II. LITERATURE REVIEW

II.1 Working Forest Conservation Easements

A WFCE, like a conventional conservation easement, is a legal agreement between a landowner and a nonprofit conservation organization or governmental entity that permanently limits the uses of the land in order to protect specified conservation values (Diehl and Barrett 1988; Lind 2001b). Unlike an open-space or no-build easement, a WFCE typically includes language that guides forest management practices in order to protect certain forest values. A WFCE deals exclusively with forest lands that are “…actively managed for goods and/or services that have a monetary value in the current marketplace, such as timber, recreation, and water supply protection” (Lind 2001b, 2). WFCEs can prohibit damaging forest practices, promote a desired forest condition, promote landscape-scale conservation by dictating certain management regimes, and can contribute to sustaining local timber-based economies (Lind 2001b).

Two distinct characteristics of a WFCE are the potential for landscape-scale conservation and sustainable forestry. These advantages are usually the primary goals of easement holders and often are significant factors in a landowner’s decisions to sell or place an easement on their land (Lind 2001b). Landscape-scale conservation, as defined by The Nature Conservancy, is the conservation of areas large enough to contain functioning ecosystems that support crucial natural processes (The Nature Conservancy 2002). In her study of WFCEs in New England, Boelhower called for the development of practical approaches to landscape-scale forest management (1995). A subsequent study showed that the use of working forest conservation easements to protect large forested landscapes in both the Northeast and other regions of the country was increasing (Levitt 2003). The Pingree easement, protecting approximately 762,000 acres, was highlighted in the study for the influence its innovative financing and monitoring technique had on landscape-scale conservation (Levitt 2003).
Recent research has focused on the many large-scale forestland conservation deals in the Northeast and their implications for sustainable forestry. Best and Wayburn noted that the forest management techniques used combine both high standards of ecosystem protection and commercial forestry, suggesting this approach could serve as a model for other landowners interested in conserving forest resource values (2001). Sustainable forest management then is an important component of WFCEs and the degree to which it succeeds in the above-mentioned projects has serious implications for other WFCEs (Best and Wayburn 2001). There are many definitions of sustainable forestry, but one of the most comprehensive is given by Jenkins and Smith in *The Business of Sustainable Forestry*:

The sustainable forest is an aggregation of trees that people preserve in a dynamic social and natural environment for the ecological qualities, services, and yields they want. Active effort is required to prevent unwanted changes that human activities and natural phenomena would usually produce. Preservation requires investment to control forest uses and the social forces that determine them; to conserve and replace necessary ecological capacities; and to develop the organizations, policies, and technologies that forest replacement, maintenance, and enhancement are likely to need. The sustainable forest strikes a dynamic balance among economic, environmental, and social forces that people control to prevent the loss of whatever forest state they prefer (1999, 12-13).

II.2 Defining Characteristics: Forest Management Requirements

As the name implies, forest management is the cornerstone of all working forest conservation easements. However, not all WFCEs address forest management in the same way. Two prominent studies, one by Lind entitled *Working Forest Conservation Easements: A Process Guide for Land Trusts, Landowners, and Public Agencies* (2001b) and the other by Boelhower entitled *Forests Forever* (1995) detailed the major ways easement holders approach forest management in WFCEs. These methods are not mutually exclusive and may be used in combination.
II.2.1 Purposes

Forestry purposes, as well as other conservation purposes, are listed in the Purposes or Recitals section of the easement. Lind contended that if specific forestry purposes are not articulated, future generations interpreting the easement may not deem forest conservation or management to be significant (2001b). Land trusts, responding to differing landowner needs, have developed three approaches to incorporating forestry purposes. First, forest purposes may exist in an enumeration of equally weighted purposes (Lind 2001b). Second, forestry purposes may be stated more specifically; for example a particular forest type may be listed as a purpose (Lind 2001b). Third, easements may explicitly prioritize purposes, designating primary and secondary purposes (Lind 2001b).

II.2.2 Restrictions

Restrictions are negotiated by the landowner and easement holder during the drafting of the document (Lind 2001b). Specific forest management restrictions or requirements are often found in a separate section often entitled Forest Management Restrictions (Lind 2001b). These restrictions can protect specific resources or identify general standards for acceptable management (Lind 2001b). One study advised land trusts to avoid excessive prescriptive language and instead address “big picture” issues such as buffers around water bodies, special management areas for wildlife, and limitations on clear-cuts (Lind 2001b).

Since an easement may protect land in perpetuity, flexible and adaptive restrictions are necessary to meet future market changes and technological advances (Lind 2001b). Moreover, restrictions should be measurable and be able to be monitored. In order to be effective and defensible in court, Lind recommended that restrictions relate to stated purposes of the easement and that easements only include restrictions necessary to protect the core purposes of the easement (2001b).
II.2.3 Forest Management Plans (FMPs)

Forest Management Plans (FMPs) describe how forest stands will be harvested and managed by the landowner (see glossary of terms). Recent studies endorsed the requirement of FMPs, and the concurrent approval of them by professional foresters, in WFCE documents (Boelhower 1995; Lind 2001b). The incorporation of an FMP confers many advantages upon both the landowner and easement holder, including a decrease in the level of detail and prescriptive language needed in the easement itself, the provision of clear guidance for monitoring, and management flexibility that allows for future changes in technology and landowner needs (Lind 2001b).

While local conditions and landowner priorities necessitate that the details of every FMP differ, Lind (2001b) found that FMPs typically share certain terms. These terms include: a list of the items to be addressed by the FMP, qualifications of the preparer (usually a professional certified forester), a timeframe for the preparation of the plan, a review and modification time schedule (usually every 5 to 10 years), and a mechanism for easement holder review and/or approval (Lind 2001b).

FMPs have been included in WFCEs in four primary ways: (1) the forest management is in accordance with a written plan approved by the easement holder, (2) the forest management is in accordance with a written plan, but approval by the easement holder is not required, (3) forest management is tailored to the sites and soils of the property, but approval by the easement holder is not required, and (4) forest management is not required (Boelhower 1995). Boelhower’s (1995) study found that the third approach was the most common (used by 48% of organizations), followed by the first and second approaches (used by 35% and 15% of organizations respectively). These approaches highlighted the importance placed upon review and approval of the FMP by the easement holder. Several factors influenced whether an organization seeks only review of the FMP or both review and approval of the FMP: landowner acceptance of veto power, easement holder expertise and financial resources, easement holder interest in engaging in forest management, and state agency regulation of forest management activities (Lind 2001b).
Lind identified two points in time for FMP preparation: either before closing on the easement or prior to planned timber harvest activities (2001b). While Lind (2001b) found that preparing the plan before closing the easement can clarify expectations and facilitate the negotiation of terms, if a landowner does not foresee harvesting on the property in the near future preparing this plan may be delayed in order to save money.

In addition, Lind (2001b) found that wildlife habitat, soil conservation, water quality, and aesthetics protection should be incorporated into an FMP. Thus, parties to a WFCE should consider the following issues in writing the FMP:

- the landowner’s vision for the property, or a desired future condition,
- a natural resources inventory, documenting the timber resource, endangered species, cultural features, geological features, and other notable attributes, and
- the activities or action plan section providing detail on management activities to be performed on the land (Boelhower 1995; Lind 2001b).

**II.2.4 Best Management Practices (BMPs)**

Best management practices are voluntary guidelines written by public agencies to assist landowners and land stewards in minimizing ecological damage during timber harvest activities and to standardize land resource management practices. Drafters of conservation easements often draw upon the expertise of local and state level agencies by referencing state and local BMPs in the easement document (Lind 2001b). When referencing BMPs in easements, national organizations must be aware that BMPs can vary greatly between states (Lind 2001b). WFCEs have cited BMPs that provide general forestry recommendations and specific BMPs with more narrow focuses (e.g. road construction, timber harvest in riparian areas, pesticide application, and erosion control) (Lind 2001b). Yet as BMPs originated under of the Clean Water Act, most BMPs focus on forest management only to the degree that forestry impacts water quality; therefore, BMPs have only limited effectiveness as a forest management tool (Lind 2001b). For
this reason BMPs should always be used in conjunction with a forest management plan or specific easement restrictions (Lind 2001b).

Researchers have investigated landowner compliance with BMPs; in a study of the effectiveness of BMPs on private forest lands in Ohio, 62% of 110 sites showed excellent or good compliance with BMPs (McClenahen, et al. 1999). To date, no research has focused on the effectiveness of BMPs on large WFCEs.

II.3 Who Utilizes WFCEs?

Working forest conservation easements are used as a conservation tool by federal and state governmental entities and by non-profit conservation organizations (Lind 2001b). Conservation easements held by the federal, state or local government are referred to as publicly-held, or public, easements; conservation easements held by land trusts and other non-governmental organizations are referred to as privately-held, or private, easements. Two sets of statutes are of fundamental importance in determining eligibility to hold conservation easements: federal statutes provide tax benefits, while state statutes provide a legal basis for enforcement. Under either set of laws there are virtually no restrictions on who may be a grantor, assuming the grantor has the proper purposes. However, both federal and state laws address eligibility to hold a conservation easement.

While adherence to federal tax laws is not required for a conservation easement to legally exist, all conservation easements are drafted to be eligible for tax benefits. Under the federal tax code, public entities and 501(c)(3) organizations with the purpose of preserving natural resources are eligible to hold conservation easements (Morissette 2001). Some state laws remain silent as to who may hold a conservation easement while other states are much more specific and require that only the state government or a 501(c)(3) organization may hold the easement (Cheever 1996).

