is 19.7 cords per year, or .63 cords per acre, per year. The value of this growth is approximately $1,891.81 which is $61.03 per acre per year. These values are good for forests in this area. Management treatments that result in focussing growth on high value trees such as white pine and red oak will maintain or increase this high per acre value of the growth. A selection harvest removing weaker low quality trees will release or allow seedlings of desirable species to become established.
The forest can be considered to have one forest stand, one hardwood.

STAND I- RO3B- Hardwood Sawtimber

Acres	Basal Area	Avg. DBH	Avg. Nmbr Trees/ac	Growth per acre	
				Board feet	Cords
31.0	99.1	10.5	164.2	179.2	0.28

Location: This is an irregular shaped stand that is centrally between the school and police station and runs parallel with Minot Ave.

Terrain and Soils: The terrain is rolling to flat. Soils are classified as Hartland, Hollis and charlton fine sandy loams and provide good to average sites for tree growth. This soil type is well drained.

Access: A potential landing site would be between the tennis court and soccer field south of the school.

Composition and Quality: This stand is composed primarily of red oak, white ash, red maple and beech. The timber is of sawlog size and good to average quality. The stand is adequately stocked.

Regeneration: Regeneration is abundant and primarily composed of white ash, red maple, red oak, sugar maple, beech and white pine.

Recommendations: It is recommended a light selective harvest be done. Trees selected for harvest should be of low quality, damaged or have disease. Any safety hazards should also be removed. Any harvesting would ideally be done in the summer while students and staff are on vacation. This would produce 180-200 cords and would leave a residual stand basal area of approximately 70-80 square feet per acre.

Volume Estimate:

Species	Board Feet	Cords
Red Oak, veneer	6,200	
Red Oak	120,920	
Sugar maple	1,970	
White Ash	18,800	
Misc. hardwood	7,710	210
Totals	155,600	210
per acre	5,019	6.8
Total cords per acre		16.8

Note: These volumes and stumpage estimates are based on long term forest management harvesting under good market and weather conditions.

Estimated Total Value of standing timber - ELHS - $54,060.70

GENERAL MANAGEMENT RECOMMENDATIONS

The boundary lines are marked primarily with plastic flagging, stone walls or old fence. Most of the lines are well defined. They need to blazed and painted.

EROSION CONTROL

The soils found on this lot all have slight to moderate erosion hazard ratings. A few practices should be carried out to keep erosion to a minimum. Trails used for harvesting or hiking should have water bars placed, as needed, on slopes to direct water flow off the trail onto undisturbed forest soils. Log landings and other large areas of exposed soil should be seeded with a "conservation mix" type seed. Harvesting should take place only when the soil is frozen or dry.

WATER QUALITY ISSUES

There are some scattered brooks and wet areas where caution should be used when crossing. Best management practices would minimize any possible impact to the brook. There are areas in a resource protection zone that would be subject to harvesting restrictions required by the Department of Environmental Protection and enforced by local code enforcement officer.

AESTHETIC QUALITY

This property has several unique features that make it aesthetically pleasing. Walking trails, scenic areas, campsites combined with a high quality and healthy forest make this property rich in aesthetic qualities. Old skid trails also provide many recreational opportunities for outdoor enthusiasts.

FOREST HEALTH

There were no significant disease or insect problems observed during the field inspection of this property.

RECREATION

A network of existing trails can be used for walking, cross country skiing and snow shoeing, etc. Current trails can be enhanced and improved to access areas used by hunters and other sportsman. Any future development will be based around educational and recreational based programs.

WILDLIFE

There is evidence of use by many species of wildlife. Those species now using the property include white tail deer, fox, chickadees, downy woodpeckers, and many other birds. This use appears to be light to moderate at the present time.

The silvicultural recommendations for this property will also benefit many species of wildlife. The recommendations will maintain a diversity of habitat and will allow herbaceous and low growing woody plants to maintain themselves in reach of ground dwelling wildlife.

The following recommendations will improve wildlife habitat and will have a minimal effect on the production of timber.

1. Leave large den trees and dead snags.

2. Leave some large crowned oak and beech for the mast they produce, and some stems of other species important to wildlife including hophornbeam, cherry, apple and striped maple.

3. Maintain landings and roads open and seed these areas with "conservation mix." This will benefit those species that use openings and edges between forest and openings.

4. The upland zone between the meadow and pond and upland forest is an important wildlife habitat. Silvicultural treatment in these areas should be conservative to maintain this habitat. Any harvesting that will remove a significant percentage of the stocking should be done with the goal of improving a specific habitat feature.

RECOMMENDED CULTURAL PRACTICES BY STAND AND TIME PERIOD

Time period	Stands	Recommendations
2009-2011	Entire Property	Maintain boundary lines by blazing and painting line trees. Improvement cut, removing low quality, damaged or suppressed trees and applying silvicultural treatments as needed.
2011-2020	Entire property	Examine property periodically, but if the above work is done this should be a period of little activity, other than trees growing.
2020-2022	Entire property	Maintain boundary lines and trails. Stands should be examined during this period. When stocking has increased enough, a commercial improvement cut will be needed during this time period. This plan should be updated at the end of the period.

APPENDIX A: Management analysis table.

Mgmt Unit	Acres	Site Quality	Cover Type	Description	Management Objective	Management Activity
Mt.Apatite Map 213; Lot 014 Stand I	204	Good site index	Hardwood	Red oak with scattered hemlock,red maple & w.birch	Improve growth of Red oak and scattered white pine	Improvement cut, in 1-2 years removing low quality and damaged trees.
Stand II	70.4	Good site index	Mixedwood	White pine, hemlock, red oak & scattered misc. hardwoods	Improve growth of white pine & red oak crop trees	Improvement cut, in 1-3 years removing low quality and damaged trees.
Stand III	6.2	Good site index	Softwood	White pine, and hemlock & scattered misc. hwds	Improve growth of white pine.	Light Improvement cut in 1-2 years, removing low quality and damaged trees
Stand IV	43.9		Mixedwood	White pine, hemlock,red & spruce	Improve growth of	Light Improvement cut in 1-2

		Good site index			white pine and red oak	years, removing low quality and damaged trees
Pettengill Park Map 250; Lot 095 Stand I	16.7	Good site index	Hardwood	Red Oak, red maple & other scattered misc. hwds	Improve growth of red oak, white ash and younger saplings.	Light Improvement cut in 1-2 years, removing low quality and damaged trees
Stand II	4.7	Good site index	Mixedwood	White pine, and hemlock & scattered misc. hwds	Improve growth of white pine.	Light Improvement cut in 1-2 years, removing low quality and damaged trees
S.Main St. Map 191; Lot 101 Stand I	21.1	Good site index	Mixedwood	White pine, and hemlock & scattered misc. hwds	Improve growth of white pineand red oak.	Light Improvement cut in 1-2 years, removing low quality and damaged trees
Stand II	2.9	Good site index	Mixedwood	White pine & scattered misc. hwds	Improve growth of white pine & red oak.	Light Improvement cut in 1-2 years, removing low quality and damaged trees
Broad St. Map 182; Lot 003 Stand I	15.1	Good site index	Hardwood	Red oak, and popple & scattered hemlock	Improve growth of red oak.	Light Improvement cut in 1-2 years, removing low quality and damaged trees
						Light Improvement cut in 1-2

Stand II	2	Good site index	Mixedwood	White pine,hemlock & scattered misc. hwds	Improve growth of white pine & red oak.	years, removing low quality and damaged trees
Sherwood Heights Map 200; Lot 028 Stand I	32.7	Good site index	Hardwood	Red Oak & scattered misc. hwds	Improve growth of red oak.	Light Improvement cut in 1-2 years, removing low quality and damaged trees
Stand II	10.5	Good site index	Softwood	White pine & scattered misc. hwds	Improve growth of white pine & red oak.	Light Improvement cut in 1-2 years, removing low quality and damaged trees
E. Auburn Map 200; Lot 028 Stand I	6.1	Good site index	Softwood	White Pine & scattered misc. hwds	Improve growth of white pine.	Light Improvement cut in 1-2 years, removing low quality and damaged trees
Stand II	12.6	Good site index	Hardwood	Red Oak, white pine & scattered misc. hwds	Improve growth of white pine & red oak.	Light Improvement cut in 1-2 years, removing low quality and damaged trees
ELHS Map 240; Lot 322	31	Good site index	Hardwood	Red Oak & scattered misc. hwds	Improve growth of red oak.	Light Improvement cut in 1-2 years, removing low quality and damaged trees

APPENDIX B: Total stand volumes winter 2009

Species	Board Feet	Cords
White pine	866,300	235
White Pine Pallet	53,800	
Red oak,veneer	59,100	
Red oak,sawtimber	680,320	
White Ash	100,400	
White birch	15,800	
Red Maple	11,800	
Yellow Birch	1,400	
Sugar maple	22,470	
Popple		250
Hemlock	21,400	478
Misc. hardwood	69,310	3,246
Totals	1,902,100	4,209
per acre	3,962	8.9
Total cords per acre		16.8

Note: These volumes and stumpage estimates are based on long term forest management harvesting under good market and weather conditions.

APPENDIX C: Recent stumpage range and most likely stumpage value - 2009

Species	Range Recent Price	Expected Value
White pine sawtimber	$85.00 to $290.00 per MBF	$230.00 per MBF
White pine pallet	$25.00 to $100.00 per MBF	$50.00 per MBF
White pine pulpwood	$5.00 to $10.00 per cord	$10.75 per cord
Red oak sawtimber	$100.00 to $450 per MBF	$350.00 per MBF
Red oak veneer	$500 to $1200 per MBF	$600.00 per MBF
Hard maple	$75.00 to $200 per MBF	$275.00 per MBF
Red maple	$75.00 to $200 per MBF	$80.00 per MBF
Hemlock sawtimber	$25.00 to $85.00 per MBF	$60.00 per MBF
Spruce & Fir sawtimber	$60.00 to $250.00 per MBF	$150.00 per MBF
Hemlock pulpwood	$5.00 to $36.00 per cord	$25.00 per cord
White Ash	$80.00 to $210 per MBF	$100.00 per MBF
Yellow birch sawtimber	$75.00 to $450.00 per MBF	$100.00 per MBF
White birch sawtimber	$50.00 to $250.00 per MBF	$110.00 per MBF
Hardwood pallet	$25.00 to$100.00 per MBF	$45.00 per MBF
Hardwood pulp	$5.00 to $12.00 per cord	$17.00 per cord
Firewood	$10.00 to $30.00 per cord	$25.00 per cord
Spruce & fir pulp	$5.00 to $22.00 per cord	$19.35 per cord

Estimated Value of Standing Timber: $ 601, 929. 60

APPENDIX D: Soils as taken from the Androscoggin County Soils Survey.

HOLLIS SERIES

The Hollis series consist of shallow, somewhat excessively drained, gently sloping to steep, moderately coarse textured soils. There are ledge outcrops found throughout these soils. These soils formed in glacial till. Hollis soils have from 3% to 35% slopes.

