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Healing Gardens in Healthcare Facilities: A Design for the Loran Smith Center
(Under the Direction of MARGUERITE KOEPKE)

This thesis establishes design criteria for a healing garden and a master plan for the Loran Smith Center. Healing gardens reduce stress by providing a positive environment for patients and caregivers that aids in the recovery process. Non-specific criteria emerged from the literature review and site examples. These criteria may be used to develop any healing garden. The literature and non-specific design criteria also helped to guide the questions for user surveys and informal interviews. After analysis of the data, specific design criteria were developed, by synthesizing site features and user input, to establish a master plan for the Loran Smith Center. The intent is to provide hospital personnel with the tools necessary to evaluate designs for a restorative garden and to establish a foundation for future decision-making in the design of the Loran Smith Center's healing garden.

INDEX WORDS: Healing gardens, Restorative gardens, Design Criteria for a
Healing garden,

HEALING GARDENS IN HEALTHCARE FACILITIES:
A DESIGN FOR THE LORAN SMITH CENTER

by

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DEDICATION

I dedicate this thesis to all people who have learning disabilities/gifted. We have a great appreciation for how hard it is to work at something -- reading, writing or math -- that is not our greatest area of strength. Now that I am almost done with my schooling, I can say how much this hard work has given me the self-confidence and positive attitude to accomplish anything that my mind can think up. Although it could not have been possible without the encouragement of many important people along the way. So to all who can relate, I encourage you to continue pursuing your dreams for your hard work and perseverance will pay off. It is not a race to the finish line but a path to completion.

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INTRODUCTION

Thesis Proposal

The purpose of this thesis is to develop basic criteria for a healing garden and to design a healing garden for the Loran Smith Cancer Care Center at Athens Regional Hospital. In order to accomplish this, this project will investigate and discuss; 1) the stressors associated with hospitals and nature's effect on stress; 2) the qualities that contribute to a healing garden; three noteworthy examples of healing gardens in hospital settings; 3) design criteria that emerged from the review of the literature and case studies; and, 4) the design process that included design input from patients, their families and caregivers, and healthcare providers. Based on these findings, the final outcome will be a garden design that can be enjoyed by everyone whether passively sitting in the garden or actively exploring the trails of the garden, ultimately improving the person's overall sense of well-being, hopefulness, and physical state.

Terminology

As research and science begin to acknowledge the healing power of nature and gardens, it becomes important to set up the parameters through which healing gardens are classified and defined. The notion that gardens could have positive influences on a person recovering from illness has long been acknowledged throughout history, but the effects differ in degree depending on the person. Cooper Marcus and Barnes (1999) define healing or restorative gardens as "a fairly broad term that can classify a variety of garden features that have a common and consistent tendency to foster restoration from

stress and have other positive influences on patients, visitors, and staff, or caregivers" (30).

Healing gardens vary greatly in size, ranging from atriums covering a few square yards to small urban parks. The healing gardens can also be found indoors (Cooper Marcus and Barnes, 1999). Gerlach-Spriggs, Kaufman, and Warner (1998) agree with Cooper Marcus and Barnes that both healing and restorative gardens are essentially the same but could vary greatly, ranging from an elaborately planned arboreta to a view from a patient's window that has been subtly designed for the patient's enjoyment. "It can sometimes be soothing in its sensitivity or stimulating in its exuberance, but at either extreme it is intended to engage the viewer in an act of configuration . . . to evoke rhythms that energize the body, inform the spirit, and ultimately enhance the recuperative power inherent in an infirmed body or mind. Where recovery is not possible, intimate contact with the cycle and flow of nature may yet calm the spirit" (Gerlach-Spriggs, Kaufman, and Warner 1998, 2).

Another term used to describe this type of garden is "therapeutic." Williams (1999) defines "therapeutic landscapes" broadly as all types of places that deal with either treatment or healing. "Therapeutic landscapes are those changing places, settings, situations, locales, and milieus that encompass the physical, physiological and social environments associated with treatment or healing; they are reputed to have an enduring reputation for achieving physical, mental and spiritual healing" (Williams 1999, 2). For the purpose of this thesis, the terms healing garden or restorative garden will be used.

The Historical Role of Healing Gardens

The research of Gerlach-Spriggs, Kaufman, and Warner (1998) demonstrates that gardens were beneficial for people with illnesses dates back centuries and appeared in a variety of different cultures. Restorative gardens originated in Persia, Egypt, and the Orient, and have remained a critical part of their present culture (Gerlach-Spriggs, Kaufman, and Warner 1998, 7). The actual design of four equal squares divided by a path, with a fountain or well in the center, was noted in Genesis, the first book of the Bible. This design reoccurred throughout many ancient cultures. In addition, an evergreen or juniper was representative of the tree of life. These restorative gardens served many functions, such as places to meditate, be spiritual, or socialize, as well as for growing food and herbs for medicinal purposes for the community.

Gradually, patients were walled off from the outside sun and gardens as seen in the mid-1450's with the new Renaissance and Reformation Catholic hospitals. Hygiene and therapeutic goals took precedence over exposure to outdoors to outdoors and nature. This exclusion of the landscape continued throughout the late eighteenth century. Gardens relating to the hospital were not linked to any restorative values outside the notion that sitting in the sun and walking about feels good.

During the fourteenth and fifteenth centuries, most of Europe was crippled with plagues, crop failures, overcrowding, and poverty. One exception in the fifteenth century was the Spanish who incorporated Arab architectural design in hospitals. This hospital design included a courtyard allowing light and air to flow through the wards. This idea of fresh air and sun in the hospital, however, did not become established in Europe until the eighteenth century. In fact, when English hospital reformer John Howard toured Europe

at the end of the eighteenth century, he commended the hospital for the garden design and flow of fresh air. Patients who were able could be seen walking in the garden.

By the late eighteenth century, the Romantic Movement revived the idea of the pastoral landscape that encouraged large expanses of open fields with large specimen trees. In addition, this movement popularized the attitude that nature would influence the restoration of the body and spirit. The American designer Frederick Olmsted began building on the idea of the pastoral landscape and the notion that the effects of natural scenery could influence a person's well being (Beveridge 1995). Many of Olmsted's views were not implemented or fully comprehended for another hundred years, and the resurgence of gardens being used for the purpose of healing did not occur until the latter part of the 1980s.

Scientific and Technological Advancements

Throughout the last hundred years the medical community generated revolutionary changes in medical practice through the use of science and technology. With scientific and technological advancements in synthetic products and medicines came a decline in the dependence on nature as a healing element (Falick 1981). Since no quantitative measures were available to determine that nature influenced a patient's recovery, the medical profession did not consider nature an important aspect of healing. However, in recent years a growing awareness has developed internationally among healthcare administrators and designers for the need to create functionally efficient environments that also are patient-centered (Gerteis, et al. 1993) or have psychologically supportive characteristics that help patients cope with the major stresses that accompany illness (Ulrich and Parson 1992). As more data are compiled pertaining to healing

gardens, hospitals and other medical institutions will find it necessary to construct such gardens (Cooper Marcus and Barnes 1999).

Overview

In determining the methodology, I initially conducted a literature review that included three examples of well-designed healing gardens. This was used to determine what elements or design criteria should go into a healing garden to make its elements the most beneficial to the user. Secondly, I developed a comprehensive list of non-specific design criteria that could be used for any healing garden. The literature and non-specific design criteria also helped to guide the questions for the user surveys and informal interviews. Next, after analyzing this information, specific design criteria were developed by synthesizing site features and user input to establish a master plan for the Loran Smith Center. Lastly, I made recommendations for the Loran Smith Center to ensure the garden's success.

The following chapters will discuss why restorative gardens are beneficial for people in healthcare settings and the recommended design criteria. This will be done through a review of the literature, site studies, a user survey, and informal interviews with patients, healthcare workers and family members. Chapter I reviews stress associated with healthcare facilities and what role nature plays in alleviating stress. Chapter II defines the qualities that contribute to a healing garden. Chapter III takes a close look at three noteworthy types of healing gardens in three healthcare settings. Chapter VI summarizes the first three chapters and organizes the non-specific design criteria into functions and aesthetics in a quick reference format. Chapter V illustrates the design

process for the healing garden at the Loran Smith Center for Cancer Support and provides guidelines for current and future decisions.

CHAPTER I
STRESS ASSOCIATED WITH HEALTHCARE FACILITIES
AND NATURE'S AFFECTS ON PATIENTS' STRESS

*Stress is centrally important because . . . it is both a significant outcome in itself,
and it directly affects many other health outcomes
(Cooper Marcus and Barnes 1999, 33).*

Stress compromises the body's immune system, and when the immune system is compromised it takes longer to recover. When a person is going through a medical procedure that is stressful, a counter-productive defense mechanism is turned on. One way to counteract stress is by exposing a person to nature. Natural scenes can benefit everyone in the hospital by reducing stress for patients, family and staff. Since hospitals are historically sterile environments with artificial lighting that allows for little or no natural interaction with nature, views or interaction with nature are ways to include nature in healthcare facilities.

Cooper Marcus and Barnes (1999, 32) state that many researchers found that most people experience stress and some people experience acute stress when they become ill. Increased stress produces many detrimental effects on a person's health due to a combination of factors. For instance, when a person is in an unfamiliar setting, is uncertain of the procedures and their outcomes, has a loss of control over their daily activities, and/or is forced to stop feeling useful, they experience stress (Cooper Marcus and Barnes 1999). Thus, being hospitalized can have a negative effect on a person's wellbeing. Ulrich (1984) suggests that stress reduction through viewing nature can

decrease both pain and recovery time, while making patients more receptive to treatment. Since hospitals are so necessary and helpful to the physiological aspects of healing, what aspects or qualities of nature can serve to reduce the inherent stress of being hospitalized?

What is Stress?

Stress is defined as “the process by which we perceive and respond to certain events, called stressors, that we appraise as threatening or challenging” (Myers 2001, 602). One of the most important aspects of stress is that it is based on how a person perceives the event that causes the stress. If you can change the conditions surrounding the person, you can change the person’s reaction to the event. The human body encounters many forms of internal and external stress every day from the environment, work, the body itself, emotions, and the people around us. External stressors are threats, adversity, conflict, excitement and challenge, while internal stressors are responses to sickness, depression, illness, handicaps and pain (Grant 1994).

Stress is a normal human response to any number of situations, but high levels of stress can be detrimental. The human body should not be exposed to high levels of prolonged stress because sustained levels of stress contribute to sickness, fatigue,

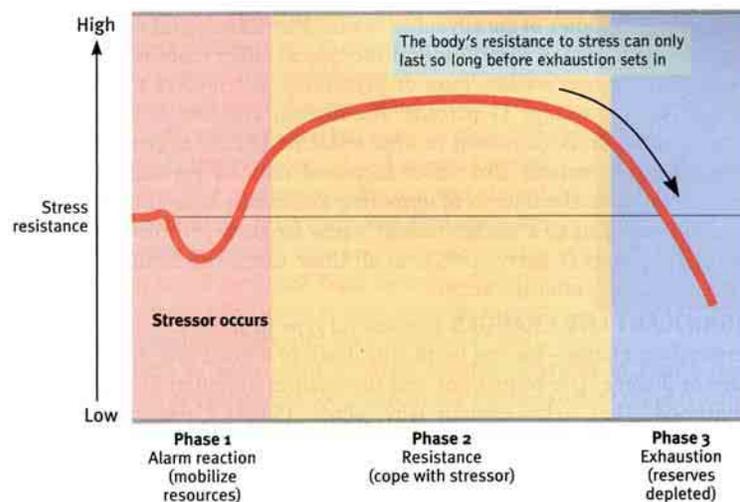


Chart 1. Stress Resistance (Myers 2001,

depression, and anxiety (Cooper Marcus and Barnes 1999, 34) (Chart 1). Stress also directly affects other health outcomes such as emotions, hypertension, and immune system suppression (Cohen, Tyrrell, and Smith 1991).

The human body has mechanisms that evolved over time to deal with stress. The autonomic nervous system has two parts, the sympathetic and parasympathetic division. The sympathetic division arouses a person so that s/he can perform under pressure. This is the “fight or flight response” which causes the adrenal glands to release the hormones epinephrine, norepinephrine, and cortisol into the blood. This release causes a decrease in immune response and pupil dilation; an increase in perspiration, heart rate, blood pressure, blood sugar levels, and respiration; inhibited digestion; and diverted blood flow from digestion to the skeletal muscles (Myers 2001, 466; 602-4). Gerlach-Spriggs, Kaufman, and Warner (1998, 37) add that stress also causes measurably increased muscle tension and changes in brain wave function and mental concentration. This is used in times of danger and high stress to give the body an extra boost to escape harm. When a person enters a hospital, the sympathetic response occurs and is active during and after a patient’s stay. This response slows the healing process and decreases the effectiveness of medical treatment in the hospital setting. The parasympathetic division performs the opposite function; it calms the body down. It decreases the heart rate, blood pressure, blood sugar, and respiration, stops hormone secretion, increases immune response, and returns the body back to its previous state (Myers 2001, 466; 602-4; 605). There are many ways people cope with stress. Some exercise, others seek refuge in hobbies or in nature, daydream, meditate, or have other temporary escapes (Cooper Marcus and Barnes 1999). Research suggests that nature has a positive therapeutic effect on people

experiencing stress and that contact with nature is able to reverse the symptoms of stress such as high blood pressure, stomach upset, anger, depression, hopelessness and anxiety (Grant 1994, 20).

Stress: A Major Problem in Healthcare Settings

In past generations, medicine was practiced differently. Doctors would come to a person's house and treat them in the comfort of their own home. But during the early part of the 20th century, health-care designers and administrators were interested in creating an environment that was better able to accommodate new medical technologies that were not easily transportable, such as X-ray machines and surgery rooms. By centrally locating hospital services, hospitals could then treat the maximum amount of people with greater efficiency. Hospitals were also becoming more advanced with better antiseptic techniques and surgery rooms that decreased the rate of disease transmission. This led to the modern hospital where everything is centrally located for ease of access and efficiency, but the patients then had to leave the comfort, security, and familiarity of their homes. Along with sterile operating rooms and efficient management came a building that was designed primarily for functionality. One cancer patient described the courtyard at Mount Zion Cancer Center as "concrete and 'corporate' filled with plants chosen for their ability to survive neglect" (Garchik 1999, 1). Due to administrative focus on efficiency, hospitals have lost touch with the important natural elements such as garden space and the home-like feeling for patients (Cooper Marcus and Barnes 1999, 27).

Consequently, when a patient enters a hospital, s/he experiences many of the internal and external stressors previously mentioned. These hospital stressors are caused

by the demanding events and environmental features associated with hospitalization. Some examples of stressors associated with hospitalization are pain, worry due to impending surgery, unknown diagnostic procedures, and uncertainty. Compounded is the patient's loss of control over their environment, for instance, loss of privacy, depersonalization through bureaucracy, uniform attire (hospital gown), visiting hours, structured activities, and disruption in social relationships and job activities (Cooper Marcus and Barnes 1999, 32).

There is conclusive evidence that stress is a widespread problem that ultimately effects health outcomes. There are many well documented accounts that a vast majority of persons with illness experience stress, and many unfortunately suffer from acute stress (Cooper Marcus and Barnes 1999, 32). The most serious emotional manifestation of stress is the depression seen in long-term patients with chronic or terminal illnesses (Cooper Marcus and Barnes 1999, 34).

“Illness and hospitalization are among the most profound stressors of human life . . .” (Gerlach-Spriggs, Kaufman, and Warner 1998, 37). When a person is diagnosed with cancer, there is a period of heightened stress, fearing what might lie ahead. There are many difficult procedures associated with cancer and its treatment. Prominent aspects of stress are negatively toned emotions such as fear and sadness, but responses can vary widely and change over time among patients. Even a short hospital stay leaves the patient experiencing a degree of anxiety that may include fear and tension. However, the degree and duration of stress vary from person to person. Patients experience the highest level of anxiety during the procedural phase as well as the first few days following surgery (Cooper Marcus and Barnes 1999, 34). Even after cancer patients go

through surgery and treatment, there is always a chance that the cancer may return, resulting in long-term stress. There are milestones in a patient's recovery that offer some relief from worrying about returning cancer; for example being without reoccurrence for five or ten years ("Fighting Cancer with Love and Laughter" support group meeting, 5 April 2001).

Thus stress is directly linked to a person's healing ability. A person who is less stressed will have less pain and discomfort and heal more quickly. Dr. Allison Williams, Editor of *Therapeutic Landscapes*, notes that the medical world is beginning to see the relationship between place, health, and healing (Williams 1999, 2). Stress also affects families of patients and visitors as well as the morale of staff (Parks 1982; Shumaker and Pequegnat 1989; Ulrich 1992; Miracle and Hovekamp 1994; Cooper Marcus and Barnes 1999, 32). In sum, since the vast majority of people who come in contact with hospital settings undergo a certain level of stress, the question then is what can be done to help reduce these types of stressors in hospitals.

How Gardens Improve Health

The belief that viewing vegetation, water, and natural settings can relieve stress dates back to the creation of some of the earliest cities in Persia, China, and Greece (Ulrich and Parson 1992). "The medical profession is good at removing the cancer. But your mind and body need more than that" (Lienert 2000). That has to happen at the *untechnological* pace of the body which is strongly influenced by the environment (Gerlach-Spriggs, Kaufman, and Warner 1998). A key component is the concept that nature helps to heal any person—maybe not in the same ways or in the same proportions—but the key is that nature is beneficial to the healing process (Cooper

Marcus and Barnes 1999, 30-31). Nancy Chambers, a horticultural therapist at the Howard A. Rusk Institute of Rehabilitative Medicine, notes that “Anything green makes patients feel better . . . plants can relieve stress and improve a patients mood . . .” (Thompson 2001, 55).

Since stress is one of the main factors that could affect recovery rate after surgery, it is logical to look for ways to reduce the stress in a patient’s hospital environment to reduce pain and discomfort and decrease the patient’s stay. Research has shown that views of nature have improved overall patient health, whether the views are out of windows or in gardens located on the hospital grounds (Ulrich 1981).

Cooper Marcus and Barnes (1999) note that therapeutic gardens help three aspects of the healing process: 1) in the degree of relief from physical symptoms; 2) in stress reduction, thereby bringing an increase in comfort, which is particularly important for patients with chronic or terminal conditions; and 3) in improving a patient’s overall sense of well-being and hopefulness, assisting in physical improvement. This leads to increased functioning and increased rate of improvement. Steve Seiler, the CEO of Good Samaritan Hospital in Phoenix, comments, “There’s a significant difference between curing disease and healing people” (Thompson 1998, 68). Hospital and treatment centers can reduce the amount of stress a patient encounters by addressing the *whole person*. Dr. Howard Rusk was one of the first people who realized the importance of treating the whole person not just the physical ailment. Gerlach-Spriggs, Kaufman, and Warner (1998) believe that incorporating a psychological support group and therapeutic horticulture are very important to the recovery process. Part of the whole person philosophy of Dr. Rusk is the inclusion of natural elements like plants, water, and

animals. Many readings (Cooper Marcus and Barnes 1999; Ulrich 1984; Ulrich 1999) also support the view that experiencing nature and natural elements are important to humans and can complement patient recovery. Grant's study (1994) also shows that healing benefits can be experienced passively or with even better results from active participation. Parry-Jones (1990, 8) notes similar findings in the relevant literature comprehensively reviewed by Knopf (1987), "There is increasing empirical evidence that natural settings are widely seen as a desirable resource, to use and enjoy, either actively or passively."

Active participation is when patients are involved in a structured activity such as transplanting a plant. This type of activity is constructive for exercise benefits and helps a person feel useful. Passive participation is when patients are socializing, meditating, or simply viewing nature, either from a window or inside the garden, but without a structured activity. Patients also benefit from passive participation because it allows them to pursue their own interests and do something that they prefer (Morrison and Aldous 1994, 263-265).

In *The Experience of Nature: A Psychological Perspective*, the Kaplans state that environmental preferences have remarkable consistency even over diverse demographic settings. This suggests the notion that environmental preferences are an essential ingredient for human functioning. Humans have "two basic informational needs—understanding and exploration" (Kaplan and Kaplan 1998, 52). From these two domains, four distinct factors emerged and contribute to how one analyzes their environment. *Complexity* is defined as the number of different visual elements in a scene or richness of plants, which ultimately give a person something to think about. *Coherence* is a setting

that can be easily understood and is enhanced by elements that repeat or can be combined (i.e., uniform texture, size, shape, or color). *Legibility* is having an understanding of one's environment and being able to orient to and find one's way around the environment. *Mystery* intrigues a person to enter or explore their surroundings, possibly alluding to something even greater just around the corner. Environmental preferences are important in designing a landscape for human functioning, allowing for an understanding and exploration of one's environment.

One theory that has validity for why nature is important to an individual is "Prospect-Refuge Theory." Jay Appleton wrote about this idea in the 1960's. This simple model relates preference to a typology of landscapes through biological and behavioral science. The objective of Prospect-Refuge Theory suggests that each organism including *Homo sapiens* use environmental perception as the key to all adaptive behavior. In other words, humans observe their surroundings and store this information quickly and efficiently to ensure survival. They also have a powerful craving to satisfy their curiosity about the environment as it relates to their survival. Appleton points out two ways to improve one's chance of survival: sight and opportunity for concealment. Sight is the most important sense through which one evaluates their environment, and the opportunity for concealment allows for protection and refuge. Environmental perception is a key component for human observation and survival.

One of the most well-known studies was conducted by Roger Ulrich from 1972-1981 (Ulrich 1984). It showed an increased rate of recovery for postoperative cholecystectomy (gall bladder removal) patients when the patient had a window view of nature from their hospital bed versus a view of a brick wall or parking lot. The patients

with a window view of nature had shorter hospital stays, received significantly fewer negative comments in nurses' notes, and took fewer analgesics than patients who had a view of the brick wall.

Carol L. Baird who struggled for seven and half months with leukemia illustrates an example of the effects of viewing nature while hospitalized. She endured chemotherapy, lung biopsy, and other procedures with repeated admission to an oncology unit and a six-week isolation bone marrow transplant. As a result of Baird's leukemia, she wrote her dissertation on "The Coping Process Humans Employ as They Adapt to Isolated Environments." She began compiling personal observations for an extended, empirical database study when she learned her condition was terminal. Baird's personal observations support Ulrich's scientific study on the effects of viewing nature through a window while recovering from surgery. During one of Baird's hospital stays she had a view of a brick wall for three weeks. During this time, Baird and her family noticed that she became depressed, had more pain, and exhibited a decrease in her mood and vigor. At this time, she requested a transfer to a room with a better view of nature. After Baird relocated, her family and friends immediately noticed her "affective state improved quickly, and optimism replaced despair" (Carver, Pozo, Harris, et al. 1993, 849) as well as an improved comfort level over a short period of time (Baird and Bell 1995, 847-850).

Stress is a centrally important mechanism for which garden rehabilitation can potentially have significant beneficial effects on health outcomes of patients. "There are sound scientific grounds for contending that gardens in healthcare facilities will improve health outcomes to the extent that they are effective in fostering restoration in coping with respect to the stress that accompanies illness and hospitalization" (Cooper Marcus

and Barnes 1999, 35). The fact of stress makes it possible to develop scientifically grounded, stress-ameliorating garden elements that demonstrate how environmental features and design approaches can directly and credibly effect health outcomes (Cooper Marcus and Barnes 1999; Ulrich 1992). The restorative effects of a healing garden will consequently benefit the patient in reducing pain, the amount of medicine needed, and bringing about a quicker recovery (Cooper Marcus and Barnes 1999, 35). Healing gardens in healthcare facilities have the potential to complement the healing effects of drugs and other medical therapies to improve overall health quality and recovery. Even though there is a shortage of research focused directly on healing gardens, there is an extensive amount of high quality research in related topics of stress, environment, and health outcomes. In a study conducted by Cooper Marcus and Barnes (1995), the most important benefit reported by the people interviewed in four California healthcare facilities was overwhelmingly that the gardens reduced stress.