Among the national organizations that actively acquire WFCEs are The Nature Conservancy, The Conservation Fund, and the Trust for Public Land (Lind 2001b). A partial list of state and regional organizations that utilize this tool include the Society for
Protection of New Hampshire Forests, the Vermont Land Trust, the Pacific Forest Trust, and the Forest Society of Maine (Lind 2001b).

II.4 What May Be Protected?

The state enabling laws and federal tax laws place limitations on which purposes and restrictions are enforceable and are tax deductible. Valid purposes for conservation easements vary by state. The California conservation easement statute’s list of purposes is typical: “retain land predominantly in its natural, scenic, historic, agricultural, forested, or open space condition” (Cheever 1996).

Under federal tax law the conservation easement must meet at least one of several conservation purposes to be eligible for tax benefits:

1. The preservation of land areas for outdoor recreation by, or the education of, the general public;
2. The protection of a relatively natural habitat of fish, wildlife or plants, or similar ecosystems,
3. The preservation of open space (including farmland and forest land, where such preservation is:
   a. For the scenic enjoyment of the general public, or
   b. Pursuant to a clearly delineated federal, state, or local governmental and conservation policy, and will yield a significant public benefit, or
   c. The preservation of a historical land area or certified historic structure. IRC § 170(h)(4)(A).

II.5 Special Federal and State Conservation Programs

Conservation easements are considered a valid conservation tool at both the federal and state government level as shown by federal and state programs funding the purchase of conservation easements. Often these programs superimpose other requirements in addition to those required by federal tax law and the state enabling laws. As examples of
such programs the Forest Legacy Program, the premier federal program, and the Land for Maine’s Future program are described below.

**II.5.1 USDA Forest Service, Forest Legacy Program**

The Forest Legacy Program (FLP) was established in 1990, as part of the Farm Bill, to protect sensitive forest areas from conversion to non-forest uses. Grant funds were first made available to states in 1996. Administered by the Forest Service, the program is a partnership between the federal agency, state foresters, local governments, land trusts, and landowners. The goal of the program is to “mitigate forest fragmentation and loss of forested landscape” (Cooksey 2003).

FLP monies are meant exclusively for the acquisition of land and easements, and not for stewardship, monitoring, or management activities. As a requirement of the program, only governmental entities can hold an FLP-funded easement. Since 1996, the Forest Legacy Program has enjoyed a steady increase in appropriations. In fiscal year 1996 FLP was funded at $3 million. The President’s proposed budget for the program in fiscal year 2004 was $90.1 million. Since 1992, 34 states have joined the program, accounting for 118 completed projects. As of September 2003 over 430,000 acres was protected (Cooksey 2003).

**II.5.2 Land for Maine’s Future**

The State Planning Office of Maine oversees the Land for Maine’s Future program, which has the stated purpose of acquiring public lands and protecting working forests in Maine. Established in 1987 when Maine citizens voted to fund a $35 million bond to purchase lands of statewide importance, Land for Maine’s Future seeks matching funds at a ratio of at least $1 of match for every $2 of public funds expended (Land for Maine’s Future 2002).

The program’s leadership determined that WFCEs “can provide an effective and economical alternative to fee acquisition where the conservation and recreational needs
of the people of Maine can be served by continuing private ownership with certain limitations on land use” (Land for Maine’s Future 2002). To effectuate this policy the program administrators developed guiding principles and easement drafting guidelines that must be followed for WFCEs to be eligible for funding (Land for Maine’s Future 2002). These guiding principles called for no additional non-forestry or non-recreational development, strict limits on subdivision, public access, and a commitment by the landowner to produce a perpetual yield of timber and pulp products (Land for Maine’s Future 2002). To date, 278,519 acres of land have been protected with WFCEs (Glidden 2004).

II.6 Easement Drafting

Several studies outlined the importance of stewardship for the management and enforcement of conservation projects, including easements (Lind 1991; Noon 2003; Rod 2003; Hahn 2000). In fact, some researchers assert that an effective and comprehensive monitoring program is the defining feature of a successful easement program (Hahn 2000). Therefore, monitoring programs that measure environmental health and easement compliance should be designed for WFCEs. By making stewardship and monitoring part of the conservation strategy from the beginning, the conservation of a particular area is likely to be more efficient and effective over time (Rod 2003). In addition, monitoring experts suggested involving the employee(s) responsible for monitoring in the easement drafting process (Rod 2003).

Studies on the design of ecosystem monitoring programs show that good monitoring programs rely on indicators chosen for their ability to measure system change and integrity (Lindenmayer and Franklin 2002; Noon 2003; Carignan and Villard 2002). Research focusing on identifying indicators for monitoring biodiversity demonstrated that the process of specifying monitoring goals and determining appropriate indicators to assay those purposes is fundamental to successful monitoring programs (Noss 1990). Since monitoring is a tool and not an end unto itself, the success of a monitoring program depends in large part upon drafting an easement document with restrictions written specifically to achieve certain purposes or conditions.
II.6.1 Easement Purposes

According to one stewardship guide, specific stewardship and management purposes for a protected area should influence the drafting of the easement document (Lind 1991). Similarly, monitoring experts advise negotiating parties to specify which environmental and ecological aspects or conditions the easement protects (Rod 2003). Research focusing on the conceptual issues in monitoring ecological resources asserted that monitoring is a dynamic process that accounts for changing environmental conditions and land use patterns (Noon 2003).

In addition to using conservation goals and purposes to guide easement drafting, several experts stressed the importance of making provisions clear and enforceable (Lind 1991; Rod 2003). For example, if a primary goal of the easement is to protect water quality, it is important to include specific provisions in the easement that promote water quality, such as buffers of a specified size on all water bodies or restrictions on pollution of water bodies. These specifics improve clarity and future interpretation, as well as making them easier to defend in court. Stout contended that, in order to make monitoring more effective, conservation organizations should think about how to monitor restrictions during the easement drafting process (1993). If the provisions of an easement are either too prodigious, too numerous, or too ambiguous, any monitoring program will provide inadequate information for making future management decisions. Thus, the monitoring program implemented on a WFCE may be controlled by the available resources and organizational capacity of easement holders. In addition to using clear, enforceable provisions when drafting an easement, Lind recommends that draftees avoid unnecessary, irrelevant, and unmonitorable restrictions (1991). This process enables easement holders/managers to focus on monitoring techniques that best enable them to effectively enforce and manage the protected area (Lind 1991; Rod 2003).
II.6.2 Baseline Documentation

Experts contend that after including monitoring and stewardship considerations in the easement drafting process, the most important aspect of an effective easement and monitoring program is baseline documentation (Lind 1991; Rod 2003). Baseline documentation is important because it: (1) provides documentation of resource values, (2) is required by IRS to obtain tax deductions, and (3) provides an initial data point against which subsequent data may be compared (Lind 1991).

WFCEs include timber harvesting and other management activities that impact the non-timber conservation values stipulated in the purposes and goals of easements (e.g. wildlife habitat or forest health); therefore, complete baseline documentation may be used in drafting provisions to protect non-forestry values (Lind 2001b). As WFCEs differ by size, geography, easement holder, landowner, management goals, etc., not all monitoring techniques are equally effective in terms of cost and measurement of data. Baseline data should be used to develop monitoring programs (Rod 2003). Without planning for monitoring in the early stages of easement drafting, conservation managers run the risk of implementing a monitoring program that does not adequately address the purposes of the easement, wastes money measuring unimportant data, and ultimately results in ineffective management decisions.

II.7 Landowner Relations

In a stewardship guide for conservation easements, Lind (1991) claimed that a strong stewardship program includes informed and cooperative landowners. Establishing good relationships with landowners allows easement-holding organizations to communicate the easement’s purposes and goals, and involve these important stakeholders in the stewardship of the easement. Furthermore, Lind (1991) asserted that good landowner relationships reduce the chances that owners will violate the easements.

By debunking the idea that landowners are simply potential easement violators, easement holders can recast their relationships with landowners as project partners and promote
positive rather than antagonistic relationships (Ratley-Beach 2002). For example, the Vermont Land Trust (VLT) has embraced efforts to improve relations with landowners, and considers such relationships fundamentally important to the long-term success of its easement program. VLT hired a full-time staff person to manage landowner relations and services, and full-time field assistants to conduct monitoring and landowner visits (Ratley-Beach 2002). VLT maintained that landowner relationships are the “key to long-term success” and that despite the additional upfront cost, working with landowners to improve stewardship efforts “will be a bargain in the long run by decreasing easement violations and the risk of legal disputes” (Ratley-Beach 2002, 9).

Assuming that good landowner relations result in landowners who understand the goals of the easement, know how their land functions to achieve those goals, and will act in good faith, then landowners can be considered the first line of defense against potential easement violations as well as good sources of information for monitoring programs (Ratley-Beach 2003). Not only do improved landowner relations benefit stewardship efforts, but some land trusts have also discovered that efforts to improve and maintain landowner relations improve the perception of their organizations. As changes in land ownership become more prevalent in the near future, positive public perception may increase donations to land trusts. Therefore, the type and quality of landowner relations may play an instrumental role in easement monitoring and stewardship efforts. No research has focused on whether it is possible to foster good relations with industry and institution landowners who have WFCEs on their properties.

II.8 Monitoring Conservation Easements

Monitoring is the systematic evaluation of the success of a particular management program over time and involves the measurement and evaluation of data as related to the easement’s management goals (Lindenmayer and Franklin 2002). Since the success of management goals cannot be assessed without adequate monitoring, the monitoring of conservation easements is essential to assessing whether easements achieve conservation goals. Responsible stewardship requires the ability to assess environmental conditions
and human impacts. For this reason, programs must continuously monitor ecosystem change and the uses and restrictions in an easement.