Hollis soils are rated fair for tree growth and have a slight hazard ratings for erosion. Due to shallow depth to bedrock there is a moderate hazard of windthrow. On the steeper slopes there are moderate limitations to the use of heavy equipment.

BUXTON SERIES

The Buxton series consists of deep, moderately well drained soils that formed in marine or lacustrine deposits of silt and clay over bedrock, glacial till, or sand and gravel. These soils occupy low knolls and the perimeter of wet flats.

These soils are rated as good sites for tree growth. These soils have a high hazard rating for erosion and windthrow. There are severe seasonal limitations on equipment use. The soils provide good habitat for woodland wildlife.

SCANTIC SERIES

The Scantic series consists of deep, nearly level, poorly drained soils. These formed in silt and clay deposited by ponded water.

These soils are rated as poor sites for tree growth due to excessive wetness. This wetness also causes severe limitations on equipment usage and a high hazard for windthrow.

LEICESTER SERIES

The Leicester consists of deep, poorly drained soil that formed in sandy loam glacial till. These soils occur along upland drainage ways and in the bottom of depressions. This soil has a high water table for about six months out of the year.

These soils provide only fair to poor sites for tree growth, however, excessive wetness usually restricts tree growth. Erosion hazard is slight, equipment limitation is high and windthrow hazard severe on these soils.

WALPOLE SERIES

The Walpole series consists of deep, nearly level, poorly drained to somewhat poorly drained, moderately coarse textured to coarse textured soils. These soils formed in glacial outwash sediment. These soils are excessively wet throughout most of the year.

These soils provide fair to good sites for most all tree species, Equipment limitations and windthrow hazard are severe. It is well suited to habitat for wetland wildlife.

SUTTON SERIES

The sutton series consists of deep, moderately well drained soils that formed in glacial tills. These soils are found on the lower part of long slopes and in slight depressions on hills and ridges.

These provide fair to good sites for tree growth. Rooting depth is limited by a hardpan or high water table. There are slight hazard ratings for erosion, equipment use and windthrow.

ADAMS SERIES

The Adams series consists of deep, excessively drained, gently sloping soils. They are found on plains and deltas usually irregular in shape of 3 to 100 acres.

These soils provide good sites for white and red pine growth as well as red oak. These soils have slight hazard ratings for soil erosion, windthrow and moderate ratings for heavy equipment use. Adams soils provide poor habitat for woodland wildlife.

BELGRADE SERIES

The Belgrade series consists of deep, level to undulating, medium textured, moderately well drained soils. These soils formed in sediments and are found on terraces adjacent to streams, rivers and natural drainage ways.

These soils are rated as excellent sites for tree growth. These soils have slight hazard ratings for erosion, limitations on equipment use, as well as windthrow. The soils provide good habitat for woodland wildlife.

ELMWOOD SERIES

The Elmwood series consists of deep, nearly level to undulating, moderately well drained soils. These soils formed in moderately coarse textured sediment of glaciofluvial origin that overlies fine textured and moderately textured sediment of marine and lacustrine origin. These soils occupy terraces adjacent to streams and rivers in the central lowlands and in the coastal areas.

These soils are rated as excellent sites for tree growth. These soils have a slight hazard rating for erosion, equipment use, and windthrow. The soils provide good habitat for open and woodland wildlife.

HARTLAND SERIES

The Hartland series consists of deep, well-drained soils that formed in stratified sediments. Their texture is that of a fine sandy loam or a silt loam.

These soils are rated as good sites for tree growth. These soils have moderate to severe hazard of erosion. There are slight limitations on equipment use, and a low windthrow hazard. The soils provide good habitat for woodland wildlife.

HINCKLEY SERIES

The Hinckley series consists of deep, excessively drained, gently sloping to strongly sloping, moderately coarse to coarse textured soils. These soils formed in glacial outwash deposits on terraces and eskers.

Erosion hazard is slight. Little if any equipment limitations, and windthrow hazard is also slight. They provide a fair site index for white pine, spruce-fir and northern hardwoods.

NINIGRET SERIES

The ninigret series consists of deep moderately well drained, nearly level or gently sloping soils. These soils are found on outwash terraces and sand plains.

These soils provide good sites for tree growth. Limitations to the use of equipment are moderate due to seasonal wetness. Hazard of erosion is slight as is danger of windthrow. These soils provide good habitat for woodland wildlife.

MELROSE SERIES

The Melrose series consists of deep, moderately sloping well-drained soils that formed in coarse textured sediments of glacio-fluvial origin over fine textured marine sediments. These soils are on terraces next to streams and rivers. Slopes range from 0 to 15 percent.

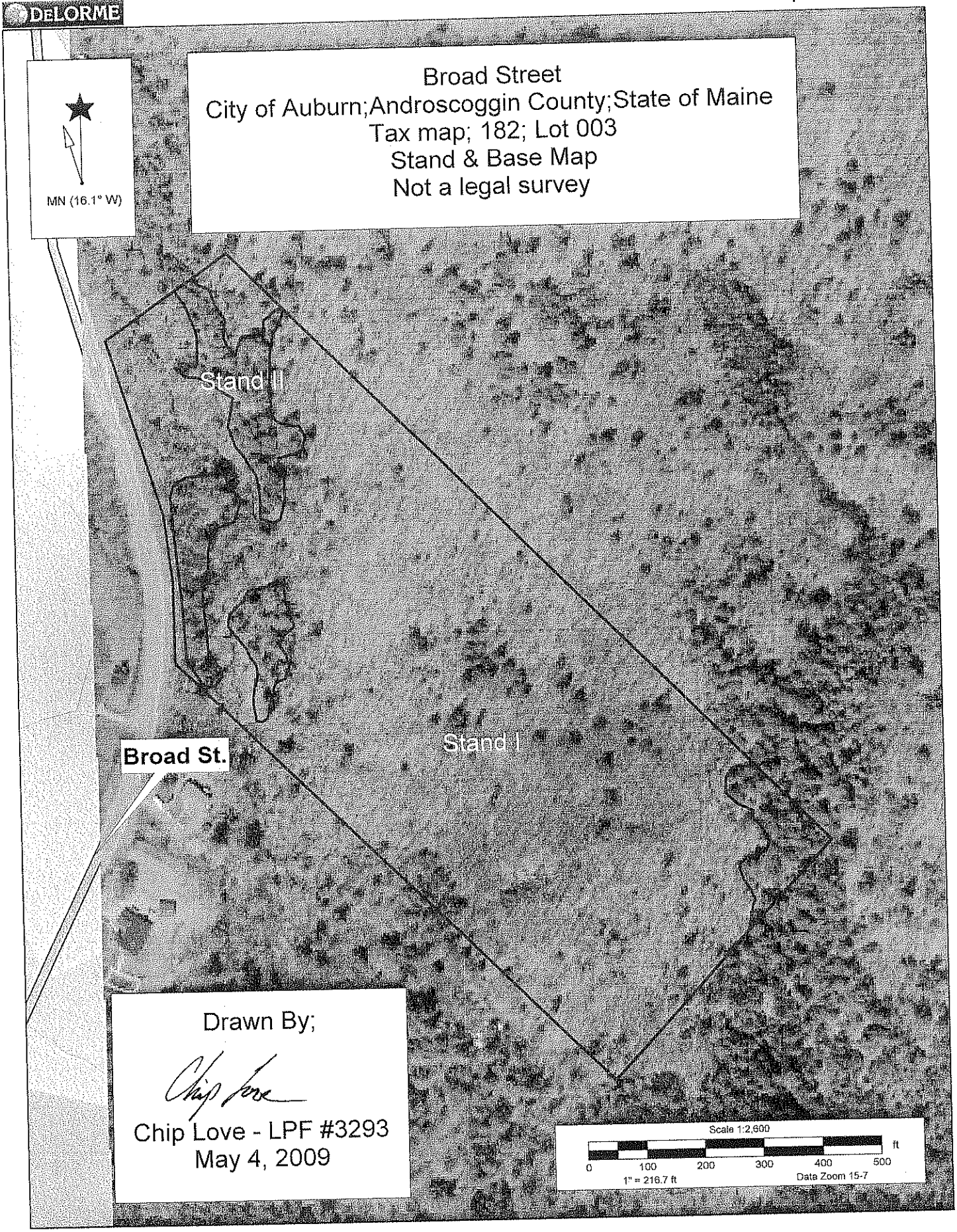
These soils provide good sites for forest growth. They have slight hazard ratings for soil erosion and windthrow, with moderate ratings for heavy equipment use. Melrose soils provide good habitat for woodland wildlife.

CHARLTON SERIES

The Charlton series consists of deep, well-drained soils that formed in glacial till. These soils are found on the tops and sides of ridges.

These soils are rated as good to excellent sites for tree growth. These soils have a moderate hazard rating for erosion and slight hazard of windthrow. There are seasonal limitations on equipment use. The soils provide fair habitat for woodland wildlife.

