GREENING TO PROMOTE URBAN HEALTH: STRATEGIES FOR ENVIRONMENTAL HEALTH PROMOTION INTERVENTIONS

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ABSTRACT

Environmental health and chronic disease are among the greatest public health challenges facing America today. A body of literature exists to support the causal relationships of various chemical, biological, physical, and social factors on health outcomes. Effects of these environmental influences on health have been found to include social, economic, psychological, biological, and physical dimensions, all of which are major contributors to the prevalence of chronic disease. In recent years, health promotion efforts have been broadened to encompass more environmentally-focused strategies, such as improving air and water quality, reducing exposures to hazardous materials, and planning land use for the design of healthier communities. While such advocacy efforts are critical for policy changes related to environmental health, these interventions, alone, are not sufficient to combat the deteriorating conditions that threaten human health and quality of life. First, given the public health significance of this problem, a need exists for greater collaboration among professionals in the fields of environmental health, community planning and development, health promotion, as well as other disciplines. Second, effective environmental health promotion requires a socio-ecological approach, which necessitates that the individual, organizational, and community-level influences on the environment be addressed. Finally, interventions that promote environmental health at these levels should be based upon sound social and behavioral theory, rather than relying solely upon

the technological approaches to risk management that have predominated in the past. Examination of urban greening interventions illustrates both the benefits and practical challenges of utilizing these methods to promote environmental health. Based upon a review of literature in the field, I explore the strengths and limitations of a community-based intervention in the East End of Pittsburgh. Specifically, I evaluate the theory and processes of this program, entitled MERGE II (Methods to Engage Residents and Grassroots in the Environment II), and conclude by translating evaluation findings into recommendations for future environmental health promotion interventions. These recommendations are intended to engage and inform diverse stakeholders in efforts to promote environmental health, and ultimately, to provide effective strategies for reducing morbidity and mortality related to environmental causes.

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PREFACE

A special thank you to the Urban Ecology Collaborative (UEC) of Pittsburgh for their expertise and support.

1.0 INTRODUCTION

Chronic diseases, defined by the U.S. National Center for Health Statistics as any disease lasting 3 months or more, affect more than 90 million Americans and account for 70% of all deaths in the United States (National Center for Chronic Disease Prevention and Health Promotion 2005). In addition to the loss of over 1.7 million lives each year, chronic diseases cause 25 million Americans to live with major limitations in activity due to their disabling conditions (National Center for Chronic Disease Prevention and Health Promotion 2005). Of the nation's $1.4 trillion medical care costs, more than 75% of this economic burden is due to the cost of caring for people with chronic diseases (National Center for Chronic Disease Prevention and Health Promotion 2005). Perhaps more astounding than the devastating effects on human life and the U.S. economy is the fact that many cases of chronic diseases like heart disease, cancer, stroke, diabetes, asthma, depression, obesity, and kidney disease, could be prevented.

Reducing the burden of chronic diseases through prevention efforts is an important function of public health. Preventable risk factors for chronic disease not only include well-known individual lifestyle behaviors, but also encompass a host of environmental conditions. Many studies have demonstrated an association between environmental exposures and the development of chronic diseases or other health problems. Examples of such relationships include that of radon and lung cancer (Darby *et al.* 2006), arsenic and cancer (Tapio and Grosche 2006), lead and nervous system disorders (Patrick 2006), and particulate matter and aggravation

of heart (Sullivan *et al.* 2005) and respiratory diseases (Corburn *et al.* 2006, Environmental Protection Agency 2003, Gent *et al.* 2003).

In addition to the toxic effects of environmental pollutants, the physical features of an environment may have a significant impact on health outcomes. There is a growing body of evidence to support the effects of the built environment on health and disease (Jackson 2002). For example, Lee Rivers Mobley *et al*., in a recent American Journal of Preventive Medicine article, concluded that "the built environment and socio-ecologic characteristics of financially disadvantaged women were associated with BMI [Body Mass Index] and CHD [Coronary Heart Disease]" (Mobley *et al.* 2006). Land use decisions, which have historically involved mainly community planners and developers, are becoming a greater concern to public health advocates. Greater consideration is being given to the ways in which the design of cities and communities may promote or inhibit health. Rapid growth and urban sprawl, for example, may have negative effects on air quality, water quality, and lifestyle behaviors.

While the impact of suburban growth has public health implications for the population at large, it has particularly devastating effects on the already disadvantaged urban poor. The decline of central cities has left many minority groups in areas concentrated with abandoned buildings, failing infrastructures, and dangerous parks and streets (Frumkin 2003). While more affluent people have greater mobility, persons of lower income are likely to be more dependent upon a scarcity of neighborhood resources (Cohen *et al.* 2003). As a result, residents in these areas often have poor access to nutritious foods, fewer exercise opportunities, and increased social isolation, all of which contribute to the risk for chronic and other illnesses (Cohen *et al.* 2003). The mental health of urban residents is also threatened by complex environmental and

social risk factors, including substandard housing, crime, drug use, and conditions of squalor (Frumkin 2003).

The public health interest in the physical environment not only includes these direct and indirect effects of suburbanization and man-made features, but also includes various aspects of the natural environment. In addition to evidence linking trees and other vegetation to clean air and water (McPherson *et al.* 2005, Wilkinson 2005), a number of recent studies also suggest a connection between nature and healthier patterns of individual and neighborhood functioning (Kuo 2003). There is evidence to suggest that contact with nature yields many mental and physical health benefits, as well as a range of social benefits that interact to affect health outcomes. Fewer reports of crime (Kuo and Sullivan 2001) and violence (Kuo 2003), improved coping skills (Kuo 2001, 2003), and stronger neighborhood social ties (Kuo *et al.* 1998) have all been associated with the presence of green spaces. These findings suggest a great potential for public health interventions, particularly in poor urban neighborhoods where risk factors are high and the presence of green space is low. Based on his extensive research on the effects of urban greening, Kuo contends that "it may be that the greatest benefits of urban forestry accrue to some of its historically most underserved constituencies" (Kuo 2003).

The "underserved constituencies" of urban forestry, as referenced by Kuo, are in many ways, synonymous with the racial, ethnic, or other minorities who are often victims of health disparities. Because health disparities can be attributed to a host of complex factors, the opportunity to address a number of these complex issues through urban greening offers a promising socio-ecological approach to promoting public health. However, the effectiveness and sustainability of greening efforts or other environmental health interventions will depend upon a

number of factors, including greater interdisciplinary collaboration among professionals and meaningful community involvement.

This paper addresses several topics surrounding environmental health promotion. To provide context for the reader, I present various aspects of human-environment relationship and highlight the evolution of the environmental health field. Next, I explore the complex challenges of urban ecosystems, with particular emphasis on greening interventions as methods for environmental health promotion in urban settings. I review the utilization of social and behavioral theory in the design of urban greening interventions. Based upon the findings in the literature and data garnered from my practicum experience, I then evaluate the theory and processes of a Pittsburgh-based intervention, entitled Methods to Engage Residents and Grassroots in the Environment (MERGE) II. Finally, I translate the results of this evaluation into recommendations for the future development of successful environmental health promotion interventions.

2.0 LITERATURE REVIEW

2.1 RELATIONSHIP BETWEEN THE ENVIRONMENT AND HEALTH

While the connection between human health and the environment is clear, the complexity of influences on this relationship creates many challenges for public health. Environmental health, according to the National Institute for Environmental Health Sciences (NIEHS), "is the field of science that studies how the environment influences human health and disease" (NIEHS 2005). Though accurate, this definition may be arguably incomplete in that it suggests only a one-way relationship, rather than a reciprocal one. Promotion of environmental health requires that we not only understand how surroundings influence well-being, but we must also understand human behaviors and how they affect the resources upon which we depend for life.

According to the World Health Organization's (WHO) Commission on Health and the Environment, "health is only possible where resources are available to meet human needs and where the living and working environment is protected from life-threatening and health-threatening pollutants, pathogens and physical hazards" (WHO 1992). While there has been much progress over the last century in reducing environmental hazards and increasing life expectancy, there remains a significant opportunity to enhance health through environmentally-focused interventions.

Waterborne diseases such as cholera and typhoid fever were major health threats in the U.S. during the early part of the 20th century. Improvements in sanitation and drinking water treatments have drastically reduced the death rates from waterborne diseases. However, many other environmental conditions have since emerged to threaten health and quality of life.

Today, air pollution is among the most significant environmental health threats in the U.S. Air pollution has been associated with increased symptoms of illness, acute onset or exacerbation of existing disease, and premature deaths. Vulnerable populations, including children, the elderly, and asthmatics, are particularly sensitive to air pollution (Environmental Protection Agency 2003). This fact, coupled with our nation's trends in aging and increasing prevalence of asthma, has significant implications for the future of public health.