Monitoring can create more effective management of conservation areas by indicating which conservation strategies succeed and which fail. Several researchers assert that monitoring is the foundation for “adaptive management,” by which new knowledge about managing resources and ecosystems will be developed and systematically incorporated into management plans (Lindenmayer and Franklin 2002; Saterson 1996; Ringold et al. 2003). Research on ecosystem management indicated that conservation efforts in the past fifteen years have moved away from management within administrative and political boundaries, and have focused increasingly on the regional, landscape, and ecosystem level (Yaffee 1996; Wondolleck and Yaffee 2000). Based on this trend towards larger ecosystem-based, landscape-level conservation approaches, easement holders must accommodate imperfect information and knowledge. This is presumably the case with WFCEs, considering they often embody long term landscape-level conservation by protecting vast forested areas (ranging from hundreds of acres to hundreds of thousands of acres), and encompass a complex array of ecological systems and habitats. Adequate monitoring programs will serve to validate WFCEs as important conservation tools.

Monitoring is important for several reasons (Rod 2003). First, monitoring detects ecosystem change over time by regularly documenting conditions and changes at a variety of sites on a property. Information on environmental conditions and changes provides a “snapshot” of the area at a particular time, against which subsequent monitoring data can be compared. Second, regular visits to the property can reduce violations of the easement, enforce the uses and restrictions stipulated in the easement, as well as detect threats to the conservation values of the area. Third, a collection of monitoring data creates a documented history of the site, which can have implications for current and future management efforts. Fourth, regular monitoring enables an easement holder to interact with the landowner, which increases owner cooperation, understanding of the easement, and consequently, can often decrease the potential for violations. In addition, research by Noon (2003) contended that monitoring is increasingly being
recognized as a complex but essential element in the effort to limit human activity on a tract of land in order to maintain ecological integrity.

**II.8.1 Available Monitoring Techniques**

A variety of monitoring techniques are available for use on conservation easements (Lind 1991; Lind 2001b; Noss 1990; Rod 2003; Salafsky and Margoluis 1999). Factors that influence the selection of monitoring techniques include the size of the parcel, the specific restrictions, the degree of precision needed, and the resources and capacity of the monitoring organization. The majority of conservation easement monitoring techniques can be applied to WFCEs, however since WFCEs are applied to a “working” landscape, some techniques chosen for WFCEs may differ from the norm.

**II.8.1.a Site Visits or Ground Monitoring**

Site visits involve individuals surveying the protected property in person and obtaining a firsthand account of its condition. Studies and recommendations by monitoring experts show that this technique is appropriate for easements small enough to walk, or for spot-checking larger easements (Lind 1991; Rod 2003). Since most WFCEs are large, and cover vast forested landscapes, on-site visits require a significant investment of human capital, and may not be a viable option. In a study done by Levitt (2003) on the innovative new monitoring protocol developed for the 762,192 acre Pingree easement in Maine, ground monitoring is considered to be the most expensive technique for a landscape-scale easement. It is, however, effective for easements with restrictions that require close inspection, such as limits on certain recreational uses or observing sources of water pollution (Lind 1991).

**II.8.1.b Photo-point Monitoring**

Photo-point monitoring is a popular technique used to provide an objective “snapshot” of the condition of certain areas on a protected property (Rod 2003). Typically, the monitor chooses several photo sites from which to photograph and document how an aspect of the property changes. This technique has two main advantages: it is relatively objective and easy to use. First, since this method provides an objective measure of how an area
changes over time, it is useful as a means of comparing and contrasting current conditions with historical or reference conditions. This technique also limits differences inherent in written observations from site visits by different individuals, documents specific changes and conditions that may be difficult to describe, and is relatively inexpensive. Second, comparing “before and after” photographs is relatively easy and will illustrate the landscape/ecosystem change. Photo-point monitoring may be effective for WFCEs by documenting, for instance, an area of forest where limited, selective logging is allowed.

II.8.1.c Indicators

Studies by Carignan and Villard (2002) and Noon (2003) defined an indicator as an element, process, or aspect of an ecosystem whose existence, absence, abundance, or overall health is indicative of the health of the entire ecosystem. According to these studies, an indicator ought to be: (1) sensitive enough to provide detection of change in or threats to ecosystem health, (2) distributed adequately throughout the area of interest, (3) cost effective and easy to measure, and (4) relevant to conservation and management goals (Carignan and Villard 2002; Noon 2003).

Many researchers have studied the importance and potential for using indicators to illustrate ecosystem change as well as how to effectively identify such indicators for particular conservation targets (Carignan and Villard 2002; Noon 2003; Noss 1990). In a study of indicators for biodiversity, Noss stated that while the concept is controversial, indicators are becoming increasingly popular and there is a long-standing tradition of using indicator species to monitor ecological and environmental conditions (1990). Opponents countered that so-called indicators do not adequately demonstrate environmental trends or changes in conditions (Noss 1990). Nevertheless, indicators such as “keystone species,” continue to be used in wildlife and habitat management policy.

Indicators should relate to an easement’s purposes, the goal(s) of the specific monitoring program, the questions that managers want answered through the monitoring process, and
the scale or level at which monitoring will occur (Noss 1990; Carignan and Villard 2002). Noss provided a comprehensive discussion of how to determine which indicators to use in a monitoring program (1990). His research was focused primarily on monitoring biodiversity, but the strategies for selection of bioindicators can be applied to WFCEs. Although some indicators can be chosen easily, more research needs to be done to select optimal indicators for ecological trends and changes. Indicators that are highly successful at detecting such trends and changes in ecological conditions have great potential for monitoring WFCEs.

The Canadian Forest Service initiated Canada’s Model Forest Program in the early 1990s in an effort to identify and develop indicators of forest health and sustainable forest management (von Mirbach 2000). Through this program, eleven “model forests” were identified, where sustainable forest management practices and indicators are developed and tested. Since forest ecosystems and conditions differ across Canada, each forest in the Model Forest Program sought to develop indicators specific to local and regional conditions. These indicators and management practices were developed by a partnership comprised of representatives with different social, economic, and environmental interests in forest management, which purportedly led to more informed and fair forest management decisions (von Mirbach 2000). A user’s guide created to disseminate the results of the Model Forest Program provided local level indicators of sustainable forest management for each model forest (von Mirbach 2000). No research has addressed whether the trend to include BMPs in WFCEs reflects a parallel effort to standardize indicators and sustainable forestry practices in the United States.

II.8.1.d Remote Sensing

As demonstrated by the monitoring protocol developed for the 762,192 acre Pingree easement in Maine, remote sensing is especially useful for monitoring large areas and forested landscapes (Levitt 2003; Sader and Reed 2003). In a report describing the monitoring protocol developed for the Pingree easement, remote sensing was defined as a technique that gathers, interprets, and evaluates data on a forested area using: (1) aerial photography, (2) Geographic Information Systems (GIS), or (3) satellite imagery (Sader
2002). By making comprehensive monitoring possible without sending personnel to ground monitor areas of a forest, remote sensing decreases the organizational resources required for monitoring (Levitt 2003). Remote sensing can be used for many forestry applications, including terrain analysis, forest management, reforestation, forest inventories, forest cover type, the delineation of burned areas, and mapping of clear-cut areas (Ross 2003). Thus, remote sensing techniques offer a practical alternative to expensive and time-consuming ground monitoring methods.

II.8.1.e Aerial Photography

As with photo-point monitoring, the consistent periodic use of aerial photographs effectively illustrates changes in ecosystem conditions. Aerial photography is a good method for monitoring restrictions on development, clear-cuts, buffers on water bodies, etc. Although this technique can be expensive if a conservation organization has to arrange for the flight and photography, it may be less expensive and more comprehensive for larger WFCE parcels than site visits or photo-points. Lind (1991) contends that aerial photography is useful because it provides a different perspective that may supplement site visits and even expose issues that ground monitoring initially would not have found. This popular technique for monitoring large properties may be especially useful for monitoring WFCEs, which can cover large areas of forest.

II.8.1.f Satellite Imagery

Satellite imagery provides images of an easement area at specific times, which can be compared over time to detect trends or changes in forest conditions. Satellite imagery makes it possible to monitor changes in forest cover, such as harvests and reforestation. For example, Sader and Reed (2003) described how the Maine Image Analysis Laboratory at the University of Maine has developed an algorithm for detecting disturbance in forest canopy using satellite imagery. Satellite imagery is also currently being implemented by the New England Forestry Foundation (NEFF) as part of a three-level monitoring program on the Pingree easement (Sader and Reed 2003). Levitt explained how satellite imagery, unlike aerial photography, allows Pingree easement researchers to evaluate the entire easement area quickly at a comparatively low cost per
area (2003). Given the large size of many WFCEs, satellite imagery is considered a very promising tool for monitoring WFCEs.

II.8.1.g Geographic Information Systems (GIS)

In GIS, digitized data is transformed into “layers”, which can then be overlaid in any combination (usually over an aerial or satellite photograph of the area) to discern trends or changes in forest conditions. The Society for the Protection of New Hampshire Forests (SPNHF) has developed a GIS-based method to inventory forests (Lind 2001a). Personnel on the ground enter data, such as vegetative species counts, timber volumes, wildlife species, etc., which is then turned into usable GIS layers that can be compared and interpreted. Paul Doscher, Conservation Director for SPNHF, suggested that, “perhaps this tool could help us be sure we are documenting key ecological values on easement properties and then help us have confidence that our monitoring is sufficient to protect them” (Lind 2001a, 3).