Conclusion

Stress is problematic in a hospital setting because of its adverse effects on health and healing. Nature is beneficial for health and healing because it reduces stress that allows the immune system to reactivate and work more efficiently, thereby giving patients an overall sense of well-being while speeding recovery and possibly reducing the amount of pain medication. One of the main reasons patients and staff visit the gardens in healthcare facilities is to obtain relief from stress (Cooper Marcus and Barnes 1995). By fostering the patient's ability to cope with stress and promoting restoration from stress, gardens can potentially improve various health outcomes (Cooper Marcus and Barnes 1999).

In summary, following are underlying principles that illustrate how nature can mitigate stress in healthcare settings.

- Nature reduces stress and benefits the healing process. Less stress produces a stronger immune system and in turn makes it possible for a person to feel less pain and discomfort.
- Healing gardens help in three ways: (1) produce a degree of relief from physical symptoms; (2) reduce stress that brings about increased comfort particularly important in chronic or terminal cases; (3) produce an overall sense of well-being and hopefulness while assisting in physical improvement.
- By treating the *whole person* and not just the ailment, the patient will have a better success rate in healing accomplished in a shorter period of time.
- Viewing nature from a window or being in a garden improves patient, family, and healthcare providers overall well-being.
- Plants relieve stress and improve the overall mood of patients. More plants and less hardscape can produce more positive effects on patients.
- Active user participation in a garden is more beneficial than passive.

These findings will become foundational in the process of developing design criteria for healing gardens.

CHAPTER II

WHAT QUALITIES MAKE A GARDEN A HEALING GARDEN?

Understanding how people see their environment, and how they react to it, is the most critical component of therapeutic [or healing] design (Cooper Marcus and Barnes 1995, 88).

As we've learned, simply viewing nature from a window or being in a garden improves a person's overall well-being. Once there is an understanding of what causes stress and how nature influences stress reduction, then one can begin to connect to the qualities that should be present in a healing garden. Olmsted, Ulrich, Cooper Marcus, Barnes, and Tyson are each known for their design expertise in the area of nature and healing. This chapter provides a historical overview and begins to build a set of design criteria for creating a healing garden.

Frederick Law Olmsted

During ancient times, spas and elaborate gardens were constructed to provide a healing environment for the upper class. With the modernization of society and the advancement of medical practices, these gardens lost their restorative functions and were seen as primarily aesthetic. However, in the late 1800's, landscape architect Fredrick Law Olmsted laid the foundation for the resurgence of these concepts in Western civilization and formed a basis for current researchers.

Olmsted is considered one of the earliest landscape architects and designers, and is credited for developing the field of landscape architecture. His ideas and principles went against much of the new style that was taking root in England and America during

the late 1800s—specifically manicured landscapes using bright ornamentals. Beveridge explains specifically that Olmstead’s “emphasis on the physiological effects of scenery gave design principles a firm base independent of the ‘battle of the styles.’ Not aesthetic theory but the very health of the human organism became the touchstone of his art” (1995, 35). Olmstead was certain of the restorative physiological effects of natural scenery and his design concepts revolved around the "relation of site to the well-being of the person" (Beveridge 1995, 34). He stated, "a man's eye cannot be as much occupied as they are in large cities by artificial things . . . without a harmful effect, first on his mental and nervous system and ultimately to his entire constitutional organization" (Beveridge 1995, 34). He believed that the purpose of a natural landscape was "to refresh and delight the eye and, through the eye, the mind and spirit" (Beveridge 1995, 34).

Olmsted felt that natural scenery held the greatest curative value because it acted directly upon a person’s highest functions (nervous system) and as a result established a sound mind and body. He believed, for example, that the tension and fatigue a person experienced could be soothed and healed by the natural landscape. However, Olmstead viewed specimen planting, bright-colored flowers, and planting that called attention to itself as hindering the beneficial healing effects of a natural landscape. For example, he acutely observed that bright colored flowers caused a specific conscious response that is counterproductive for the relief of stress. When designing a site, Olmsted expressed the “genius of the place,” adding vegetation and contours that enhanced the original character of the natural area, thus achieving harmony between the natural scenery and the work of a landscape architect (Beveridge 1995).

Roger S. Ulrich

Many of Olmsted's ideas were not fully grasped by his colleagues because they were so ahead of their time. Over one hundred years later research conducted by Roger Ulrich gave support to Olmsted's views. Ulrich is noted for numerous studies as well as a wealth of knowledge that has driven the notion that nature is beneficial to a person's well being. Ulrich has also contributed to other fields of study a wealth of knowledge (i.e., architects, landscape architects, interior designers, physiologists, psychologists, and geographers).

During summer break in 1981, Ulrich conducted a pilot study in Sweden to compare which types of images evoked the most positive responses from college students. The students were requested to complete a mood survey and then close their eyes for five minutes. When they opened their eyes, they were shown a series of two hundred slides containing architecture with 1) no landscape, 2) water and landscape, and 3) landscape only. Electrical brain activity was recorded during the process. After viewing these slides, the students were again asked to repeat the mood survey. The results showed that average nature scenes elicited more positive emotional states and effectively sustained attention than did attractive buildings lacking nature. The same study was then conducted in the United States and similar findings were noted (Ulrich 1981), thus showing that natural scenes appear to be beneficial across cultures.

Ulrich's most famous research paper, "View Through a Window May Influence Recovery from Surgery" (1984), discussed in the previous chapter, influenced many designers to look closer at the environments that they create. This impacted a wide range

of disciplines such as architecture, landscape architecture, interior design, physiology, psychology, and geography.

For the first time, Ulrich (1984) provided strong quantitative evidence that nature can influence a person's rate of recovery and even reduce the amount of pain a patient experiences. This drew examination of the environment from a purely aesthetic viewpoint to a closer examination of the environment that influences healing the mind, body and spirit. (Thompson 2000, 55).

In a discussion published in *Landscape Architecture* (Thompson 2000), Ulrich alluded to several important factors to consider when designing a restorative garden. He pointed out that designing a healing garden is not just a matter of arbitrarily arranging shrubs, trees, and flowers, and putting in a few sculptures and paths. Instead it should be designed with the goal in mind of creating the proper *atmosphere* through which healing can occur. Ulrich noted that a badly designed garden could make some patients sicker than no garden at all and goes on to say, "I take the view that designers have less personal license, in the case of health care, to exercise their own personal tastes, and more of a professional obligation to empathize with the users, to be as research-informed as possible, and to do everything within their professional powers to achieve therapeutic outcomes" (Thompson 2000, 55). Ulrich gave designers a body of research that enabled them to construct environments that were "unambiguously positive." This is accomplished by using an abundance of plants to soften harsh structural edges of buildings and other hardscape elements in and surrounding the garden. A well-designed garden is ultimately more inviting, and most people leave it feeling more restored than when they entered (Thompson 2000).

Ulrich influenced the design profession and is considered one of the first to scientifically document natural settings can have restorative influences. He continues to gather data to test the hypothesis that nature has a positive influence on a person's well-being. Researchers such as Cooper Marcus and Barnes (1995, 1999) and Tyson (1998) rely on qualitative data to enhance the body of knowledge of restorative gardens.

Clare Cooper Marcus and Marti Barnes

Cooper Marcus and Barnes (1999) delved deeper into design philosophy in their book entitled, *Healing Garden Therapeutic Benefits and Design Recommendations*. These authors emphasized that "the healing process is complex, and by no means fully understood, but there are basic attitudinal shifts that take place when an individual is stressed or otherwise in need of healing" (87). This shift in emotion affects a person's perception and in turn affects a person's response to various environmental stimuli. "Understanding how people see their environment, and how they react to it is the most critical component of therapeutic design" (88). Sensitivity to a person's impression when viewing or occupying a garden must be understood and incorporated into design decisions. The scale of the garden should be familiar; e.g. parallel in size to a garden in a residential setting, thus encouraging a sense of belonging and familiarity. A person's senses of sight, smell, and sound enhance the individual's experience but can also add to levels of distortion when a person is stressed. When designing a garden, one must be aware of symbolic meaning behind elements in the garden. For example, an architectural feature of one cancer treatment center had building supports extending out into a plaza. The patients perceived these supports as resembling tilted tombstones—and thus emotionally threatening (Figure 1).

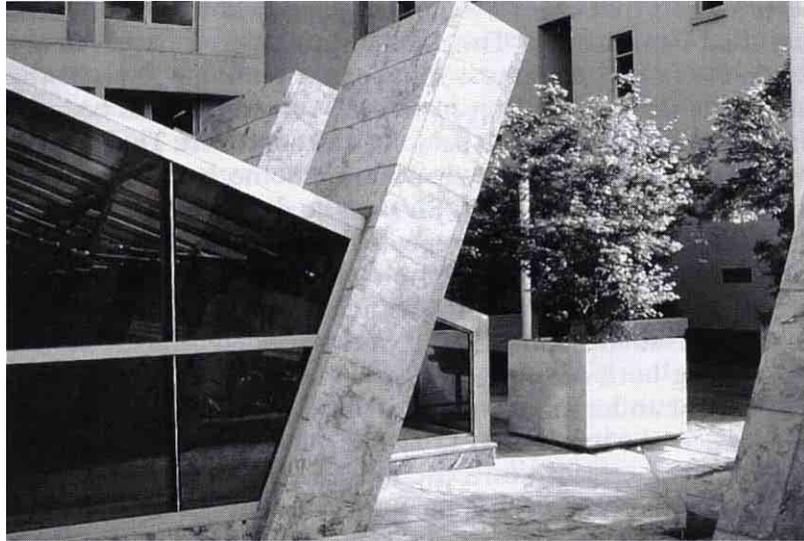


Figure 1. Leaning Building Supports (Cooper Marcus and Barnes 1999, 90)

Cooper Marcus and Barnes point to three philosophical design approaches: traditional, botanical or ecological, and people-oriented.

The *traditional* approach is based on three different subgroups: historic precedents, "statement" art, and regional attributes. The first subgroup, historic precedents, consists of design approaches that have been used throughout recorded history, for example, labyrinths, paradise gardens, monastic cloister, and Japanese gardens. These elements deal with the meditative properties of a garden. Secondly, "statement" art is when the designer conveys a message or statement on the land and for the most part is in abstract form. Cooper Marcus and Barnes point out that healing gardens should not be abstract, because patients consider these forms threatening. Lastly, regional attributes focus on elements in particular settings to draw upon for inspiration and design decisions. These elements can be displayed throughout the interior and exterior and can incorporate local icons. For instance, the St. Mary's Hospital in Wight, UK, uses a water theme, throughout the entire hospital, important since the hospital is

located on an island. The water theme takes on many forms such as art mosaics, tapestries, tile work, murals and so on.

- The second design philosophy, the *botanical or ecological* approach, has two components—sustainability and medicinal plants. Sustainability is difficult to define and the degree to which it is applied ranges from strictly native plants to companion planting, or the use of organic maintenance practices. “The intent of this approach is to create an ecosystem within a built environment that is in harmony with nature’s own support systems, one that will return what it takes, so that the life cycle may consciously flow without depleting the resources of the environment” (Cooper Marcus and Barnes 1995, 101). Cooper Marcus and Barnes agree that one advantage of this philosophy is that patients subconsciously or consciously realize that the area is harmonious, therefore giving the individual a sense of connectedness and inner harmony. It is believed that individuals will feel more relaxed and feel better taken care of when the environment’s “focus has been to promote the health of all living things” (Cooper Marcus and Barnes 1999, 102).

A botanical or ecological approach employs labeled medicinal plants in a design in which Cooper Marcus and Barnes feel would educate patients and demystify some of the treatment process; however, labeled medicinal plants can be perceived as an intrusion—being counterproductive to patients who are trying to relax in a natural environment.

- Cooper Marcus and Barnes’ third approach to healing landscapes is *people-oriented*. This design approach is based on user interaction with the environment and is broken down into three subcategories: personal experience, research, and clinical

practice. The personal experience approach can take several forms, such as the designer working directly with a patient, or using a first-hand experience with trauma, or providing his or her own interpretation of the concept of trauma. Using these approaches, the designer is better able to create a garden that is patient centered.

These three concepts can be used simultaneously to create a hybrid design—one using part of each. Figure 2 summarizes this approach.

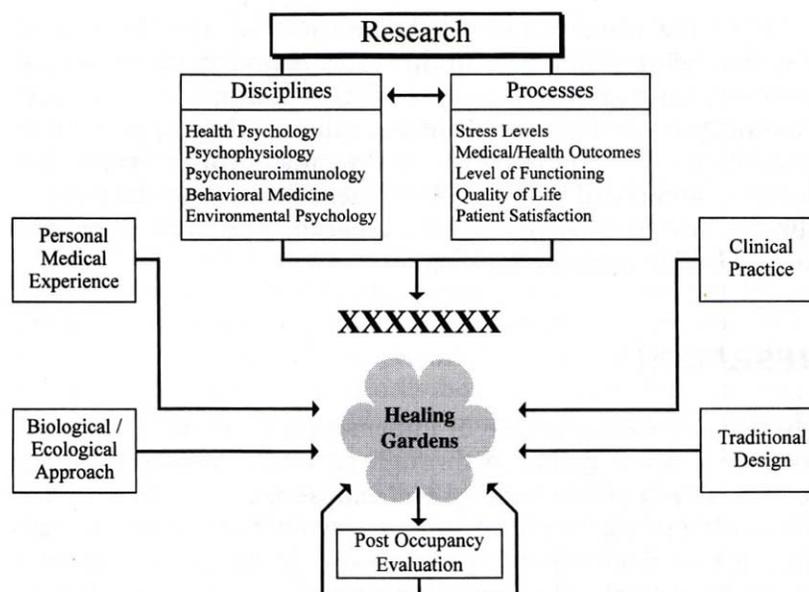


Figure 2. Approaches to Healing Garden Design in Medical Facilities. (Cooper Marcus and Barnes 1999, 108)

The second subcategory of the people-oriented approach is research. Cooper Marcus and Barnes point out that research is the best practice to date and links emotions with environmental features, thereby being directly applicable to landscape design. Research in the field of physiological measures records the physical and chemical changes of the human body directly linked to emotion. For example, heart rate and blood pressure are the two most frequently used physiological measures. In addition, Cooper

Marcus and Barnes state that post-occupancy evaluation—evaluation of an existing landscape to determine which features work and which features need to be strengthened—is underutilized; and designers need to incorporate this evaluation into their practice. Based on these evaluation techniques, the designer can receive insightful information about what works and what does not work in order to enhance new designs.

The final subcategory of the people-oriented design approach draws upon clinical practice. This method has two different sources for clinical information: the first is based on specific disease or diagnosis; and the second on psychological and developmental criteria. By drawing on his or her knowledge of the patient's stage of illness and reaction to different sets of environmental conditions, the designer will have a clearer picture of what the patient needs. This serves to educate the designer in the physiological processes and developmental criteria enabling the designer to have first-hand information on patient needs and capabilities. By using this developmental psychology, the design can incorporate different environments through which patients can choose. For example, a patient might seek out an enclosed womb-like area for safety while another patient might want to challenge himself and explore a walking trail.

In order to design the most comprehensive healing garden, Cooper Marcus and Barnes stress that a healing garden should be an intertwining of two conceptual components: "a *process* of healing and a *place* in which it is supported" (112). Designers must take advantage of all three design perspectives and use the particular elements that are necessary to address the specific site and patients' needs for the garden. However, Cooper Marcus and Barnes stress that it is necessary to include the people-oriented perspective and to take full advantage of available research.

Martha M. Tyson

Martha M. Tyson is also a designer of restorative landscapes. Tyson's approach does not include a set of guidelines but rather a critical thinking process (a way of brainstorming) that can be used to solve problems and make pathways from the inception of an idea to the creation of a final product. She distinguished the intrinsic qualities of a garden (tone, feeling) to establish therapeutic qualities (spiritual) for people who used the garden, focusing on people's activities in the garden and passive viewing. Tyson explains that these paths will restore "the soul, capturing the imagination, clearing the mind, illuminating the senses, and healing the body" (2). She finds meaning in everyday situations, human behavior, design, and people-plant interaction for the purpose of healing and looks at how gardens affect the individual, as well as the larger social dimension. According to Tyson (1998), many authors have found that "research and historic examples show that a home-like atmosphere designed to encourage participation with ordinary daily domestic activities may be especially therapeutic for people in a vulnerable state of mind and physical health" (3).

The garden or landscape is tied to people in such a way that it reveals healing in its essence. "The restorative qualities of gardens span the human spectrum and have no social, cultural, or ethnic boundaries. Gardens may contain elements that are specific to culture, climate, or time; however, the simple truth of their existence reflects the universal desire for human interaction with nature, with humans as the stewards of the land" (Tyson 1998, 3). Tyson points out that historically healing gardens were recognized to restore the mind, soul, and body. In the middle ages, healing gardens or courtyards were multifunctional, serving as a place for contemplation, growing

vegetables, fruits, flowers for ceremonies, and herbs for medicinal purposes. Tyson also points out that there is a spiritual connection in which, for example, Christians speak of gardens using natural elements, flowers and trees as a place of union with their God.

Tyson also suggests that providing a positive outdoor environment will have an overwhelming effect on patients, visitors, and staff. By integrating the building and landscape design process to work in harmony and draw people outdoors or to view passively from inside is key to the success of a healing garden. "This interaction is the instrument that acts as a catalyst for both physical and spiritual healing" (1998, 7). Tyson believes that when creating a restorative garden it is important to remember "the little things make a big difference" (1998, 7), for example, childhood memories of the aroma of a blooming lilac bush or low hanging branches that one would remember climbing. Many researchers discovered that surrounding landscapes have a great impact on person's sense of well-being (Tyson 1998).

Once introduced to the concepts of a healing landscaping, Tyson turned to people and resources in the field of environmental-behavior studies (1998). In creating a healing landscape, Tyson stated that it is critical to understand design philosophy and how the process of designing unfolds, bringing meaning and life to the design. In addition, the lines of communication must be clear and open between key advisers of the garden project and the designer for the process to be fully comprehended. Designers must understand the users of the garden, including their history, differing ability levels, and social patterns in order to accommodate them in the area. Tyson continues that each design is unique and specific to the needs of patients, residence, and staff who will be incorporated into the design as well as the architecture, local customs, climate, and plant

materials. Tyson points out "the goal is to provide tools necessary to assist people in the process of planning, designing, and building a garden" (Tyson 1998, 10).

Conclusion

These designers suggest that human interaction with nature is a critical element to speed the healing process. Because Olmsted had established his design philosophy over a century ago, his ideas did not have scientific support, evidence, or research to backup this hypothesis. In addition, much of Olmsted's philosophy was not fully appreciated until Ulrich's research gave support to many of Olmsted's views.

Within the last ten to fifteen years, Barnes, Cooper Marcus, and Tyson utilized the research of Ulrich and others to support their design recommendations. All four of these individuals were collectively in agreement on essential criteria for a healing garden. They each stressed the importance of knowing the "users" and the "users' needs" to gain better insight for the design and the importance of designing the garden into the daily functions of the hospital. In addition, they agreed that the patients should be able to view the garden from inside the hospital, thus functioning to draw users into the garden. While Tyson did not dedicate an entire chapter to design philosophy, her points were consistent with Cooper Marcus and Barnes. However, Cooper Marcus and Barnes thoroughly covered the topic and gave much insight into the overlaying of design philosophy that could be interwoven into any given site. With examples, the authors forewarn designers of possible misinterpretations by patients. Cooper Marcus and Barnes stressed the importance of research for each new site because each site has a unique character. Ultimately, the users determine what forms will be integrated into the healing garden, providing a larger base of elements that could exist in the healing garden.

Listed below are recommendations that designers should follow to develop design criteria. Designers can provide functional aspects of the garden in the following ways:

- Become as informed as possible about the users for whom they are designing and know what questions to ask
- Collect user knowledge to gain insight on what forms, colors, textures, and activities, etc. are desired
- Learn the daily functions of the hospital in order to integrate parts into the garden
- Create garden views from as many points as possible to draw users in
- Learn attributes of the site

Regarding aesthetic characteristics of a healing garden, the designer must:

- Acknowledge that viewing nature can relieve stress and be restorative
- Use familiar scale (similar to residential landscaping)
- Avoid elements that might elicit a negative reaction (such as abstract art)
- Use an abundance of plants
- Incorporate wildlife
- Link common home features to the garden

CHAPTER III

HEALING GARDENS IN HEALTH CARE FACILITIES:

THREE NOTEWORTHY EXAMPLES

When gardens exist in health care settings, they, like gardens everywhere, fuse culture and place in ways that meet our most basic need . . . gardens shelter, protect, and nourish us (Gerlach-Spriggs, Kaufman, and Warner 1998, 49).

Olmsted, Ulrich, Cooper Marcus, Barnes, and Tyson's expertise in the design areas of nature and healing have illuminated some functional aspects and aesthetic characteristics for a healing garden. In reviewing the functional aspects of healing gardens, the above designers recommended that the primary goal for the designer is to become as informed as possible about the users, know what questions to ask, and gather user insight on form, color, texture, and activities that are important to them. Ideally, the hospital should be designed with the garden in mind. When this is not possible, it is even more critical that the designer learns about the site attributes (natural elements), the daily functions of the hospital, and maintains the garden as a focal point to draw the user into the garden. Aesthetically, the designer must incorporate the use of plants, wildlife, and familiar home-like features while avoiding elements that can elicit a negative reaction from the users.

The success of a hospital's restorative garden depends on how well it is integrated—its visibility, location, ease of access, and application within the healing setting. These and many other factors must be taken into account when designing a restorative garden in a healthcare facility for maximum therapeutic effect. The following

institutions—Rusk Institute of Rehabilitative Medicine, Community Hospital of the Monterey Peninsula, and Kaiser Permanente Medical Center—are examined and show how outstanding healing gardens can be integrated into a hospital setting or environment. A discussion of each garden, with an analysis and rating of their individual functions and aesthetics, follows.

Howard A. Rusk Institute of Rehabilitative Medicine

The Rusk Institute, located in New York City, was selected because of its well-respected horticultural therapy program established in 1951 and because it exemplifies what can be accomplished in a small space within the urban environment. Dr. Howard Rusk, its namesake, began the practice of rehabilitation medicine in 1942 when he accepted an assignment with the U.S. Army Air Force at Jefferson Barracks in Louisiana. Here Rusk, who had been an internist, found that soldiers who were too weak for drills, but too strong for hospital confinement, benefited from training that helped them transition back into duty or society. Rusk recalled the success of his rehabilitation program and began to earn his title as the Father of Rehabilitation Medicine. “We discovered that 40 million man-hours of duty time, and that we had gotten more sick and injured men back on duty than any branch of service had done during any war in history. More importantly, we had prepared thousands of boys for useful roles in civilian life after the war who might otherwise have wasted away for years in veterans hospitals.” (Gerlach-Spriggs, Kaufman, and Warner 1998, 44). Rusk also noted that the “practice of the art of medicine is always a cooperative undertaking: the success of medical intervention reflects on the knowledge and skills of the healers and depends on the constitution, will, and restorative powers of the patient.” Rusk acknowledges the

professionals who created the mechanical prostheses in order to assist patients who lost limbs return to a productive life. However, he found it difficult to make professionals aware of healing “the whole person,” not just replacing the body parts with an artificial prosthesis. Rusk knew that it was important to treat the psychological adjustment of the patients in addition to the physical piece. Rusk reflected on this phenomenon in the following way:

It was true that they [professionals] had adopted some good methods of therapy. But they fail to see my point: the whole person needed rehabilitation, not just the part of him that had been damaged. They had no concept of the emotional problems which follow disability, or the problems of job placement, or the other fundamentals behind our philosophy (Gerlach-Spriggs, Kaufman, and Warner 1998, 45).