DeLORME



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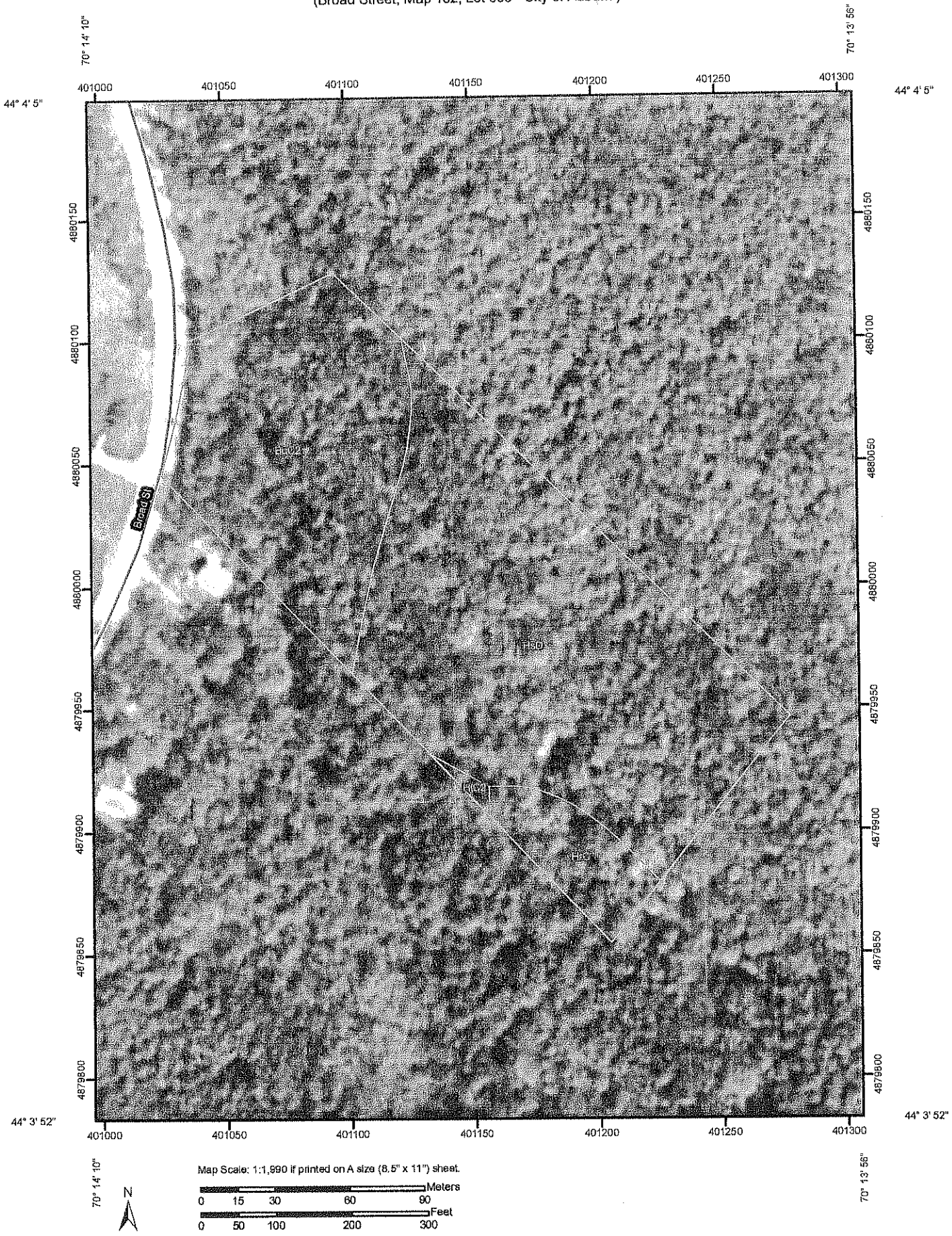
Soil Map—Androscoggin and Sagadahoc Counties, Maine
(Broad Street; Map 182; Lot 003 - City of Auburn)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:1,980 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Androscoggin and Sagadahoc Counties, Maine
Survey Area Data: Version 12, Jan 9, 2009

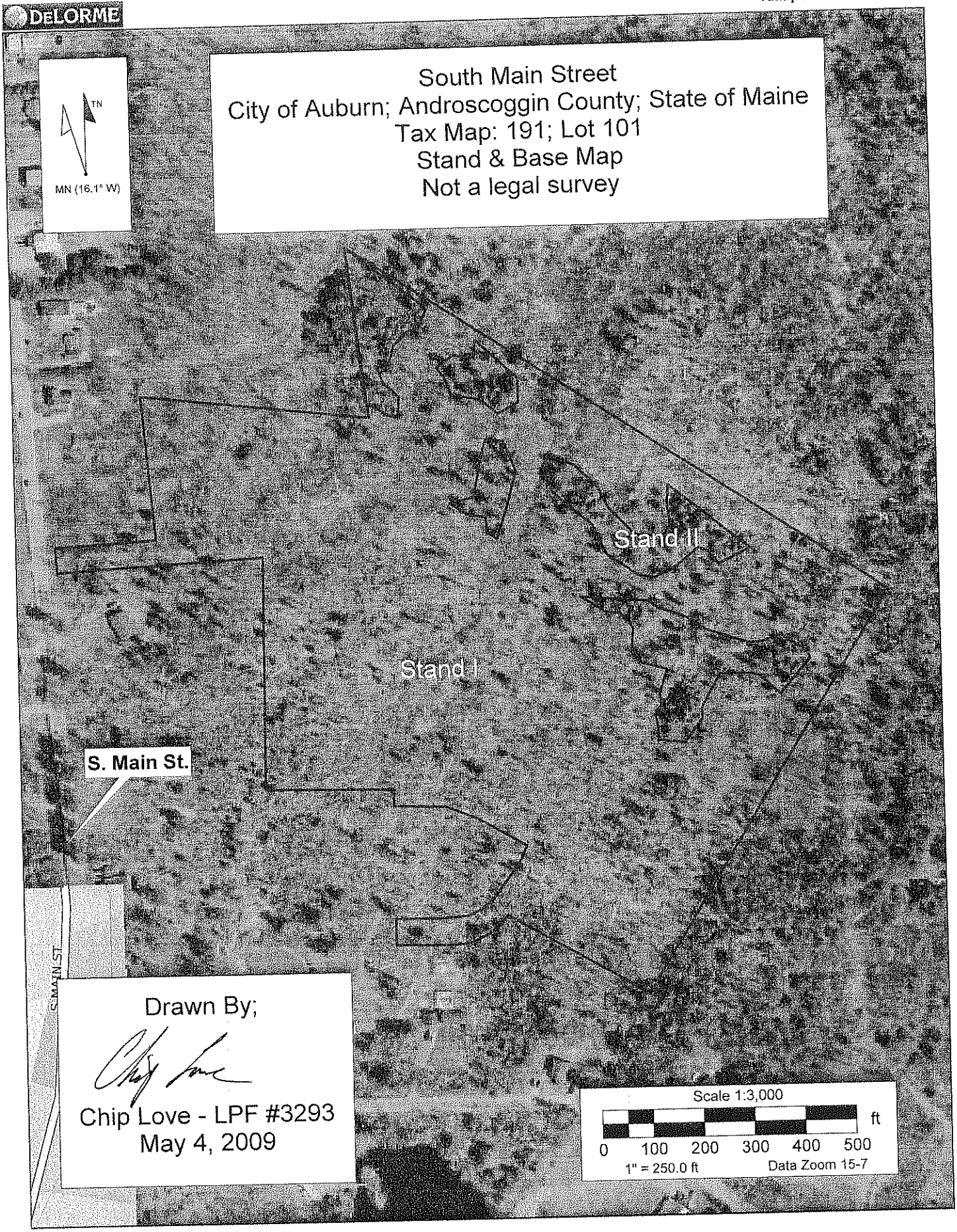
Date(s) aerial images were photographed: 4/29/1998

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Androscoggin and Sagadahoc Counties, Maine (ME606)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BuC2	Buxton silt loam, 8 to 15 percent slopes, eroded	2.5	33.1%
HfC2	Hartland very fine sandy loam, 8 to 15 percent slopes, eroded	0.0	0.5%
HrC	Hollis fine sandy loam, 8 to 15 percent slopes	0.5	6.7%
HsD	Hollis very rocky fine sandy loam, 15 to 45 percent slo pes	4.5	59.7%
Totals for Area of Interest		7.6	100.0%

DeLORME



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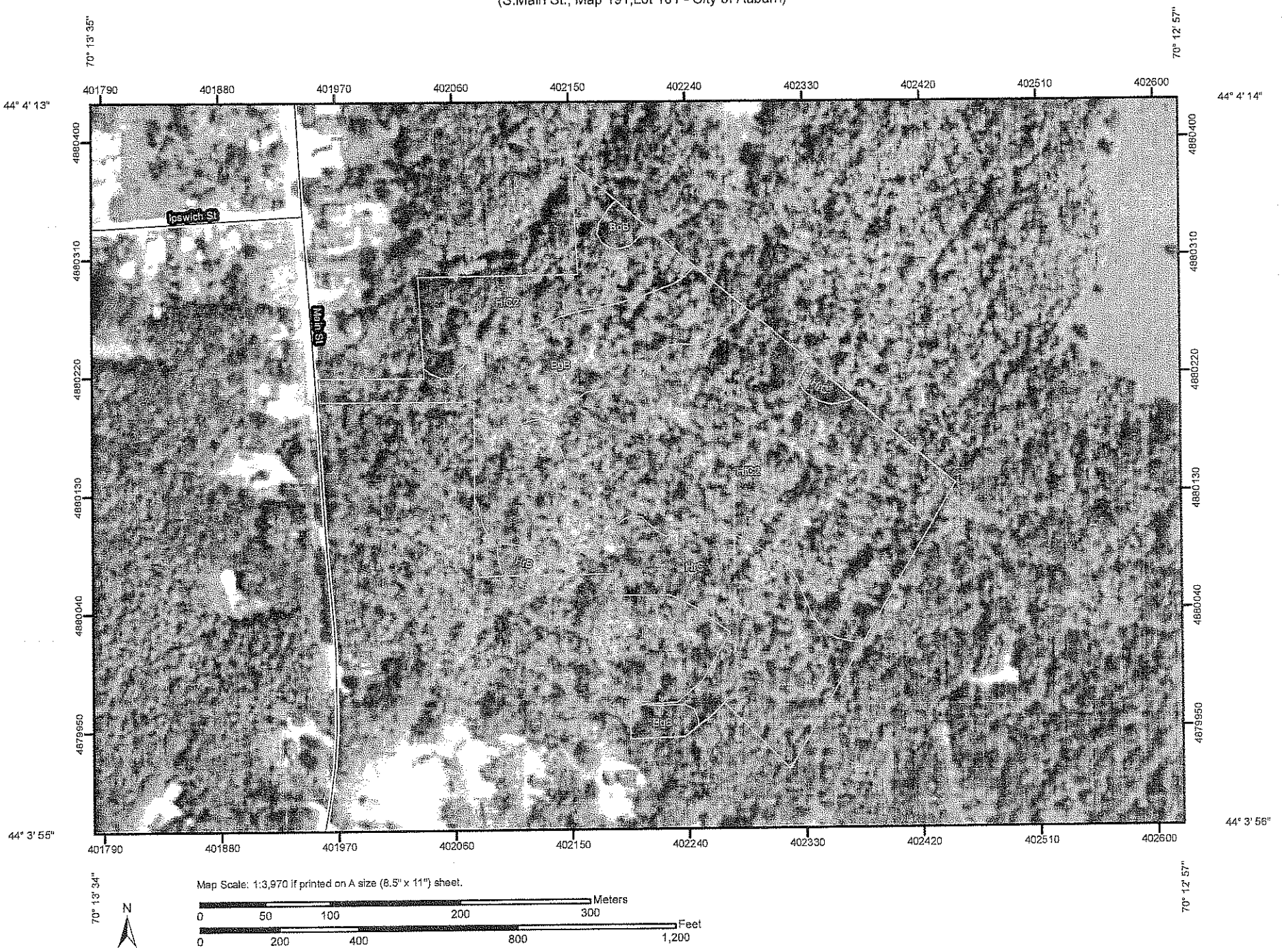
Soil Map—Androscoggin and Sagadahoc Counties, Maine
(S.Main St.; Map 191;Lot 101 - City of Auburn)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:3,970 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Androscoggin and Sagadahoc Counties, Maine
Survey Area Data: Version 12, Jan 9, 2009