II.8.1.h Combinations of Techniques

Often, the ideal monitoring program will include a combination of the techniques noted above. For example, Levitt (2003) and Sader et al. (2002) detailed how the monitoring program created by NEFF to cover the Pingree WFCEs combines traditional ground-level monitoring, aerial photography, and satellite imagery. NEFF’s monitoring program is a hierarchical, three level monitoring program: level 1 uses satellite imagery, level 2 uses aerial photography to monitor priority sites determined by changes detected at level 1, and level 3 involves ground monitoring of sites identified by aerial photographs that may need more detailed measurement or observation (Levitt 2003; Sader et al. 2002; Sader and Reed 2003). Instead of monitoring and enforcing the landowner’s forest management plan, as many WFCEs monitoring programs do, NEFF’s monitoring program seeks to evaluate long-term results of forest management in order to promote those practices that are sustainable (Lind 2001a). Aside from research on the Pingree easement, little research has focused on whether a combination of monitoring techniques is “greater than the sum of its parts.”
As WFCEs become increasingly popular as a tool for conservation across the country, traditional monitoring programs may fail to adequately measure information relevant to the goals and purposes of easements on large acreages, creating an explicit need for new monitoring techniques for large-scale landscapes. The NEFF monitoring program is a proactive experiment attempting to determine the most effective methods to monitor large WFCEs. As it develops and is refined, Sader and Reed (2003) suggest that this monitoring system will likely become a model for monitoring landscape-scale WFCEs across the country, and may have important implications for monitoring smaller WFCEs as well.

**II.8.2 Establishing a Monitoring Regime**

Research indicated that several issues should be examined in designing a monitoring program: (1) identifying overall easement/conservation goals that will direct the monitoring program, (2) selecting specific parameters to be monitored, (3) considering the size of the area to be monitored, (4) recognizing organizational capacity to carry out monitoring, and (5) evaluating the relative success of monitoring efforts (Lind 1991; Lindenmayer and Franklin 2002; Noon 2003; Rod 2003).

**II.8.2.a What Conservation Purposes are Being Monitored?**

If, as many studies have argued, easements are drafted with stewardship goals and organizational capacities in mind, it is crucial to establish an effective monitoring regime that reflects the purposes, provisions, and restrictions in an easement (Sader et al. 2002). Although compliance monitoring for restrictions in easements is more straightforward and relatively well-understood, Noon contended that a monitoring program that also accounts for the ecological or environmental goals of an easement can be less clear and more difficult to enforce (2003). This observation is especially poignant for WFCEs, for which managers often must couple monitoring conservation purposes like forest health with monitoring restrictions on activities such as timber management.

Studies on monitoring ecological resources have shown that the development of a monitoring regime should begin with a model or design of the ecological system, process,
or area of interest (Salafsky and Margoluis 1999; Noon 2003). Several guides for monitoring and evaluating conservation projects indicate that the process of defining the system and making project purposes explicit is of utmost importance (Ericho et al. 1996; The Nature Conservanceny 2000; Ecosystem Management Initiative 2003). Some examples of ecological and environmental purposes found in WFCEs include biodiversity, forest health, and wildlife habitat. Through such a model, Salafsky and Margoluis explained that managers establish a conservation target condition, identify the pressures and threats to the conservation target, and determine the responses or activities that can be used to mitigate threats to the target condition (1999). Without such efforts, managers will often find themselves unable to measure the success of their conservation projects.

Salafsky and Margoluis discussed the lack of methods available for measuring conservation success (1999). In an effort to fill this void, they created Threat Reduction Assessment (TRA) to measure the outcomes of conservation projects (Salafsky and Margoluis 1999). The Nature Conservancy (2000) has developed its own model for site conservation, called the “Five-S” Framework (systems, stresses, sources, strategies, and success). Similar to the approach of Salafsky and Margoluis (1999), the “Five-S” Framework attempts to abate the stresses or threats to the target condition. In an effort to promote the evaluation of conservation projects as a means of improving the efficiency and effectiveness of conservation efforts across the country, the Ecosystem Management Initiative at University of Michigan has developed a comprehensive evaluation guide to help conservation project managers through the process of designing an approach to evaluate their own conservation projects (Ecosystem Management Initiative 2003). Without effective evaluation methods, organizations that hold and monitor WFCEs will not be able to discern whether the monitoring programs implemented are truly measuring information relating to easement purposes.

II.8.2.b What Parameters and Indicators Should Be Monitored?

Authorities agree that the second step in creating a monitoring system is the selection of parameters or indicators to be monitored (Lindenmayer and Franklin 2002; Carignan and Villard 2002; Noss 1990). In the face of finite resources, easement holders should place
particular emphasis upon selecting parameters that accurately reflect the degree to which the conservation purposes are being attained (Carignan and Villard 2002). Lindenmayer and Franklin observed that the reverse process often takes place: limits on organizational capacity and resources often dictate which parameters are selected (2002).

Considering that organizational capacity and available resources impose limits on the selection of parameters, Salafsky and Margoluis (1999) explained that conservation organizations must choose parameters that are the most cost-effective. This is essentially the difference between what one wants to know and what one needs to know about the conservation target. Lindemayer and Franklin (2002) used forest structure to illustrate this point: strong ecological linkages between forest structure, plants, animals, and ecosystem processes in forest ecosystems make selection of forest structure as a parameter a low cost, yet effective, alternative to measuring the condition of multiple species. Based on the well-established ecological connections in forest ecosystems, other possible parameters for measurement of forest ecosystem health might include dead standing and fallen woody debris, forest canopy cover, nutrient levels in water bodies, etc. (Lindenmayer and Franklin 2002). The strategic selection of parameters is a crucial link in a monitoring regime since well chosen parameters allow WFCE monitoring staff to easily determine whether an easement’s purposes are being met.

II.8.2.c How Large is the Property?

Monitoring experts concluded that the size of the property protected by an easement significantly influences the character of a monitoring regime (Levitt 2003; Lind 1991; Sader and Reed 2003). For example, large tracts are often difficult and expensive to monitor through site visits, so using remote sensing techniques, such as satellite imagery, to monitor these areas is typically more appropriate. However, since fewer resources are necessary to conduct site visits on small tracts, this technique is often better suited for monitoring small parcels than remote sensing methods.
II.8.2.d What is the Organization’s Capacity to Monitor?

Several studies have documented how limits on organizational capacity hinder monitoring (Lindenmayer and Franklin 2002; Salafsky and Margoluis 1999; Ecosystem Management Initiative 2003). Since many organizations have limited financial resources, cost is a very real issue in selecting a monitoring program. Given finite resources, an organization could include more parameters in the monitoring regime for a smaller tract than a larger tract. Funding for monitoring is often not a high priority as many organizations and government agencies and corporations have annual budgets, which make appropriating funding for long-term monitoring difficult (Lindenmayer and Franklin 2002).

II.8.2.e How is Monitoring Being Evaluated?

Monitoring information not only must be collected, but also needs to be compared and interpreted in order to be useful in evaluating a project’s success, and ultimately, to the decision-making process. Recent research highlighted that the importance of evaluation to a monitoring regime is matched by its difficulty (Lindenmayer and Franklin 2002; Ecosystem Management Initiative 2003). These studies indicated conservation organizations tend to be project-oriented: the majority of resources are usually devoted to project development, leaving assessment of the success of current and past projects to fall through the cracks. To overcome these challenges, several guides have been produced to advocate the importance of evaluation and to demonstrate how an evaluation plan can be created (The Nature Conservancy 2000; Ecosystem Management Initiative 2003; Saterson et al. 1996).

While many organizations overlook the evaluation process, other organizations have found reporting successes to decision-makers and the general public useful in order to influence policy changes and to garner support for their projects. Some organizations use a “report card,” to document the condition of an ecosystem or specific conservation targets (Harwell et al. 1999; Parrish et al. 2003). These studies suggest that by charting and interpreting information from monitoring programs, report cards simplify measurements of multiple parameters into meaningful categories (Harwell et al. 1999;
Parrish et al. 2003). Report cards illustrate a project’s progress towards conservation purposes, can be easily interpreted by the public and other interested parties, and can serve as an added incentive for organizations to engage in the evaluation process (Harwell et al. 1999). Producing these performance results may also influence land owners to be more diligent in complying with easement restrictions and provisions.

**II.8.3 The Cost of Monitoring**

WFCEs carry a significant financial responsibility. Besides the upfront cost of purchasing an easement, the holder has the financial obligation of perpetual stewardship for the property. Stewardship was found to be the least celebrated aspect of WFCEs and hence the most challenging to fund, despite being highly valued as the “policing” mechanism that protects biodiversity and retains public confidence in WFCEs as a conservation tool. Lind subdivided monitoring expenses into three categories: collection of baseline data, monitoring, and enforcement of easement restriction violations (1991). Despite the diversity of landscapes, easements, and organizational norms and capacities, certain expenses are either universal or can be adjusted to fit the nuances of specific organizations. A sample worksheet can be found in Appendix G (Ratley-Beach 2003).

**II.8.4 Monitoring Endowment**

With myriad stewardship responsibilities on other easements and preserves, land trusts should create a stewardship fund independent of other financial endowments (Ratley-Beach 2003). For example, NEFF, which holds the Pingree easement in Maine, arranged for a portion of the purchase price to be placed directly into a monitoring fund (Levitt 2003). As WFCEs become mainstream and the necessity of large-scale monitoring more immediate, land trusts will have to make strong commitments to financing monitoring. A separate fund for monitoring ensures that adequate monitoring and enforcement continues over time and through financial hardship.