Rusk continued his rehabilitation program, but the focus shifted from war veterans to the general public. Eventually, he accepted a position as medical administrator at the Institute of Physical Medicine and Rehabilitation in New York City (later named the Howard A. Rusk Institute of Rehabilitation Medicine). Rusk’s contribution has had far reaching effects on the emotional and physical recovery of many patients over the years since he began his work. He laid the groundwork for future research in physical therapy and later horticulture therapy that changed the direction of the hospital for the better. As Rusk continued to refine his techniques to further benefit his patients, he gained recognition.

“Dr. Howard Rusk fully understood the many elements that must work together in any successful course of rehabilitation. He stressed the need to attend to ‘the whole person,’ and this outlook, in turn, led him to build gardens at his hospital.” (Gerlach-Spriggs, Kaufman, and Warner 1998, 43). The Howard A. Rusk Institute of Rehabilitation Medicine was the first center that included therapeutic horticulture and

gardens in a hospital setting. At first, the staff was reluctant to prescribe greenhouse activities for their patients, but they soon found the activities made a remarkable improvement which was directly related to the occupational therapy goal, “to animate psychic energies,” helping the patients recover more quickly (Gerlach-Spriggs, Kaufman, and Warner 1998, 48). Patients were prescribed horticultural therapy and garden visits as part of their daily activities. Gerlach-Spriggs, Kaufman, and Warner (1998) noted that Rusk’s success was the result of personalizing each patient’s treatment. By incorporating the needs and wants of the patients, he helped them stick to their treatment and in turn assisted their recovery. Rusk noticed a marked improvement not only on the rate of recovery, but also on the mental condition of the patients. In addition, the authors found that the gardens and horticultural therapy programs played an important role in transitioning patients from being dependent to independence (Gerlach-Spriggs, Kaufman, and Warner 1998).

In keeping with his philosophy of “attending to the whole person,” Rusk believed that his staff and patients needed to be in an environment that was most uplifting. He encouraged his staff to use the garden during breaks as an outlet. By incorporating the garden into the everyday functioning of the hospital environment, the staff was able to use the garden not only for helping patients but also for themselves. Thus, the garden existed as a respite from the stresses of hospital life.

Currently, there are four gardens at the Rusk Institute: a children's play garden, a glass greenhouse, the Edna A. Haupt Perennial Garden, and the Alva and Bernard J. Gimbel Garden. Each garden is designed to satisfy a certain activity and provide a different atmosphere from which users can choose depending on their mood. The newest

garden is the children's play garden where children are able to play in an environment that offers a range of interactive elements such as swings, climbing house, vegetable garden, sensory bed, slide, grassy hill, stream, frog sprayers, and interactive play house. Adult patients also visit this garden to watch children play, thus they served as a form of encouragement and distraction (Chambers and Fried interview by author, 5 January 2001.) The enclosed and heated glass greenhouse, serving as an oasis from the hospital even during undesirable conditions, is open to users as well as to the horticultural therapy program. The greenhouse is attached to the hospital at the main lobby. At the entrance to the greenhouse, there is a small circular fountain with lush vegetation all around. Further into the greenhouse various types of birds, fish, and frogs are encountered. Most of the plants are potted and sold at the greenhouse to help fund the gardens of the hospital. The Enid A. Haupt Perennial Garden has seating walls around many of the raised beds designed for patient interaction and horticultural therapy. The Alva and Bernard F. Gimbel Garden is a courtyard garden for patients, staff, and visitors who want a peaceful place for reflection. These small garden plots are a great example of diversity and demonstrate what can be accomplished in an urban site of high-rise buildings. They are also a perfect example of a hospital's overcoming all the negatives that accompany the city environment; such as automobile traffic, noise, polluted air, less sunlight, and little room.

In conclusion, the Rusk Institute has an upbeat atmosphere that does not allow patients much time to brood about themselves (Gerlach-Spriggs, Kaufman, and Warner 1998, 48). It gives patients the benefits of both technological health-care as well as attention to the whole person. The four gardens provide a peaceful contrast to the city and

the clinical environment of the hospital, serving as an oasis for patients and caregivers. Importantly, the garden is woven into the medical process whereby every patient is solicited and encouraged to participate in the horticultural therapy program in small groups of four to six. According to Chambers and Fried, patients ranked the program as the most helpful adjunct to conventional therapies. A majority of patients felt that the gardens were crucial to their recovery. The gardens provide physical restoration, sustenance for the mind and soul, and physiological healing to many patients, visitors and staff (Gerlach-Spriggs, Kaufman, and Warner, 1998).

Community Hospital of the Monterey Peninsula

In contrast to the Rusk Institute, the Community Hospital of the Monterey Peninsula, in a large non-urban area, demonstrates how to maximize the ideal setting for a healing garden by playing off the natural views and landscapes of Monterey Bay and the surrounding undisturbed forest. The Community Hospital of the Monterey Peninsula owes much of its success to the views of the community surrounding the hospital. Formerly, the hospital was an upscale resort nestled in a fishing community. The resort went to great lengths to preserve the beautiful natural surroundings. In 1919, Samuel F. B. Morse purchased the resort and began retrofitting it to become a hospital. The community and administrators of the hospital embraced the natural beauty of the Monterey setting, believing it would assist patients' recovery. Later, wealthy business tycoons invested their time and money in supporting projects that encouraged the hospital to look less like a hospital and more like a resort. In addition, philanthropists donated large sums of money towards the construction of the hospital. The hospital is a result of an experiment that is centered in the belief of community and the ability to provide

quality at a reasonable cost. The hospital prospered from the joint practice of two brothers, Drs. Hugh and Horace Dormody who saw upwards of one hundred twenty-five patients a day. Hugh saw a hospital as a place where scenery and climate could add healing qualities to medical and surgical science and where nature could rejuvenate the soul. Thus, a patient could enjoy an ideal setting for recovery.

The Monterey hospital is designed to embrace the community, climate, topography, and vegetation of the Monterey Peninsula. The hospital's architecture, gardens and forests work as one, responding to both ecological and human needs. Edward Durrell Stone designed the original plans for the hospital and set the tone for the many additions that followed in the delightful California style with low white horizontal buildings nestled in a forest backdrop. When new construction is considered, a collaboration of foresters, environmental landscape consultants, planners, designers, and financiers are involved to ensure that nothing is overlooked in the design phase.

The buildings embrace the natural surroundings and gardens are found at every turn featuring many types that suit various needs. Some gardens are filled with activity while others are quiet; some overlook Monterey Bay while others focus into the forests. Each garden is unique and offers its own pleasures, but each contributes to the complexity of the surroundings. The natural landscape is such that the more one explores the hills and the ocean, the more one is drawn to embrace the experiences. The gardens follow a hierarchy of design. The gardens nearest the hospital building reflect the geometry of the building, primarily its squares, circles, and rectangle. As one moves further away from the building, the gardens become less formal and give way to native species. Many elements of the gardens seem to be a personal gesture of individual

interests, a key to spark the interests of the each patient. On a nice day, the long-term patients are wheeled outside in their beds.

In conclusion, the gardens at Monterey work well to bring the natural beauty of the Pacific Ocean and the surrounding forests into the design of the gardens. The hospital is adamant about taking care of its staff which the hospital feels will directly benefit the patient. Today it is considered the most beautiful hospital in the country. The hospital has remained competitive since its inception, and a comprehensive cancer center is planned in the hospital's near future. The Community Hospital of the Monterey Peninsula is an excellent example of the synergy that needs to be in place in order to elevate the role of a hospital to benefit an entire community (Gerlach-Spriggs, Kaufman, and Warner 1998).

Kaiser Permanente Medical Center

Located in a small urban setting, Kaiser Permanente Medical Center in Walnut Creek, California, was chosen because the healing garden is centrally located to the hospital. From the parking lot, people walk through the garden to get into the hospital. This innovative design provides innumerable opportunities to reap the benefits of the garden. The Central Garden at Kaiser Permanente Medical Center is about half an acre, functioning like a courtyard that is surrounded by buildings on all sides and serving as a connector to several buildings on the hospital grounds. Surrounding the Central Garden is the main parking deck, outpatient clinic, pediatric and medical wards, post-op and orthopedic ward, cafeteria, and main hospital lobby. The east and south sides are the pediatric, medical, post-op and orthopedic wards. They are all single-story wings that look onto the Central Garden. Each room has a sliding glass door that gives direct access

to the garden. The parking deck sits catty-corner to the main hospital lobby, making the garden a main thoroughfare. Due to this layout, people continually travel the paths even in rain or 100-degree temperatures.

Mature trees give the garden an established feel with heritage valley oaks, sycamores, pines, boxelders, sweetgums and olive trees. The understory is mostly grass with undulating shrubbery beds mostly around the edge of the garden. Seating options in the garden are provided in both sun and dappled shade. Stone tables, benches, stools in clusters, wooden picnic tables, and patio tables and chairs provide a variety of seating preferences for the users. In addition there are a variety of options depending on users' moods: semiprivate seating, social seating, and benches along the pathway.

Cooper Marcus and Barnes (1995) used an observation method of tracking to count the number of people in the garden over a two-day period (morning and afternoon on both days). In this time period, 1,251 people were recorded in the garden with 745 people stopping for any number of reasons in the garden (talking, eating, waiting, smoking, strolling and playing). The following was observed during this same two-day period: sixty-nine percent of the people appeared to be visitors or outpatients; twenty-nine percent were medical staff or uniformed employees; and the remaining two percent were inpatients. This number would most likely be higher; however, half the inpatient rooms were unused because of renovation.

During the same two-day period, Cooper Marcus and Barnes interviewed fifty people. Of those fifty interviewees, thirty-three were women, twenty-seven staff, eleven visitors, eight outpatients, and four inpatients. Almost half of the people interviewed reported they used the garden every day with one-fifth staying in the garden for more

than thirty minutes. Nearly three-fourths spent ten to thirty minutes in the garden. These figures illustrate the extensive use of the Central Garden.

Cooper Marcus & Barnes (1995) note that relaxing (88%), walking (84%), eating (82%), and talking (70%) were the most popular and highest ranked activities in the garden. Interestingly, forty-six percent reported engaging in outdoor therapy while forty-two percent reported visiting with patients as activities they performed in the garden. The Central Garden has a variety of activities demonstrating that the garden is well used, thus reflecting good design. In addition, half the people reported no problems when using the garden (i.e., no available seating or too much noise). The only problems reported were either bad weather or not being able to use the garden during work. This shows that adequate seating is provided in correct locations and adds to the garden's usability. The garden was appreciated by everyone who was interviewed, especially the staff. They were grateful for the contrast to the hospital environment.

A large number of respondents rated the following qualities of the Central Garden the highest: trees, plants, and flowers (82%), the aesthetic attractiveness and design (72%), the serene/quiet "escape"(54%), and the animals one encounters outside (50%). Trees and plants also rated the highest (86%) (Cooper Marcus and Barnes 1995) for qualities that are helpful in attaining mood changes in a person. This further shows that people want to see large specimen trees and flowers in a garden. When looking at changes to the garden almost half said no changes were needed. Those that did recommend a change felt that more color was needed on the ground plane and that a water feature was also needed (Cooper Marcus and Barnes 1995, 44). Interestingly, the hospital constructed a three-sided, roof structure with comfortable chairs for the

convenience of smokers, working to congregate them and the secondhand smoke away from nonsmokers.

In conclusion, the Central Garden is a most welcomed contrast to the hospital environment. Users chose activities such as relaxing, walking, eating, and talking as the most popular. The qualities that the users ranked highest were the trees, plants and flowers. In addition, trees and plants were noted as helpful in attaining mood changes. Recommended changes were a water feature and more color. Through observation and interview with patients and staff, Cooper Marcus and Barnes (1995) concluded, ". . . the presence of life just outside is immensely therapeutic to people in the Central Garden" (44).

Analysis

The three examples, the Rusk Institute of Rehabilitative Medicine, Community Hospital of Monterey Peninsula, and Kaiser Permanente's Central Garden, reflect design criteria that are critical to the success and restorative nature of the healing garden. These design criteria divide into two categories: the garden setting or *function*, and the garden elements or *aesthetic*. Kaiser's post-operative evaluation also helped to identify a number of concerns related to the function of restorative gardens.

Commonalties that emerged from the site studies also related to the garden settings and the garden elements. Recurrent functional aspects of the garden settings included usability/functionality, central location, therapeutic/healing, and accommodation for children and play. Recurrent aesthetic aspects of the garden included mature trees, water, and wildlife. Each of these elements is discussed in greater detail below. In general, the discussion is organized with the best example given first.

The Garden Setting: Functional

Usability/Functionality

The function of a healing garden is to promote wellness, but in order to do this it must attract users. Does the garden attract the users, and once the users are there are they engaged in some way to remain for a time? Making a garden part of the daily hospital routine or viewing the garden from the hospital encourages exploration and enjoyment. Sun, fresh air, breezes, birds chirping, shady areas, water features, and children playing draw people from the inside of a sterile hospital environment to the outdoors. “I feel more calm, more relaxed. If you want to get away from things, just sit under a tree and reflect—things usually get better” (Cooper Marcus and Barnes 1995, 42). Throughout the three garden studies, three functional aspects of a healing garden emerged: layout; seating; and involvement.

The Kaiser Central Garden encourages use of its gardens in several ways. By having the cafeteria and dining areas adjacent to the garden, users are encouraged to sit and eat outside. The Central Garden has paths for direct flow as well as for a casual strolling. The Monterey Peninsula hospital functions much like the Kaiser Central Garden in that each patient has direct access to the garden enabling patients, staff, and visitors frequent respites. Because the garden at Monterey Peninsula surrounds the hospital, it is highly visible and as a result is widely used. This garden area is extensive and provides much variation among the individual gardens (rose, Japanese, ornamental, etc.). Accessible paths link the gardens to each other and different areas of the hospital. If patients are too weak to experience the garden, they can be taken outside in their beds

to enjoy the surroundings. Both the Monterey Peninsula and Rusk Institute provide gardens that are quiet and meditative as well as others that encourage social interaction.

By having enough seating in both sun and shade locations, users are free to choose the area that is most comfortable for them. In the Central Garden, stone tables, benches, stools in clusters, wooden picnic tables, and patio tables and chairs provide comfortable seating for users. In addition, smokers have a three-sided roofed structure with comfortable chairs away from non-smokers, enabling the rest of the garden to be smoke-free. At the Rusk Institute, benches are available throughout the garden for individual meditation purposes or for small groups. The seating walls that enclose raised beds are available for group gatherings or horticulture therapy. Since the Monterey Gardens were by far the largest in the area, many types of seating were available including patio furniture and seating walls in some of the gardens. The patio furniture may be the most functional because it can be arranged to accommodate a variety of groups and situations. All facilities have turfgrass areas that can be used in a variety of ways, such as children's play, napping, sitting, watching people, and other hospital functions.

Monterey Peninsula's gardens have strong community interest and involvement that helps to foster a positive outlook towards the hospital. For instance, anyone who volunteers time or donates five dollars or more is automatically a member of the hospital corporation and can vote for the Board of Trustees. In addition the trustees are composed of retired military, corporate executives, notable volunteers, and hospital staff who serving to mobilize the communities of the area to support and continue the excellent status of the hospital. The community provides feedback to guide the hospital's decision-

making by keeping the focus on a patient-centered environment. "Today it is perhaps the most beautiful hospital in the country, an outstanding community achievement" (Gerlach-Spriggs, Kaufman, and Warner 1998, 151).

The Rusk Institute encourages the staff to utilize the gardens, and in turn the staff encourage the patients to use them. In addition, horticultural therapy is held in the gardens and the therapists speak individually to patients to encourage their participation. Patients find this horticulture program so crucial to their recovery that after they complete the program they frequently return to volunteer helping fellow patients through their process.

Important element extracted from site studies	Rusk Institute of Rehabilitative Medicine	Community Hospital of the Monterey Peninsula	Kaiser Permanente Medical Center, Walnut Creek
Usable/Functional	✓	✓	✓ +

Central Location

Kaiser Permanente's Central Garden, the Rusk Institute, and the Community Hospital of the Monterey Peninsula all demonstrated the importance of having the garden centrally woven into the hospital. In other words, staff, visitors and patients come in contact with the garden frequently. As a result, a well-designed garden will be more utilized and in turn reflect the success of the garden. As discussed earlier, the Central Garden is highly visible and connects the various networks of the hospital through paths that run through the garden, adding to the frequency of garden use. In addition, the inpatients have access to the garden from their rooms, and therapy is conducted in the garden. Furthermore, location of their cafeteria in the vicinity of the garden functions as a means of drawing people outdoors into the garden. Monterey Peninsula's Community

Hospital further exemplifies the centrality of their gardens to the hospital. Their gardens literally surround the entire hospital and serve to connect the hospital to the surrounding forests adding to the restorative properties. From any part of the hospital a user is within reach of the gardens.

At the Rusk Institute, the four gardens are not located in the main thorough way of the hospital as in Kaiser's setting. However, the main entrance to one of the gardens, the greenhouse, is next to the main lobby of the hospital, adding to its visibility. The horticulture therapists speak personally to each of the patients to encourage them to visit and possibly use the greenhouse to support their recovery. Encouraging the patients to participate has been successful because patients are in the hospital for extended periods of time and put through intense therapy. The perennial garden and the children's garden are directly outside of the greenhouse providing visibility from the main entrance. Rusk's fourth garden is located in a courtyard within the complex and patients can view it from inside their rooms. This garden is a passive garden that staff, patients, and visitors can utilize.

Important element extracted from site studies	Rusk Institute of Rehabilitative Medicine	Community Hospital of the Monterey Peninsula	Kaiser Permanente Medical Center, Walnut Creek
Central	✓	✓ +	✓ +

Therapeutic/healing

Cooper Marcus and Barnes (1999) use the term therapeutic or healing to mean one or a combination of the following: accomplishing a degree of relief from symptoms; decreasing the amount of stress; and helping to improve a person's well-being and hopefulness. The benefits a person receives by viewing nature passively in a garden has

been discussed at length in chapter one. In addition, when a facility can incorporate patients' necessary routines into a garden setting, an increase in recovery and happier patients should be noticed. As demonstrated at the Rusk Institute, patients endured many hours of intense physical therapy for weeks and even months. Patients are encouraged to participate in horticultural therapy which functions in a combination of ways to be extremely successful. In horticultural therapy, the plants provide the focus for therapy and are non-threatening to the patient. Social support and encouragement are also given to patients contending with similar issues. Horticultural therapy also provides a sense of accomplishment at the end of a task. An interview with Nancy Chambers and Gwenn Fried (2001), both horticultural therapists at the Rusk Institute, revealed that the horticultural therapy program is always ranked as the most important aspect in the patient recovery process. In addition, many of the patients after being released either volunteer or visit frequently, further emphasizing the success of the program.

Even through passive viewing, a therapeutic effect can be achieved. In the Community Hospital of the Monterey Peninsula and Kaiser Permanente Medical Center, each room has direct access to the garden so that inpatients can frequently visit. At Monterey Peninsula, patients and beds are taken outdoors on nice days. Therapy sessions are conducted in the Central Garden and in turn benefit both the patient and staff. "Out here, it's open to the sky. It fits with the holistic idea of what I think healthcare is. It is not only medicine and physical treatment; you also have that part that's unique to the individual called the soul. This garden helps to receive that" (Cooper Marcus and Barnes 1995, 45).

Important element extracted from site studies	Rusk Institute of Rehabilitative Medicine	Community Hospital of the Monterey Peninsula	Kaiser Permanente Medical Center, Walnut Creek
Therapeutic/healing	✓ +	✓ +	✓ +

Children and Play

As seen in the Rusk Institute, the children's playground serves several functions. The most important is to enable hospitalized children the opportunity to have fun and experience activities as other children. The playground also provides an area where visiting children can release energy, keeping the level of noise down in the hospital. Lastly, patients enjoy watching children at play; it provides fond memories and encouragement that life goes on. The Kaiser Permanente Medical Center Garden does not have a playground; however, children are frequently seen playing on the lawn areas, serving the same purpose without the playground. Community Hospital of the Monterey Peninsula has lawn as well as a vast forest in order to give children (visiting or inpatients) a break from the hospital environment.

Important element extracted from site studies	Rusk Institute of Rehabilitative Medicine	Community Hospital of the Monterey Peninsula	Kaiser Permanente Medical Center, Walnut Creek
Children and Play	✓ +	✓	✓

The Garden Elements: Aesthetic

Natural Environment

As mentioned in chapter one, humans can receive relief from stress when they come in contact with nature or natural settings. Chapters one and two also show the need for designing a landscape that does not attract too much attention but instead functions to restore a person through the subtleties of nature. The Community Hospital of the

Monterey Peninsula is surrounded by a natural forest and is the best example of preserving the natural environment. The landscaping around the hospital serves as a transition from the interior of the hospital to outside natural surroundings. These surroundings move gradually into the forest. Unfortunately, most hospitals are not fortunate enough to have this luxury of expansive natural surroundings. Usually, in most hospitals every square inch of space is under careful scrutiny for use.

The Kaiser Permanente Medical Center is able to design a successful restorative garden, in part, because the large specimen trees on site add significantly to the feel and mood of the garden setting and are critical to the restorative properties seen in other gardens. Although the Rusk Institute is located in New York City where little vegetation and natural surroundings exist, the hospital is able to create a lush oasis in a small area.

Important element extracted from site studies	Rusk Institute of Rehabilitative Medicine	Community Hospital of the Monterey Peninsula	Kaiser Permanente Medical Center, Walnut Creek
Natural Environment	✓ -	✓ +	✓

Trees

Both the Kaiser Permanente Medical Center and Community Hospital of the Monterey Peninsula went to great lengths to preserve as many large specimen trees as possible. This advantage provides a head start for a successful restorative setting. As mentioned in chapter one, humans prefer an established setting of large trees with little understory. The Rusk Institute is in direct contrast to the above facilities because of its city environment and lack of space. The Rusk Institute cannot feasibly portray as natural a setting as the Monterey Peninsula; however, in order to compensate, the gardens at the

Rusk Institute use a plethora of plantings to soften the enormous buildings that surround the garden.

Important element extracted from site studies	Rusk Institute of Rehabilitative Medicine	Community Hospital of the Monterey Peninsula	Kaiser Permanente Medical Center, Walnut Creek
Trees	✓ -	✓ +	✓

Water

In Ulrich's study conducted in 1981, he notes, "views of vegetation, and especially water, appear to sustain interest and attention more effectively than urban views" (420). Two of the three case studies had water features in their designs. Interestingly enough, the Rusk Institute found the water element important enough to included in the design of three out of their four gardens. Upon entering the main lobby, one immediately views a circular fountain about eight feet in diameter containing large Koi, with a seating wall for close proximity. In the Children's Garden, a stream meandered through much of the garden and children were able to interact with a water sprinkler. In the Gimbel Garden, designers incorporated a long rectangular viewing pool for relaxation. Community Hospital of the Monterey Peninsula integrates a fountain in the main lobby with a spectacular view of the Monterey Bay in the distance. Even though the Kaiser Permanente Medical Center does not currently have a water feature, in a post-operative evaluation several interviewees suggested adding a water feature as one of the possible changes to the very successful design (Cooper Marcus and Barnes 1995).