Date(s) aerial images were photographed: 4/29/1998

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

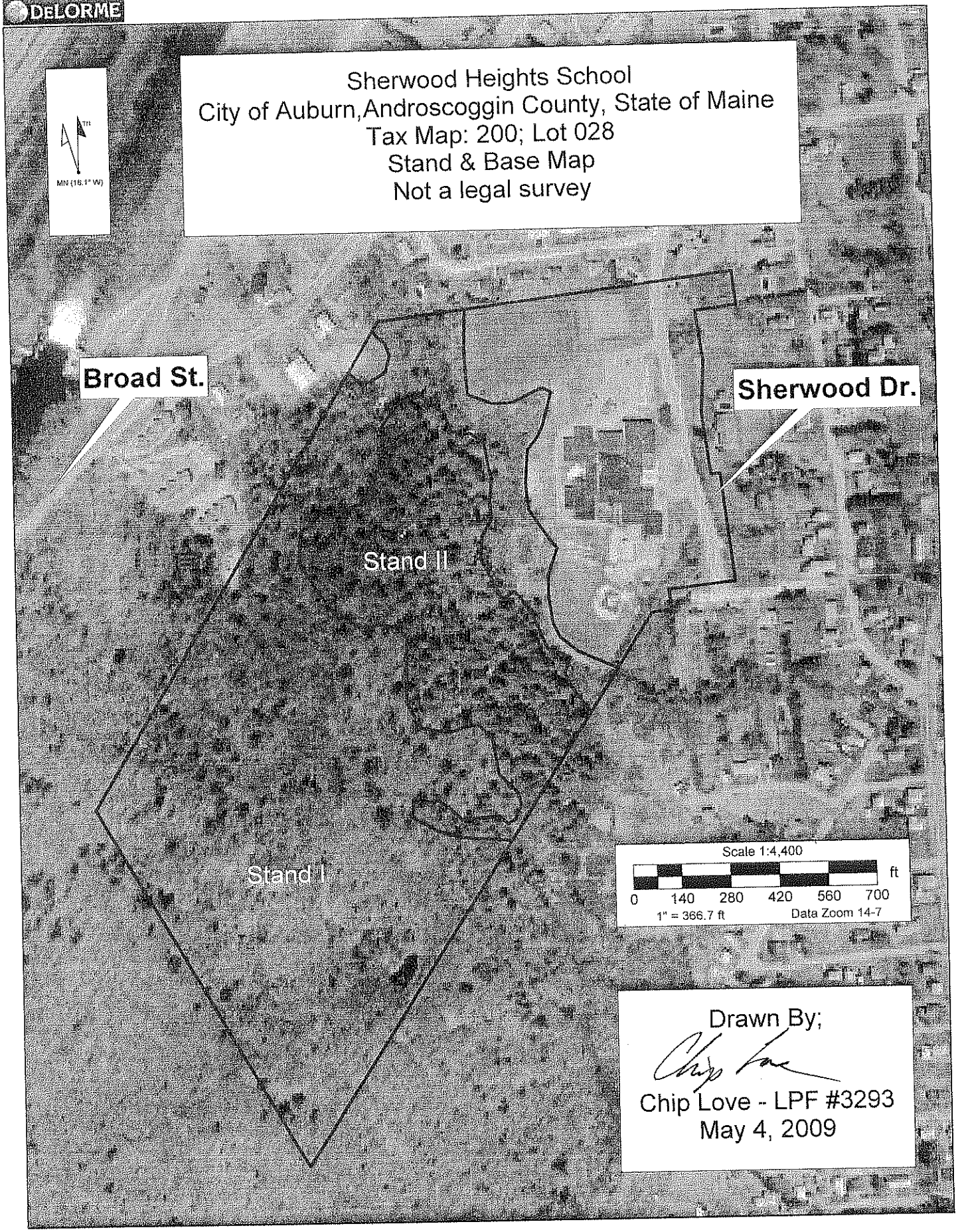
Map Unit Legend

Androscoggin and Sagadahoc Counties, Maine (ME606)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
BgB	Belgrade very fine sandy loam, 2 to 8 percent slopes	4.2	18.1%
HfC2	Hartland very fine sandy loam, 8 to 15 percent slopes, eroded	12.7	54.5%
HrB	Hollis fine sandy loam, 0 to 8 percent slopes	0.2	1.0%
HrC	Hollis fine sandy loam, 8 to 15 percent slopes	6.1	26.4%
Totals for Area of Interest		**23.3**	**100.0%**

DeLORME

MN (16.1° W)

Sherwood Heights School
City of Auburn,Androscoggin County, State of Maine
Tax Map: 200; Lot 028
Stand & Base Map
Not a legal survey



Scale 1:4,400

0 140 280 420 560 700 ft

1" = 366.7 ft Data Zoom 14-7

Drawn By;

Chip Love - LPF #3293
May 4, 2009

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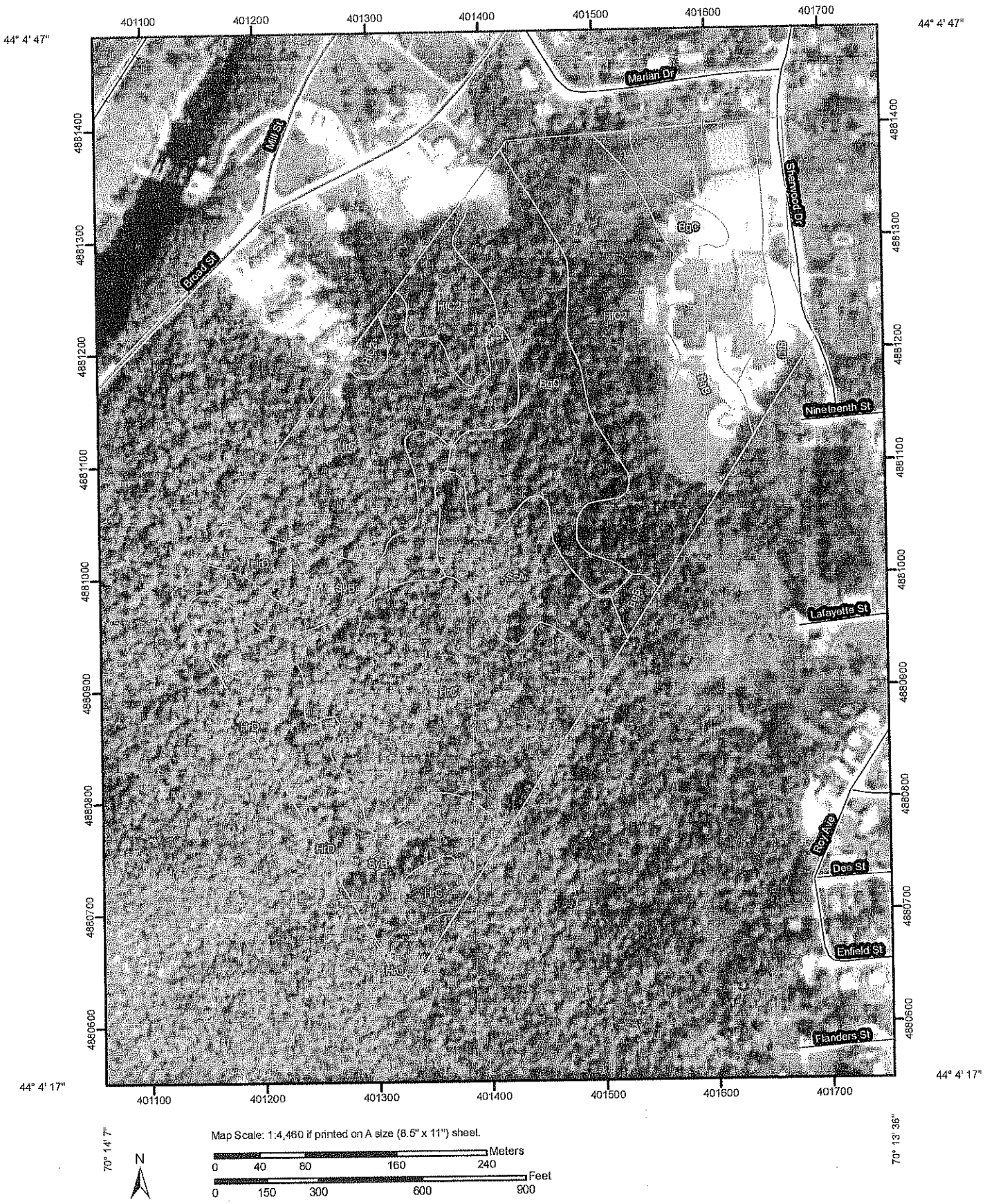
Soil Map---Androscoggin and Sagadahoc Counties, Maine
(Sherwood Heights; Map 200;Lot 028 - City of Auburn)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:4,460 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

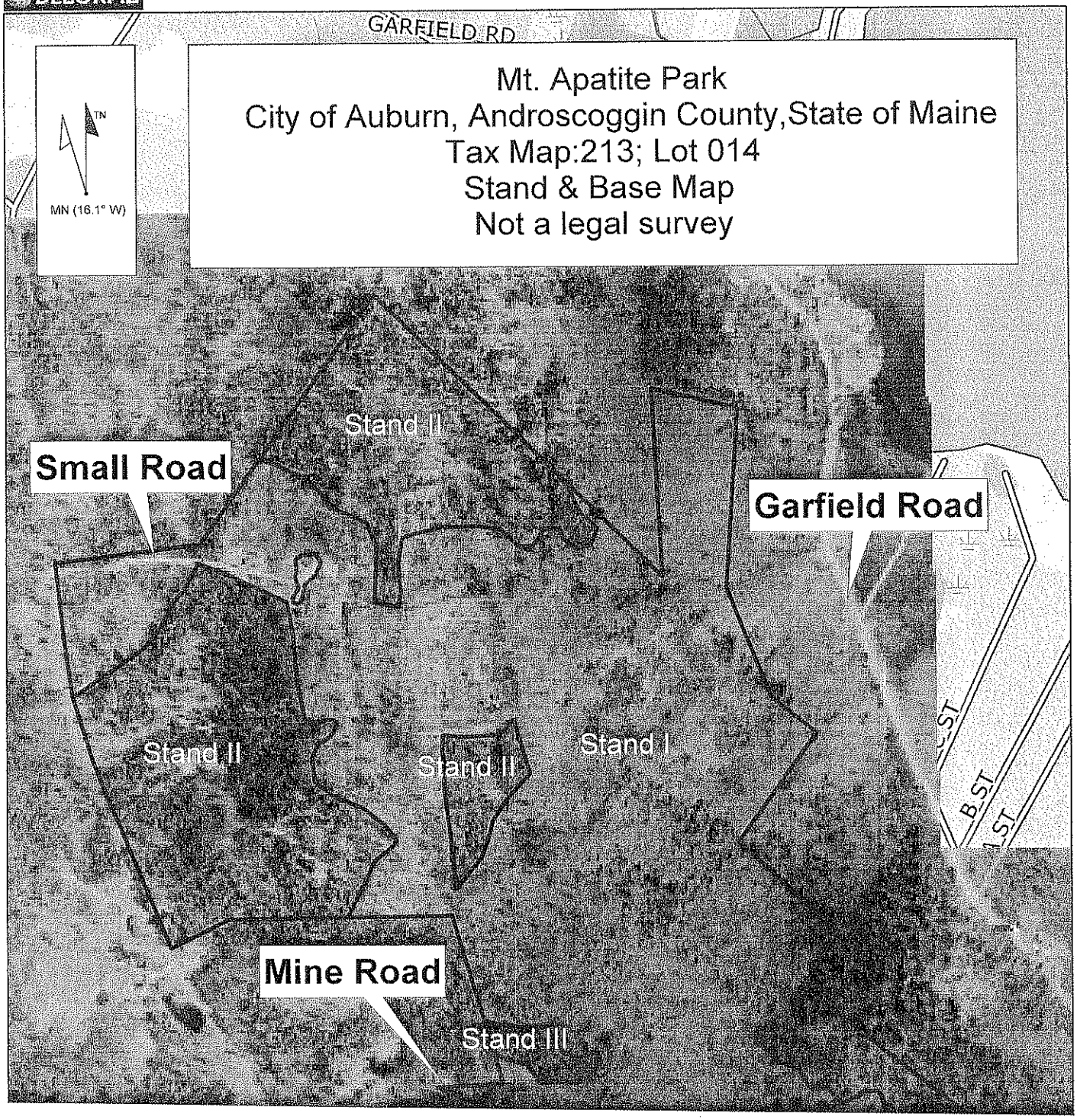
Soil Survey Area: Androscoggin and Sagadahoc Counties, Maine
Survey Area Data: Version 12, Jan 9, 2009