The purpose of a monitoring endowment is to provide a regular and steady income source to finance a monitoring regime (Ratley-Beach 2003). Ratley Beach’s model monitoring endowment has three primary investment goals: (1) to provide income to support
monitoring activities, (2) to grow principal, keeping pace with inflation and providing income to support future activities, and (3) to generate a steady pay-out stream in order to deliver a consistent, high quality monitoring program (2003). The endowment should grow with each easement that an easement holder accepts (Lind 1991). Through monitoring calculation worksheets, investment managers can determine the proper amount necessary to fund monitoring in perpetuity (Ratley-Beach 2003).

Easement holders can secure money for the monitoring endowment from the grantor. While this can be a sensitive request, Lind (1991) noted that landowners typically place easements on their properties to ensure the very attributes valued by the grantee. Thus, Lind (1991) suggested that negotiators repeatedly remind the landowner that the fund is consistent with the organization and landowner’s shared goal of sustaining the environmental, social, and economic quality of the property. A representative of The Brandywine Conservancy, a regional land trust in Pennsylvania, observed that “most landowners willingly provide an endowment once they understand the importance of the land trust being financially prepared to uphold the terms of their easement” (Lind 1991, 67). A monitoring worksheet helps by explicitly showing where the money will be allocated and how a donation to a monitoring fund will better prepare a grantee to uphold the terms of the easement. The donation can cover a portion or the entirety of monitoring costs for an easement. Usually annual monitoring costs are used to determine the donations size; although, the cost of legal enforcement and baseline documentation can also be used to estimate the necessary donation size (Lewis 2001). The Vermont Land Trust, for example, requests an additional $600 from donors to cover baseline documentation costs (Lind 1991). A simple method to calculate the monitoring fund contribution is to use a flat amount, which is based on the average costs per easement (Lind 1991). Other recommended methods include determining: (1) an amount based on acreage and complexity of restrictions, (2) an amount based on specific projected costs, (3) an amount based on the percentage of land’s value transferred by the easement, or (4) an amount based on a property owner’s ability to contribute (Lind 1991).
If no donation from a grantor is forthcoming, grantees can solicit assistance from community members, foundations, and even government stewardship and/or conservation programs. Fundraising specifically for monitoring constitutes a considerable challenge; collecting tax-deductible donations for the monitoring fund is the preferred way to garner funds. Donations can either accompany the easement itself or be provided in segments over time. A more indirect approach, yet equally effective, is a non-monetary asset, such as real estate, which the grantor can sell or trade to use toward other projects. After exhausting these avenues, grantees can resort to internal transfers, moving unspecified monies from an existing fund to the monitoring fund.

Once the monitoring fund is established, easement holders must set investment and withdrawal policies. Half of the land trusts surveyed in an LTA research project, for example, used a written policy to manage stewardship funds (Lind 1991). Since these funds are available exclusively for monitoring, policies must be in place to safeguard against impropriety and endowment collapse (Ratley-Beach 2003).

**II.8.5 WFCEs and Forest Certification**

Third party certification of environmentally friendly or sustainable forest products is a growing trend in both America’s private forests in general and on WFCEs specifically (Newsom 2002). Forest certification effectively protects forests through the promotion of environmentally responsible forest management. Qualified independent certifiers (or auditors) evaluate as well as manage forests according to international standards. Wood or wood products from certified forests are then labeled so that consumers can identify them.

Two major forest certification programs exist: the Forest Stewardship Council and the Sustainable Forestry Initiative Program. Since its inception in 1993, the Forest Stewardship Council has certified 9.4 million acres in the U.S. (Newsom 2002). The FSC ensures the integrity of the certification process by evaluating and accrediting qualified certifiers, and continuing to monitor them regularly after accreditation has been granted. FSC is comprised of environmental groups, the timber trade, forestry
professionals, indigenous peoples and community forestry organizations and certifiers (Washburn and Miller 2003). The Sustainable Forestry Initiative, established in 1995 as a voluntary code of conduct for members of the American Forest and Paper Association, has certified 136 million acres in North America (Sustainable Forestry Initiative 2004).

As WFCEs become both larger and more prevalent, it will be critical to develop monitoring regimes that simultaneously are suited to large scale tracts of land and do not over-tax the organizational capacity of the easement holders (Newsom 2002). A link between WFCEs and forest certification offers a potential opportunity. Forest certification in combination with a WFCE could provide both a streamlined and a cost-effective integrated approach to the responsible management of forested land.

Table II.1 Common elements of WFCEs and forest certification (Source: Newsom 2002).

<table>
<thead>
<tr>
<th>Common Elements of WFCEs &amp; Forest Certification</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Compliance with a set of standards</td>
</tr>
<tr>
<td>• Baseline documentation / assessment</td>
</tr>
<tr>
<td>• Forest management plan</td>
</tr>
<tr>
<td>• Scheduled auditing / monitoring</td>
</tr>
<tr>
<td>• Balance of social, economic, &amp; ecological stability</td>
</tr>
<tr>
<td>• Long-term vision of the forested tract of land</td>
</tr>
<tr>
<td>• Conservation ethic / sustainable forest interest by landowner</td>
</tr>
<tr>
<td>• Involvement / input of professional forester</td>
</tr>
<tr>
<td>• Stakeholder consultation</td>
</tr>
</tbody>
</table>

Research into forest certification is in the preliminary stages. The incorporation of forest certification into WFCEs is plausible from the standpoint that the two processes have several similarities (see Table II.1). Combining the two processes would remove any redundancy and allow resources to be directed elsewhere. Essentially, this shared approach maximizes the benefits of each party while minimizing cost and the planning and implementation efforts that strain land trusts’ operational functionality. An article on third party certification on WFCEs concluded that third party certification should not replace easement restrictions and forest management plans (Newsom 2002). Nevertheless, certification could ease monitoring and address a number of current dilemmas, including increasing difficulty in monitoring very large tracts of forested land, providing clarification in defining the term “sustainable forestry,” and offering greater public credibility to WFCEs (Newsom 2002).
Land trusts, and other holders of large WFCEs, could benefit from partnering with an FSC-accredited certifier that has developed an assessment and auditing system for large forested tracts. With an increasing number of WFCEs funded by public tax dollars (e.g. the Forest Legacy Program), a growing emphasis on corporate responsibility, and consumer demands for environmental and social accountability, certification may provide credibility for WFCEs. Monitoring could ultimately be paid for by the landowner, which Lindenmayer and Franklin (2002) proposed would allay the financial and organizational resource challenges which land trusts often confront. This added cost to the landowner would provide benefits, such as the opportunity to access a currently select, but growing international market. A rise in consumer demand for certified forest products could drive forest managers to adopt more environmentally sound practices and for retailers and manufacturers to obtain wood products from certified forests (Newsom 2002).

Forest certification of WFCEs could be structured in a number of ways. The optimal approach for future WFCEs, which has already been drafted into an easement held by the North Carolina Land Trust, would be to draft easements so that achieving forest certification would mean *de facto* that certain requirements of the WFCE are fulfilled (Newsom 2002). Generally, certification could be mandated, or presented as an option, in an easement whereby certification would automatically signify compliance with the goals and restrictions of an easement. Thus, a grantor’s operations would be both legally sound and certified while the grantee would be free from the responsibility of monitoring. This would enable land trusts to direct resources to activities such as land transactions, site restorations, and negotiations.
II.8.6 The Pingree Easement: A Model in Large-Scale Monitoring

The NEFF holds and monitors the Pingree easement, the largest conservation easement in the United States. Monitoring the 762,192 acres of forest land constituted a considerable monitoring challenge and resulted in the creation of a new approach to monitoring. A number of published works discussed the Pingree easement as the model for monitoring large forested areas (Levitt 2003; Reed et al. 2002). Most notably, on April 3, 2000, the Yale Forest Forum (YFF) hosted a public forum and workshop entitled, “The Fine Print: Exploring the Complexities of Implementing the Country’s Largest Conservation Easement on the Pingree Forest.” Workshop participants discussed several characteristics that had, as of 2000, made the easement successful to date: like-minded grantor and grantee, the establishment of an endowment, and partnerships that maximize resources to best monitor the land (Binko 2001). Pingree Associates, the easement grantor, had a long history of stewardship and sustainable forestry practices in the state of Maine. In 1994, the FSC recognized this commitment and green-certified the Pingree lands (Binko 2001). After recertification, the Pingree lands received certification from the Sustainable Forestry Initiative in April 2001 (Binko 2001). The Pingree family commitment to protecting the land provided the underpinnings from which NEFF could develop an effective WFCE (Binko 2001).

NEFF displayed extraordinary foresight in designing the monitoring strategy (Levitt 2003). For example, NEFF envisioned a monitoring endowment for monitoring and eventually raised $1,000,000 for a monitoring and enforcement endowment. This fund supports the fundraising, legal, documentation, and other costs associated with completion of the Pingree easement. Assuming a 5% rate of return, NEFF relies on approximately $50,000 per year for monitoring the easement (Levitt 2003). This commitment to monitoring provided an important level of comfort for the donors, ensuring the capability of NEFF to monitor and, if necessary, enforce the easement provisions (Reed 2003).
Despite the substantial amount of funding, NEFF does not have the organizational capacity to handle all aspects of the Pingree easement independently. The monitoring fund, for example, is managed by the Maine Community Foundation (Binko 2001). In addition, NEFF contracts assistance with monitoring from both the Lyme Timber Company and the Maine Image Analysis Laboratory, directed by Dr. Sader at the University of Maine (Binko 2001).