Important elements extracted from site studies	Rusk Institute of Rehabilitative Medicine	Community Hospital of the Monterey Peninsula	Kaiser Permanente Medical Center, Walnut Creek
Water	✓ +	✓	✓ -

Wildlife

As recorded in the literature (Cooper Marcus and Barnes 1999; 1995; Gerlach-Spriggs, Kaufman, and Warner 1998; Morrison and Aldous 1994; Tyson 1998) and in personal interviews with patients and family members (Loran Smith Center, Athens Regional Hospital; interview with Morrison; interview with Talarico), viewing animals such as fish, squirrels, chipmunks, birds, and butterflies in an outdoor setting was of considerable benefit to patients. The Kaiser Permanente Medical Center has more of a campus-like environment with squirrels and birds so domesticated they tend to be regarded more as pets. The Community Hospital of the Monterey Peninsula is in a natural setting fostering the best habitat for nature to thrive. An abundance of butterflies, birds, and squirrels can be viewed scampering around as well as deer raising their young. Lush flower gardens located just outside the hospital provide the perfect setting to entice birds and butterflies. The main lobby has a large fountain with Koi and is open to the sky by a glass dome. The Rusk Institute also provides a range of animals, from parrots to finches, and frogs to salamanders. All of the animals are located in the temperate conditions of the Greenhouse Garden that allows for year round viewing.

Important element extracted from site studies	Rusk Institute of Rehabilitative Medicine	Community Hospital of the Monterey Peninsula	Kaiser Permanente Medical Center, Walnut Creek
Wildlife (animals)	✓	✓	✓ +

Summary of Garden Studies

It is important to note that even though these design features are seen as important to the success of the three gardens, it is not meant to be the formula for all restorative gardens. As the readings have emphasized, each garden must be site specific and reflect

what the users specify. The Summary of Garden Studies (Chart 2) illustrates that it is possible for a garden to compensate for a missing or weak feature by stressing another element. For example, the Rusk Institute did not have space to accommodate large specimen trees; however, it achieved a restorative environment by using a greenhouse and water features in three out of the four gardens. Horticultural therapy encouraged patients to use the gardens. These garden elements are discussed in Chapter four and incorporated into Chapter five in the design for the Loran Smith Center.

Important elements extracted from site studies	Rusk Institute of Rehabilitative Medicine	Community Hospital of the Monterey Peninsula	Kaiser Permanente Medical Center, Walnut Creek
Usable/Functional	✓	✓	✓ +
Central	✓	✓ +	✓ +
Therapeutic/healing	✓ +	✓ +	✓ +
Children and Play	✓ +	✓	✓
Natural Environment	✓ -	✓ +	✓
Trees	✓ -	✓ +	✓
Water	✓ +	✓	✓ -
Wild Life (animals)	✓	✓	✓ +

Key: Poor ✓ - Good ✓ Great ✓ +

Chart 2. Summary of Garden Studies

CHAPTER IV

DESIGN CRITERIA

This chapter compiles and reviews the materials discussed thus far, in order to establish design criteria. Distilling this information furnishes the foundation necessary to proceed with the final design. Since there was an abundance of information related to healing gardens, it was necessary to study and evaluate the important aspects of healing garden (landscapes) from several perspectives—stressing the physiological and psychological impacts of nature (Chapter I), designer ideas (Chapter II), and assessment of existing gardens (Chapter III). Through this process, criteria were established to enable the designer to develop a healing garden.

In Chapter I, research on stress and nature revealed basic principles that support the concept that nature reduces stress and is beneficial to the healing process and overall well-being of the individual. By treating the whole person and not just the ailment, the patient will have a better success rate in healing and this will be accomplished in a shorter period of time. In general, plants reduce stress and improve patient mood. By comparison, hardscapes should be kept to a minimum. Simply viewing nature, through a window, is found to be more beneficial than viewing buildings or parking lots.

Chapter II addresses the question of what qualities make a garden a healing garden. The readings revealed that gardens embody both functional aspects and aesthetic characteristics. Criteria for functional aspects suggest that designers must be informed about the user and the user's needs; gain insight about desirable activities in healing

gardens; and incorporate patient participation and the daily functions of the hospital or health care facility into the garden. When considering the garden's aesthetic, the designer should use an abundance of plants; incorporate wildlife; give the garden a homey feeling; and watch for hidden meanings (especially negative ones) in the design.

Chapter III reviewed three noteworthy examples of healthcare facilities. As the readings have emphasized, each garden must be site-specific and reflect what the users would like. Important functional aspects extracted from the site studies revealed that these sites be usable and functional, central to the hospital, and elicit a therapeutic or healing effect. The aesthetic characteristics that emerged were a natural setting, mature trees, water features, and plenty of wildlife. It is important to note that children and play surfaced as a criterion and can be either a functional aspect or aesthetic characteristic of a garden.

What emerged is a compilation of non-specific functional and aesthetic criteria that can be used in the design of any healing garden. The following list was then used to generate survey and interview questions which ultimately led to site-specific design criteria for the Loran Smith Center.

Functional and Aesthetic Characteristics

	FUNCTIONAL Positives	AESTHETIC Positives
Chapter I Stress Relievers	<ul style="list-style-type: none"> • Opportunities for physical movement and exercise and other forms of activity • Passive activities such as viewing nature and socializing • Treating the whole person • The complexity to keep the user's interest • Coherence or grouping elements according to size, 	<ul style="list-style-type: none"> • Use more plants than hardscapes • Hospital/care facility should have views of nature • Stimulate the senses through the color and scent of plants and flowers, and the feel and temperature of smooth rocks and soft moss • Complexity in the variety of

Chapter II Designers

- texture, shape and brightness
- Legibility or ease of navigation through the site
- Mystery or drawing the user ever deeper into the garden
- Benefits patients, staff and visitors all
- Stimulate the senses

plant species

Negatives

- Excessive hardscape
- Excessive rock

Positives

- Unambiguously positive garden elements (inducing no negative reactions)
- Clear access and circulation
- Spatial sequencing
- Survey user preferences to address their needs
- Observe daily activities of facility
- Create views from many vantage points to draw user into the garden
- Comfortable temperature range
- People-oriented design
- Colors (such as blue and green) that elicit positive mood changes
- Domestic or residential in size, scale and familiarity
- Sense of control and access to privacy
- Place of gathering for social support
- Lots of plants and flowers emphasizing seasonal changes
- Simple in design
- Plants that provide food and shelter to butterflies, birds and other wildlife
- Incorporate site into daily function of facility

Positives

- Employ “genius loci” and native (indigenous) plants to strengthen site attributes
- Watching wildlife – plants that attract, shelter, and feed ex (squirrels, birds, butterflies)
- Familiar features - tactile materials, smooth stones, fragrant plants, wind chimes, bird baths and flowing water
- Water- reflective, still, dark, gentle flowing fountain
- Abundant plants

Negatives

- Too much angularity, hard angles, lines
- Abstract art
- Bright colors such as red, orange and yellow
- Too ordered or structured

Chapter III
Site examples

Positives

- Activities that draw the user into and keep them in the garden (i.e., cafeteria, wildlife, socializing, quiet reflection)
- Visibility leads to use - the garden is frequently seen by the users (i.e., entering and leaving building, cafeteria in garden)
- Therapeutic (relief from symptoms, decrease stress, improve well being)
- Central location
- Playground for children and play
- Light variation in sun and shade areas
- Views that draw the user into the garden
- Enhance natural site attributes
- Centrally located to hospital

Positives

- Seating (sun shade options for temperature variation, group socializing, quiet, and enclosed)
- Natural environment (large specimen trees; still, bubbling, or gently flowing water; small wildlife; fish)
- Children at play provide positive distraction

Negatives

- Urban noise (traffic, A/C units, etc.)
- Smoking
- Direct sunlight

Using these findings as a basis to guide the design process, it is possible to recognize what positive elements to include and negative elements to avoid when establishing a healing garden. When examining a prospective site for its functional and aesthetic elements, the designer will want to de-emphasize site weaknesses by shifting attention to its more positive attributes. Communicating with potential users during the process will ensure the most practical and useful garden. Coming to a consensus among the patients, caregivers, facility administrators, maintenance staff, designer, and keeping with the integrity of the site will facilitate the development of a well-designed healing garden.

CHAPTER V

THE DESIGN PROCESS

Introduction

This chapter describes a three-phase process used to gather and analyze information used to design a healing garden. Criteria is then established and applied in developing a design for a restorative garden at the Loran Smith Center in Athens Regional Hospital. Finally, it provides hospital personnel with the tools necessary to approve a design for a restorative garden for Loran Smith Center and to guide future decisions regarding its evolution.

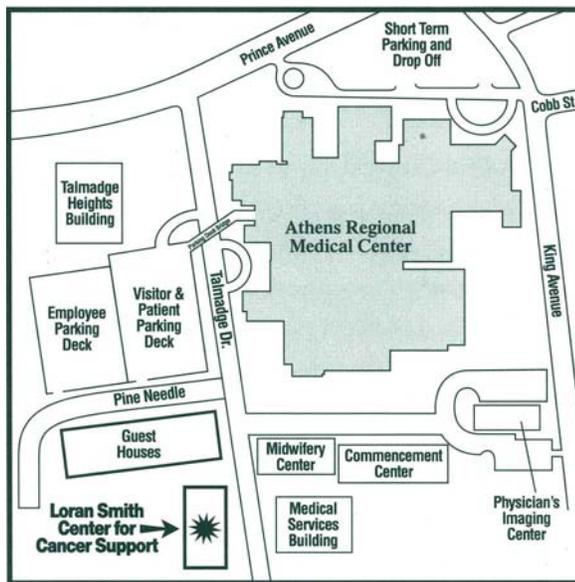
Overview of the Design Process

A three-phase systematic approach was used to organize the accumulated information. First, the facts and data from the site and from the users were assembled under the headings *site inventory* and *users inventory*. Much of this information influences the design process. Second is analysis of the collected data from the site and from user interviews and surveys. This involved prioritizing according to value judgments about the effects of one fact upon another. Phase three involves the synthesis or weaving together of the results from the analysis into a final design (Rutledge 1971).

Site Inventory

The purpose of the site inventory is to compile all the site features. The Loran Smith Center for Cancer Support, a cancer information and support center, is part of Athens Regional Hospital and serves thirteen counties in Athens, Georgia (Figure 3).

Currently, the hospital is in the process of constructing a four-story addition located directly across the street from the Loran Smith Center. The Radiology Department,



↑ North

Figure 3. Location Map (Loran Smith pamphlet, n.d.)

under the direction of Dr. Ronald Terry, will be one of the treatment facilities that will be relocating to the new building. The cancer wing of the Athens Regional Hospital will remain in its current location on the fifth floor of the hospital. The restorative garden will surround the Loran Smith Center and will cover one acre. An accessible parking lot with eleven spaces that can be accessed from Talmadge Street is adjacent to Loran Smith Center. Three guesthouses located on the north end of the site and are accessible from Pine Needle Drive, a lightly traveled residential street (Figure 6).

Figures 4 through 8 denote existing conditions of the site. Existing slope (Figure 4) determines the ideal area for the garden as well as ADA accessibility which is denoted in light pink (see Figure 4). Areas highlighted in light blue are feasible, but people in

wheelchairs may have more difficulty maneuvering the terrain. The dark brown and gray areas are very steep and will need special attention for erosion control.

The Existing Vegetation Inventory (Figure 5) shows that mature trees dominant much of the area behind the Loran Smith Center. These large specimen trees – white oak, southern red oak, water oak, black oak, tulip popular, American elm and pecan,– are in good health and enhance the natural beauty of the site. Loblolly and short-leaf pine trees dominate the north end, directly behind the guesthouses. The creek, another attribute of the site, currently has a large amount of privet (*Ligustrum amurense*), an invasive exotic plant, growing throughout the creek banks and the drainage ditch near Sylvan Street.

Figure 6 shows the location of existing features such as water and gas lines, sanitary sewage pipes, drainage from the streets that enter the creek, current and proposed structures, and the right of way. The upper creek is a retention basin enclosed by a fence; the middle segment is straight with steep eroded banks; and the lower end of the creek occasionally floods. The proposed design will concentrate on the usable portions of the site on either side of the stream.

Figure 7 illustrates traffic and pedestrian circulation, adjacent land use surrounding the site, and natural focal points that provide pleasant views. Noise from vehicles is noted only on the south end of Talmadge Drive. A conflict exists in crossing the street from the new building to the Loran Smith Center. The residential areas located on the east side of the site add a pleasant distant element; however, the parking garage and hospital are hardly visible from the site.

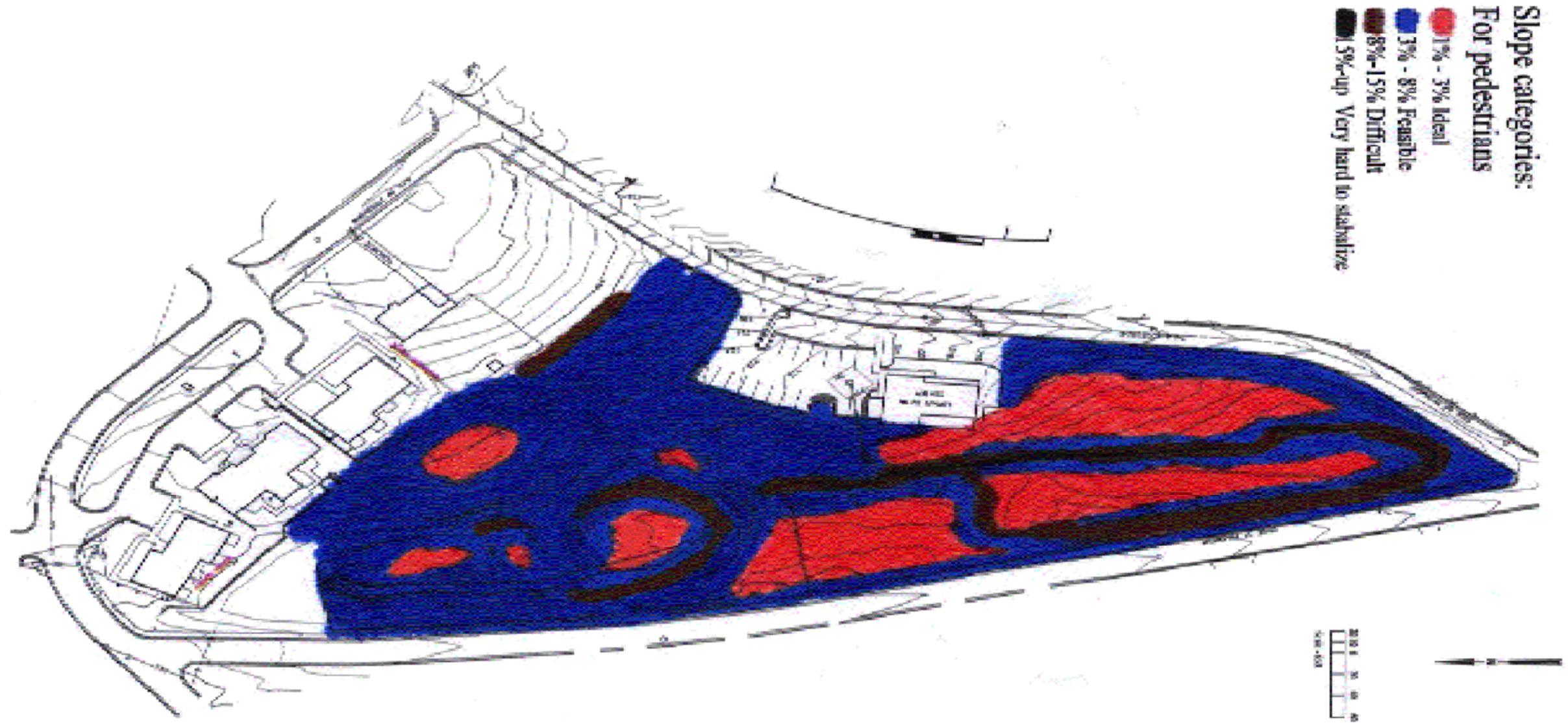
Elaboration of Great Views

- (A) denotes a pleasant view of the stream that extends to some large pines in the distance. The view is blocked by undergrowth on stream banks.
- (B) is an important vantage point that gives a commanding view of much of the garden from the inside of the screen porch of the Loran Smith Center. This view is partially obstructed because of the privet located along the stream. The view extends to the neighborhood.
- (C) is on level ground and extends into the drainage basin and focuses on the stream.
- (D) also on level ground and encompasses the retention area and the stream.

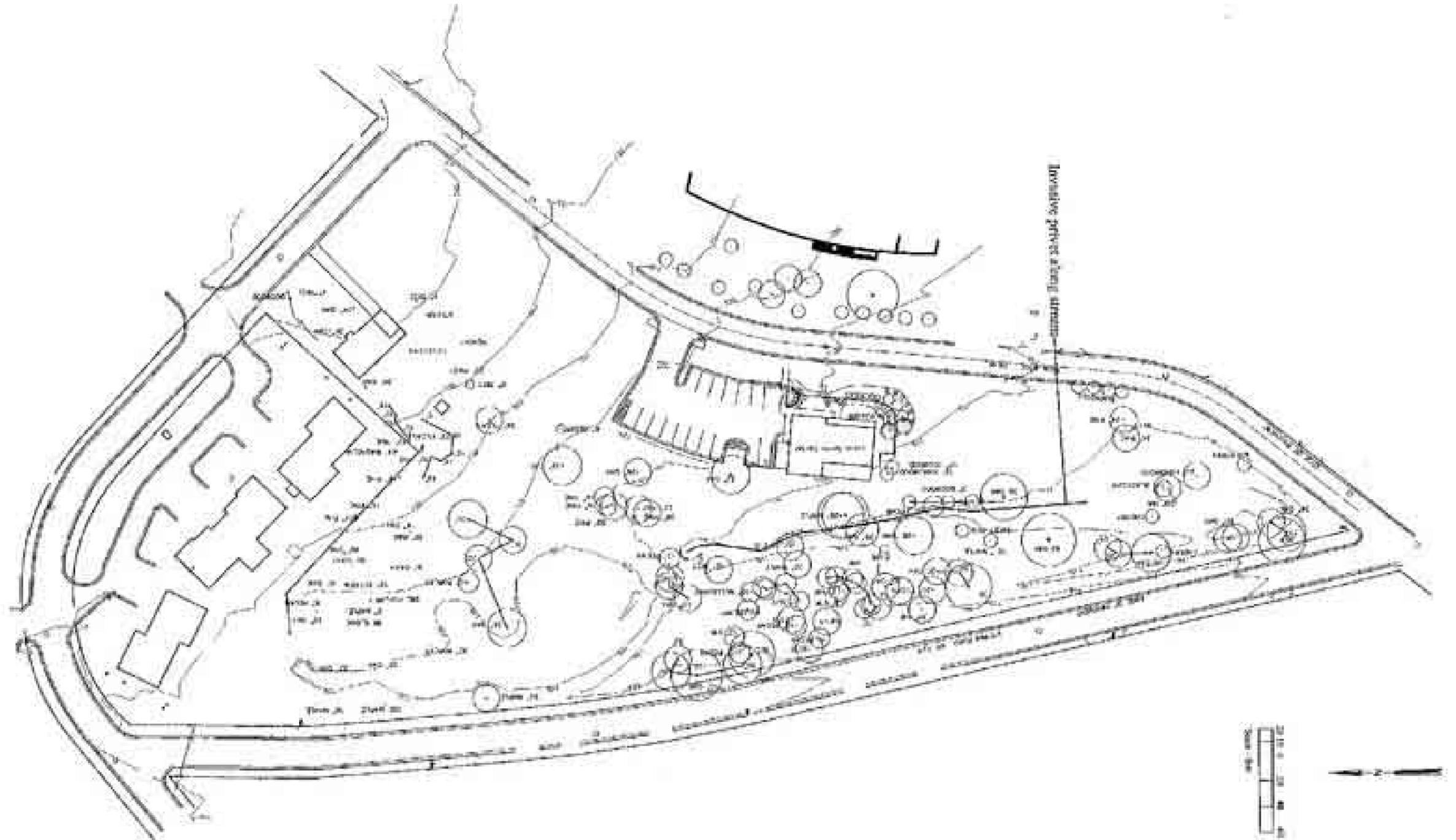
According to the soil survey maps of Clark and Oconee counties of Georgia, the soil was identified as Cecil Sandy Loam (CYB2). The soil is eroded only where the creek runs through the site. According to the map, the Cecil soil has a thick root zone and is generally in good tilth (crumbles easily in hands). It is feasible for supporting structures and recreational activities; however, it has inherent erosion potential. Water permeability is moderate and the water holding capacity of the soil is also moderate. Surface run off is considered as medium because of the slower absorption rate. If the soil is disturbed, there is a potential for erosion. The soil responds well to good management and is suited for a number of plants. This soil is seen throughout much of Georgia's farmlands.

Site Analysis

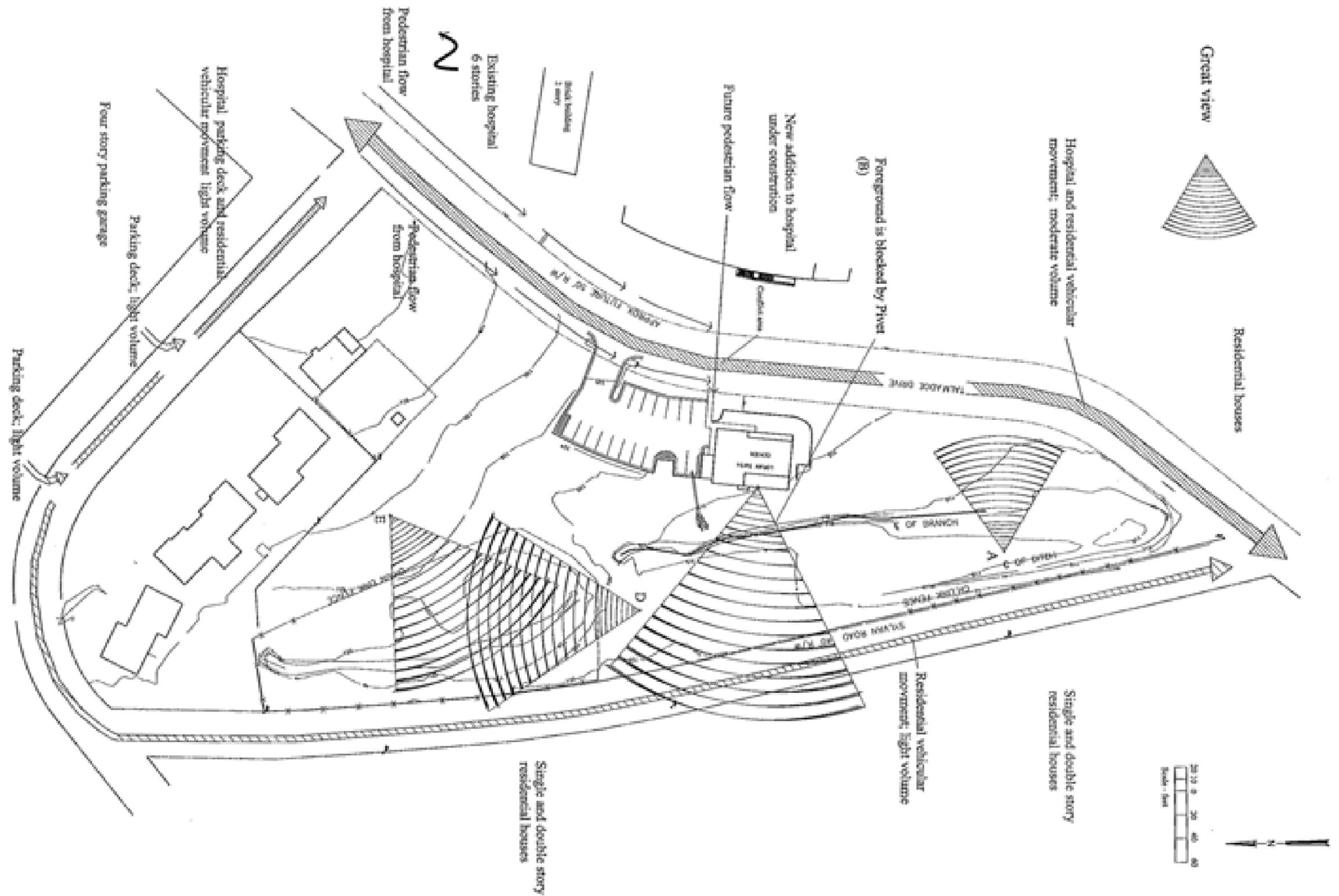
The Site Analysis (Figure 8) locates the positive and negative characteristics and incorporates the research findings of this thesis into the site:



Existing Slope
Figure 4



Existing Vegetation
Figure 5



Existing Circulation, Adjacent Land Use, Views
 Figure 7

Negative

The four most difficult site challenges site are the topography, retention basin, location, and creek.