Date(s) aerial images were photographed: 4/29/1998

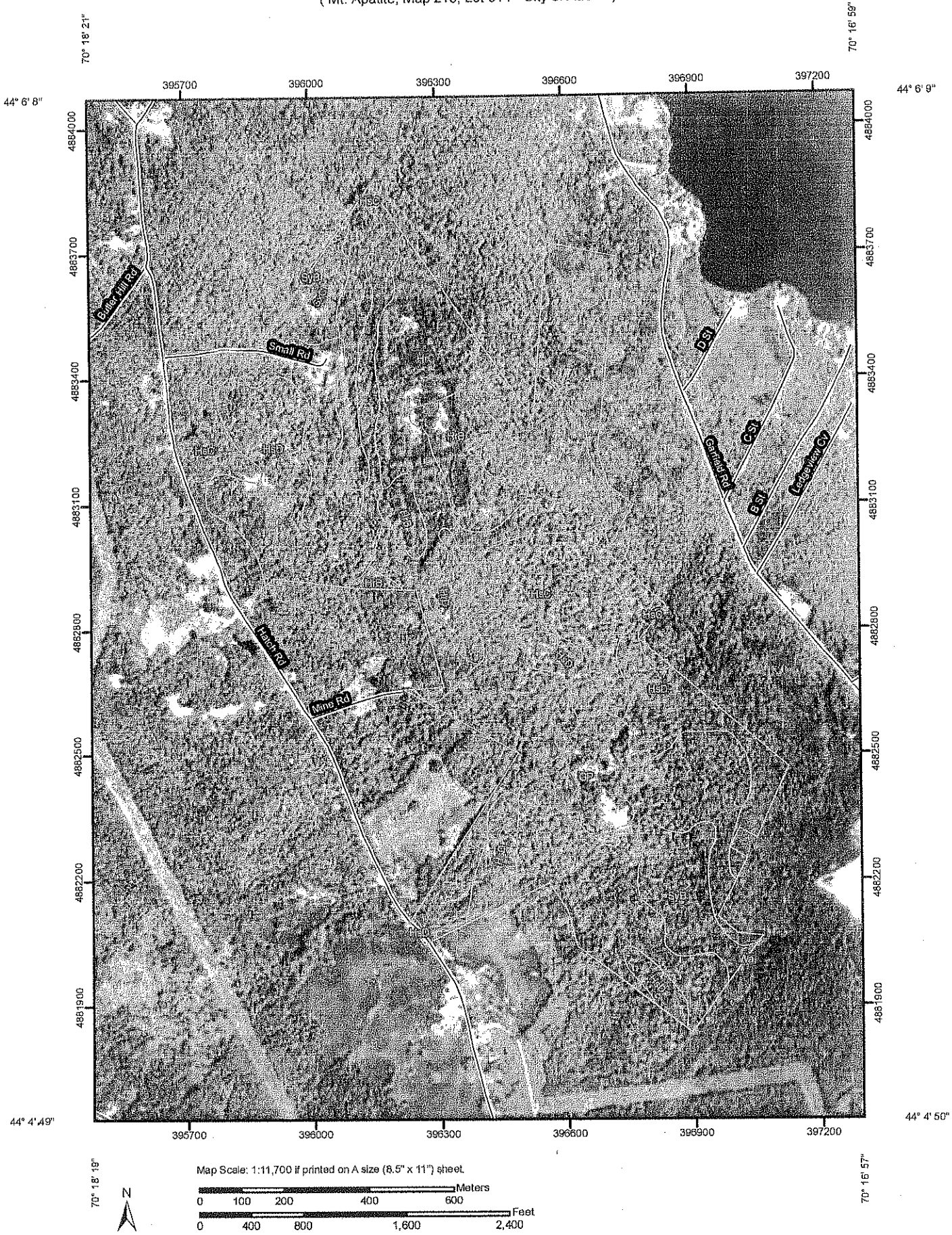
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Androscoggin and Sagadahoc Counties, Maine (ME606)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BgB	Belgrade very fine sandy loam, 2 to 8 percent slopes	1.8	3.2%
BgC	Belgrade very fine sandy loam, 8 to 15 percent slopes	7.9	13.9%
CfB	Charlton fine sandy loam, 0 to 8 percent slopes	1.8	3.3%
HfC2	Hartland very fine sandy loam, 8 to 15 percent slopes, eroded	14.5	25.7%
HrC	Hollis fine sandy loam, 8 to 15 percent slopes	18.2	32.1%
HrD	Hollis fine sandy loam, 15 to 45 percent slopes	1.1	1.9%
ScA	Scantic silt loam, 0 to 3 percent slopes	3.3	5.9%
SyB	Sutton very stony loam, 0 to 8 percent slopes	7.9	14.0%
Totals for Area of Interest		**56.6**	**100.0%**


GARFIELD RD
TN
MN (16.1° W)
Mt. Apatite Park
City of Auburn, Androscoggin County,State of Maine
Tax Map:213; Lot 014
Stand & Base Map
Not a legal survey
Stand II
Small Road
Garfield Road
Stand II
Stand II
Stand I
C ST
B ST
1 ST
Mine Road
Stand III

Soil Map—Androscoggin and Sagadahoc Counties, Maine
(Mt. Apatite; Map 213; Lot 014 - City of Auburn)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads

MAP INFORMATION

Map Scale: 1:11,700 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

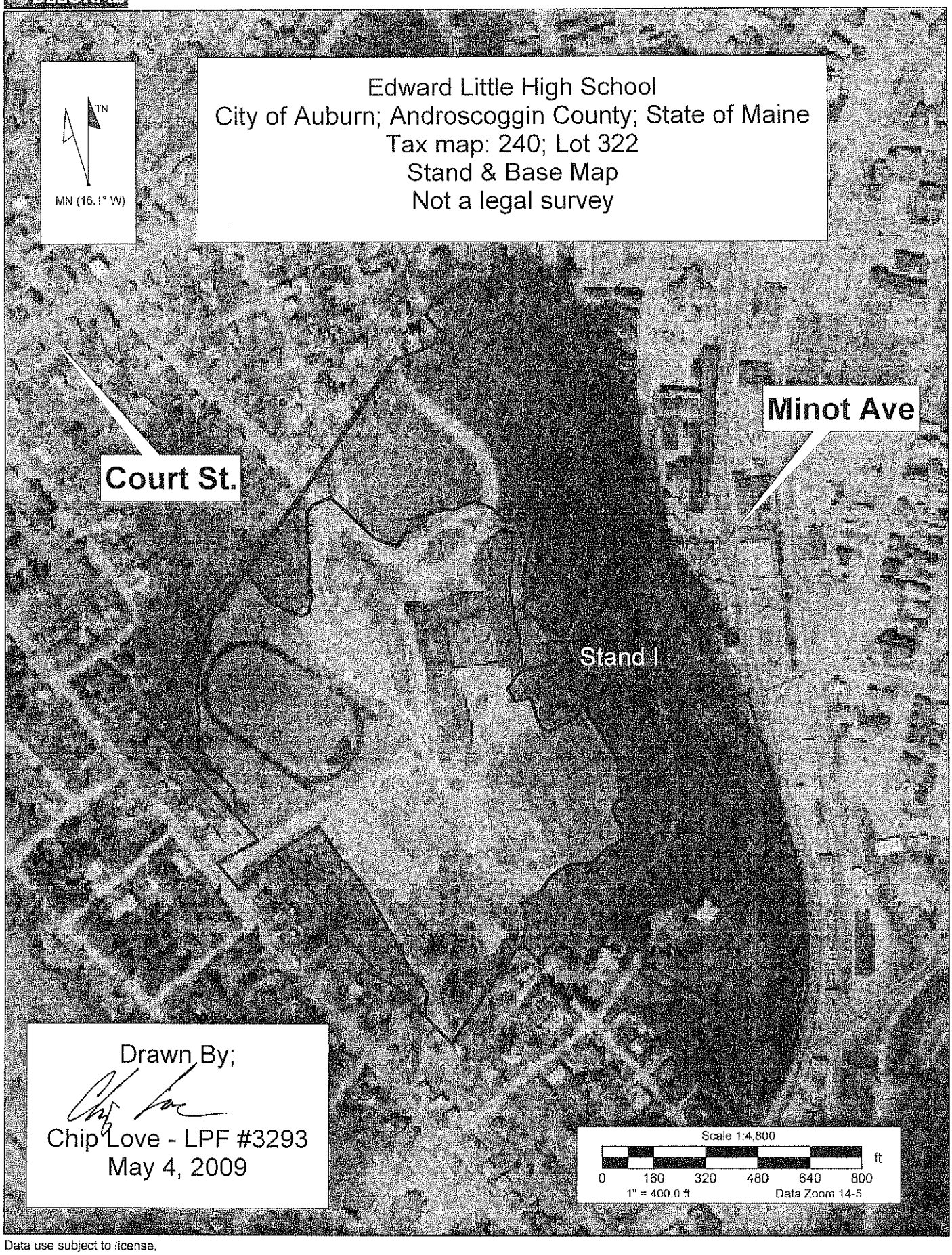
Soil Survey Area: Androscoggin and Sagadahoc Counties, Maine
Survey Area Data: Version 12, Jan 9, 2009