The prevalence of asthma among children increased by an average of 4.3% per year between 1980 and 1996. According to the Centers for Disease Control and Prevention (CDC), low-income populations, minorities, and children living in inner cities experience disproportionately higher morbidity and mortality due to asthma (CDC unknown year). Given that 25% of children in America live in areas that regularly exceed the Environmental Protection Agency's (EPA) limits for ozone (The President's Task Force on Environmental Health Risks and Safety Risks to Children 2000), reductions in air pollution levels are imperative to protect the health of our nation's children.

In addition to ensuring the health of the young, a healthy environment is also critical to protect the health of older Americans. Air pollution has been shown to aggravate chronic diseases, and in some cases, may even contribute to their development (EPA 2003). Given the prevalence of chronic disease in the overall U.S. population and, in particular, the disproportionate prevalence among older adults, the need to reduce dangers of air pollution is

evident. As our nation's baby-boomers approach retirement age, there are growing concerns about the need to provide long term care for an overwhelming number of older adults with chronic conditions. Population projections by the U.S. Census Bureau indicate that the number of persons aged 65+ is expected to increase from approximately 35 million in 2000 to an estimated 71 million in 2030 (CDC 2003). Given that approximately 80% of all Americans aged 65+ have at least one chronic condition, and 50% have at least two (National Center for Chronic Disease Prevention and Health Promotion 1999), this suggests the potential for an unbearable strain on public and personal resources. Thus, minimizing the burden of chronic disease, as well as the complications induced by air pollution, is of critical importance to public health.

The effects on air quality are but one health-related consequence of the built environment. Urban sprawl, which is characterized by uncontrolled, poorly-planned growth patterns, not only contributes to higher transportation rates, which in turn, increase the automobile emissions that pollute the air, but it also encourages sedentary lifestyle behaviors. As suburbs are developed and distances between schools, malls, and places of employment increase, people tend to rely more upon their vehicles for mobility and consequently, engage in less physical activity (Jackson and Kochtitzky 2001). This reduction in the "walkability" of communities is a function of the built environment that has significant implications for public health. According to the Surgeon General, approximately 200,000 deaths each year are attributable to a sedentary lifestyle (National Association of County & City Health Officials 2006). The benefits of physical activity include reduced risk for many chronic diseases, such as obesity, heart disease, diabetes, stroke, and certain types of cancer. Additionally, regular exercise relieves symptoms of depression and anxiety, and improves overall quality of life

(DHHS 1996). By presenting either opportunities for or barriers to exercise, community design features may have dramatic effects on the morbidity, mortality, and quality of life of Americans.

As with most major environmental threats facing America today, the effects of land use on health are multifaceted. In addition to reducing air quality and discouraging physical activity, poor urban planning and rapid development often result in a loss of green space, which presents a number of potentially negative health effects. When vegetation is removed to make way for new development, both surface and groundwater quality are compromised. Rainfall, rather than following a slow and natural filtration process, becomes surface runoff that reaches rivers and streams before pollutants can be adequately filtered (Jackson and Kochtitzky 2001). The result is often contaminated water following heavy rainfalls, which not only poses a threat to wildlife, but has also been shown to increase the risk for waterborne disease outbreaks among people (Curriero *et al.* 2001). In addition, overdevelopment, involving the removal of natural vegetation, has other dangerous health effects including an increased potential for flooding and increased health risks of heat-related illness (Jackson and Kochtitzky 2001).

Clearly, there are countless ways in which the natural and built environment impact human health and disease. Based on a growing understanding about this relationship, public health officials have recognized environmental health as an area of high priority. The U.S. Department of Health and Human Services (DHHS) identified environmental quality as a leading health indicator, which is being used to evaluate the health of the nation as part of Healthy People 2010. Specifically, the Focus Area 8 of Healthy People 2010 aims to "promote health for all through a healthy environment" (DHHS 2000).

Koplan and Fleming, in their commentary on *Current and Future Public Health Challenges* (2000), also recognized environmental health as a priority. The need to "clean up

and protect the environment" was listed by the authors as one of ten challenges facing public health in the decades ahead (Koplan and Fleming 2000). Despite receiving such attention in the public health arena, environmental issues are often easily dismissed as being secondary to other pressing issues, both by professionals in other disciplines and by the many members of the general public. Even with all that is known about the multitude of ways in which our environment influences health, many people remain unaware of or negate the extent of this relationship. Thus, human behaviors continue to destroy the resources upon which we depend for life.

Understanding the human dimension is critical to promoting environmental health. Why, for example, are some individuals or groups more likely to engage in environmentally-responsible behaviors than others? What specific factors influence environmental behavior? If air pollution, water pollution, the effects of sprawl, and other pertinent hazards are to be controlled, then the human behaviors which impact these conditions must be addressed. Policy-level changes, such as the Clean Water Act and Clean Air Act, have had a significant influence on environmental behaviors, particularly among commercial industries. However, the establishment of standards that limit pollution and imposition of penalties upon violators of such standards is just one of many intervention strategies that are needed. Individual and community-level influences must also be addressed in order to promote a more sustainable relationship with the environment.

2.2 ENVIRONMENTAL HEALTH: PAST, PRESENT, & FUTURE

According to Yassi *et al*. (2001), today's environmental concerns are part of a "third wave" of concerns that have occurred within the field throughout time. Concerns about infectious diseases from adulterated food and contaminated water dominated the first wave, which began in Europe during the nineteenth century. Around the time of World War II, a second wave emerged. This phase involved two key movements, including: (1) the ecology movement, which focused on conservation of natural resources and preservation of historic sites, and (2) control toxic substances, which have been a negative consequence of industrialism. The third and current wave emerged in the 1980s as a function of the accelerated rate of economic development, a trend which is evident today in patterns such as sprawl (Yassi *et al.* 2001).

Due to the dynamic relationships between living organisms and the environment, the definition of environmental health has evolved along with our changing understanding of it. Offering a more expansive definition than the previously-described NIEHS definition, the World Health Organization (WHO), defines environmental health as:

> those aspects of human health, including quality of life, that are determined by physical, biological, social, and psychosocial factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling, and preventing those factors in the environment that can potentially affect adversely the health of present and future generations (WHO 2006).

The U.S. DHHS also recognizes the array and complexity of influences on environmental health (Figure 1), and has adopted the following definition in the development of its Healthy People 2010 objectives:

> In its broadest sense, environmental health comprises those aspects of human health, disease, and injury that are determined or influenced by factors in the environment. This includes not only the study of the direct pathological effects of various chemical, physical, and biological agents, but also the effects on health of the broad physical and

social environment, which includes housing, urban development, land use and transportation, industry, and agriculture (DHHS 2000).

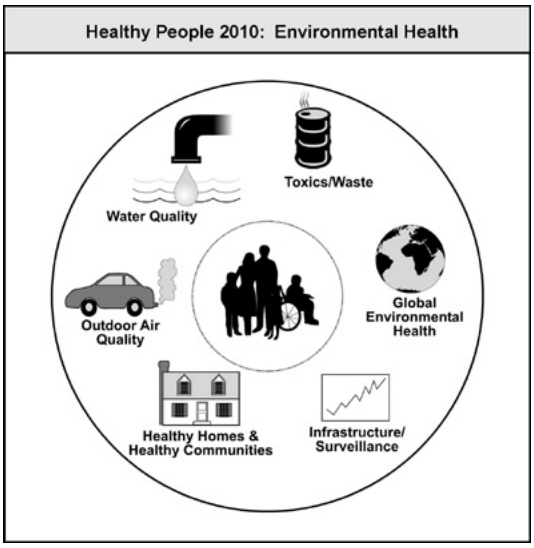

Figure 1: Healthy People 2010: Environmental Health (DHHS 2000)

As a result of this broad view of environmental health which is common today, the importance of interdisciplinary collaboration has become increasingly apparent. In particular, the need for partnerships between land use planners and public health professionals has recently been recognized. For example, the National Institute of Environmental Health Sciences is paying for the five-year evaluation of communities located across the U.S. to assess the impact on physical activity and obesity of local design and transportation changes (NIEHS 2004). Similarly, the Robert Wood Johnson Foundation's "Active Living by Design Program" is supporting 25 community partnerships to develop and implement collaboration among a variety of organizations in public health and other disciplines, such as city planning, transportation, architecture, recreation, crime prevention, traffic safety and education, as well as key groups concentrating on land use, public transit, non-motorized travel, public spaces, parks, trails, and architectural practices that advance physical activity (Robert Wood Johnson Foundation). Also leading this initiative toward greater collaboration are the American Planning Association

(APA), the National Association of County and City Health Officials (NACCHO), and the Centers for Disease Control and Prevention (CDC). Based on their shared goals, which "include understanding the impact of neighborhood design on residents' ability to be physically active, the impacts of development on natural systems such as aquifer recharge and groundwater contamination, and the effects of transportation facilities and automobile use on air quality and personal mobility," these national partners have taken a number of steps to identify and reduce the barriers related to trans-disciplinary collaboration. Among their most noteworthy contributions has been the development of tools and resources for facilitating collaboration, including the development of a jargon fact sheet, entitled *Public Health Terms for Planners & Planning Terms for Public Health Professionals.* The purpose of this and similar tools are to minimize language barriers that may inhibit communication between professionals in the planning and public health fields (NACCHO 2006).