- In order to make the site ADA handicap accessible, a path with less than a eight percent grade needs to be constructed to make the entire site available to everyone.

Walking paths are included throughout the site, but especially within the basin area.

- The retention basin currently has an eight-foot chain-link fence surrounding it. The basin should be landscaped with plants that can tolerate periodic flooding in order to enhance the features of the site.

- According to the gardens reviewed, the locations of the healing gardens are usually within the immediate vicinity of the hospital for optimum usage by patients, staff, and visitors. In the case of Athens Regional Hospital, the hospital staff will need to encourage the use of the garden because the garden will be located across from the hospital.

- The creek is a valuable element on the site. It is, however, one of the most challenging because of its steep slope and the invasive privet obstructing the view. The privet should be removed in stages followed by immediate bank stabilization with native vegetation to reduce erosion and add to the visibility of the garden. The stream would then become a major focal point for the restorative garden.

Positive (attributes to be amplified by design)

Positive attributes of the site are the natural stream and the large specimen trees that cover a substantial area. Keeping the natural woodland area is the foundation for the

design. Other positive elements existing on the site are listed below and are referred to in

Figure 8:

- Lots of shade and interest due to stream and large trees (A)
- Full sun ideal for greenhouse and plants that desire more sun; the greenhouse would be highly visible from street making it easy to find (B)
- Quiet, shaded area ideal for meditation; retaining wall will need repair (C)
- Screened porch of Loran Smith Center overlooks stream, is shaded and level; ideal for patio (D)
- The largest of the level sites; lots of trees and shade; a good focal point to Loran Smith Center screened porch once privet is cleared from stream; pleasant view to retention basin (E)
- Retention area currently is grassed and has stream; potential wetland site and walking path (F)
- Level area; high tree canopy, overlooks retention area; potential smoking area (G)
- East of the site is a residential (homey) character of the surrounding neighborhood

Other negative features noted are: (features to be mitigated in design)

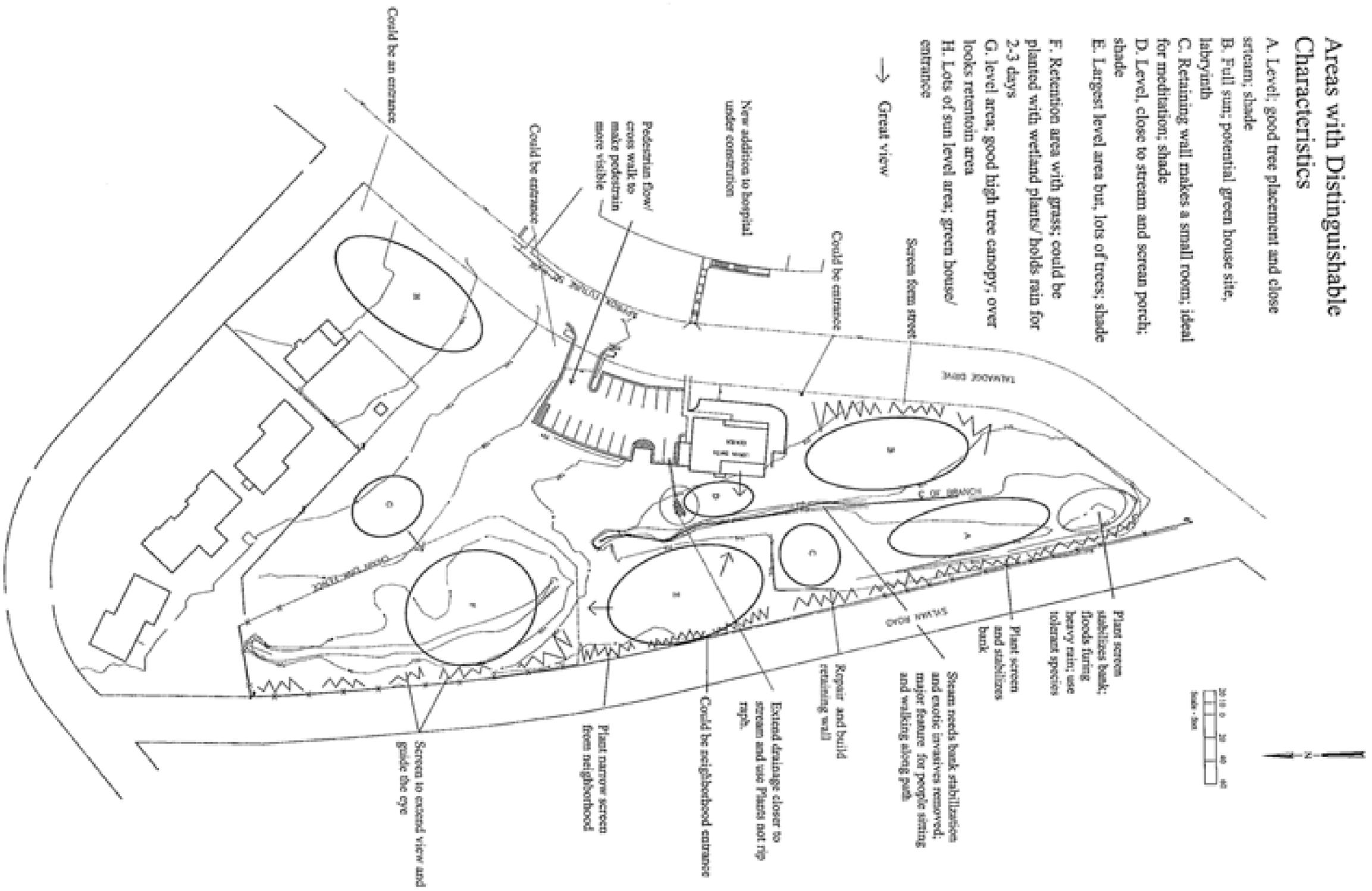
- Pedestrian circulation crossing Talmadge Drive from new building to Loran Smith Center (i.e., cross walk to make pedestrian more visible).
- Site in relationship to the hospital (two highly visible entrances to the garden from the parking lot and the south side of the Loran Smith Center are suggested)
- Undesirable views (i.e., Tallmadge Drive, east side of site once privet is removed)
- Steep slopes (i.e., drainage ditch in southeast corner)
- Invasive Privet
- Potential for a building and parking lot on northwest side of site; however, if construction is done, the parking lot should be screened from view of the garden and the building should have a maximum of two stories to minimize visibility from garden. Also, a garden entrance can be located on the corner to add to the visibility. (H)

User Inventory

Through the review of the literature and the examination of specific site examples, the methodology evolved into utilizing survey and informal interviews to establish functional and aesthetic user preferences. The user inventory was done to determine who would use the garden, what activities they would prefer engaging in, and

Areas with Distinguishable Characteristics

- A. Level, good tree placement and close stream; shade
- B. Full sun; potential green house site, labyrinth
- C. Retaining wall makes a small room; ideal for meditation; shade
- D. Level, close to stream and screen porch; shade
- E. Largest level area but, lots of trees; shade
- F. Retention area with grass; could be planted with wetland plants/ holds rain for 2-3 days
- G. Level area; good high tree canopy; over looks retention area
- H. Lots of sun level area; green house/ entrance



Site Analysis
Figure 8

some elements they would like to encounter if they wanted to reduce stress. After the users were identified each group was asked to fill out a survey to help collect information to guide the design program.

User Groups

The users of the healing garden will be patients and caregivers (family, friends, and staff). Patients who have been released from hospital care can attend support group meetings at the Loran Smith Center. While they are on site, they can visit the healing garden by themselves, with family members, friends, or staff or even have their support group meetings in the garden. In-patients can be accompanied by a loved one to the garden for a change of environment and fresh air. Between scheduled appointments, out-patients can venture into the garden to relax or meditate prior to or after treatment. Finally, the employees at the hospital can enjoy taking a break, eating lunch, or winding down after work in the healing garden.

Survey Method

The author utilized informal surveys and interviews to obtain program input. A screening question (pre-question) elicited if the user would seek out a garden close to a hospital facility if they were undergoing cancer procedure. A three-part survey for the user groups (patients, family, friends, and staff) (Appendix I) determined what activities would appeal to them, how often they would do the activity, and suggestions from the users about what they would like to see in the garden. In the first part, fifteen activities were listed and the users ranked how often they would do that activity in the garden “not at all”, “sometimes”, “often”, or “all the time”. At the end of this question, the user could suggest other activities if they were not listed. The second part (questions 2-12)

focused on user preferences explained in detail below. In part three, the users responded to three short answer questions (13-15) about what they would like in a garden and when they would use the garden. A Summary of all Data collected from the survey can be found in (Appendix II). Lastly, informal interviews contributed by two patients, a family member, two nurses, and a doctor provider a richer insight into the user preferences.

The purpose of the screening question (pre-question) was to determine if the user was interested in using the garden. If the user responded in the negative, he continued answering the survey questions, but his data were not included in the final counts. Only one out of twenty-six responded “no” to the screening question.

User Survey—Analysis and Its Influence on the Design

Twenty-five users responded to the three-part survey. Charts three through nine are located at the end of this narrative section and graph the responses to question one. In addition, Appendix II includes all data from survey questions 1-15.

In question one, the users ranked the fifteen activities from one (not at all) to four (all the time). In responding to the question *what would you most likely see yourself doing in a garden*, the following preferences were noted by the users:

- a) Sit passively/meditate

Not surprisingly, a majority of patients and staff said that they would often find themselves engaging in such activities. From a design point of view, this means that adequate seating must be provided as well as a quiet area with meditative qualities such as a babbling brook or a reflecting pool.

- b) Socialize

Interestingly, the majority of users replied that they would only “sometimes” use the gardens to socialize. Cooper Marcus & Barnes (1999) suggest that women have a stronger need for socializing than men. Having a majority of women participate in this survey, one would think that socializing would rank higher. From a design perspective, providing adequate seating and movable chairs to form the desired group size is important.

c) Observe nature

A majority of the users said that they would watch nature “often” or “all the time.” This is an activity that would be most desirable in the garden and should give several opportunities for this activity to take place. In the informal interviews with Talarico, Koepke, and Morrison, all stressed how important viewing nature, specifically birds, animals and butterflies, was to the recovery process. The readings from Tyson (1998) and Cooper Marcus and Barnes (1995, 1999) also supported the interviewer’s observations of nature. Survey question 9 addressing *which elements would you hope to encounter in a garden*, the large majority of users chose a pond with fish and a birdhouse. All illustrate how beneficial observing nature can be. From a design perspective, birds, butterflies, fish, and squirrels will enhance the garden’s appeal.

d) Walking

n) Explore surroundings

o) Gentle exercise/stretching

These three activities were combined because they relate to active participation. Walking is seen as a very desirable activity as noted with responses in “often” and “all the time.” Exploring surroundings also ranked extremely high, further emphasizing the need for walking paths. Gentle exercise/stretching had a majority of users doing this

activity “sometimes.” The Loran Smith Center has also recognized the potential for conducting some of the classes, such as Yoga, outside in the garden. During the interview with head nurse Judy, I found that Athens Regional Hospital had a fitness trail that encompassed the hospital; however, after several hospital additions the trail was eventually eliminated. She indicated that people had often used it.

From a design perspective, a walking trail would satisfy the walking and exploring components, winding throughout the garden site and paths ranging from a foot-and-a-half to three feet wide. These paths would be exclusively for walking. A second path should exist that is accessible to people in wheelchairs and could also be used by walkers. The Loran Smith Center already has Yoga classes meeting inside their building, but they could incorporate their activities on a level area that could accommodate ten to fifteen people. This activity could take place in a grassy area or perhaps in one of the larger gathering areas providing the seating is movable.

e) Work with plants

A majority of users chose “not at all” or “sometimes,” indicating little interest in this activity. However, a few were extremely adamant about working with plants. The “Surviving Cancer with Fun and Laughter” group at the Loran Smith Center vocalized their interest and future involvement in garden activities. From a design perspective, a horticulture therapy program at this time may not be desirable. However, a volunteer group could be established to give gardening tips to patients and staff. One consideration is for a greenhouse, serving as a focal point for the garden that would draw users into the garden and leading to other activities. The greenhouse would provide an alternative space during inclement weather.

- f) Sit in a small group
- g) Sit by yourself
- h) Sit in a large group

This activity is combined to show that the majority of users would “often” sit by themselves and only “sometimes” sit in a small or larger group. Providing the majority of seats in a private area would be the most desirable. Morrison mentioned the importance of having movable seating so that the user could manipulate the seats to accommodate the number of people in a group. He suggested that moveable seating is much more personal than bench type seating. From a design perspective, providing a range of small seating areas will be one of the keys to successful gardens. These seating areas should range from an enclosed and womb-like setting, to overlooking a stream, or to viewing a larger gathering area.

In questions two through eleven, users were asked to circle the letter that in their opinion corresponds to the picture that best represents their choices for a healing garden. This served to determine what type of atmosphere the users wanted. The following results were taken from Charts 7 – 9. In Appendix II, Table 2 summarizes the users responses to the photographs.

Question two

Users were requested to choose the landscape that was most relaxing or meditative. The three examples were selected providing a range of possibilities from the most natural with lots of vegetation to an urban scene with little vegetation. Example A represents the most natural scene with large mature trees and open lawn. Example B represents a formal garden. A strong axis is created with small fountains, rectangular pool, and neatly trimmed hedges that extend into the distance. Example C contrasts the

natural scenery by representing a corporate business setting with extensive hardscape, black shiny buildings, and newly planted trees. The majority of the users chose example A that represented the most natural setting. A few people choose B, possibly because of the water. However, nobody choose example C.

From a design perspective, the majority of users chose the scenery that coincides with the preferences noted in the literature (Cooper Marcus and Barnes, 1990,1995; Ulrich 1986). The mature trees that are present at Loran Smith Center make this user preference viable for the healing garden.

Question three

If you were looking for a place to sit (alone or in a small group) which one of the following would you select? Example A is a secluded bench with lots of vegetation including an arbor with vines, resembling a private room. Example B contrasts this private setting with an urban center with a large seven story brick building and a large fountain outside the entrance way. Example C is a cozy private backyard patio with small trees and moveable lawn furniture and tables. Surprisingly, nearly all users chose example A with only a few choosing C.

From a design perspective, smaller and more secluded areas for one to three persons should be constructed with a few larger areas for five to ten people. In reviewing the literature (Cooper Marcus and Barnes1999) and interviews (Talarico 2001 and Terry 2001) researchers noted that users will select various garden areas (i.e., secluded, open, shaded, interactive) depending upon their state of mind, point in treatment, or simply their mood on that day.

Question four

Users were asked to choose a water feature that would be renewing or reviving to them. Example A represents a courtyard with plants and a small square pool containing a large gray and red rock that has a fountain of water flowing from the middle and running down the rock into the pool. Example B represents a natural stream with a few small falls opening into a pool. Example C represents a two-tier fountain with one tier spraying straight up and the other portion spraying outward into a larger pond. Example D represents a small private pond with a very subtle fountain only about four inches tall. The majority of users chose the natural stream while a few users chose the large fountain.

From a design perspective, this site already has a stream present; however, rocks and vegetation should be used to stabilize the bank.

Question five

In terms of your senses (sight, smell, touch, hearing), which sense invigorates you the most? Example A represents the same natural stream in question four. Example B represents a rectangular lawn with flowers for color and smell. Example C represents a pond with lush green vegetation, flowers for color and smell, and a range of textures. Most of the users chose the natural stream having the appeal of the restorative properties of water and the sound of the water streaming over the rocks. Some users chose example C that reveals the senses of smell (flowers), touch (texture), and hearing (frogs, crickets). From a design perspective, the natural stream would fulfill many of the sensory criteria as well as the users' preference for a natural stream.

Question six

In reviewing the entrance features, much controversy arose. Example A represents a small rock path with larger rocks leading to a closed wooden gate. Many of the users explained that they would prefer the natural scene, but it would be even harder to maneuver. Cooper Marcus and Barnes (1999) noted that a closed gate is not inviting. Example B represents a very formal entrance with large bollards on top of each column; however the gate is open and looks into a small, enclosed room. Example C shows an archway (entrance) in the distance with a formal boxwood garden in the foreground. Interestingly, users mentioned that the archway or entrance was too narrow. While the majority of users selected the natural entranceway (example A), it should be noted that many other factors could contribute the users' final decision. From a design perspective, an entrance way should be as natural as possible and access should be not difficult. If there is a door, it should be left open at all times.

Question seven

In question seven, users were asked to pick a color palette that they would like to see in the garden. Example A displays a range of reds with orange, purple, white, and yellow in the background. Example B showed hues of bright yellow, red, and orange. Example C looks more monochromatic (greens) with a dab of white. The majority of users selected the monochromatic greens in example C; however, example B with lots of bright colors was not far behind. From a design perspective and the research, the major color in a healing garden should be a range of greens. Morrison (2001) noted that he prefers flecks of color, but nothing that jumps out at you.

Question eight

Users were asked to choose a pathway that they preferred to walk. Example A shows a slate path that disappears into a flower garden. Example B reveals a light gray pea gravel walkway that gently curves connecting to a courtyard. Example C shows a red brick path in an English garden forming a circular walkway in the middle with four paths leading away from the circle. Most of the patients chose example B. However, example A received considerably high ratings from the staff, possibly appealing to the activity of exploration.

From a design perspective, having a path that gently curves adds mystery and interest. The large trees provide shade by forming a canopy at different points. The Loran Smith Center has enough space to have several walking paths that curve as well as shade from the large trees.

Question nine

In question nine, users were asked about the elements they would like to encounter in a garden. This question had two pictures that coincided with each letter to emphasize the elements of nature, sculpture, and architecture. Example A illustrates a birdhouse and a fishpond. Example B depicts a large abstract black sculpture and a grass labyrinth. Example C shows a plaza with waterfall and some greenery and a quad with open gathering space with a corporate-looking landscape with little vegetation. A majority of users chose nature and animals over any other elements in the garden, further emphasizing research findings. From a design perspective, one of the main objectives in a healing garden should be to consider having elements to attract animals, birds, butterflies, and fish. These elements would include nut bearing trees for squirrels, bushes

that serve as a home and have berries for birds, flowering plants to attract butterflies, and ponds or water elements for fish.

Question ten

Users were asked to decide which use of stones was most interesting or meaningful to them. Example A details a light gray river stone, small to medium-sized, with lots of green vegetation surrounding it. Example B shows a light and dark gray river stone with larger rocks than the first picture nearly covering the entire landscape. Example C depicts one large light gray rock with a fine texture surrounded by vegetation. The majority of the users chose example A, revealing a more groomed garden with fewer rocks. From a design perspective, having an area with smooth rocks interspersed with vegetation is most desirable.

Question eleven

Question eleven asked users which labyrinth they preferred for walking. Example A shows a grass labyrinth with sand borders and wider grass paths. Example B depicts a hedge-like labyrinth that is four feet high. Example C views a path dominated by different colored tile and located in a church. The majority of users preferred the labyrinth that was four feet high. From a design perspective, a labyrinth supports the idea of mystery and exploration and can take on many different forms from the classic twelve-turn labyrinth to a walking path that may lead to a dead end.

Question twelve

Users were asked if they could view a garden from inside a building, would they be more likely to use the garden. Everyone replied “Yes” to this question. One major drawback to the Loran Smith Center site is that it is not easily accessible to the whole

hospital. From a design perspective, the hospital should encourage patients, family, and staff to use the garden similar to how the Rusk Institute encourages their staff, patients and visitors. The Loran Smith Center could also organize frequent group functions (i.e., Yoga, support groups, and garden classes), providing as many different activities as possible, making the garden more usable to showcase its beneficial effects.

Interviews

Interviews were conducted among patients, family, and staff (nurses and doctor) to determine who would use the garden (inpatients, out patients, users of the Loran Smith Center, family friends, staff) and at what time during treatment or appointments, and possible implications and recommendations for what elements are important for a healing garden. The following people were interviewed: Susette Talarico (patient), Darrel Morrison (family member/designer/professor), Head Nurse Judy and Nurse Jane (healthcare providers), and Dr. Ronald Terry, MD. The following descriptions provide a brief synopsis of each interview.

Interview with Patient

Susette Talarico, a recovering cancer patient, recalls that when you're going through chemotherapy you do not have much energy and, as a result, you sit and observe and notice things a lot more. The Loran Smith Center was not built when she was in treatment; however, she has since become involved with the center's activities.