As Reed and Sader explained during their workshop at the 2003 LTA Rally, NEFF’s monitoring regime for Pingree started with compilation of baseline documentation even before the easement was completed. Once the conditions of the property were recorded, NEFF moved to review and monitor the forest management plan. NEFF utilized a three level hierarchical approach developed from the property’s baseline documentation. The three levels, discussed by both Reed et al. (2002) and Levitt (2003), included satellite imagery, aerial photography, and site visits:

- **Level 1:** Level 1 consisted of change detection. Medium spatial resolution was used to detect human and natural disturbances causing a change in canopy of greater than one acre in size. GIS and GPS data was used through a Landsat Thematic Mapper (TM), which is a coarse filter monitoring system that allows the entire property to be monitored frequently, expediently, and at relative low cost per acre. For the Pingree property, Landsat-7 TM imagery, with approximately 13,225 square miles of coverage, was purchased for $600 per scene (Reed et al. 2002). Dr. Sader’s lab used a simple algorithm to determine canopy disturbance from this satellite imagery. Satellite data was collected annually in late spring to early summer.

- **Level 2:** If a disturbance was detected or if a site was too small for Level 1 analysis, the monitors moved on to Level 2. Level 2 involved high-resolution aerial photographs. Level 2 followed Level 1 because high resolution aerial photos were expensive and time-consuming to obtain. Photo collection could take place when events triggering a disturbance occur, annually, or over longer time periods for long-term monitoring of diversity and structure indicators (Reed et al. 2002).

- **Level 3:** Level 3 was ground monitoring or field measurement. Ground monitoring was the most expensive method, and was only conducted on the highest
priority sites or those not possible to monitor at Levels 1 and 2. Field visits for a landscape-scale easement could be complicated. If a new disturbance was not detected, check sites or long-term monitoring sites were used. Scheduling for Level 3 monitoring occurred after Levels 1 and 2 were complete in case of discovery of a new high priority site.

NEFF monitors for the provisions detailed in the purpose and restriction sections of the easement (Reed et al. 2002). NEFF’s monitoring regime and protocol for specific attributes remains in development as new methods are researched and studied. NEFF’s monitoring efforts are supplemented by the Maine Forest Service’s legally mandated review of annual self-reports from landowners (Reed et al. 2002). However, no assistance or solution is currently available for monitoring long-term ecosystem health until new methods are developed.

II.9 Issues Affecting the Use of WFCEs

II.9.1 Ownership Patterns in America’s Private Forests

Depending on the source and categorization of land use estimates of private forestland differ from nearly 488 million acres of forest held by nonfederal owners (National Research Council 1998) to 430 million acres of forest, nearly two thirds of the country’s total forest land, held by private owners (Best and Wayburn 2001). According to National Research Council statistics, 40% of this total can be found in the South Central and Southeastern regions of the United States, while 32% can be found in the Northeast. Twenty percent can be found in the Pacific Northwest and Southwest (National Research Council 1998). This acreage represents about 58% of America’s total forestland, defined by the USDA Forest Service as land that is at least 10% covered by trees, including land that formerly had such tree cover and is expected to regenerate, naturally or artificially. The USDA Economic Research Service and Natural Resource Conservation Service both define forestland in terms of land use, which often leads to lower estimates (National Research Council 1998).
According to a 1994 study conducted for the Forest Service, there were more than 9.9 million private forest owners who controlled 393 million acres of forestland (Birch 1996). Industrial owners, while only numbering 13,300, controlled approximately 21% of this land. Individuals, comprised 68.32% of private owners, and farmers, who represented 24.55% of the owners, controlled nearly 35% and 28.3% of the 393 million acres respectively (Birch 1996).

Even though the number of owners holding parcels of 1,000 acres or more only comprises 0.27% of private forestland owners in the country, they control nearly 40% of America’s total private forestland acreage (Best and Wayburn 2001). In the Northeast, just 2,806 owners, or 0.15% of the total for that region, held parcels of 1,000 acres or more but they controlled nearly 30% of the total forestland (Irland 1999). On the Pacific Coast, only 1% of forest owners that held parcels of 1,000 acres or more control 67% of the total forestland area (For further detail, please refer to Table II.2). The concentration of vast tracts of lands under relatively few landowners provides an opportunity for land trusts and government agencies to obtain landscape scale WFCEs.

Table II.2 Forestland Ownership in Parcels of 1,000 Acres and Greater, By Region (Source: Best and Wayburn, 2001; Irland, 1999; Birch, 1996).

<table>
<thead>
<tr>
<th>REGION</th>
<th># OWNERS</th>
<th>% OF TOTAL OWNERS</th>
<th># OF ACRES</th>
<th>% OF TOTAL ACREAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>2,806</td>
<td>0.1</td>
<td>17,261,000</td>
<td>29.8</td>
</tr>
<tr>
<td>Southeast</td>
<td>7,700</td>
<td>0.3</td>
<td>30,132,000</td>
<td>39.0</td>
</tr>
<tr>
<td>North Central</td>
<td>2,800</td>
<td>1.0</td>
<td>19,339,000</td>
<td>71.0</td>
</tr>
<tr>
<td>South Central</td>
<td>8,100</td>
<td>0.3</td>
<td>43,425,000</td>
<td>39.0</td>
</tr>
<tr>
<td>Great Plains</td>
<td>100</td>
<td>0.1</td>
<td>155,000</td>
<td>5.0</td>
</tr>
<tr>
<td>Intermountain</td>
<td>2,800</td>
<td>1.0</td>
<td>19,339,000</td>
<td>71.0</td>
</tr>
<tr>
<td>Pacific Coast</td>
<td>3,300</td>
<td>0.5</td>
<td>30,614,000</td>
<td>67.0</td>
</tr>
</tbody>
</table>
II.9.1.a Industrial Owners

Best and Wayburn’s statistics show that timber industry owners controlled 67.6 million acres nationally, or 9% of total U.S. forestland (2001). Between 1952 and 1992, the forest products industry acquired approximately 11.5 million acres from smaller non-industrial private owners (Best and Wayburn 2001). The ratio of timber industry owners to all other owners was greatest in those regions of the country where soils and other ecological factors allow for profitable and intensively managed stands, namely the Pacific Northwest, Southeast, and South Central United States. In these three areas, approximately 19% of all forestlands were industry-owned (Best and Wayburn 2001). In parts of the northeast industry ownership was also high. For instance, the timber industry owned 46% of all forestland in the State of Maine, where industry ownership increased by 10.3% between 1952 and 1997 (Irland 1999). Generally, these owners attempt to maximize the yield per acre (Best and Wayburn 2001). This was accomplished through intensive management and the buying and selling of forestland to maximize ownership of highly productive lands (Best and Wayburn 2001).

Table II.3 Timber Industry Ownership, By Region (Source: Best and Wayburn 2001; Birch 1996).

<table>
<thead>
<tr>
<th>REGION</th>
<th># OWNERS</th>
<th>% OF TOTAL OWNERS</th>
<th># OF ACRES</th>
<th>% OF TOTAL ACREAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northeast</td>
<td>7,700</td>
<td>0.3</td>
<td>11,670,000</td>
<td>16.0</td>
</tr>
<tr>
<td>Southeast</td>
<td>1,300</td>
<td>0.1</td>
<td>15,821,000</td>
<td>21.0</td>
</tr>
<tr>
<td>North Central</td>
<td>1,000</td>
<td>0.4</td>
<td>4,791,000</td>
<td>8.0</td>
</tr>
<tr>
<td>South Central</td>
<td>2,100</td>
<td>0.1</td>
<td>5,443,000</td>
<td>6.0</td>
</tr>
<tr>
<td>Great Plains</td>
<td>25</td>
<td>0.0</td>
<td>36,000</td>
<td>1.0</td>
</tr>
<tr>
<td>Intermountain</td>
<td>125</td>
<td>0.1</td>
<td>9,424,000</td>
<td>34.0</td>
</tr>
<tr>
<td>Pacific Coast</td>
<td>1,000</td>
<td>0.2</td>
<td>14,529,000</td>
<td>39.0</td>
</tr>
</tbody>
</table>

II.9.1.b Institutional Owners

In 1974 Congress passed the Employee Retirement Income Security Act (ERISA). This act encouraged institutional investors to diversify their portfolios. As a result of this legislation and a depressed market for forestland, timberland investment management organizations (TIMOs) emerged to organize and manage partnerships of institutional
investors. Institutional owners, including pension funds, foundations, university endowments, and TIMOs control approximately 7 million acres (Best and Wayburn 2001). Unlike industrial owners, institutional owners do not own mills, processing facilities, or other infrastructure. Like many smaller owners, they decide how much and when to harvest based on market trends and are driven by generating a desirable rate of return from timber harvesting. This growing ownership class is characterized by a long-term view on investment and risk-averse behavior (Best and Wayburn 2001). TIMOs may be interested in entering into WFCEs to obtain bulk cash payments and a variety of tax benefits (Hall 2004).

Typically, institutional owners will move into or out of specific regions and forest types depending on market conditions and changing financial models. While still only holding a relatively small percentage of privately owned forestland, it is clear that institutional owners have made a long-term commitment to owning and managing forests (Best and Wayburn 2001).

II.9.1.c Non-Industrial Private Forestland Owners (NIPFs)

The overwhelming majority, or 94.4%, of non-industrial private forestland owners (NIPFs) owned fewer than 100 acres (Birch 1996; Best and Wayburn 2001). These owners controlled 70% of forestland in the South and 67% in the North Central and Northeastern regions of the country (Best and Wayburn 2001). As this population ages, they are confronted with intergenerational transfer within the family or the sale of their land to developers or industry. Through these transfers and sales, NIPF’s lands will be increasingly important as part of forestland conservation on a national level and regionally (Best and Wayburn 2001).