Integrating public health into land use planning is one of many necessary strategies for addressing environmental health in a socio-ecological context. In addition to cross-disciplinary collaboration, the need for greater collaboration among professionals within various public health disciplines has also been recognized. As Maller *et al*. write in a recent journal article for *Health Promotion International*:

> To maximize use of 'contact with nature' in the health promotion of populations, collaborative strategies between researchers and primary health, social services, urban planning and environmental management sectors are required. This approach offers not only an augmentation of existing health promotion and prevention activities, but provides the basis for a socio-ecological approach to public health that incorporates environmental sustainability (Maller *et al.* 2006).

Others (Yassi and Sidebottom 2005) have noted this need when examining these two fields (health promotion and environmental health) in the workplace. They recognized the increasing need for a more holistic approach that focuses on both health promotion which is

rooted in “wellness and healthy lifestyle choices” as well as environmental/ occupational health which is dictated by workplace health and safety requirements (Yassi and Sidebottom 2005).

Until recently, the respective fields of environmental health and health promotion have existed somewhat independently of one another, with little intersection between the two disciplines. These fields not only differ in their theoretical and science bases and conceptualizations of risk, but they also employ different intervention strategies. Whereas environmental health interventions have often sought to minimize exposure, health promotion interventions have focused on community organizing and behavioral change strategies (Kegler and Miner 2004). Howze *et al*. (2004) advocate for the development of “environmental health promotion” as an emerging field that aims to bridge the gap between the two domains. The authors suggest that the complex nature of most environmental issues requires change at many levels, including individual, community, and organizational levels. Traditional environmental health intervention strategies, however, have relied upon technological approaches to risk management, which have not translated well among all levels (Howze *et al.* 2004). Consequently, insufficient communication, lack of community involvement, and unsuccessful outreach methods have been identified as barriers to effective environmental public health practice (NACCHO 2001). By integrating with environmental science the expertise of health educators and social scientists who are skilled at mobilizing communities and promoting change at many levels, environmental health promotion can begin to overcome these known barriers (Howze *et al.* 2004).

2.3 HEALTH DISPARTIES AND THE URBAN ENVIRONMENT

Urban environments have a unique set of challenges that may be addressed through the proposed model of environmental health promotion. The complex issues affecting many urban residents and the problem of health disparities that result from those issues are all too familiar in the field of public health. While life expectancy has increased in the United States and the general health of the population has improved over time, the disparate rates of morbidity and mortality among minority populations continues to grow (Blackman and Masi 2006, CDC 2002, Villarruel 2006). Segregation and access issues contribute largely to the health inequalities that affect the poor, people of color, and other marginalized groups. In particular, the deterioration of inner-cities as a consequence of "white flight" has left many of these disadvantaged groups to live in urban environments that are not supportive to health and well-being. Limited access to health and social services, increased risk of crime and violence, and increased exposure to harmful pollutants are among the health threats facing many of today's urban residents.

In order to reach the goal of eliminating health disparities, as established through Healthy People 2010, it is necessary to address the underlying determinants of these inequalities. A number of studies have shown increased environmental risk is associated with race, income, and class (Downey and Willigen 2005, Olden and White 2005). In their recent review of literature on differential exposure to a variety of environmental components, Evans and Kantrowitz concluded that "the poor and especially the nonwhite poor bear a disproportionate burden of exposure to suboptimal, unhealthy environmental conditions in the United States" (Brulle and Pellow 2006). Such findings reinforce the need to "promote health for all through a healthy environment," as a strategy by which to reach the larger Healthy People 2010 goal of eliminating health disparities. According to NACCHO, one way that health agencies can contribute to

achievement of these goals is by pushing for "more green spaces, parks and other recreational areas for natural air filtration purposes, particularly in more industrial areas and neighborhoods" (NACCHO 2006). However, for many inner-city residents who struggle with conditions of inadequate housing, unsafe neighborhoods, and unemployment, green spaces are often viewed to be competing with these basic human needs, rather than as part of the solution to such problems.

Kreuter *et al*. (2004) use Ritter and Webber's term, "wicked problems," to characterize the complexity of environmental health issues. The authors assert that, because their "definitions and solutions are entwined in diverse social, economic, political, cultural, and value systems," environmental problems must be recognized "wicked problems" and approached with an ecological perspective (Kreuter *et al.* 2004). They further support that, unlike "tame problems", which usually have clear and workable solutions, wicked problems are best resolved when interventions engage community stakeholders in a meaningful way (Kreuter *et al.* 2004).

As with any health promotion effort, meaningful community involvement in greening interventions is essential if these efforts are to be effective and sustainable. Thus, designing interventions that make greening a relevant solution to residents' concerns is critical. By incorporating a sound theoretical framework into the design of interventions, urban greening efforts may be more successful at engaging urban residents, thereby increasing their overall impact on health and quality of life.

2.4 ENVIRONMENTAL HEALTH PROMOTION: THEORETICAL CONSIDERATIONS

Published literature on environmental health interventions has focused largely on the removal or reduction of hazardous substances, rather than on social or behavioral processes (Srinivasan and Dearry 2004, Stokols *et al.* 2003). However, several studies (Freudenberg 2004, Johnston and Shimada 2004, Kegler and Miner 2004, Parker *et al.* 2004) have begun to explore how the application of health promotion models and incorporation of social and behavioral theory may serve to enhance the traditional environmental health interventions. Consistent in this literature is an emphasis on community capacity and empowerment in environmental health promotion.

Goodman et al. (1998) described community capacity according to two complimentary definitions, which are as follows: (1) *the characteristics of communities that affect their ability to identify, mobilize, and address social and public health problems,* and (2) *the cultivation and use of transferable knowledge, skills, systems, and resources that affect community and individual-level changes consistent with public health-related goals and objectives*. According to the authors, community capacity is a prerequisite for effective community-based health promotion and disease prevention programs. In an effort to better operationalize capacity, they identified and explained ten dimensions that can be used to assess and develop community capacity. The ten dimensions include participation and leadership, skills, resources, social and organizational networks, sense of community, understanding of community history, community power, community values, and critical reflection (Goodman *et al.* 1998).

Based on these ten dimensions, Freudenberg examined the determinants of community capacity for environmental health promotion (2004). Because of its emphasis on the process by which capacity is created, Freudenberg suggested that the second definition proposed by

Goodman et al. may be most useful in guiding the design of capacity-building interventions. Table 1 illustrates the dimensions of community capacity that are relevant to environmental health action, as indicated by Freudenberg.

Table 1: Dimensions of Community Capacity Relevant to Environmental Health Action (Freudenberg, 2004)

Dimension	Definition
Leadership	Presence of experienced, skilled leaders willing to address environmental health issues
Participation	Extent to which broad cross section of citizens participate actively in addressing environmental health concerns
Skills	Level of relevant organizational, scientific, political, and information-seeking skills among range of participants
Resources	Financial, human, and social resources available for addressing environmental health concerns
Social and organizational networks	Horizontal and vertical linkages among participants and their organizations and other relevant local regional and national groups
Sense of community	Extent to which participants have shared identity related to community as a physical and social environment and a willingness to take action based on that identity
Understanding of community history	Awareness of previous efforts by a community to address related problems and an understanding of how the community fares relative to others
Community power	Ability to act to make or resist change that affects the community's environment
Community values	Shared norms and standards related to environment, social justice, and democracy
Critical reflection	Ability to analyze successes and failures, to reflect on one's experience, and to assess the arguments and motivation of other stakeholders

Freudenberg further elaborated on these definitions by presenting a model for understanding and studying the relationships between community capacity and environmental health. The model, according to its author, was constructed to "provide a framework understanding how communities respond to environmental health concerns and identifying intervention points where public health professionals can help to build community capacity to respond" (Freudenberg 2004). Based on his review of literature and testing of the conceptualized model against four case histories of community environmental action, Freudenberg concluded by offering specific actions that public health professionals can take to strengthen each dimension of community capacity. These strategies are listed in Table 2.