Talarico is involved in starting a journal at the Loran Smith Center to help other cancer patients with a variety of coping strategies. Ten years ago, when she was first diagnosed with cancer it was very difficult to go to a support group and bond with strangers. Within her circle of friends, however, there happened to be several women

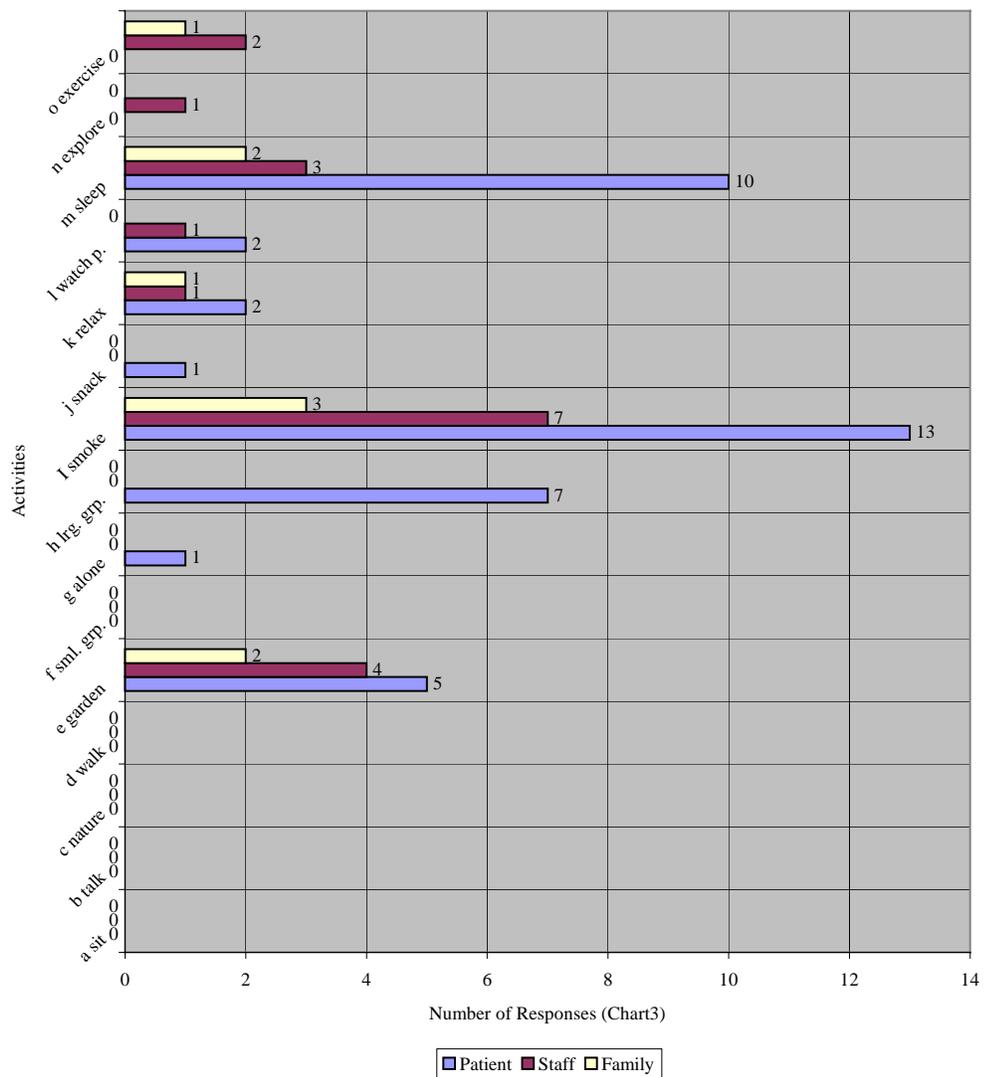


Chart 3: Question 1: Patient, Staff, Family Response - "Not at all"

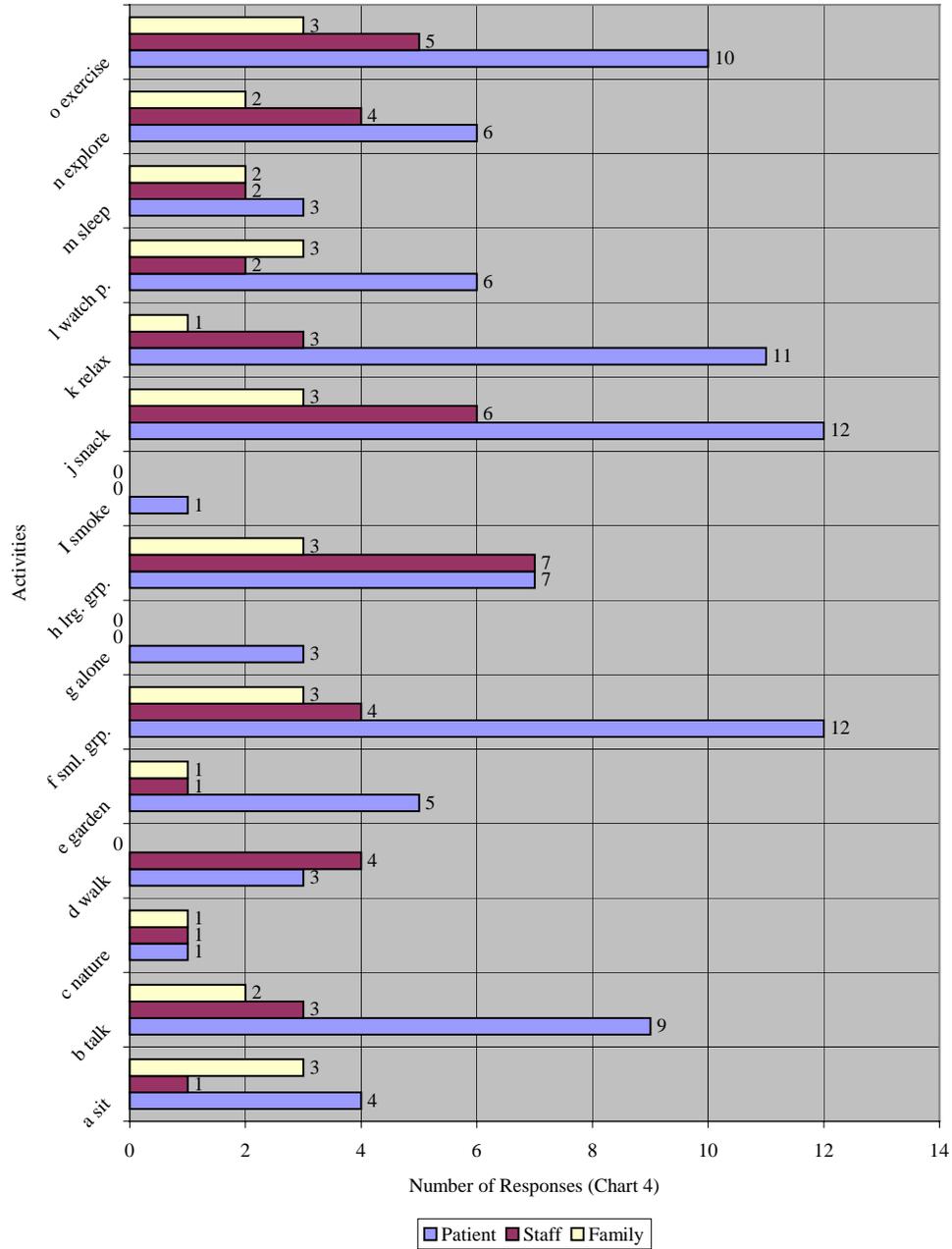


Chart 4: Question 1: Patient, Staff, Family Response - "Sometimes"

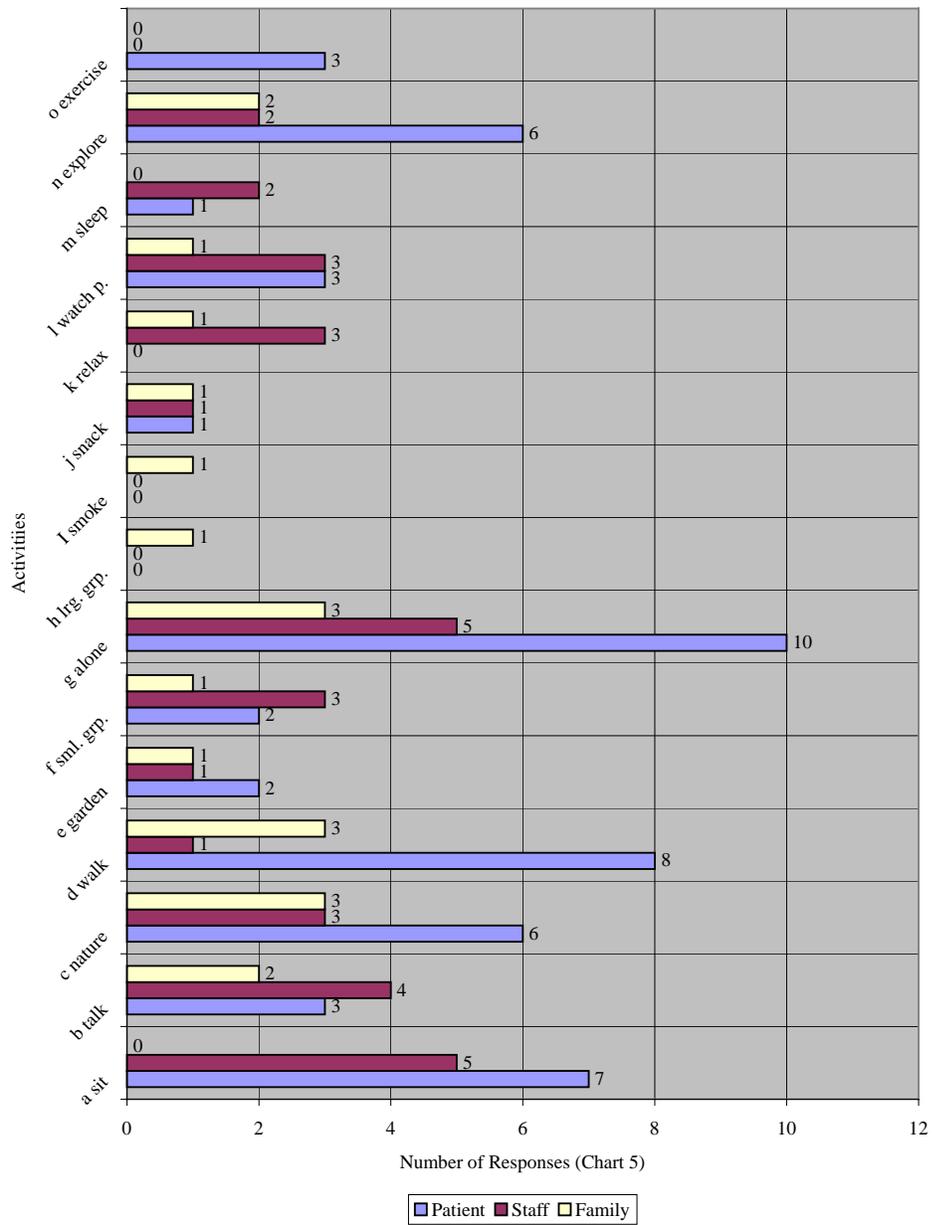


Chart 5: Question 1: Patient, Staff, Family, Response - "Often"

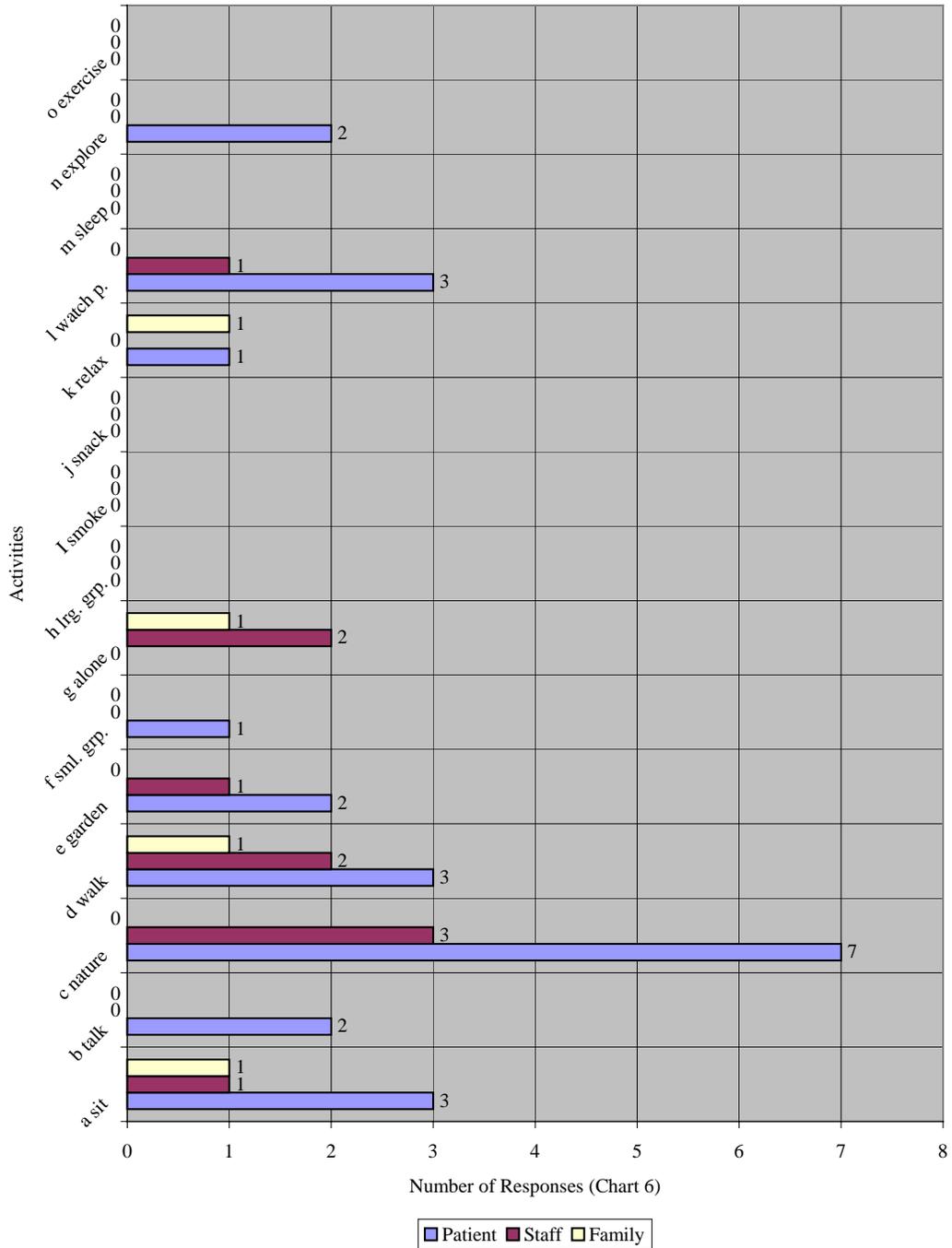


Chart 6: Question 1: Patient, Staff, Family Response - "All the time"

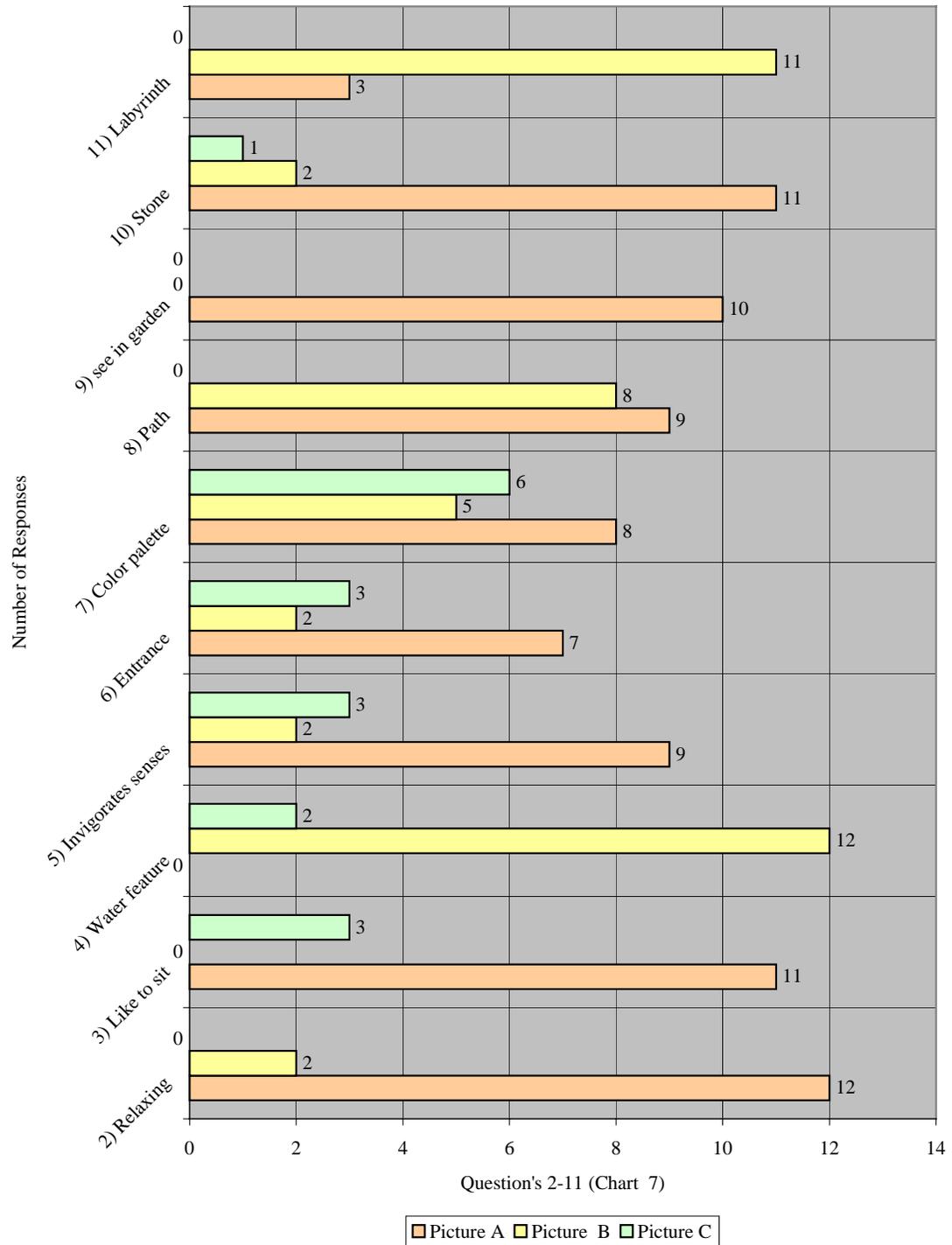
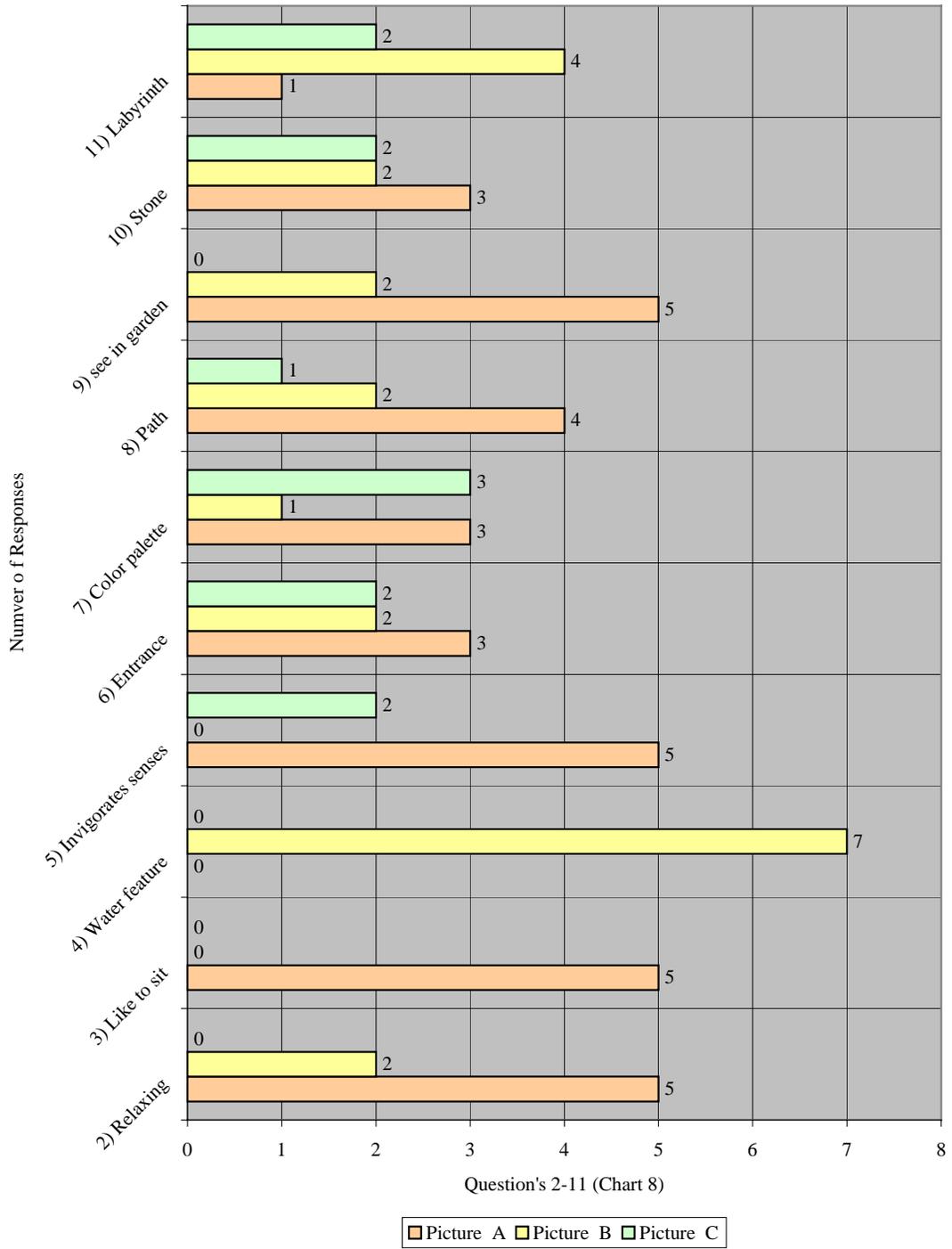


Chart 7: "Patient" Preference to Pictorial Examples



C

Chart 8: "Staff" Preference to Pictorial Examples

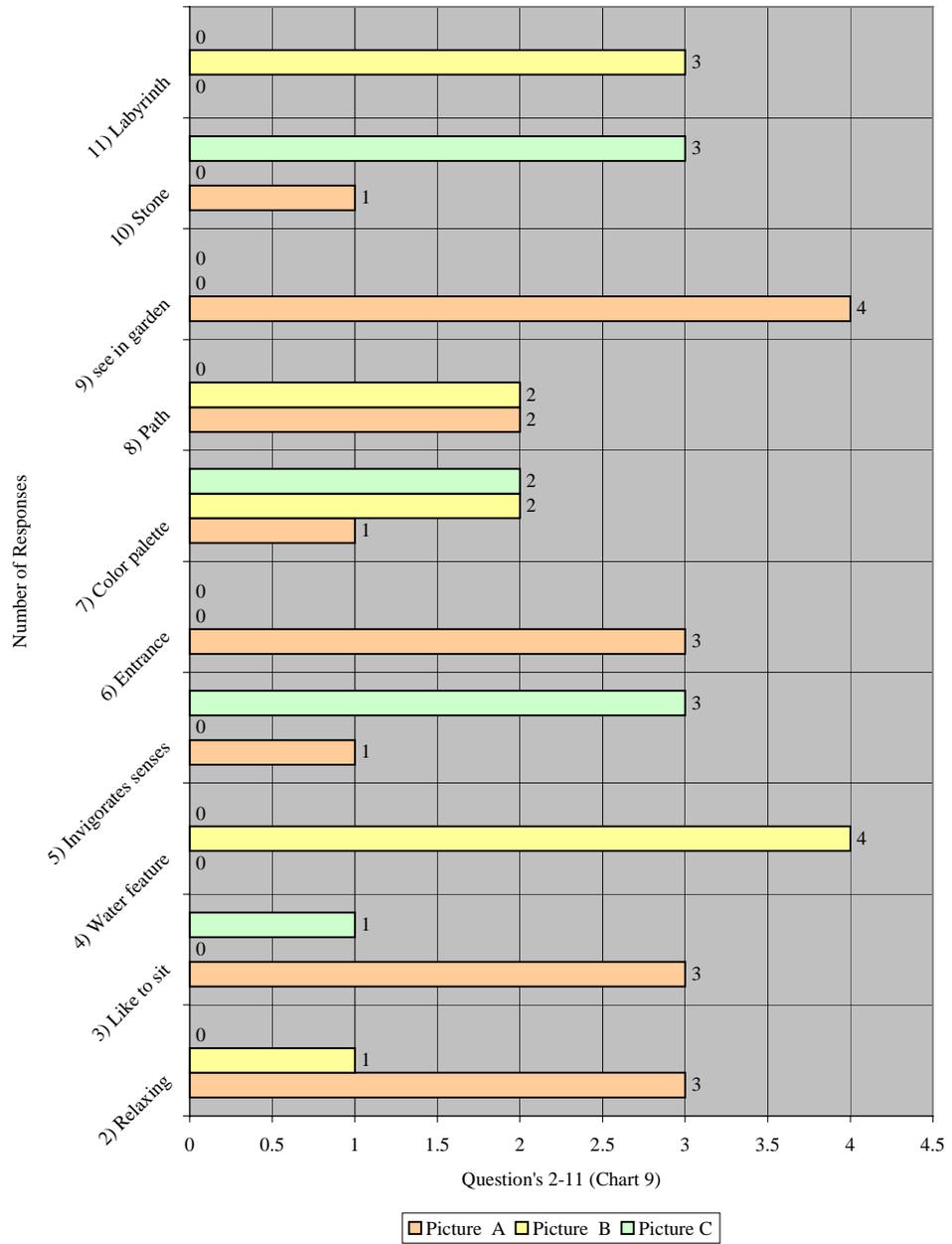


Chart 9: "Family" Preference to Pictorial Examples

who had also developed cancer. Together, they helped each other cope with the effects of the disease. She also observed that in hiring a social worker, the Loran Smith Center is helping patients cope with the social, emotional and psychological implications of cancer. This employee has played a very important role for patients in the recovery process.