Date(s) aerial images were photographed: 6/7/1997

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Androscoggin and Sagadahoc Counties, Maine (ME606)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
GP	Sand and gravel pits	11.2	3.6%
HrB	Hollis fine sandy loam, 0 to 8 percent slopes	16.3	5.2%
HrC	Hollis fine sandy loam, 8 to 15 percent slopes	51.5	16.4%
HrD	Hollis fine sandy loam, 15 to 45 percent slopes	5.0	1.6%
HsC	Hollis very rocky fine sandy loam, 8 to 15 percent slop es	119.4	38.0%
HsD	Hollis very rocky fine sandy loam, 15 to 45 percent slo pes	81.9	26.1%
Le	Leicester very stony fine sandy loam	9.3	3.0%
SxC	Sutton loam, 8 to 15 percent slopes	6.5	2.1%
SyB	Sutton very stony loam, 0 to 8 percent slopes	13.0	4.2%
Wa	Walpole fine sandy loam	0.0	0.0%
Totals for Area of Interest		**314.0**	**100.0%**



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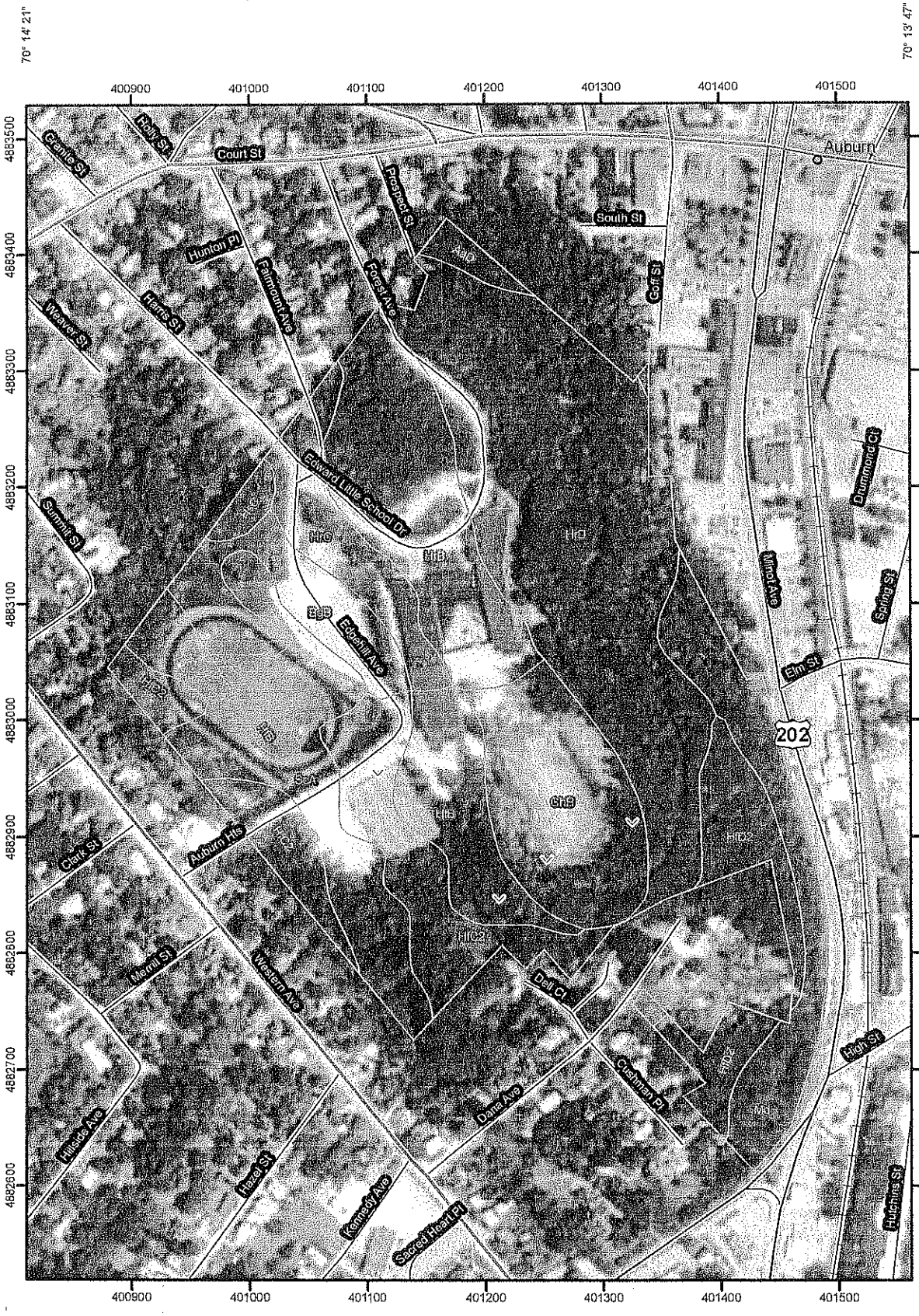
Soil Map—Androscoggin and Sagadahoc Counties, Maine
(Edward Little high School; Map 240; Lot 322 - City of Auburn)



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:4,820 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

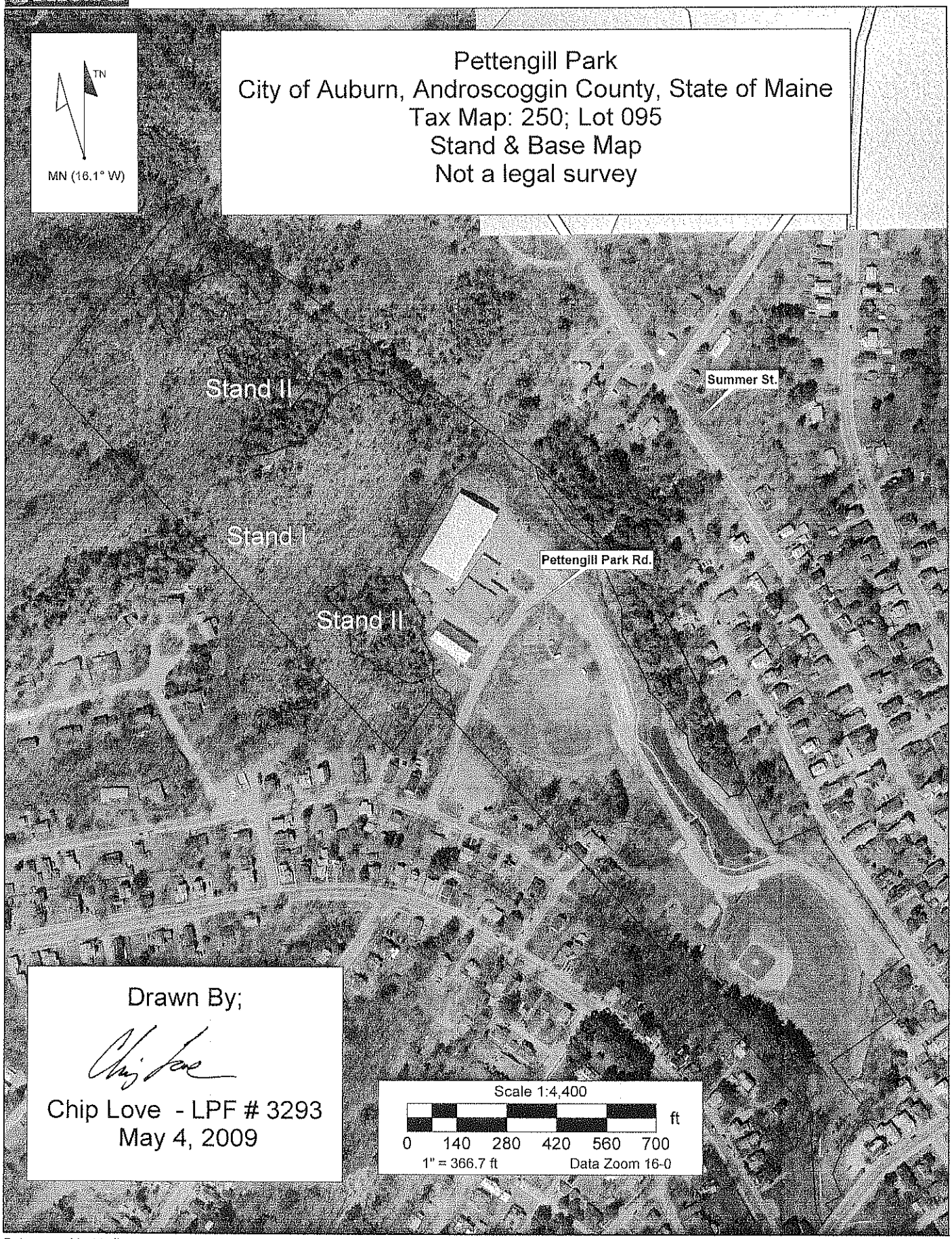
Soil Survey Area: Androscoggin and Sagadahoc Counties, Maine
Survey Area Data: Version 12, Jan 9, 2009

Date(s) aerial images were photographed: 4/29/1998

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Androscoggin and Sagadahoc Counties, Maine (ME606)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AaD	Adams loamy sand, 15 to 30 percent slopes	0.5	0.9%
BgB	Belgrade very fine sandy loam, 2 to 8 percent slopes	3.3	5.4%
ChB	Charlton very stony fine sandy loam, 0 to 8 percent slo pes	5.7	9.4%
HfB	Hartland very fine sandy loam, 2 to 8 percent slopes	3.7	6.2%
HfC2	Hartland very fine sandy loam, 8 to 15 percent slopes, eroded	6.6	10.9%
HfD2	Hartland very fine sandy loam, 15 to 25 percent slopes, eroded	3.2	5.2%
HrB	Hollis fine sandy loam, 0 to 8 percent slopes	6.6	11.0%
HrC	Hollis fine sandy loam, 8 to 15 percent slopes	2.9	4.8%
HrD	Hollis fine sandy loam, 15 to 45 percent slopes	16.1	26.6%
HsC	Hollis very rocky fine sandy loam, 8 to 15 percent slop es	0.5	0.8%
Md	Made land, loamy materials	4.5	7.5%
ScA	Scantic silt loam, 0 to 3 percent slopes	6.8	11.3%
Totals for Area of Interest		**60.4**	**100.0%**



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Soil Map—Androscoggin and Sagadahoc Counties, Maine
(Pettengill Park; Map 250; Lot 095 - City of Auburn)

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:5,450 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Androscoggin and Sagadahoc Counties, Maine
Survey Area Data: Version 12, Jan 9, 2009