Table 2: Public Health Strategies to Build Community Capacity for Environmental Health Action (Freudenberg, 2004)

Dimension	Public Health/Community Development Strategies
Leadership	Prepare environmental activists to be leaders, educate community leaders about environmental issues, create forums to bring formal and informal community leaders together to consider environmental health issues, assist with strategic planning and policy development
Participation	Offer incentives for participation, conduct outreach to uninvolved sectors of the population, provide residents with voice in making key decisions
Skills	Offer skills workshops and technical assistance on environmental health issues, create opportunities for participants to exchange skills, assist efforts to link those with skills inside and outside community to those with needs
Resources	Serve as bridge between community and external resources (e.g. state health department, foundations), assist participants to identify and develop local assets, contribute staff time to community investigations, build capacity for advocacy, assist in writing grants and working with funders to support community groups
Social and organizational networks	Support and nurture local, regional, and national coalitions that bring together concerned citizens, environmental activists, scientists, health professionals, and others for environmental health promotion activities
Sense of community	Support community events that build sense of identity; create safe spaces for community residents to discuss, analyze, and study environmental health issues
Understanding of community history	Assist residents to study and analyze previous health and environmental issues facing community, prepare reports aimed at community residents that develop such understanding
Community power	Join coalitions for environmental health to enhance community strength, provide community with information so they can confront special interests effectively, support political reforms that level playing field for those with less influence, provide scientific information that can be used in political arena
Community values	Articulate values that underlie public health efforts, defend community values on health against disease promoting organizations
Critical reflection	Assist community residents to analyze and reflect on successes and limitations of their actions to promote environmental health

Kegler and Miner (2004) also presented community capacity as a proximal target for reaching the ultimate goal of improved environmental health. The authors compared the Protocol for Assessing Community Excellence in Environmental Health (PACE EH) with the PRECEDE-PROCEED model used in health education to identify promising interventions for environmental health promotion. They reviewed various intervention strategies used within the models, as well as their levels of application and associated targets of change. As a result of their findings, Kegler and Miner suggested that increasing community capacity can lead to changes in the environment that will ultimately contribute to the long-term outcomes of reduced environmental risk and improved health status. Based upon the theory that "communities with higher levels of capacity are better able to identify and solve collective problems," Kegler and

Miner contend that interventions targeting community capacity "have the potential to help communities address their priority issues" (2004).

Empowerment, deemed by Goodman et al. (1998) as one dimension of capacity (i.e. community power), has also been emphasized as a goal of environmental health promotion efforts (Parker *et al.* 2004, Westphal 2003). While the concepts of capacity and empowerment have been used interchangeably, Goodman et al. distinguish capacity as a broader construct. They acknowledge, however, that "empowerment shares characteristics with capacity" (Goodman *et al.* 1998).

A number of definitions have been used to describe empowerment (Perkins and Zimmerman 1995, Wallerstein 1992, Westphal 2003, Zimmerman 1995). Central to these definitions is an emphasis on helping communities to help themselves, rather than on assuming a paternalistic role in which the provision of goods and services is the primary goal. Wallerstein refers to community empowerment as "a social action process that promotes participation of people, organizations, and communities towards the goals of increased individual and community control, political efficacy, improved quality of community life, and social justice" (1992). Embedded in this definition is the notion that community empowerment includes individual, organizational, and community-level influences and controls. Israel et al. (1994) support this assumption, stating that "Empowerment at the individual level is linked with the organizational and community levels through the development of personal control and competence to act, social support, and the development of interpersonal, social, and political skills."

Like capacity, theories on empowerment have recognized this construct as both a process and an outcome (Goodman *et al.* 1998, Perkins and Zimmerman 1995, Wallerstein 1992,

Zimmerman 1995). According to Perkins and Zimmerman, distinguishing between empowering processes and outcomes is critical to understanding empowerment theory (Perkins and Zimmerman 1995, Zimmerman 1995). Empowering processes, Zimmerman explained, are those that "might include opportunities to develop and practice skills, to learn about resource development and management, to work with others on a common goal, to expand one's social support network, and to develop leadership skills" (1995). Like Wallerstein, Zimmerman emphasized that empowering processes may occur at the individual, organization, and community levels of analysis. Empowered outcomes, which Zimmerman describes as a "consequence of empowering processes," refer to the "specific measurement operations that may be used to study the effects of interventions designed to empower participants" as well as those that may be used to "investigate empowering processes and mechanisms" (Zimmerman 1995). Measures of mastery and control, resource access and mobilization, and sociopolitical context and participation are among the variables that may serve as indicators of empowered outcomes across various levels of analysis (i.e. individual, organizational, and community levels) (Westphal 2003, Zimmerman 1995). Section 3 of this paper describes how empowering processes (e.g. training of community residents) and empowered outcomes (e.g. increases in knowledge and skills) were considered in the evaluation of a Pittsburgh-based intervention.

2.5 URBAN GREENING INTERVENTIONS: CHALLENGES AND STRATEGIES

Capacity building and community empowerment have not only been recognized as broad strategies for environmental health promotion, but they have also been noted as specific approaches for urban greening interventions (Johnston and Shimada 2004, Westphal 2003).

Because they offer more sustainable solutions than do many "one-shot" greening initiatives, strategies that focus on these constructs may prove effective in addressing today's challenges faced by urban foresters. Among the common challenges to community participation in urban greening, as revealed in the literature, are an under-representation of minority groups in greening efforts (Johnston and Shimada 2004, McDonough 2003) and an inadequate understanding of targeted communities by urban foresters (Austin 2002, McDonough 2003).

Johnston and Shimada (2004) proposed capacity building as an important strategy for engaging diverse cultural groups in urban forestry. Increasing ethnic communities' access to expertise and resources, said the authors, is important to building such capacity. They suggested that "training schemes and other initiatives should be organized to focus on building a community's capacity to develop, acquire, and gain access to the skills required to plan and manage projects" (Johnston and Shimada 2004). In particular, they emphasized that the design of community programs should reflect a balance of education, consultation, and participation strategies (Johnston and Shimada 2004).

Knowing the preferences, concerns, and motivations of residents may also be a prerequisite to engaging them in greening and forestry efforts (Austin 2002, Johnston and Shimada 2004). One way to make community involvement in greening more meaningful is to link benefits of urban greening/forestry with the more pressing economic and social issues that are of concern to residents (Johnston and Shimada 2004, Westphal 2003). Like Israel *et al.* (1994), Westphal advocated that, when making such connections, it is critical to recognize whether such benefits are to be realized at the individual, organizational, and community level (2003). Although benefits at one level can "have a ripple effect to the other levels," Westphal warns that program organizers should not assume that all interventions will have such a socio-

ecological effect (2003). Rather, the author emphasizes that "clarity about who gets which benefits is important, particularly when designing or gathering support for a program" (2003).

In addition to serving as motivators for involvement, Westphal noted that social benefits may also emerge as empowerment outcomes from urban greening (Westphal 2003). Drawing from empowerment theory, and specifically, the ideas of Rappaport, Wallerstein, Perkins, and Zimmerman, Westphal examined empowerment outcomes from urban greening in low- to moderate- income African American neighborhoods in Chicago (2003). Indicators of empowerment, as utilized by Westphal, are listed in Table 3.

Table 3: Indicators of Empowerment (Westphal, 2003)

Efficacy
Mastery
Control
New resources
Participation
Increased skills
Proactive Behavior
Critical awareness
Sense of competence
Shared leadership
Meeting organizational goals
Key brokers in decision making
Extended influence
Connections to other community groups
Responding to threats to quality of life

Significant to Westphal's interpretation of findings was Zimmerman's differentiation between empower*ed* and empower*ing*:

> When people are empower**ed**, they, themselves, show mastery of skills, control over aspects of their environment, and an ability to make changes that lead to a higher quality of live for themselves (and sometimes others). When people are empower**ing**, they are able to foster empowerment in others, facilitating changes in another individual or group to make changes in their circumstances. An individual might become empowered, but not be empowering (Westphal 2003).

Based on these distinctions, Westphal found that "empowering local organizers make for empowering projects," but cautioned forestry practitioners to "watch out for empowered but not

empowering local participants, particularly those who dominate a project" (2003). Perhaps most importantly, Westphal's investigation affirmed that empowerment outcomes may not be recognizable if measured too early or too late, and that recognizing empowerment as a process is key to measuring success (2003).

The concepts of capacity-building and empowerment, as presented above, provide a useful framework for examining the theoretical basis for and processes of community-based urban greening interventions. The pages that follow will describe how these constructs informed the theory and process-oriented evaluation of a Pittsburgh-based greening initiative, entitled Methods to Engage Residents and Grassroots in the Environment (MERGE) II.