In her interview, Talarico referred to an article she wrote for *Commonweal* magazine, entitled “Gardening for Life.” Self-described as a former “brown thumb,” she began gardening in pots and says that it is one of the most rewarding things to observe life cycles by watching something that you have planted grow. She also installed a bird feeder and noted how wrens nest in just about anything and how beneficial it was for her to watch them raise a family.

Through a restorative garden, the benefits of nature would be available to all. During the early days of her illness, she points out that a garden at the Loran Smith Center would have been very helpful before and after doctors’ appointments and during some low times when she needed a boost. She goes on to talk about her involvement in creating a journal at the Loran Smith Center. She and others recommend taking walks with a friend or a loved one or simply visiting a garden. Since her own experience with cancer, she has grown to appreciate how therapeutic nature can be.

In making specific recommendations for the garden, she says that a variety of seating should be available. Private areas that feel “cocoon-like” would be good for the person who needs to be alone; other areas could seat two or three people; and more expansive areas could accommodate larger gatherings. Seating should be comfortable

with back support and be movable so that someone could easily view anything in the garden that “caught their eye.” She also recommended a hammock in the garden.

Talarico also noted that the Hematology and Oncology Clinic of Northeast Georgia, in Athens, has constructed a new building in which the treatment rooms are situated so that patients can view a small landscaped area including a pond. She says that just being able to view a pretty tree or some flowers in natural light goes a long way in making the treatment process more bearable.

Interview with Family Member and Designer

Darrel Morrison is nationally known as a landscape architect and designer at UGA . At the time of the interview Morrison’s brother had recently died of cancer. His brother lived at home the entire time. He said that he placed a couple of bird feeders by his brother’s window and that his brother enjoyed watching the birds’ activities. His observations are based on many years of design experience. His designs often have many elements that positively effect one’s mood. The interview revolved around what features he would introduce into a healing garden if he were designing it. He says “I probably would lean on . . . characteristics that I think are true for any good design, in terms of engaging people and engaging their minds, and that gets back to the . . . Kaplan characteristics – mystery, complexity, coherence, and legibility, but not too much mystery and I would not want it to feel disorienting.” He believes that complexity in a healing garden is necessary so there is always something more to discover whenever you go out and connect with nature. By viewing seasonal changes, the user can maintain interest in the landscape and it gives them a reason to keep coming back.

Morrison states that his “mother was in a nursing home for several years and I visited there. I thought about how the environment could have been improved for her and for me, as a visitor, . . . just lots of softness . . . and this sounds trite . . . but gently curving lines, river-like spaces as opposed to too much angularity. That wouldn’t preclude there being some straight lines”.

He believes that fine textures of ferns and grasses are calming because of their light wispy qualities rather than dense, stiff shrubs. His view on bright color is similar to Olmsted’s. He would not use bright yellows and bright reds. “I might use flecks of yellow, but more of a French expressionist approach. I do think color is important, but I don’t think it has to be massive quantities.” He supports flowering fragrant plants in a healing garden because they evoke remembrances from earlier days. “I know one smell is really evocative to me . . . [it] is the smell of iris. My mother had an iris collection and I remember that smell . . . when I was a kid. And petunias . . . the smell of them at night is kind of comforting somehow because I grew up with it.”

He believes that wood decking gives the feeling of “floating through the landscape.” It can be finished so that it is not slippery. His comments on water features revealed that big gushing fountains would not be as effective in producing a calming effect. “Dark water, overhanging ferns . . . the idea of a shady glen” is much preferred. “Little quiet runnels as well as more naturalistic streams . . . sort of the Persian water idea that’s in little reservoirs and runnels.” Morrison refers to Martino’s use of water features as being “beautiful still water . . . just a small amount of still water but it’s so meditative” (Figures 8 and 9).

Morrison notes that something done in China very effectively is the use of gray walls in a garden that appear more or less like mist beyond the end of the garden. This makes the garden appear larger. When looking at gathering areas, he recommends comfortable movable chairs because they can be arranged according to the number of people in the group and are more conducive for talking than are benches.



Figure 8. Still water design by Martino



Figure 9. Still water design by Martino

Interview with Nurses

The in-patient wing in the hospital will not be relocating to the new building and is currently located on the fifth floor of the hospital. The interior of the hospital was decorated to provide a comfortable place that was not so clinical looking. The halls have carpeted floors, the rooms are blue instead of white, and the artwork is very restful, calming and peaceful. Ironically, the artwork reflects all outdoor scenes with water (oceans, lighthouses lakes). Each room has a window; however, only one side of the hospital wing views trees while the other overlooks rooftops.

The nurses almost never take patients outside because they do not have the time. Volunteers cannot be used for outings due to liability issues. But the nursing staff does encourage family members to take the patient outside especially if they have been in the hospital for a long time. While the average stay for a cancer patient is three to four days, a patient could stay as long as thirty days. During this time it becomes tougher for the patient to keep a positive outlook. Nurses encourage family members to take frequent breaks by going outside to reduce stress. The nurses reported that they would most likely use the garden on their lunch breaks or after their shift is over to wind down.

Interview with a Doctor

Dr. Ronald Terry, a doctor at Athens Regional Hospital, said that he would like very much to take patients over to the garden to explain the patient's diagnosis, providing there was enough time. He stated that there are times when patients have to wait between physician appointments for a procedure. During those times the patients could take advantage of the garden. His nurses would also encourage patients and family members to utilize the garden. In reflecting on the changes that he felt would make a difference

around the grounds of the hospital, he suggested having more flowers, nice grassy areas, mature trees, and private areas for two or three people, benches, and some type of water feature. He also feels that smaller gathering areas accommodating two to five people would be the perfect size.

Summary of Surveys and Interviews

The surveys and interviews were helpful in giving a richer insight to activities and elements that the users would likely be interested in as well as providing elaboration on several criteria. The elements that emerged from the surveys and interviews will help shape the garden. Appendix I includes the survey and sample answer sheet; Appendix II includes Tables 1 – 5, a summary of all data that was collected.

User preferences that emerged from user surveys:

- Water a must; stream was a favorite
- Site for gentle exercise and exploring
- Observation of nature, animals
- Comfortable seating for small groups of two to three or individual
- Lots of green
- Cancer patients would use the garden during all stages
- Smoking was strongly opposed

Preferences that emerged from interviews:

- Patients waiting for appointments can use the garden
- Staff would encourage patients and family members to use the garden
- Patients could also be taken to the garden under family supervision
- Staff would use the garden at lunch
- Seating areas (private; small groups, larger groups); benches; comfortable chairs
- Use of gentle curving lines
- Water features; still dark water
- Flecks of color; more flowers
- Wood decking for paths
- Walking trail
- Nice grassy areas
- Mature trees

Synthesis

Many of the elements that were found to be important in the site examples (water, large trees, wildlife, activities) were also important to the users surveyed and interviewed for this study. Examples included water, being able to observe wildlife, and numerous plants and large trees. The users also saw the garden's function as being a place to walk, observe nature, and passively sit in small groups. The large trees and stream create a therapeutic environment. The review of the three site examples and readings revealed that being central to the hospital was important to encourage use of the garden. This is something that needs special attention in the design and continual emphasis by the hospital. In comparing the literature and project specific data, the results indicated a strong parallel between the readings, site examples, and user data.

Implementation

Design criteria developed by overlaying elements from readings, user surveys and interviews, along with site's attributes, were used to create a master plan (Figure 11). The plan reflects a design that has integrated all the major elements the users desire into a garden that will draw the user in and provide the requested activities of the users. A greenhouse serves as an icon for the garden, enticing the unfamiliar user into the space.

The main features are the greenhouse, meditative garden (Figure 12), smoking area, stream paths, gazebo, lawn, wetland area, water features, and playground. Water is stressed throughout the design in the trails by the stream, the meditation garden, the gazebo outlook, the small patio, and the greenhouse. There are many private seating rooms along the paths. One loop accommodates wheel chairs and several other loops are for walking. The greenhouse is located next to the entrance to encourage use of the

garden that includes wildflowers to attract birds and butterflies. A playground is located on the southernmost corner. The overall feel that is created is that of a cool open space with low-growing plants that lend much interest.

One activity frequently mentioned, walking and exploring, is incorporated by the provision of two forms of paths. One is wider and ADA accessible; the other for walking meanders through the site like a river twisting and turning (Figure 13). This allows for more interaction with the stream and surrounding landscape. The path also varies in width to reduce the amount of hardscape area, but also to allow for passing and other necessary maneuvering around others. There is a longer path that loops around most of the site that is covered with fine hardwood mulch with much of the path a foot and a half wide but opening to three feet in places.

There are numerous opportunities for seating as you move through the site with a wide range of areas and seating sizes. There are many private seating rooms along the paths. One example is a small constructed deck that overlooks the stream and is screened from plain view with low plantings (Figures 13 and 14). A larger seating area is located next to the gazebo or directly below the screen porch at the Loran Smith Center. Both areas have chairs and tables that are moveable.

The Quiet Meditation Garden functions as a quiet environment to which one to three people can go to talk quietly or reflect. This garden has series of room- or womb-like areas that focus on private water features or familiar garden elements. Misters cool the surrounding area without wetting the users. When the temperature becomes cool the floor has heating that can warm the immediate rooms.

The following list is a distillation of important elements included in the design:

- Walking paths (some with ADA accessibility) and exploring trails
- Enhance the stream to allow for as much interaction as possible
- Playground to allow for patients' and children's enjoyment
- Open lawn to allow for various activities (i.e., functions, picnics, and children's play)
- Meditation area for thought, reflection, or escape
- Greenhouse with constant environment to draw people into the garden
- Several water features
- Climate-controlled areas (i.e., misters to cool and heated floor to produce warmth)
- Isolated smoking area.
- Various seating options with the majority in the one to three seating range.
- Homey/familiar elements (i.e., bird feeders, baths and houses; familiar plants and fragrances)

Recommendations

1. Full-time gardener should be hired to tend the healing garden. This person should be an experienced horticulturist who would also enjoy engaging in conversation with the users to answer question and concerns.
2. Frequently planned activities should be held in the garden to increase its visibility and use by both the hospital and the Loran Smith Center.
3. Post-occupancy evaluations should be conducted at least once a year and adjustments implemented according to results.

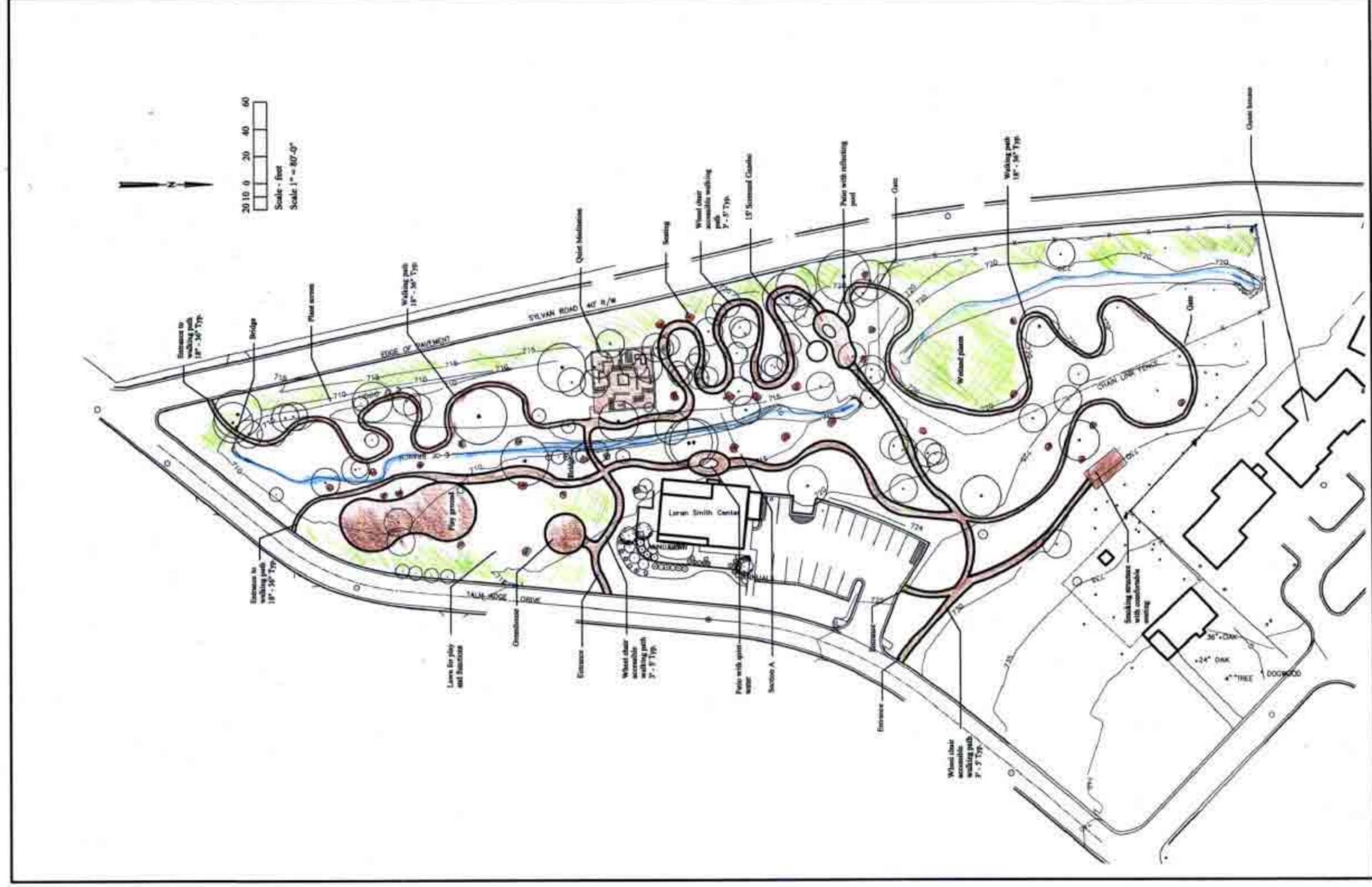
Conclusion

A restorative garden for the Loran Smith Cancer Center was developed using design criteria created through research of documented examples of healing gardens, review of literature, and user input. These criteria were integrated into a healing garden master plan that reflects a therapeutic environment beneficial for both the passive as well as the active user.

Before one encounters the garden, a glimpse of the greenhouse is visible from many different vantage points outside the garden. As one is drawn into the garden,

wildflowers, birds, and butterflies are present as sweet aromas emanate from bee balm, butterfly bushes and blue mist. Progressing along one of the river-like paths, you enter a woodland area and the sound of gurgling water nearby. Small intimate seating areas encourage one to sit for a time and reflect while listening to the stream. Crossing over a wooden bridge, the meditation garden isn't far away. Entering a dappled light area, misters cool the ferns and moss surrounding the reflecting pool that provides a serene environment. Continuing along the path that parallels the stream, the patio of the Loran Smith Center comes into view. At this point, one can sit for a spell or leave the garden.

From the journey through the garden, you can see that the garden will benefit caregivers and patients as well as the entire hospital by reducing stress connected with illness and the hospital environment and therefore speed the healing process. Its implementation will provide improvement in the overall well-being, hopefulness, and physical state of its visitors and the space will become a positive asset to the entire community.

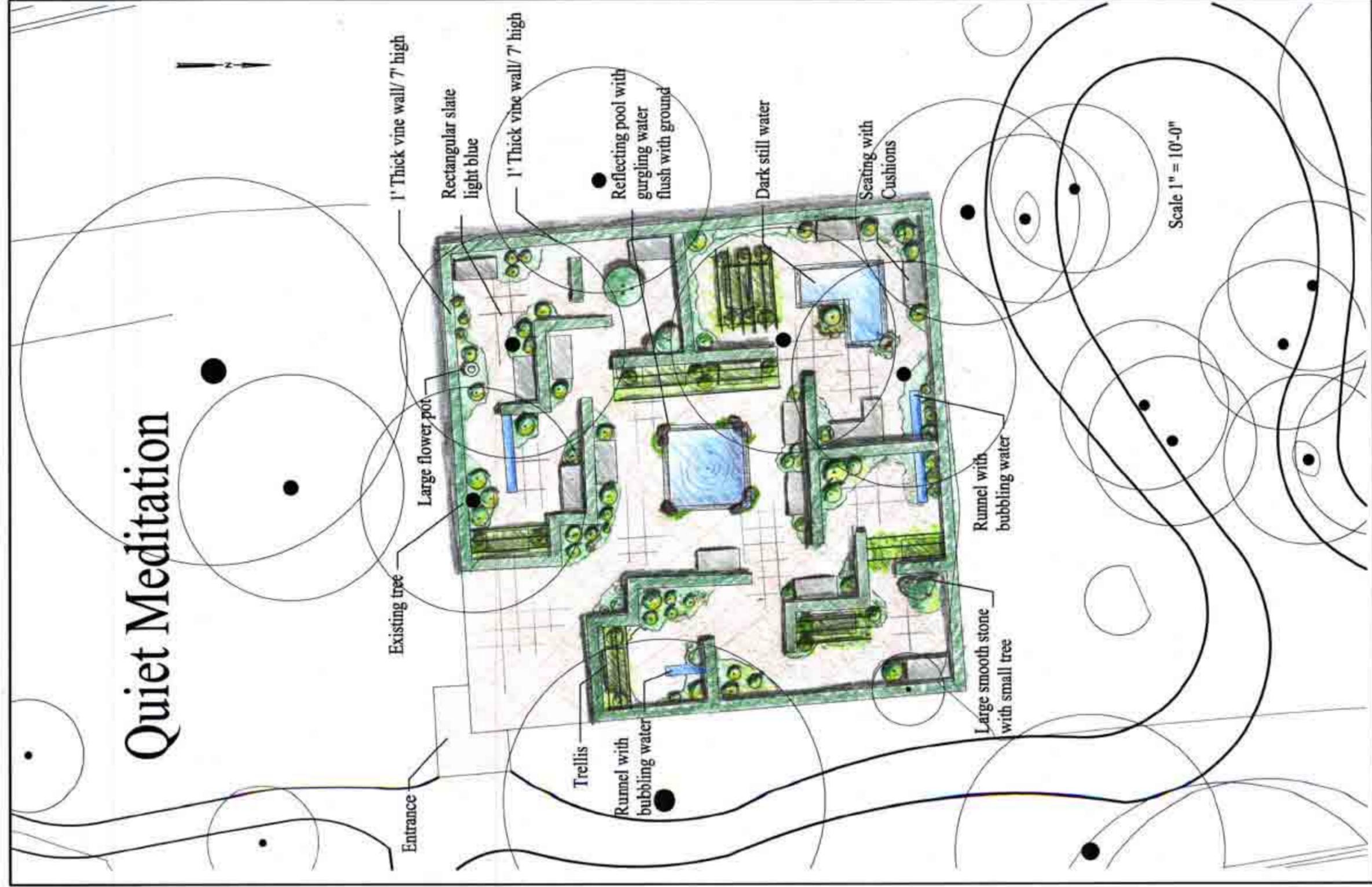


Loran Smith Center for Cancer Support

Master Plan
 Scale 1" = 80'-00"
 Figure 11

Athens Regional Hospital, Ga
 Healing Garden

Andrew Majsztrik
 MLA Design Thesis
 University Of Ga.

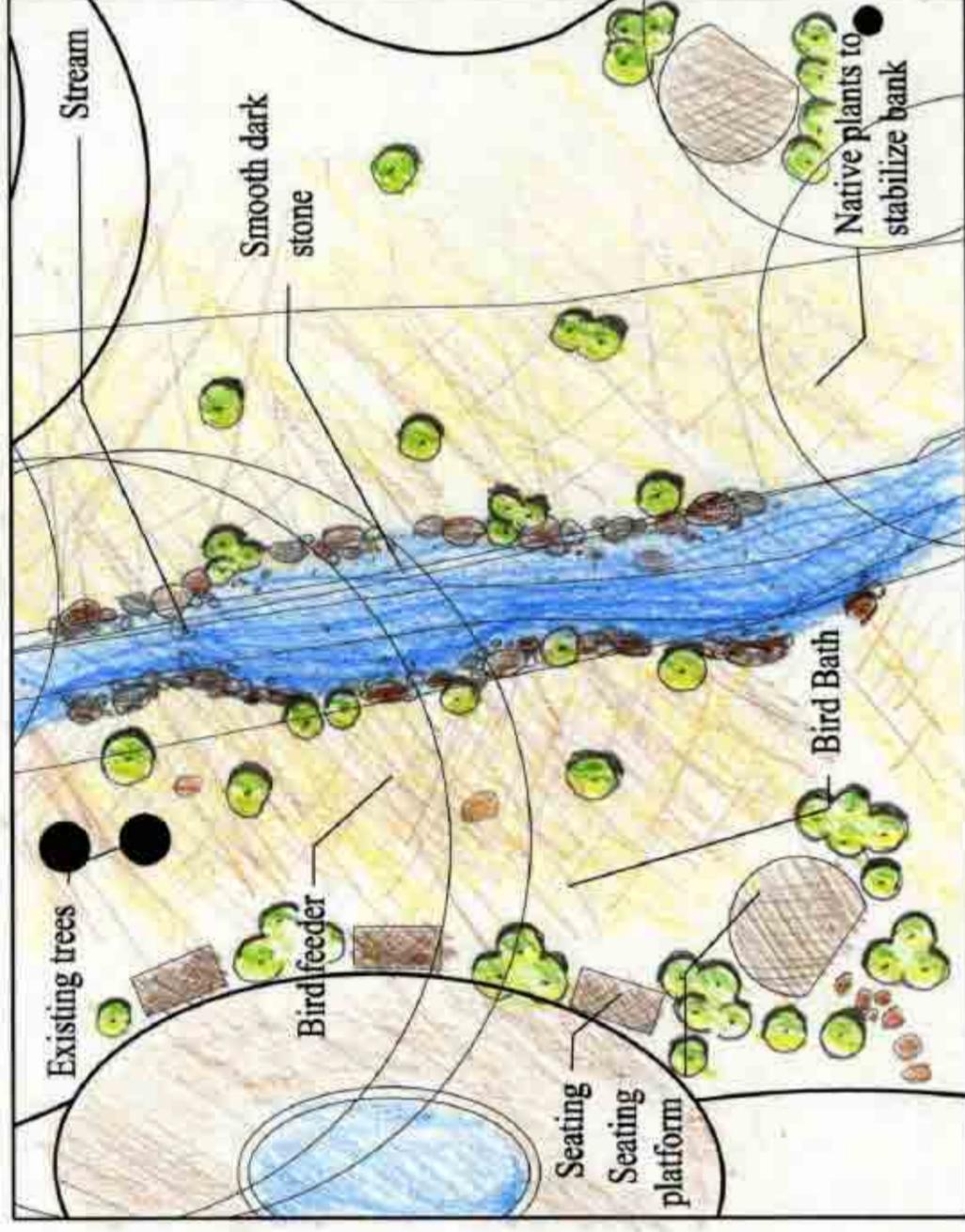
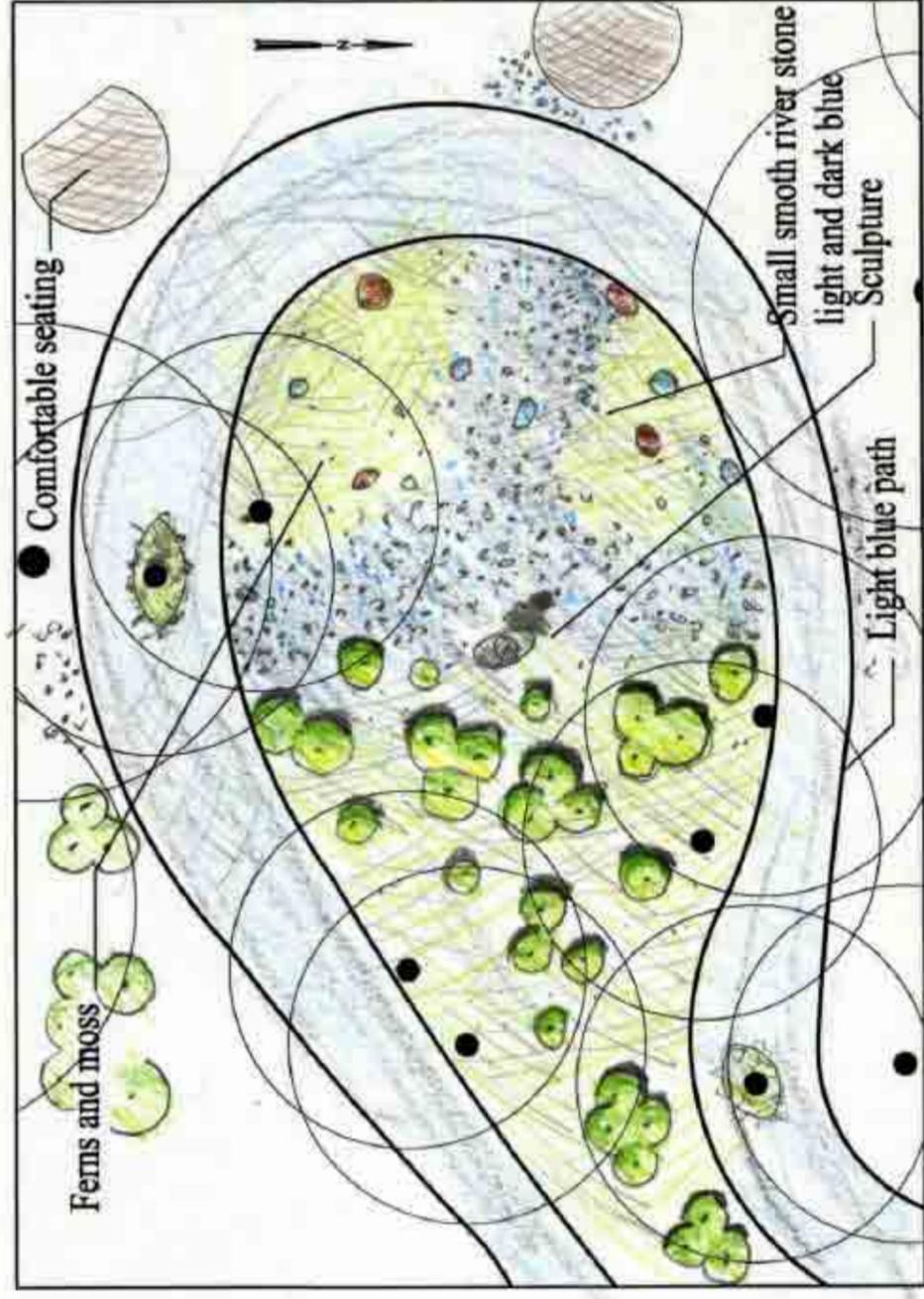


Loran Smith Center for Cancer Support

Athens Regional Hospital, Ga
Healing Garden

Andrew Majsztrik
MLA Design Thesis
University Of Ga.