II.9.2 Forest Fragmentation

Previous studies revealed that between 1978 and 1994 there was a 161.6% increase in the number of owners of forested parcels ranging from 10 to 99 acres in size (Birch 1996). Between 1978 and 1994 the acreage of forested parcels between 10 and 99 acres grew by 39,609,000 acres, or 130.2% (Birch 1996). During that same time period the number of
owners of parcels 100 acres and greater decreased by 14% (Best and Wayburn 2001; Birch 1996). This decrease corresponded to a loss of 29,394,000 acres of forestland in parcels greater than 100 acres (Best and Wayburn 2001). Despite differences between the two datasets analyzed in the study (the 1994 dataset included the addition of some 14 million acres of forestland), larger forested parcels clearly are being fragmented into smaller parcels (Best and Wayburn 2001). This trend has potential ramifications on both the ecological integrity of forested landscapes and on the opportunities to protect those landscapes. Hypothetically, WFCEs could limit forest fragmentation by virtue of restrictions on the subdivision of land. Since restrictions “run with the land,” even if the land is subdivided the new parcels are encumbered with the same restrictions. Thus, while the land may become fragmented, the negative effects of fragmentation might be mitigated. To date no research has been done on either of these topics.

II.9.3 Aging Landowners

The most recent statistics available show that in 1994 there were 2.5 million individual forestland owners aged 65 or older, controlling approximately 92.6 million acres. There were an additional two million owners, controlling 54 million acres, between 55 and 64 years of age (Birch 1996). As these owners retire and pass away, the decisions they make about the future use of their forestlands is critical to the success and effectiveness of forestland conservation schemes, including working forest conservation easements.

III.9.4 Problems with Future Landowners

One of the greatest selling points of conservation easements is that conservation easements may exist in perpetuity. However, the durability of conservation easements is questionable (Cheever 1996; Tapick 2002; Mahoney 2002). While some grantors of conservation easements have attempted to terminate the easements, grantors usually respect the terms of the easement because they negotiated the restrictions to reflect their desired uses of the land (Cheever 1996). In other words they have received a “benefit” from knowing that the land will be protected. As conservation easements are relatively new devices, most current owners of encumbered lands are the grantors of the
conservation easement. However, according to many sources, the ownership of burdened land will soon shift (Best and Wayburn 2001; Birch 1996; Irland 1999). Therefore, a wave of challenges to the validity of conservation easements may soon begin.

Why will these challenges take place? First, future owners of the encumbered land will not have received the psychological “benefit” of knowing the land will be protected because of their actions (Cheever 1996). Moreover, future owners may desire fundamentally different uses of the land and thus attempt to challenge the validity of conservation easements (Cheever 1996). While the donor received the benefit of a reduction in property tax, income tax, and the estate tax, the future landowner will only benefit from the reduction in property tax (although presumably a lower price was paid for the encumbered land) (Tapick 2002).

The argument used in a successful challenge to a conservation easement can be applied by other dissatisfied landowners, regardless of their status as a corporation or a living person, in an attempt to break the conservation easement on their land. Therefore, the termination or limitation of a conservation easement is a precedent that may cause a “domino effect” and have negative ramifications on all conservation easements. To date, no studies have analyzed the impact of future landowners on WFCEs. However, the concerns addressed above are as applicable to WFCEs as to ordinary conservation easements.

**II.9.5 Lack of Land Trust Financial Resources**

Land trusts that lack financial resources may be in danger of losing conservation easements and may even put the conservation easements of other land trusts at risk. Earmarking funds for monitoring conservation easements is not as enticing as acquiring additional lands and conservation easements for land trust personnel; likewise, donors are less prone to dedicate donations towards monitoring easements instead of new acquisitions (Hall 2004). Thus, if land trusts place a higher priority on these activities than monitoring, sufficient financial resources may not remain to carry out an adequate monitoring program. Today, land trust personnel are placing increasing emphasis on
monitoring easements and the creation of funds to pay for monitoring is often part of the negotiation process (Hall 2004).

The obvious result of not having a monitoring program is that either the land owner or third parties may violate the conservation easement with impunity. Simply put, the violation may never be discovered or may be discovered too late to be pursued in court. A statute of limitation exists for property and contract claims under which easement enforcement actions would be brought. While a party may have engaged in behavior that negatively impacted the legal rights of another party, the right to be heard in court does not extend forever. Most states limit the duration of claim to a few years (Cheever 1996). If a land trust does not discover a violation before the statute of limitations expires no legal remedy exists. The large size of most WFCEs would magnify this issue. Similarly, if the land trust is unable to enter into litigation due to a lack of resources before the statue of limitations expires, then no court action may take place.

Inadequate funding impacts the ability of land trusts to engage in successful litigation to enforce conservation easements (Cheever 1996). Since WFCEs are often held by large corporations, a large discrepancy may exist between the resources available to a land trust and a corporation for litigation. Not only may a single conservation easement be eliminated, but the case may become a legal precedent creating a “domino effect” where numerous other easements are destroyed by following the same rationale.

II.10 Enforcement

II.10.1 Monitoring for Enforcement

Successful enforcement of conservation easements is impossible without adequate monitoring of the purposes and restrictions presented in the document. Monitoring WFCEs may become even more complicated and crucial than monitoring for a typical conservation easement because the land is being used simultaneously for forestry and forest preservation. Therefore, in addition to making sure that restrictions on
development are followed, monitoring programs for WFCEs must also account for ecosystem health and forest management considerations.

**II.10.2 Enforcement Provisions Inside of WFCEs**

Enforcement is usually addressed in the WFCE document itself, although the state enabling statute impacts the content of the document. Some state statutes address who may enforce the provisions of the easement and thereby influence the content of the easements. The Uniform Conservation Easement Act, and many of the state statutes modeled after it, allows third-party enforcement; in other words, the grantor and grantee may grant another party the right to enforce the terms of the easement. Yet frequently the conservation easement is written to prevent third-party enforcement or to limit the enforcement of the easement to the signatory parties and specified third parties (Tapick 2002). Without the option of third-party enforcement, novel methods of monitoring and enforcement like third party certification may not succeed.

**II.10.3 Interpretation of Easements in Court**

**II.10.3.a Enforceability of WFCEs by Analogy to Conservation Easements**

Since large-scale WFCEs are relatively new there is an absence of legal literature and court decisions focusing on WFCEs. However, WFCEs are created and subsequently are enforceable under the state laws that allow for conservation easements; therefore, the problems of enforcing WFCEs should mirror those of the greater body of conservation easements. In turn, literature on the enforceability of conservation easements draws upon the related subjects of common law easements and other legal restrictions upon land use (e.g. covenants).

**II.10.3.b Ambiguous Language**

Often the terms of an easement are open to multiple interpretations. In interpreting the terms of conservation easements the courts have taken three different approaches: determining the intent of the parties, looking to relevant local statutes and codes, and examining the purpose of the enabling statute.
A common method for courts to interpret ambiguities is to determine the intent of the parties and evaluate the language with this intent in mind. Two main techniques exist for determining the intent of the parties: the court may examine the entire document or alternatively, the court may look only to the text of the document immediately surrounding the ambiguous language. In *Madden v. TNC (1992)*, the court chose to examine the entire document.

On occasion the court does not follow this general principle. For example in *Gallaway v. Idaho Forest Industry, Inc. (1997)*, the protected land parcel had been sold multiple times before the easement was challenged. Both the original grantor and grantee testified that their intent had been to protect the land. However, the court chose to ignore this testimony, instead claiming that the restrictions had been meant to protect the land if the original sale fell through and that the land was more valuable unrestricted since timber could be harvested.

In situations where terms are not defined in the easement, courts have looked towards local building codes for guidance. In *Southbury Land Trust, Inc. v. Andricovich (2000)*, the landowner wanted to build a pool. The decision turned on whether a pool fit into the definition of a structure under the easement. Instead of looking to the intent of the parties, the trial court looked to the local city code, which stated that a pool was a structure, and subsequently held the pool was a building. On appeal, the appellate court looked, instead, to the purpose of the easement as a guide to interpret the restrictions and reversed the lower courts opinion.

In *Racine v. U.S. (1988)*, the terms of a scenic conservation easement limiting the property owner to one residence and dude ranching were at issue. The land owner wanted to expand the dude ranching operation and construct additional buildings. The court held that additional buildings consistent with dude ranching were permissible; if the land trust had wished to limit the construction to only a single building, the residence, then such a restriction should have been specifically negotiated and made explicit in the document.
While none of these cases involved a WFCE, WFCEs can also suffer from ambiguity. Many forestry goals and terms have multiple definitions. How will a court resolve a suit based on a failure to preserve “forest diversity?” Judges, while skilled in the law, are not foresters, and even defining “forest diversity” may be beyond them. In fact, the easement holder and landowner may have different definitions of what “forest diversity” means. Taken a step further, what happens when the land is sold to a new land owner and potentially a third view of “forest diversity” enters the picture?

II.10.3.c Permissible Levels of Restrictions

Legal scholars have attempted to consolidate and clarify many bodies of law. One attempt is the creation of “Restatements” of areas of law. The views put forth in “Restatements” are not automatically binding upon courts, although “Restatements” are persuasive authority. However, courts are free to adopt the principles of the “Restatement” as the binding law of the jurisdiction. “Reasonable” restraints upon the land are allowed under the Restatement (Second) of Property (Servitudes) (Mahoney 2002). This “reasonable” test involves balancing the benefits of the restrictions against the negative impact on the landowner (Mahoney 2002).