3.0 PRACTICUM EXPERIENCE: METHODS TO ENGAGE RESIDENTS AND GRASSROOTS IN THE ENVIRONMENT (MERGE) II

In pursuit of a Master's Degree of Public Health through the University of Pittsburgh's Department of Behavioral and Community Health Sciences, I completed a practicum experience, which provided an opportunity to apply knowledge and skills gained in the classroom. My practicum experience took place from November 2005 through July 2006 at the Urban Ecology Collaborative (UEC) of Pittsburgh, and focused on evaluating the theory and processes of a program called Methods to Engage Residents and Grassroots in the Environment (MERGE) II.

3.1 PROGRAM BACKGROUND

The purpose of the Urban Ecology Collaborative (UEC) is to "cultivate healthy, safe and vibrant cities through collective learning and united action" (Boston College). The UEC is a partnership of universities, non-profit organizations, and state, local and federal officials working in cities in the Eastern United States. Participating cities currently include Boston, New Haven, New York City, Pittsburgh, Baltimore and Washington, D.C.

In June 2004, the UEC began the initial phase of the MERGE project, entitled MERGE I. The project was developed by members of the six partnering UEC cities with the goal of identifying methods for linking the concerns of local residents and organizations to urban

community environmental initiatives. Through funding from the USDA Forest Service, the UEC partners collaborated to create a shared framework for meeting MERGE I project objectives, which included the following: (1) development and administration of a survey instrument to learn more about neighborhood residents' concerns, (2) holding community forums to share survey results and discuss successful methods for grassroots outreach, (3) conducting pilot projects to test and evaluate outreach methods, and (4) sharing results, ideas and next steps for the MERGE project. An evaluation of MERGE I provided information about primary themes for effective outreach methods. It also identified the need for technical skill development for community leaders to employ those outreach methods.

Based on these findings from MERGE I, the partners of the Pittsburgh UEC branch initiated a second phase of the project, or MERGE II, in November 2005. The goal of this second phase was to provide training for community leaders, as well as to further test and refine the outreach strategies identified through MERGE I. Thus, the practicum experience focused on evaluating the theory and processes of the second project phase in Pittsburgh, MERGE II.

Partners within the UEC of Pittsburgh include the Nine Mile Run Watershed Association, PA Cleanways of Allegheny County, the Pittsburgh Parks Conservancy, the Urban Farming Initiative, the Pennsylvania Resources Council, Conservation Consultants Inc., Friends of the Riverfront, the Student Conservation Association, and the University of Pittsburgh. Various committees exist within the overall partnership, so that members may focus their efforts on environmental issues and projects that are most relevant to themselves or their organization.

MERGE II functioned as a project of the Restoration Tools Committee, and the Committee Chair oversaw the administration of the project, as well as the activities of its planning and evaluation team. The initial team members consisted of six individuals, including

three representatives of UEC-member agencies, two university partners, and one community volunteer.

The primary objective of MERGE II was to increase the capacity of community leaders and other residents to conduct environmental projects within their Pittsburgh neighborhoods. Urban greening was emphasized as a focus for the projects. Specific activities of the MERGE II program included a comprehensive training for the leaders in the form a two-part, community-based workshop. Topics of relevance/motivation, partnering, outreach, grant-writing, and resources, were included in the training. The event was held at the East Liberty Presbyterian Church (an in-kind contribution of space), situated in the East End of Pittsburgh. This selection of the event location was based upon the provision of funds from the City of Pittsburgh, District 8, which encompasses the East Liberty community.

Promotion of the MERGE II training was conducted through various methods, including electronic, print, and word-of mouth communications. Email invitations were sent approximately 125 individuals, who were identified by the Pittsburgh UEC based on their status as UEC partners or their previous involvement in regional environmental or community efforts. In addition, posters (8.5 x 11 inches in size) were displayed on bulletin boards areas at ten public locations in the East End of Pittsburgh, including supermarkets, community centers, coffee shops, and a community library. An advertisement for the event was also placed in the Pittsburgh Post-Gazette, a regional newspaper. The ad was featured for two days, including the day prior to and the day of the first workshop date.

Workshop facilitators included three members of the MERGE II planning committee, who led the sessions on motivation/relevance, outreach, resources, and partnering. A representative from a local funding agency, the Sprout Fund, presented the session on grant-

writing. Two community leaders, both participants of MERGE I, offered testimonials about their experiences in leading with urban environmental projects.

In addition to the workshop, the MERGE II program also included plans for a subsequent activity, which was to provide opportunities for the trained leaders to obtain mini-grants to support the implementation of "pilot" environmental projects in their urban neighborhoods. However, funding restrictions, which are discussed in the Results and Limitations sections of this paper, prevented this portion of the program from being carried out.

3.2 PROGRAM EVALUATION OBJECTIVES

As an initial program evaluation of MERGE II, this study focused primarily on assessment of both the MERGE II program theory and the program process.

According to Rossi et al. (2004), a sound program theory is critical to the success of a program. The authors further assert that "if the program theory is not sound, there is little reason to assess other evaluation issues, such as the program's implementation, impact, or efficiency" (Rossi *et al.* 2004). Thus, the overall goal of evaluating the program theory or logic was to determine if the program design reflects valid assumptions about the nature of the problem and represents a feasible approach to resolving it. Because the MERGE II program theory was not previously articulated and recorded, but rather, was implicit, it was first necessary to articulate what the MERGE II program was supposed to do and what results were expected. Once expressed, the program theory could then be evaluated in terms of its plausibility. Therefore the specific objectives of the program theory evaluation were as follows:

Objective 1: To describe the MERGE II program theory as intended.

Objective 2: To determine if the MERGE II program theory demonstrates a logical approach to reaching the desired changes.

Kreuter et al. (2004) contend that "the quality of the process may be the best benchmark of the extent to which the wicked problem is being resolved." Thus, another broad goal of the evaluation was to assess the processes MERGE II. Specific objectives of the process evaluation included the following:

Objective 3: To describe the MERGE II program process as planned.

Objective 4: To determine the extent to which the MERGE II activities, as implemented, were consistent with the planned processes.

Objective 5: To determine if the MERGE II activities reached the appropriate recipients.

Results of this evaluation are intended to guide MERGE program improvement, to provide a basis for further evaluation of MERGE, and to inform the development of future urban environmental interventions by the UEC of Pittsburgh and its national partners.

3.3 METHODS

According to Rossi et al. (2004), the three interrelated components of a program theory are the program impact theory, the service utilization plan, and the program's organizational plan. While consideration was given to all three components in assessment of the MERGE II program theory, a primary focus of this theory evaluation was on assessing the program's impact theory and organizational plan.

The first step in assessing the program impact theory was to explicate it based on the organizers' assumptions. Sources of information utilized to elicit these assumptions included the following: (1) review of (MERGE I and MERGE II) program documents, (2) interviews with program organizers, and (3) review of social science literature. With the W.K. Kellogg Foundation's Logic Model Development Guide (2004) serving as a tool, draft descriptions of the program impact theory were generated to illustrate the underlying assumptions about how and why the MERGE II is supposed to work. Specifically, the Theory-of-Change Template, as seen in Figure 2 below, was utilized to provide a structure for representing the program theory logic. Drafts were discussed with program organizers to obtain their feedback, and the model was refined based their input.

Once the program theory was clearly articulated, its logic and plausibility were reviewed. Specifically, the MERGE II program theory was compared with findings from research. Because evaluation results of similar programs were limited in the literature, research on social and behavioral processes served as the primary framework for assessing the program theory. Literature on community capacity and empowerment theory was particularly relevant to evaluation of the MERGE II program theory. In addition, several general issues about the logic and plausibility of the program theory were also addressed, based on Rossi et al.'s recommended questions for addressing this component (2004). These include:

- Are the program goals and objectives well defined?
- Are the program goals and objectives feasible?
- Is the change process presumed in the program theory plausible?