Meditation Garden
Scale 1" = 10'
Figure 12



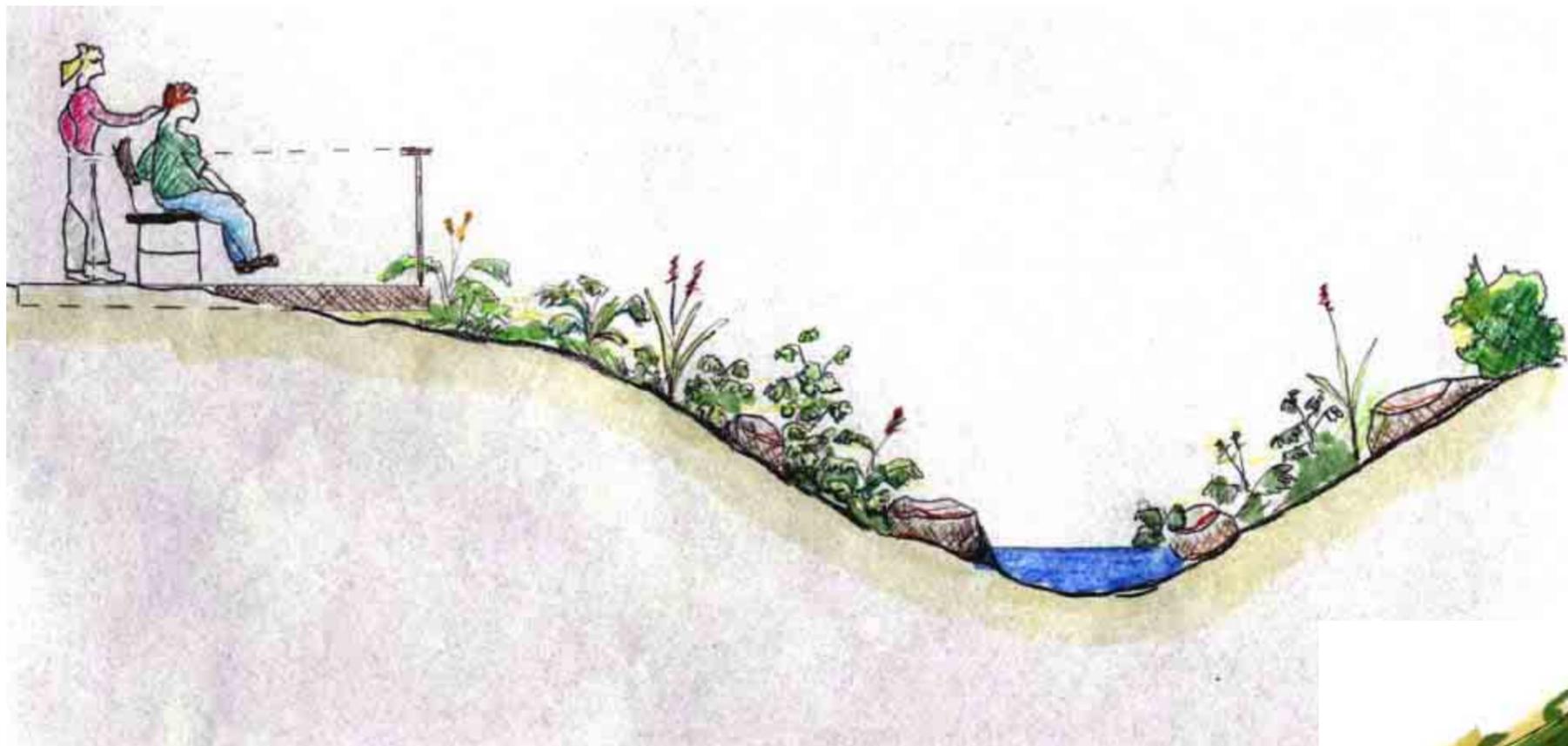
Loran Smith Center for Cancer Support

Detail of stream and path
 Scale 1/8
 Figure 13

Athens Regional Hospital, Ga
 Healing Garden

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Section A-A' and perspective
Figure 14.



Section A - A' Platform and stream
Scale 1" = 30'-0"



Perspective from Figure 12.
Quiet Meditation Garden

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APPENDIX I
SURVEY AND ANSWER SHEET

SURVEYS AND SURVEY ANSWER SHEET

1) What would you most likely see yourself doing in a garden.

Rank all the activities from 1 to 4.

1-not at all

2-sometimes

3-often

4-all the time

a_____sit passively/ meditate

i_____smoke cigarettes

b_____socialize

j_____snack

c_____observe nature

k_____relax on grass

d_____walk

l_____watch people

e_____work with plants

m_____sleep

f_____sit in a small group

n_____explore surroundings

g_____sit by yourself

o_____gentle exercise/ stretching

h_____sit in a large group

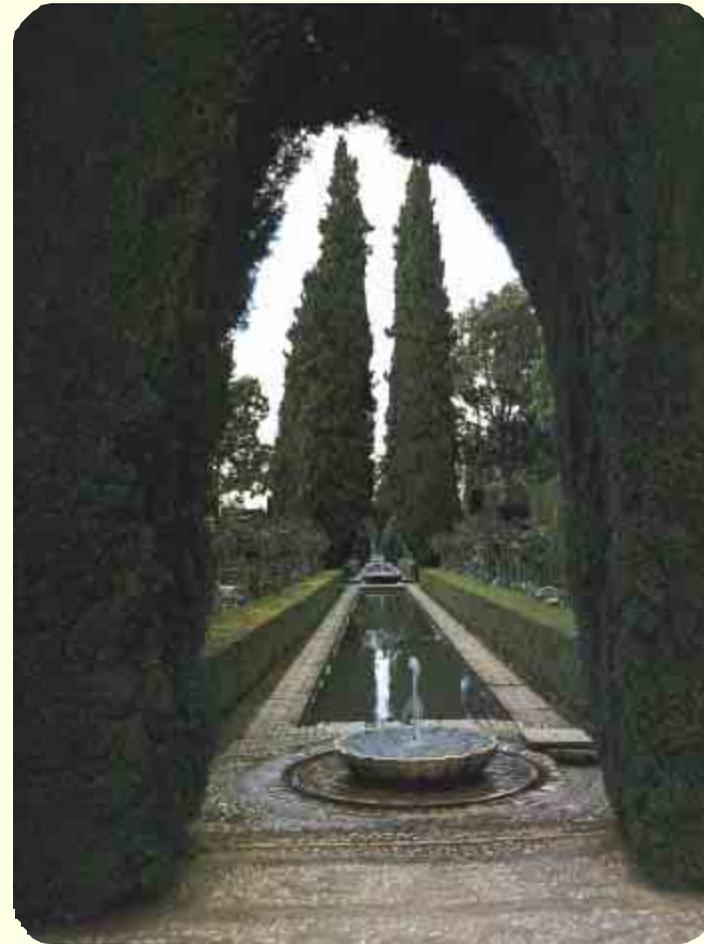
p_____list other activities that you might do.

For questions 2 through 11, circle the letter.

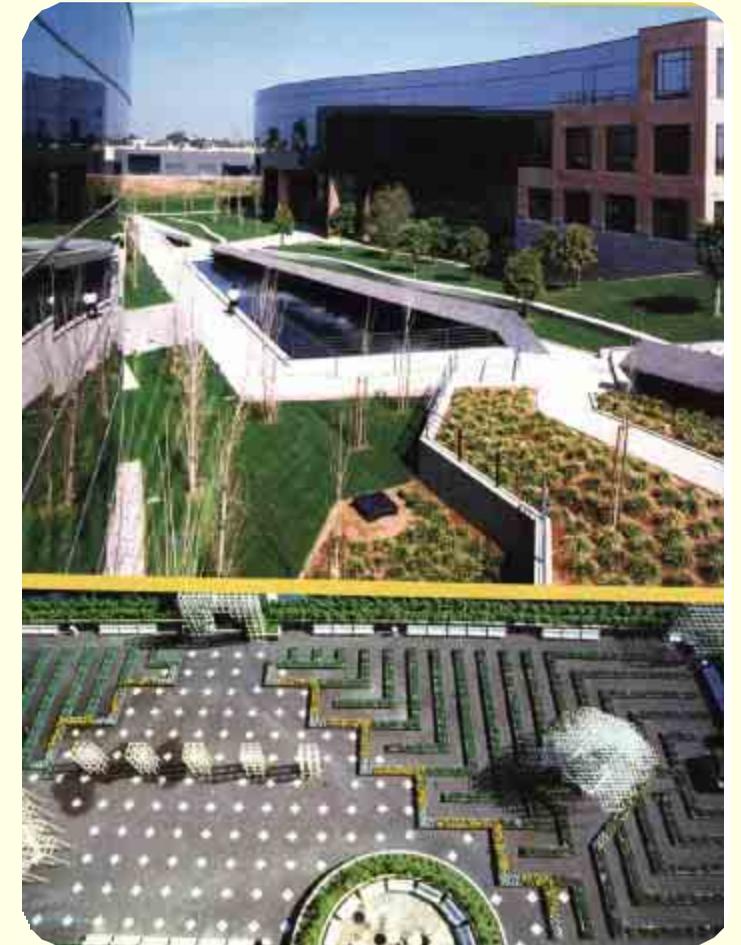
2) From the following examples choose the landscape that is the most relaxing or meditative to you.



A



B



C

3) If you were looking for a place to sit (alone or in a small group) which one of the following would you select ?



A



B



C

4) Choose a water feature that would renew/ revive you.



A



B



C



D

5) In terms of your senses (sight, smell, touch, hearing) which scene invigorates you the most?



A



B



C

6) Which entrance do you find the most inviting? and why?



A



B

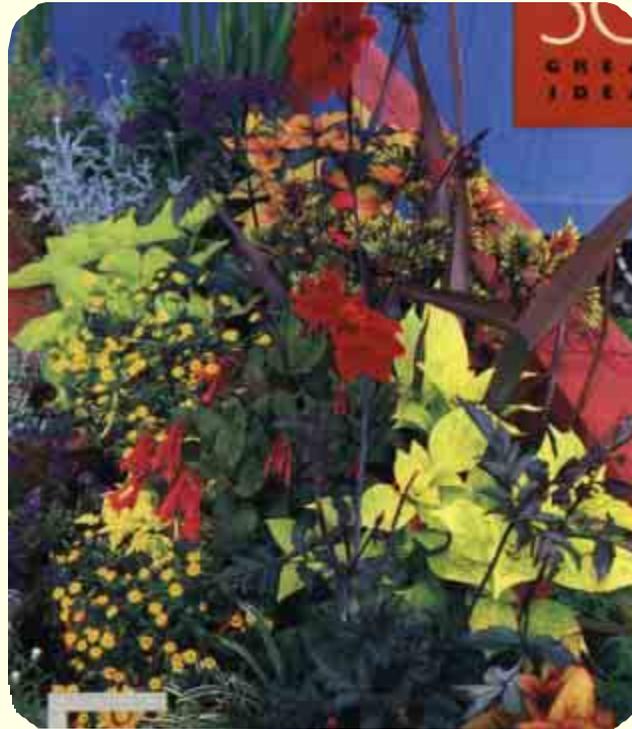


C

7) What colors would you associate with this garden?



A



B



C

8) What pathway would you choose to walk.



A



B



C

9) Which elements would you hope to encounter in the garden?

A



B



C



10) Which use of stones is most interesting (ie. meaningful) to you.



A



B



C

11) If you encountered a labyrinth in the garden which one would you most likely walk.



A



B



C

12) If you could view a garden from the inside of a building, would you be more likely to use the garden?
Yes or No

SURVEY ANSWER SHEET

Name (optional): _____ **Date:** _____

Age: _____ **Sex:** M F **Year Diagnosed:** _____

Circle one: Patient Staff Family Friend

Treatment Stage (circle one): Pre Current Post NA

Pre-question:

If you, a family member, or a close friend were to undergo a cancer procedure at a treatment center or hospital, would you seek out a garden area if it were close to the facility? **Yes** **No**

1. Rank all the activities from 1 to 4 using the scale below.

1 - not at all

2 - sometimes

3 - often

4 - all the time

a	i
b	j
c	k
d	l
e	m
f	n
g	o
h	

For letter p: _____

For questions 2 through 11, circle one.

2. A B C

7. A B C

3. A B C

8. A B C

4. A B C

9. A B C

5. A B C

10. A B C

6a. A B C

11. A B C

6b. Why? (answer on the lines below)

12. Yes No

Short answers for questions 13 – 15.

13. What would you personally like to see in a healing garden?

14. During therapy if you do not feel like walking, would you still wish to sit and view the garden? Explain.

15. At what point during your treatment or recovery would you most likely use the gardens? Explain.

APPENDIX II
SURVEY RESULTS SUMMARY

SURVEY RESULTS SUMMARY

Total number of users: Patients 14, Staff and doctor 7, Family 4

Pre question:

If you, a family member, or a close friend were to undergo a cancer procedure at a treatment center or hospital, would you seek out a garden area if it were close to the facility? Yes or No

All but one person said yes to this question and the data was not used.

Question 1. Rank all the activities from 1 to 4.

1- not at all 2- sometimes 3- often 4- all the time

Activities Table

(Table 1)

			1 (never)			2 (sometimes)			3 (often)			4 (all the time)		
A	P	S/D	F	P	S/D	F	P	S/D	F	P	S/D	F		
a				4	1	3	7	5		3	1	1		
b				9	3	2	3	4	2	2				
c				1	1	1	6	3	3	7	3			
d				3	4		8	1	3	3	2	1		
e	5	4	2	5	1	1	2	1	1	2	1			
f				12	4	3	2	3	1	1				
g	1			3			10	5	3		2	1		
h	7			7	7	3			1					
i	13	7	3	1					1					
j	1			12	6	3	1	1	1					
k	1	2	1	11	3	1		3	1	1		1		
l	2	1		6	2	3	3	3	1	3	1			
m	10	3	2	3	2	2	1	2						
n		1		6	4	2	6	2	2	2				
o		2	1	10	5	3	3							

A = activity

P = patient

S/D = staff/doctors

F = family/friends

Activity "p" responses:

- Have my dog with me.
- Identify flora
- No smoking
- On a nice day or in a covered area, this would be an ideal place for infusion.

Questions 2-12.

Photograph Preferences

(Table 2)

<i>Q</i>	A			B			C			D/ none/all		
	<i>P</i>	<i>S/D</i>	<i>F</i>	<i>P</i>	<i>S/D</i>	<i>F</i>	<i>P</i>	<i>S/D</i>	<i>F</i>	<i>P</i>	<i>S/D</i>	<i>F</i>
2	12	5	3	2	2	1						
3	11	5	3				3		1	Both A&C		
4				12	7	4	2					
5	9	5	1	2			3	2	3			
6	7	3	3	2	2		3	2				
7	3	3		5	1	2	6	3	2			
8	6	4	2	8	2	2		1		Both A&B		
9	14	5	4		2							
10	11	3	1	2	2		1	2	3			
11	3	1		11	4	3		2		None 2		
12	14	5	4									

Q = question A = activity P = patient S/D = staff/doctors F = family/friends

Question 12 A = yes

Question 13. What would you personally like to see in a healing garden?

Patient responses:

- Benches (some way to soften them)
- Fountains, water flowing, pretty flowers
- Fragrant plants
- Plants, rocks, paths with tree branches and flowers crossing overhead, waterfall, benches rocking chair
- Pond with fish
- Butterfly bush
- Gentle movement; some sound (quiet/white noise)
- Variety of plants and flowers; water a must! (stream, pond, creek)
- Place to sit quietly with the sound of water... Big plants and trees interspersed with smaller plants. Leave out scented plants/flowers.
- Scents such as lavender; the sound of water.
- Shade, balance, stone(s), water
- Scented plants, water feature with gentle sound; labyrinth
- Water sculpture flowers

Family and Friends responses:

- Lots of green plants some large trees but also open areas. There should be bushes but also some flowers. I would also like a waterfall and pond with fish.
- Flowing water, lots of green and colorful flowers

- Fragrance (lavender); color (but quite colors)
- Flowers with a lot of different colors, something cheerful

Staff and doctors' responses:

- Sitting areas; water; herbs (especially those with strong sense); flowering plants/bushes
- Benches; trail/labyrinth; plants flowering and no flowering
- Water; comfortable chairs
- Water features with gentle noise; private areas to get the feeling you are alone.
- Waterfall/fountain area of fragrance; labyrinth; places for private meditation; places for group sharing
- A ponds with fish; insects
- Flowers; pathways to walk on
-

This table categorizes (patient, family/friends, and staff/doctors) and shows the frequency that the following elements were chosen.

Activities Summarized for Question 13

(Table 3)

Activities	Patients	Staff/Doctors	Family/Friends
Benches/chairs (soft)	4	2	
Water features (fountains, pond, creek)	9	5	2
Flowers (bright, quiet)	4	3	4
Plants/bushes	8	2	
Walking trail/path	2	2	
Labyrinth	1	2	
Religious statue	1		
Private area; small group	1	3	
Fragrance	3	2	1
Group gather	1	2	
Rocks	3	1	
Large trees			1
Lots of green			2
Open areas			1
Fish	2	1	1
Quiet mood - (white noise)	2	1	
Sculptures	1		

Question 14. During therapy if you do not feel like walking, would you still wish to sit and view the garden? Explain.

- One could meditate or talk quietly with someone.
- If there were someone to talk to
- A time to appreciate life and nature
- Very much a garden; just by being in offers therapy; quietness, calm, many nature activities to observe
- Observing natural materials (small animals, birds, fish); comforting, relaxing, stress reducer
- Peace. During the actual therapy, yes; but after therapy, probably not during recovery.
- I would find it soothing to hear bubbling water and see streams and natural materials.
- Plenty of benches and chairs should be available; cooling shade must be plentiful, on a bench by some water.
- Transfer from reality to nature

Staff and doctor responses:

- Sometimes it's nice just to look around at nature
- To watch the other people and to be outside in a peaceful environment
- View; be able to go in with a wheelchair to observe.
- In a private area, preferably near water
- Definitely. I derive so much peace and introspection just from viewing nature.

Family and friend responses:

- Looking at nature helps me to feel calm - to see the big picture on things
- I find gardens very relaxing and enjoyable.

Patient Responses

(Table 4)

View garden	Patients	Staff/Doctor	Family/Friends
Yes	14	7	4
No	0	0	0

Question 15. At what point during your treatment/recovery, would you most likely use the gardens? Explain.

Patient responses:

- I found it very important during my "chemo" treatment to be able to look out of the window-particularly at the pond and fish.
- Two weeks after each chemo treatment. Treatments are every three weeks; at the end of radiation treatment, too. Tired after each one.

- After I calm down enough to finally think about medical studies and statistics, i.e., after all the treatment.
- During and after treatment
- During the actual infusion and doctor visits
- Throughout
- Uncertain; gardens need to be accessible.
- During chemotherapy; perhaps after it was all over.
- All times. A garden is always a renewing place.
- It would be appreciated at all stages. It is an "escape" place, where things are calming.
- I would go into the garden anytime when I am at the center, unless weather is extremely cold or rough.
- At the time, I take weekly chemotherapy, but often feel like coming to the center for activities, so I would probably visit the garden whenever I am near the hospital. Out side the Oncology clinic (on the street side) is a small garden with a tiny pond. During treatment, I sit where I can watch the activity in the garden.
- All points, depending on aspect of treatment. During (chemo) treatment (very stressful), the view into small outdoor space nice; helped take mind off treatment;before and/or after Loren Smith activities.
- Beginning with no end.

Staff and doctors' responses:

- I would not know for sure since I've never undergone treatment; but probably within the middle and toward the end of treatment.
- Maybe when deciding on treatment options
- Throughout.
- Early on, especially during the most emotional times
- If I were to ever have cancer, I would imagine such a garden would be particularly healing at diagnosis and during the "dark days" of chemo (when side effects are at their peak).
- After completion of treatment
- When feeling depressed or worried.

Friends and family responses:

- In the middle of it, to help get through the various stages of treatment
- All
- Whenever I could, and as long as the weather was nice

Summary Table: Use of Garden

(Table 5)

Use garden	Patients	Staff/Doctors	Family/Friends
All stages	8	1	1
Treatment over	2	11	
2 weeks after treatment	1		
At diagnosis		11	
When side effects at peak		1	
When I could			1
Middle; depressed		1	1
During treatment	2		