That said, a dramatic change in method of interpreting easement terms has been recommended in the Restatement (Third) of Property (Servitudes). The new restatement is much more deferential to the easement holder, maintaining that a restriction is valid if there is a “rational justification” for the restriction. It is unclear yet whether this new distinction will be adopted by the courts (Cheever 1996), but undoubtedly WFCE holders would benefit greatly.

II.10.4 Enforceability of FMPs and BMPs

What is the legal enforceability of FMPs and BMPs mentioned in WFCEs? To date, there appear to be no cases on this subject. WFCEs often require landowners to develop a FMP and enumerate topics that should be incorporated. Can the land trust engage in successful litigation over violations of the FMP? A potential loophole seems to exist since easement documents typically only require the creation of an FMP, which in turn
provides standards for certain activities. The landowner could argue that the legal requirements of the conservation easement have been achieved upon completion of the FMP and that adherence to the FMP is not strictly required by the document. This creates an added level of organization and perhaps another level of confusion and ambiguity.

Many WFCEs stipulate that forestry activities must follow a BMP or BMPs promulgated by state or federal organizations. This appears to be done in several different ways. Certain easements dictate a BMP by name and year; other easements dictate a BMP by name and year and state that any future versions will take the place of the original; another set of easements refer generically to any BMPs created by state agencies. This final set is very open and may well be stated as such due to the fact that the state agencies have not enacted any BMPs. In other words the Land Trust is trying to tie into documents that have not yet been created.

These forms of easement construction save land trusts time and money, and allow them to draw upon the expertise of these organizations. Since BMPs are modified periodically, in theory to accommodate scientific advances, incorporating BMPs into a conservation easement creates a degree of flexibility that creates cutting edge forestry management. However this final point may only be applicable to easements in which the document specifically states that future versions of the BMP are applicable.

II.11 Potential “Affirmative Defenses” for Landowners

Landowners have several weapons to counter the restrictions of conservation easements. “Affirmative defenses” are not used to attack the legitimacy of the easement, instead “affirmative defenses” are based in equity and amount to a claim that enforcement of the easement would place an unfair burden on the landowner. The counterarguments that the landowner either entered into the conservation easement or knew of the conservation easement at the time of purchase and paid a substantially reduced price are strong, but do not guarantee that the conservation easement holder will prevail. Thus, even a well drafted WFCE may fall prey to these attacks.
II.11.1 Dead-hand Control

Academics point to the longstanding policy against “dead hand” control as a potential impediment for conservation easements. In essence, courts disfavor allowing past generations to place restrictions on the land, meaning that land should be freely alienable (Collins 1996). The underlying reason is that decisions made in the past, which bind current and future owners, may retard the desired outcome of maximizing society’s wealth (Tapick 2002). Previous owners are not able to anticipate all future conditions. Therefore, a court will decide as a matter of equity that the conservation easement is inherently unfair and strike down the easement as unenforceable, regardless of whether the easement is well drafted and unambiguous. A counter-argument to the policy against dead-hand control is that without protection large scale ecosystem destruction will occur and have an adverse impact upon future generations (McLaughlin 2002).

The impact of the dead hand policy on WFCEs has not been examined. As discussed earlier, WFCEs are becoming increasingly flexible by referencing BMPs and FMPs that are periodically changed. This flexibility might insulate WFCEs from the equitable power of the court to terminate an easement because of the fear of dead-hand control.

II.11.2 Equitable Doctrine of “Changed Conditions”

Historically, the doctrine of changed conditions was not frequently applied to common law easements; instead it was applied to equitable servitudes and real covenants (Morissette 2001). Despite sharing the word “easement,” conservation easements are not automatically considered most similar to common law easements (Morissette 2001). In fact, some scholars have implied that the use of “easement” in conservation easements is a misnomer (Morissette 2001; Tapick 2002). Thus, there is some uncertainty as to whether this doctrine can apply to conservation easements (Tapick 2002). The rationale behind this doctrine is that an agreement cannot be analyzed without considering the background conditions extant at the time the agreement came into existence. Should background conditions change sufficiently, so that the enforcement of the easement is no
longer sensible or if the purpose of the easement can no longer be attained, then a court may terminate the easement (Mahoney 2002; Tapick 2002). The burden of proof is on the landowner (Tapick 2002).

Some scholarly research has questioned the overall existence of conservation easements based on this point (Mahoney 2002). One scholar suggests that the popularity of conservation easements is at its zenith. Conservation easements are relatively new and the properties are being held by the grantors. Since little time has elapsed since the original donation, there has been little time for the values of society to shift and advances in science to occur (Cheever 1996). The downside of conservation easements will become evident as society’s values change, its knowledge increases, and the ownership of the protected land shifts to owners with different goals (Mahoney 2002). According to this rationale, at best the present generation is trying to act in the benefit of future generations, yet the present generation is creating obstacles and restrictions that the later generations will need to remove. At worst the present generation, acting with an inflated sense of purpose and ego, is attempting to impose its values upon future generations.

Indeed, there is a sense of irony in the idea of protecting land in perpetuity when the scientific community is coming to believe that Nature is always in a state of flux (Mahoney 2002). Over the course of time flora and fauna will change. Thus, while a WFCE may protect prime forestland today, in fifty years the courts may remove the forestry restrictions through no fault of the easement holder.

II.11.3 Attacking the Purpose of the Conservation Easement

In order to be legally enforceable a conservation easement must fulfill the conservation purposes listed in the enabling statute. A landowner interested in discrediting a conservation easement may argue that the easement is not for legitimate purposes (Cheever 1996). The best argument against legitimate purposes is that the original grantor entered into the conservation easement only to take advantage of the tax breaks.
A landowner may attack the conservation easement by claiming that it was not created for a legitimate purpose (Cheever 1996). Needless to say, the sizeable federal tax breaks for conservation easements automatically lend some credence to this claim. This attack will take one of two approaches depending upon the language of the state enabling statute. In a state such as California that requires specific purpose requirements, the original intent will be examined. Undoubtedly in most situations strong conservation purposes also exist; however, proof may not be readily available. Presumably the original grantor and grantee will be of similar minds on the conservation value of the property and will therefore discuss the subject little, especially by official documentation; in contrast, the taxation issues may be discussed in greater detail because of their complexity. Therefore, the easement may be considered as never having existed in the first place (Cheever 1996). WFCEs have not been examined on this subject. While discussions of tax benefits are probably heavily documented while WFCEs are negotiated, conservation purposes may or may not be documented.

The second approach, possible in states such as Colorado, which requires the restrictions be “appropriate” for the enumerated purposes, the argument would be different (Cheever 1996). The argument will proceed that the restrictions are no longer “appropriate” to meet the desired purposes. Given the changing nature of science this seems like a significant long term threat to conservation easements.

**II.11.4 Direct Attacks Upon Land Trust’s Charitable Status**

In many states, a land trust must have 501(c)(3) status to hold a conservation easement. If a land trust fails to have or maintain this status then the conservation easement may be void (Cheever 1996). Thus, faced with an enforcement action in court, a landowner may attack the land trust directly, alleging that the land trust is not qualified to hold the easement. Proper record keeping and filing is required to maintain 501(c)(3) status (Cheever 1996). The likelihood of insufficient record keeping and filings could be a large problem for smaller land trusts that depend upon volunteer staffs for labor and do not have office space.
Similarly, even if the state does not require a 501(c)(3) organization to hold the easement, the land trust may be required to have certain organizational purposes. If any organization holding a conservation easement changes its purpose and no longer maintains the required purposes then the conservation easement may no longer qualify as such (Tapick 2002); in this case the conservation easement would be rendered a common law easement and become more susceptible to being overturned in court (Tapick 2002). In addition, if a land trust engages in self-dealing and helps members achieve a profit, then 501(c)(3) status is at risk as well.

II.12 Termination of Easements

Easements may be terminated in several ways, both intentional and unintentional. At the easement holder’s discretion, the conservation easement may be terminated by giving the written deed for the easement to the landowner (Mahoney 2002). At least twenty-nine state enabling statutes as well as the Uniform Conservation Easement Act allow for this option (Tapick 2002), yet many state statutes act to preclude this option (Mahoney 2002). For example the Colorado statue states: “A conservation easement in gross is an interest in real property freely transferable in whole or in part for the purposes stated in (this article) and transferable by any lawful method for the transfer of interests in real property in this state” (Collins 1996). The argument proceeds that the merger of the easement with the fee simple would contravene the stated purposes of conservation easements in Colorado (Collins 1996).

The Uniform Conservation Easement Act in Section 2(a) allows conservation easements to be “released, modified, terminated, or otherwise altered or affected in the same manner as other easements.” Thus state laws governing conservation easements in gross apply; however if none are applicable the UCEA section 4(2) allows assignment (Collins (1996).

II.12.1 Doctrine of Merger

In theory the doctrine of merger is simple. The landowner of property with a conservation easement cannot also hold the conservation easement. If the landowner
does own both then the conservation easement and fee simple are merged (Tapick 2002). The result is as if a conservation easement had never been granted in the first place. In *Gallaway v. Idaho Forest Industry, Inc. (1997)* the court held that even if the parties’ intent had been for the easement to run with the land, the manner of sale merged the conservation easement and the fee simple.

**II.12.2 Modification, Termination, and Release**

Most easements contain language allowing for the modification, termination, and release of easements. Many templates, including the UCEA template, contain relevant provisions as well. Obviously, the ability to accommodate unforeseen circumstances and changes is important for any document that is intended to exist in perpetuity. Undoubtedly, the ability to modify and terminate easements assuages the doubts of landowners and encourages them to enter into the easements.