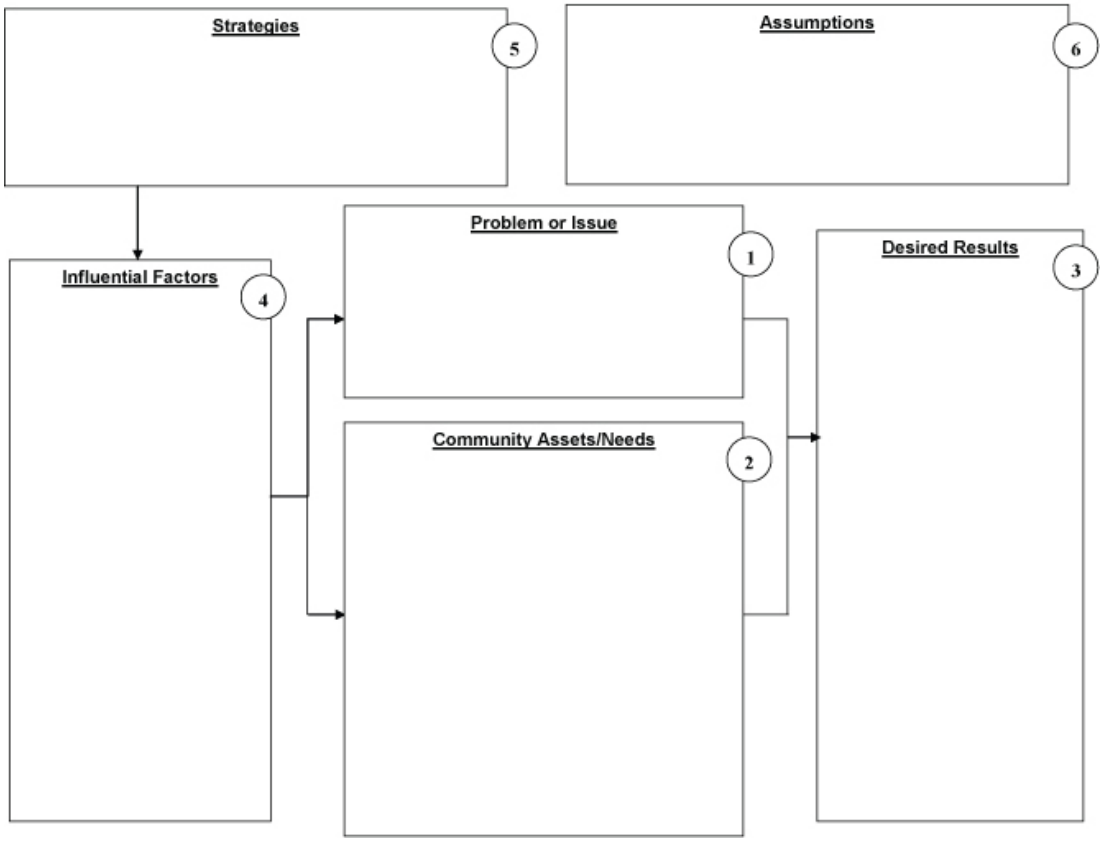

Figure 2: Theory-of-Change Template (W.K. Kellogg Foundation 2004)

A second logic model, or program implementation logic model, was constructed to illustrate the MERGE II program's organizational plan and processes. Through review of program documents and interviews with program organizers, information was gathered about the specific resources, activities, outputs, and outcomes that would be necessary to help MERGE II create the desired impact. The Program Implementation Planning Template (W.K. Kellogg Foundation 2004), as illustrated in Figure 3 below, provided the structure for drafting the implementation model. Program organizers were also solicited for feedback on the model, and revisions were made based upon their input.

RESOURCES	ACTIVITIES	OUTPUTS	SHORT & LONG TERM OUTCOMES	IMPACT
In order to accomplish our set of activities, we will need the following:	*In order to address our problem or asset, we will accomplish the following activities:*	*We expect that once accomplished, these activities will produce the following evidence or service delivery:*	*We expect that if accomplished, these activities will lead to the following changes in 1-3, then 4-6 years:*	*We expect that, if accomplished, these activities will lead to the following changes in 7-10 years:*

Figure 3: Program Implementation Planning Template (W.K. Kellogg Foundation 2004)

Once developed, the model was used to assess the extent to which MERGE II activities were implemented as planned. Specific questions addressed in the process evaluation were based on those suggested by Rossi *et al.* (2004), including the following:

- Are the procedures for identifying members of the target population, delivering service to them, and sustaining that service through completion well defined and sufficient?
- Are the constituent components, activities, and functions of the program well-defined and sufficient?
- Are the resources allocated to the program and its various activities adequate?

Although they are expressed in the program implementation logic model, evaluation of the outcomes and impact of MERGE II was not the goal of this study. Initially, the evaluation plan included short-term outcome measures to assess the effectiveness of the two-part training workshop. Instruments were designed to measure participant changes knowledge and skills, as

well as attitudinal changes on topics related to environmental initiatives after the workshops as compared to before. However, for reasons discussed in the Limitations section of this paper, these quantitative measures were determined to be invalid for the current study. The instruments, which included a pretest and posttest questionnaire for each of the two workshops in the training, can be found in Appendix as follows: *Pre-Workshop 1 Questionnaire* (Appendix A) and *Post-Workshop 1 Questionnaire* (Appendix B), *Pre-Workshop 1 Questionnaire* (Appendix C) and *Post-Workshop 1 Questionnaire* (Appendix D). The Evaluation Planning Template (Appendix F) (W.K. Kellogg Foundation 2004) was utilized to identify focus areas for the planned outcome evaluation, as well as specific questions to measure each focus area. The MERGE II Evaluation Planning Tool, which represents a modified version of the orginial template, can be found in Appendix E.

Unlike the quantitative items included on the instruments, several qualitative items were useful in garnering feedback from participants about processess of MERGE, particulary in terms of workshop content and event promotion. Thus, a brief summary of these findings are included in the Results and Recommendations sections that follow.

3.4 RESULTS

3.4.1 Description of Program Theory

As a community-based intervention, the MERGE II program was built upon a theoretical framework that utilizes the concepts of community capacity and community empowerment. Consistent with the models proposed by Kegler and Miner, Freudenberg, Johnston, Westphal, and others, the MERGE II program theory assumes that increased community capacity and its related dimension of empowerment will contribute to positive environmental changes, thereby enhancing overall environmental quality and health outcomes.

The MERGE II program theory logic model (Figure 4 below) illustrates the conceptual linkages between the underlying program assumptions (Box 6) and the problem that the program is attempting to address (Box 1). In this case, the problem that MERGE aims to address is the poor health and quality of life among urban residents resulting from environmental hazards and lack of green space. The community needs and assets that led MERGE II to address this problem are specified in Box 2. By addressing these identified needs and utilizing the community assets, MERGE II is expected to yield short-term, intermediate, and long-term results, as presented in Box 3.