Date(s) aerial images were photographed: 4/29/1998

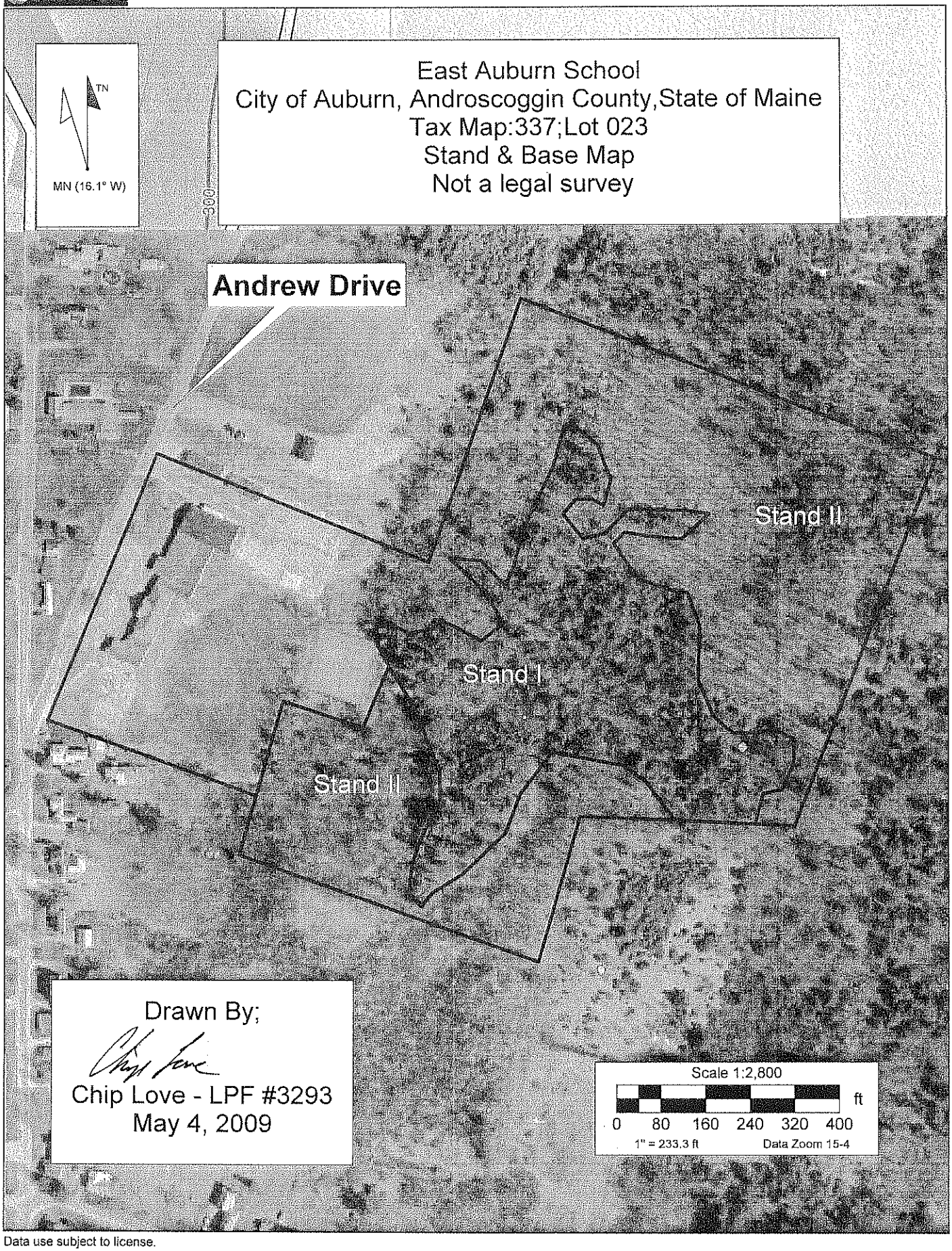
The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Androscoggin and Sagadahoc Counties, Maine (ME606)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
AaC	Adams loamy sand, 8 to 15 percent slopes	0.0	0.0%
BgC	Belgrade very fine sandy loam, 8 to 15 percent slopes	2.8	7.0%
BuC2	Buxton silt loam, 8 to 15 percent slopes, eroded	0.0	0.1%
EmC2	Elmwood fine sandy loam, 8 to 15 percent slopes, eroded	4.5	11.4%
HfB	Hartland very fine sandy loam, 2 to 8 percent slopes	0.2	0.5%
HfD2	Hartland very fine sandy loam, 15 to 25 percent slopes, eroded	2.1	5.2%
HkD	Hinckley gravelly sandy loam, 15 to 25 percent slopes	0.6	1.4%
Md	Made land, loamy materials	18.7	47.4%
MeC	Melrose fine sandy loam, 8 to 20 percent slopes	2.4	6.2%
NgB	Ninigret fine sandy loam, 0 to 8 percent slopes	8.2	20.8%
Totals for Area of Interest		**39.4**	**100.0%**

DeLORME

XMap® 5.2 Professional



Data use subject to license.

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Soil Map—Androscoggin and Sagadahoc Counties, Maine
(E. Auburn School; Map 337;Lot 023 - City of Auburn)

USDA Natural Resources Conservation Service

Web Soil Survey 2.2
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Units

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other

Special Line Features
- Gully
- Short Steep Slope
- Other

Political Features
- Cities

Water Features
- Oceans
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

MAP INFORMATION

Map Scale: 1:3,270 if printed on A size (8.5" × 11") sheet.

The soil surveys that comprise your AOI were mapped at 1:15,840.

Please rely on the bar scale on each map sheet for accurate map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: UTM Zone 19N NAD83

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Androscoggin and Sagadahoc Counties, Maine
Survey Area Data: Version 12, Jan 9, 2009

Date(s) aerial images were photographed: 5/1/1998

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Androscoggin and Sagadahoc Counties, Maine (ME606)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BgB	Belgrade very fine sandy loam, 2 to 8 percent slopes	1.3	5.2%
BuB2	Buxton silt loam, 0 to 8 percent slopes, eroded	0.3	1.1%
EmB	Elmwood fine sandy loam, 2 to 8 percent slopes	0.8	3.1%
HrB	Hollis fine sandy loam, 0 to 8 percent slopes	0.8	3.2%
HrC	Hollis fine sandy loam, 8 to 15 percent slopes	0.7	2.9%
ScA	Scantic silt loam, 0 to 3 percent slopes	12.4	49.3%
SyB	Sutton very stony loam, 0 to 8 percent slopes	8.8	35.2%
Totals for Area of Interest		**25.1**	**100.0%**

To: Auburn City Councilors

From: Mayor's Committee on Solid Waste Management

Subject: Solid Waste and Recycling Recommendation for Upcoming Fiscal Year(s)

Date: February 16, 2015

The members of the Mayor's Committee on Solid Waste Management are pleased once again to present a recommendation to the City Council for the upcoming fiscal year(s) based on our analysis of the solid waste and recycling (SW&R) management options for Auburn. We began meeting again in September to reconsider the SW&R scenarios we presented to the council last year, as well as a fee based collection system which we will refer to as pay as you throw (PAYT). During our deliberations we met with representatives from Pine Tree Waste and Waste Zero, sent out a series of questions to Public Work directors whose cities have adopted PAYT, and communicated with Joe Kazar from MMWAC. In addition we held a public meeting in December, 2014 to present the 4 scenarios we were carrying forward for final consideration. These conversations and the written responses we received or read in the paper have been used to supplement the research we completed last year, inform our revised budget analyses, and ultimately determine our recommendation to the council.

Recommendation

The committee recommends that the City Council negotiate a long term combined SW&R contract with Pine Tree Waste that will be for an automated, weekly pick-up system of curbside solid waste and single stream recycling that would begin at the end of the current solid waste contract, June 2016. This time frame will allow for the city to investigate bonding for the purchase of bins and for Pine Tree Waste to acquire the trucks. This recommendation is the same as last year and we feel is supported by citizens' calls for weekly curbside recycling collection in lieu of the current inefficient and burdensome bi-weekly system. The committee also recommends that the schools continue to be part of any new long term SW&R contract. Furthermore, the committee recommends that if the targets for recycling participation, leading to cost avoidance, are not achieved, or the tipping fee for solid waste disposal exceeds the current $41 per ton, the city move to a fee for service model, charging citizens for the amount of solid waste they dispose. The automated SW&R management system with its uniquely tagged bins will allow for an easy transition to a fee based system when/if the city decides to move in this direction. (At the present time, Pine Tree Waste is piloting the data collection software in other Maine communities.)

As stated in last year's report to the city council (January 15, 2014), the automated SW&R system supplies each residential unit one recycling bin and one solid waste bin, each large enough to meet an average household's weekly SW&R needs. The benefits of this SW&R management system are: (1) an increased recycling rate of up to 35%, (2) a reduction in costs for solid waste disposal and collection, (3) ease of use and compliance by residents, (4) elimination of a person lifting the recycling and solid waste bins reducing the chances for work-related injuries, and (5) consolidation of our SW&R curbside collection to one truck, eliminating a second truck and route. Pine Tree Waste has agreed to work with the city to promote and educate the public about the new SW&R system. The committee continues to

recommend that if an additional recycling or solid waste bin is requested, that: (1) the city supply the extra recycling bin at cost with no additional fee charged for utilizing it, and (2) the city supply the additional solid waste bin at cost and charge a set monthly fee to cover the extra solid waste disposal costs.

Process and Analysis

The committee determined that 2 scenarios from last year's analysis were still viable and carried them forward for an updated budget review: Business As Usual weekly and SW&R automated collection. In addition, we added 2 new scenarios for the cost analysis, each of which included PAYT as a component: PAYT alone and PAYT in combination with automated collection. Our assumptions for the cost analyses are conservative and present a worst case scenario.

All of the scenarios assume a 10-year contract for single stream, curbside collection of recyclables and a 2.5% annual increase in collection costs. (The 2.5% increase was the percentage proposed by Pine Tree Waste in 2014 and is used for illustrative purposes. Exact costs cannot be determined until a new contract is negotiated.) The tipping fee for solid waste was increased from $29/ton to $41/ton based on the new fee schedule from MMWAC. (The rate of increase in tipping fees in future years has not been determined. Therefore we made the assumption for our cost analysis that it would not exceed $55/ton for the duration of the SW contract.) The tipping fee for recycling disposal was estimated at $20/ton based on recent correspondence from Pine Tree Waste.

None of our analyses take into consideration the potential income from MMWAC to the city that will arise from MMWAC's ability to accept more commercial solid waste, at a higher tipping fee, in lieu of municipal solid waste as recycling rates increase.

Scenario 1: BAU weekly [Business As Usual with weekly recycling collection]

For this SW&R option, a private contractor retains the curbside recycling collection and increases the frequency to weekly. The recycling rate is assumed to double to 16%. Solid waste continues to be collected separately by a private contractor.

*Scenario 2: AUTO [*Automatic combined collection of SW&R]

This AUTO option reflects the 2015 proposal from Pine Tree Waste for a 10-year combined SW&R automated collection program. Pine Tree's costs include purchasing 3 new automated, dual compartment trash and recycling trucks, providing 2 uniquely tagged bins to each residence, automated weekly collection, and tonnage data by residence. The recycling rate over 10 years increases from 25% to 35% over a 3 year period where it remains at 35% for the duration of the contract. This recycling rate is consistent with data obtained from other towns who utilize an automated collection system.