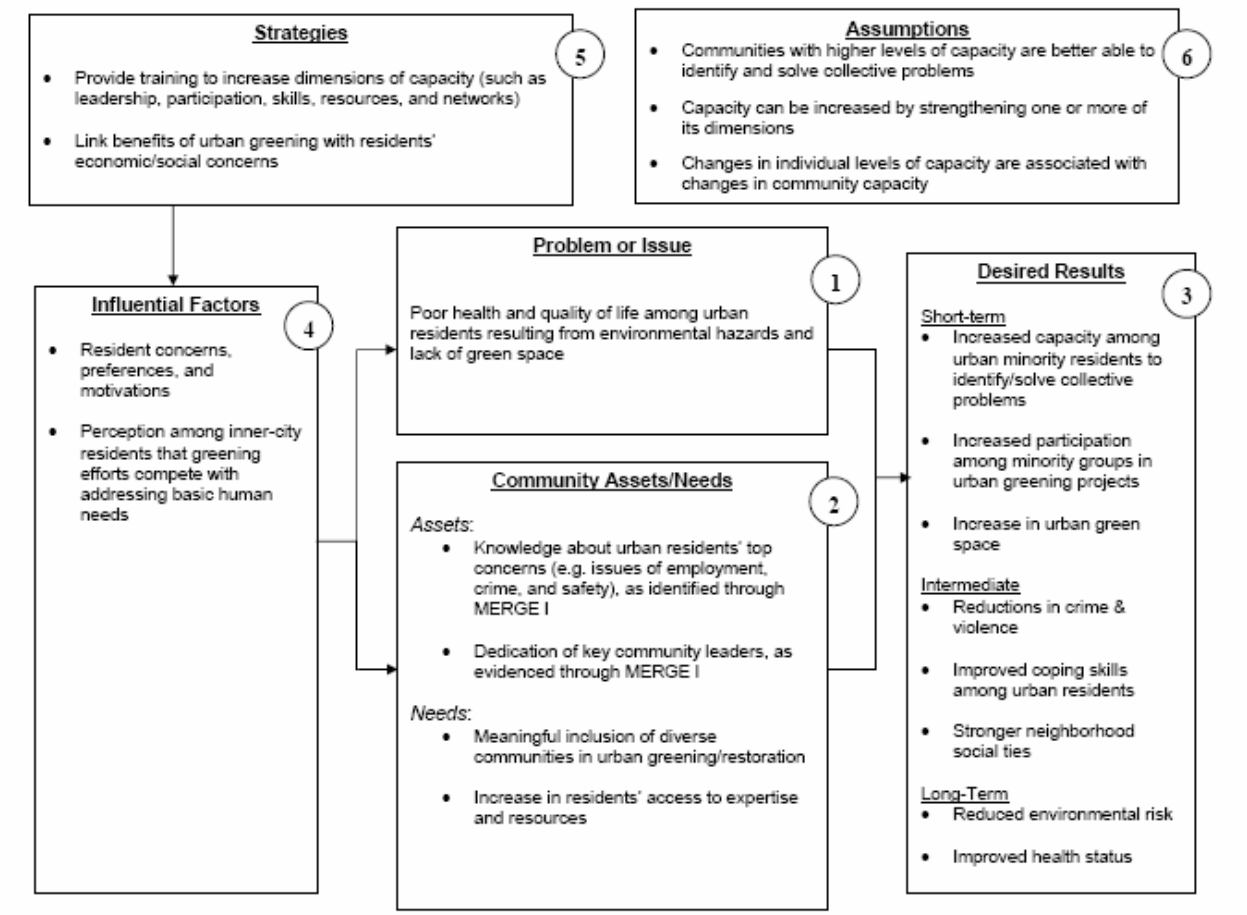

Figure 4: MERGE II Program Theory Logic Model

As illustrated in the model, several factors are expected to influence the program's ability to address the central problem (Box 4). Among these factors are individual resident concerns, preferences, and motivations. In other words, individual differences are likely to influence the extent to which residents are receptive to the MERGE II program and its environmentally-focused goals. For example, a parent who is concerned about having a safe park in which his/her child can play may be more motivated take environmental action than an individual who lives alone, works several jobs, and has little time to spend in the outdoor environment. In addition, perceptions about greening as a competing priority, rather than a solution to residents' concerns, may have a significant influence on the extent to which MERGE II can effectively address the

problems associated with a lack of urban green space. However, by recognizing these factors, the program strategies employed through MERGE II were designed to leverage them as positive influences, rather than barriers to program success.

Represented in Box 5 are the strategies, as supported in the literature, which are likely help MERGE II to achieve the desired results. The first strategy is to provide training for residents in attempt to increase various dimensions of capacity. In particular, MERGE II aims to enhance the dimensions of leadership, participation, skills, and resources. Although the training is focused on building capacity at the individual level (i.e. among individual workshop participants), there is an underlying assumption that changes at this level will be associated with changes at the community level.

Another strategy, to "link benefits of urban greening with residents' economic/social concerns" (Box 5), represents the leveraging of influential factors to promote the program's success. By structuring the training to cover the topic of relevance/motivation, the MERGE II program aims to help participants recognize the links between urban greening and their own neighborhood concerns. Additionally, this component emphasizes the need for the trained participants to help other residents make such connections when soliciting their participation in urban greening projects.

3.4.2 Assessment of Program Theory

Evaluation of the MERGE II program theory, as it is described above, reveals both the strengths and limitations about its logic and plausibility. While most program goals and objectives are well-defined, there is a lack of clarity about the target audience for the intervention. For example, increased capacity and participation in urban greening projects among "urban minority

residents" are noted as desired results of the MERGE II program. Additionally, "meaningful inclusion of diverse communities in urban greening/restoration" is an identified need that the MERGE II program is attempting to address. However, it is unclear, based on the current program theory model, which specific minority groups the program is attempting to engage in order to increase diversity in urban greening. Further, it is difficult to determine whether the intended audience includes only urban minority residents, or whether this population represents one of several segments to be targeted by the intervention.

Despite the lack of definition about the intended audience for MERGE II, the program's goals and objectives are feasible in that they recognize both proximal and distal outcomes of the intervention. There is a logical sequence linking the program strategies (e.g. increasing dimensions of community capacity) with the desired short-term results (e.g. increased overall capacity and participation), and eventually, with the long-term goals of reduced environmental risk and improved health status. Based on this sequence, the MERGE II program theory is plausible in that it echoes the change process associated with capacity-building and empowerment, as implicated in social science literature.

While there are some consistencies between the theory logic model and the implementation logic model, there is an important distinction between the two illustrations. Whereas the theory model represents a more broad view of the principles on which the MERGE II program is based, the implementation model provides more specific details about the activities and events (processes) that must take place in order to keep the program on track.

3.4.3 Description of Program Process

The MERGE II program implementation logic model (Figure 5) illustrates the conceptual linkages between the specific program activities and the intended outcomes. To best describe the MERGE II program processes, the components of the implementation logic model will be reviewed in reverse of its visual representation.

Beginning at the far right, the *impact* column is shown to reinforce the desired social changes (indicted as *desired results* in the program theory model) that MERGE II is working to create in the community. The impact of the program may not be evident for seven to ten years after program implementation (W.K. Kellogg Foundation 2004).

Outcomes, represented in the adjacent column, describe changes that are anticipated within various timeframes of program completion. Short-term outcomes are typically expected to occur within one to three years of the program implementation, whereas long-term outcomes are expected to occur within four to six years (W.K. Kellogg Foundation 2004). In general, outcomes include changes in participants' attitudes, knowledge, skills, behavior, and level of functioning (W.K. Kellogg Foundation 2004). The targeted short-term outcomes of MERGE II include changes in participant attitudes, knowledge, skills, behaviors, and levels of functioning related to urban greening projects. Specifically, such changes are targeted among MERGE II workshop participants in the areas of relevance, resources, partnerships, outreach strategies, grant-writing, and collaboration. These changes are thought to lead to increased capacity among the trained leaders to initiate and sustain urban greening projects (a longer-term outcome).

RESOURCES	ACTIVITIES	OUTPUTS	SHORT & LONG TERM OBJECTIVES	IMPACT
In order to accomplish our set of activities, we will need the following:	*In order to address our problem or asset, we will accomplish the following activities:*	*We expect that once accomplished, these activities will produce the following evidence or service delivery:*	*We expect that if accomplished, these activities will lead to the following changes in 1-3, then 4-6 years:*	*We expect that, if accomplished, these activities will lead to the following changes in 7-10 years:*
• Funding ($5000) • In-kind contribution of space for workshops • Donated food for workshops • Child care services for workshop attendees • Workshop Presenters/Trainers • Participants from MERGE I forums • Partnerships with community-based organizations • Knowledge gained from MERGE I • Political Support (Councilman Peduto) • National UEC Partners	• Develop fiscal plan/budget • Develop community resources package • Design & distribute workshop promotional materials • Design and implement community-based workshop • Develop criteria for mini-grant evaluation process • Design and implement evaluation plan	• 2 community workshops held by April 15, 2006 • 30 community leaders trained at workshops, including: ○ 15 minority leaders ○ 15 community residents (non-agency affiliated) • 30 community resource packages distributed at workshops • 10 new partnerships formed among workshop participants • 15 mini-grant applications submitted to UEC Pittsburgh by May 1, 2006 • 10 applications for alternative funding to support environmental projects, submitted by July 1, 2006 • 3 community pilot projects completed by September 1, 2006	• Change in attitudes about the relevance of urban greening efforts on community health, safety, and economic issues • Increase in workshop participants' knowledge about available community resources • Increase in workshop participants' knowledge and skills related to building and sustaining partnerships • Increase in workshop participants' knowledge about effective outreach strategies • Increase in grant-writing skills among workshop participants • Increased collaboration among residents & non-environmentally-focused agencies in urban greening projects • Increase UEC's knowledge about Best Practices for environmental outreach • Increased capacity of community residents to initiate and sustain urban greening efforts	• Increase in the diversity of environmental leaders in Pittsburgh • Decrease in # of vacant lots & abandoned buildings • Decrease in resident concerns about health, safety and economic issues • Increase in the amount of urban green space • Healthy urban ecosystems • Improved quality of life • Increase in the diversity of UEC partners

Figure 5: MERGE II Program Implementation Logic Model

As pictured in the center column, *outputs* include the "deliverables," or the direct results of the program activities. The expectation is that production of these outputs will lead to the desired outcomes. The MERGE II outputs are described in terms of the "products" delivered by, or produced by, the intervention. In this case, outputs of MERGE include the number of workshops to be held, the number of participants to be trained, the quantity of resources packages to be distributed, and various measures involving the size and scope of post-workshop activities. Specifically, the post-workshop outputs include estimates on the number of grant applications to be submitted to the UEC or other funding agencies, as well as the number of community pilot projects to be implemented and, subsequently, have their results presented to

the UEC. For a number of the outputs identified, a specific date is noted to clarify the timeframe within which the output is expected.