Scenario 3: PAYT [Pay As You Throw]

This SW&R option involves residents purchasing specific bags from retailers and using them for curbside collection of their trash. Recycling would be collected separately in owner supplied bins on a weekly

basis. Based on data from Waste Zero and other cities, the recycling rate is assumed to attain 40% the first year and 50% for the remainder of the contract.

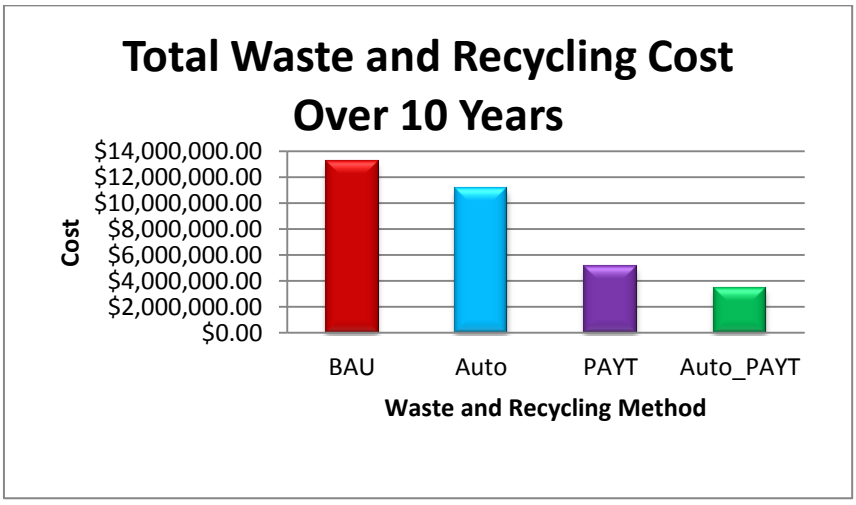
Scenarion4: PAYT with AUTO [Pay As You Throw Combined with Automatic combined collection of SW&R]

This scenario combines scenarios 2 and 3 into one program, reducing the need for 2 separate trucks, allowing for a fee based SW disposal system (with or without bags), and supplying the residents with bins. The recycling rate mirrors Scenario 3.

We developed an Excel workbook with spreadsheets analyzing current and future costs over 10 years for each of the 4 scenarios. A ten year time frame was chosen for this analysis because: (1) we felt that taking a long range view of our SW&R management costs was prudent because of the increase in SW tipping fees at MMWAC, and (2) Pine Tree Waste's proposal was for 10 years. The assumptions we made in our cost analysis were based on:

- Experience from other cities in terms of recycling rates for various collection options
- The Pine Tree Waste proposal for annual cost increases (2.5%), collection costs, and projected recycling tipping fees
- Information received from MMWAC regarding disposal tipping fees
- Revenue projections from Waste Zero for purchasing trash bags
- Auburn Public Works

The results of the economic analysis of the 4 SW&R scenarios are presented in the following graph and table.



Scenario	Total Cost	Collection	Disposal (SW&R)	Cost Avoidance
BAU	$13,218,506.35	$ 9,209,359.07	$4,009,147.28	-$441,894.72
Auto	$11,137,866.45	$ 7,624,752.75	$3,513,113.70	-$937,928.30
PAYT	$5,077,216.67	$ 9,209,359.07	$3,087,857.60	-$1,363,184.40
Auto_PAYT	$3,492,610.35	$ 7,624,752.75	$3,087,857.60	-$1,363,184.40

As is evident, the Business As Usual SW&R management system is the most expensive option due to the highest collection and disposal costs. The increase in Auburn's current recycling rate from 8% to 16% by moving to weekly collection in the BAU scenario remains far below the rates achieved by any of the other SW&R systems and thus has the lowest cost avoidance.

The benefits of moving to an automated, combined SW&R collection system can be seen in the Auto scenarios, with and without PAYT. The total cost difference over ten years between BAU and Auto is approximately 2 million dollars. A reduction in expenses is directly tied to lower collection costs, increased cost avoidance through higher recycling rates (35%) and reduced disposal fees. The committee also recommends that the council consider the city purchasing the bins directly thereby reducing the overall cost of the AUTO scenario.

As the graph and table also indicate, the two PAYT scenarios would have the lowest impact on the city's budget. Moving to a fee based solid waste disposal system results in residents having to pay for the amount of services they use, as is done for other utilities. This system incentivizes citizen participation in reducing the amount of trash and participating in recycling. The difference in total cost over 10 years between BAU and PAYT is approximately 8 million dollars. The annual revenue from the purchase of bags was estimated by Waste Zero to be $722,000. Ultimately, the committee decided not to recommend any of the PAYT scenarios for one main reason, perceived citizen opposition to a fee based system for solid waste services.

The committee members believe that the two bin automated collection method is the best option for collection of SW&R, for the reasons stated above, and will prepare Auburn for the future direction of the solid waste collection industry. Indications lead the committee to believe that the industry is gearing itself towards a wet waste, dry waste collection process. The two bin automated SW&R collection system will also allow recording of individual bin weights that could be used in a fee based system, should the council decide to pursue this option.

Under the automated SW&R collection system proposal, the committee expects that the council might hear concerns that a single trash container is not adequate for certain homeowners. These concerns can be addressed in a few ways:

1. Citizens could be directed to MMWAC where they may drop any excess waste into a dumpster at no charge.
2. The City could provide a second waste bin for such residents at no charge.
3. The City could provide a second waste bin for such residents at cost.

4. The City could provide a second waste bin for such residents at cost, and also add a monthly cost to reflect the increased disposal costs associated with the extra solid waste.
5. The City could encourage greater recycling by offering to provide a second recycling bin for free to encourage these residents to reduce their waste through greater recycling.

After careful discussion of these options, the committee members agreed to recommend option 4 with the understanding that citizens will still be able to take any excess waste to MMWAC for no additional charge. We recommended this option because it reduces costs to the city and places the onus on the residents for controlling their amount of solid waste for curbside pickup. We also recommend that any additional recycling bins be available at cost to any citizen.

City Council Information Sheet

City of Auburn

Council Workshop or Meeting Date: March 2, 2015 **Order**

Author: Denis D'Auteuil

Subject: Solid Waste and Recycling Committee Presentation

Information: In November 2013 the Solid Waste and Recycling Committee began reviewing various options for an improved Solid Waste and Recycling program. In January 2014 the Committee provided the City Council with their analysis of various options and final recommendation to adopt an Automated Solid Waste and Recycling program. The Committee's recommendation was supported by the City Council, but the funding was not approved through the City Manager's proposed budget. This resulted in the Solid Waste and Recycling programs remaining as a weekly collection for solid waste and a twice a month collection for recycling. Following the closing of the budget process for FY15 the committee began the work of updating the analysis, as well as, a thorough review of additional options. Staff and Committee members will update the City Council on the process that the committee undertook to review multiple options and provide the Committee's recommendation to implement an Automated Solid Waste and Recycling Program.

Advantages:

- An increased recycling rate of up to 35%;
- Reduction in costs for solid waste disposal and collection;
- Ease of use and compliance by residents;
- Elimination of a person lifting the recycling and solid waste bins reducing the chances for work-related injuries;
- Consolidation of our Solid Waste and Recycling curbside collection to one truck, eliminating a second truck and route.

Disadvantages:

- Moving to an automated system would require a new 10yr agreement due to the capital costs being placed on the vendor to purchase new equipment and bins. By signing a 10yr agreement the city will be limited on considering new or improved options in the industry during the life of the contract.
- Long range strategic plans have not been completed by MMWAC. The MMWAC Board of Directors has had numerous discussions revolving around this subject, but no document has been developed to date.

City Budgetary Impacts: For the FY16 budget we enter the final year of our 5 yr. contract for solid waste collection with Pine Tree Waste at a cost of $441,048. Through last year's budget process the City Council approved funding to contract out curbside recycling collection at $96,900 and we anticipate a 5% increase from our vendor bringing this cost to $102,000 for FY16. The combined total for our current solid waste and recycling contracts in FY16 is anticipated to be $543,048. If an automated program was adopted the cost would be approximately $680,000 for the first year. Exact costs will only be determined once negotiations are completed. The cost avoidance by increasing recycling tonnages and reducing solid waste disposal tonnages are outlined in the recommendation letter and analysis spreadsheets provided by the Committee. The analysis provided shows that an automated program is more cost effective compared to our current programs.

Staff Recommended Action: City staff support the recommendation to move to an Automated Solid Waste and Recycling Program. Staff recommends adoption of the program through the upcoming FY16 budget process.

City Council
Information Sheet

City of Auburn

Previous Meetings and History:

- January 21, 2014 City Council Workshop: The Solid Waste and Recycling Committee presented their recommendation on moving to an automated program. City staff supported the recommendation, but the funding was not included in the City Manager's proposed budget.
- December 18, 2014 Public Information Session: The committee and staff held a public information session to review the various options being considered and resident comments were used to determine the final recommendation.

Attachments:

1. Solid Waste and Recycling Committee's recommendation letter;
2. Solid Waste and Recycling Options Analysis

City Manager or Assistant City Manager signature: _____ Date: _____


Single White Line
Single Yellow Line
Double Yellow Line (DYL)
Proposed Edge of pavement (EOP)
Green Space
EOP
DYL
16'
6'
11'
11'
5'
13'
1 inch = 20 feet
0
20 Feet
N


11' 9" S'
1 inch = 30 feet
0
30
60 Feet

City of Auburn
Transportation & Environment
February 17, 2016
5:30 PM
Council Chambers

Present: Councilor David Young; Councilor Ernestine Gibert, Councilor Leroy Walker (Absent); City Manager, Howard Crowell, Assistant City, Manager Denis D'Auteuil, Public Services Director Dan Goyette, and Deputy Director, Scott Holland

I. Housekeeping Items:

1. Introductions of Council Committee Members and Staff

2. Selection of Committee Chairperson – Councilor David Young as select as chairperson.

3. Schedule of regular meetings – The Committee discussed a regularly scheduled meeting time. It was determined to be the 3rd Wednesday of the month.

II. Fiscal Year 2015-2016 Budget and Work Plan: The Committee reviewed the plan and had no questions for staff.

III. Projects and initiatives Review:

- **<u>Community Forest Management Planning as follow-up to moratorium</u>** – Conservation Commission is currently working with the forest board on an ordinance update. An updated ordinance will be presented at the next meeting.

- **<u>Solid Waste and Recycling Contract</u>** –
The current contract is set to expire in July. There are various options to the City moving forward and additional information on future costs of those options will be included in the next meeting packet.

- **<u>Future of MMWAC</u>** –
A discussion took place on the future of the facility and what it means to the City if it were ever to close. More information needs to be gathered for the Committee to review in the future.

- **<u>Route 4 Engineering from East Auburn to Lake Shore Drive –</u>**
A discussion of the current process occurred and the schedule of the project moving forward.

IV. Priorities: The Committee identified the following as priorities for the next meeting.

V. **Public Comment:** Tiz Crowley spoke about the committee structure and her hope for lots of public interaction.

End Session 6:20 PM