According to Rossi et al. (2004), an organizational plan of a program is commonly represented in terms of its *resources* and *activities*. Activities, shown in the column to the left of *outputs*, refer to the services the MERGE II program was expected to provide. A preliminary activity was to develop a fiscal plan, which was necessary to determine how financial resources would be allocated to the remaining program activities. These remaining activities include the development of a community resources package, the design and distribution of workshop promotional materials, the design and implementation of community workshop sessions, the development of evaluation criteria for mini-grants, and the design and implementation of the MERGE II evaluation plan. It is expected that effective implementation of these activities will produce the defined outputs.

Resources, as listed in the far left column, are the inputs or constraints that are applicable to the MERGE II program. A contract for $5000 in funding from the City of Pittsburgh is listed as the primary financial resource. In-kind contributions of space, food, and child-care services are also listed as resources, along with the workshop presenters. In this case, presenters include the UEC committee members who will facilitate workshop sessions and the community leaders (from MERGE I) who volunteered to provide testimonials of their experiences at the MERGE II workshops. Various inputs available from the previous program phase (MERGE I) are identified as additional resources of MERGE II, including past program participants and the knowledge gained from the initial program phase. Partnerships with community-based organizations are also recognized as resources, due to the networking capability that they provide for promoting the program to the community audience. Access to political networks is also a resource, and is

recognized through the support of Councilman Bill Peduto, who designated the contractual funds ($5000) for the MERGE II program. Lastly, the national UEC partners are listed as resources due to their experience in conducting MERGE I and other community-based greening interventions.

3.4.4 Assessment of Program Process

As presented above, the MERGE II program implementation model provides a useful tool for determining the extent to which the activities, as implemented, were consistent with the planned process. While a number of activities and functions of the MERGE II program, (including those related directly to the workshop design and implementation) were well-defined and sufficient, the processes related to other areas were less adequate. In particular, insufficient procedures for identifying, delivering service to, and sustaining service among the target population, as well as resource inadequacies, were among the factors that compromised the overall quality of the program process.

As previously highlighted in evaluation of the program theory, issues about the target population were also evident in the evaluation of the program process. While planned output measures indicated that minority leaders were to be targeted for participation in the workshop training, there is a lack of definition about which specific minority groups the program was seeking to involve, as well as a lack of clarity about the specific activities that were planned and implemented in attempt to increase their involvement. Based on the population of African American residents within the East Liberty community (where the MERGE II event was held), it is reasonable to assume that African American leaders were representative of the “minority” audience that the program was aiming to reach. However, it is possible that other minority

audiences (e.g. low-income residents or female leaders) may also be inclusive in this definition. Thus, without a more explicit description of the intended "minority" audience, it is difficult to determine if the MERGE II activities were effective in reaching the appropriate recipients. Even under the assumption that African American leaders were the primary "minority" audience for which the program was intended, it remains unclear how the channels of delivery for promotional messages (i.e. invitations, poster displays, newspaper advertisements, and word-of-mouth communications) were specifically geared toward reaching these minority leaders.

Also of importance to this process evaluation is consideration of how a lack of actual resources, as compared with those anticipated, impacted various aspects of the MERGE II program implementation. Specifically, the flow of funding from the primary funding source ($5000 from the City of Pittsburgh) was interrupted and thus, various modifications to the initial program plan were necessary. In addition to changes in the general fiscal plan and overall program timeline, specific activities related to program promotion and mini-grant evaluations were also modified from those initially planned. Furthermore, these changes in activities and their overall timeline for completion also affected the associated evaluation components. A summary of these inconsistencies between the planned and actual processes, as well as their related effects on the outputs of the MERGE II program, are highlighted in the paragraphs that follow. Table 4 (below) compares the planned versus actual outputs of the program.

Table 4: MERGE II Outputs: Planned vs. Actual

Planned Output	Actual Output
2 community workshops held by April 15, 2006	2 community workshops held by May 15, 2006
30 community members trained at workshops, including: • 15 minority leaders • 15 community residents (non-agency affiliated)	14 community members trained (number of minority leaders versus community residents indeterminate)
30 community resource packages distributed at workshops	Indeterminate (various community resource materials were available for pickup at workshop site, but were not assembled in packages for distribution)
10 new partnerships formed among workshop participants	Indeterminate
15 mini-grant applications submitted to UEC Pittsburgh by May 1, 2006	0 applications submitted to UEC
10 applications for alternative funding to support environmental projects, submitted by July 1, 2006	Indeterminate
3 community pilot projects completed by September 1, 2006	0 community pilot projects
3 presentations of pilot projects, completed by September 15, 2006	0 presentations of pilot projects

The initial timeline for MERGE II activities and the program outputs was based upon the anticipated funding period of October 2005 through September 2006. Because funds were not received within this timeframe, program activities were postponed. As a result, the community-based workshop series, though targeted for completion by April 15, 2006, was not completed until May 15, 2006. Although funds were still not received by the latter date, the committee proceeded with workshop-related activities, relying on other resources and in-kind contributions.

While the design of program promotional materials was conducted according to plan, the distribution of these materials was halted by the absence of funding. Due to the inability to cover postage costs, electronic invitations (i.e. email) replaced the planned postcard mailing. Thus, individuals for whom email addresses were unavailable were eliminated from the invitation list.

As a result, the reach of the program's promotional efforts were compromised, and likely contributed to the low attendance rates at the workshops.

Also affected by the lack of funding were activities and outputs related to mini-grants and the pilot projects that they were intended to support. In addition to general timeline disruptions noted earlier, the implementation of these activities was significantly altered as a result of the unavailability of funds. As part of the original program plan, three mini-grants (in the amount of $500 each) were to be awarded to those workshop participants who, following the training, were most successful in meeting the established criteria for mini-grant applications. Specifically, the criteria were intended to provide guidelines within which the applicants should propose their ideas for urban environmental pilot projects. Once it was determined that funding for the mini-grants was not available, the criteria were adapted for a new purpose. Rather than guiding the determination of mini-grant awardees, the mini-grant evaluation process became focused on providing participants with an opportunity to gain constructive feedback on their grant-writing skills. Planned outputs of the mini-grant activity, which included the completion of community pilot projects and presentation of their results, were eliminated based on the lack of funding to support these components.

The effects of resource limitations on various program activities, as noted above, also had indirect effects on the related evaluation components. Such are presented in the Limitations section of this paper.

Despite the above-noted inconsistencies between the planned and actual processes of the MERGE II program, the primary program activity (i.e. the workshop design and implementation) was well-aligned with its initial delivery plan. The training topics covered in the workshops were consistent with those intended. Community resource materials, though not assembled into

comprehensive packages, were readily available in take-home form for workshop. Allowing each participant to select the most appropriate resource materials for his/her use, rather than distributing unnecessary materials to all participants, was decided by the planning team to be the least wasteful approach.

Qualitative data collected from workshop participants offered additional insight about the processes of the MERGE II workshops. In terms of workshop design/content, participants noted the testimonials delivered by community leaders, opportunities for networking and idea-sharing, and information about resources to be among the most valuable aspects of the workshops. Feedback on event promotion and suggestions for future training topics were also provided by participants, and are noted in the Recommendations section of this paper.

3.5 LIMITATIONS

A major limitation of this study relates to its lack of valid outcome measurements. Due to the relatively brief duration of the practicum experience, coupled with the overall disruption of the program timeline, it was infeasible to evaluate intermediate and long-term outcomes through this investigation. For several reasons, short-term outcomes were also indeterminate within the current study. Given the small sample sizes at each workshop, quantitative evaluation measures (such as changes in participant attitudes, knowledge, and skills) were determined to be invalid. Contributing to these small sample sizes were the low attendance rates (noted previously), coupled with the issue of late participant arrivers and early departures from the workshops. In other words, several participants were not present during administration of one or more pre/post questionnaires. Partial completion of questionnaires was also an influential factor on the validity

of outcomes, and may be related to the manner in which evaluation questionnaires were presented to workshop participants. Workshop facilitators placed minimal emphasis on the importance of the evaluation, which may have contributed to participant incompletion.

Several program outputs, in addition to outcomes, could not be evaluated as planned. Due to the elimination of the mini-grant awards and pilot project components, the outputs related to these areas were affected. Initially, a requirement of mini-grant recipients was to include participation in midpoint (qualitative) interviews, at which time they would share information about their progress with neighborhood greening projects. In addition, pilot project results were to be presented by team leaders at the conclusion of their projects. A focus of the presentations was to include a discussion about which outreach strategies (as learned through the workshop training) proved to be most or least effective in engaging other residents in their projects. However, these evaluation activities could not be carried out as a result of the unanticipated program changes. Because pilot project teams were unable to test the outreach strategies presented through the training, measurement of this program outcome (i.e. increasing UEC knowledge about best practices for outreach) was affected.

In addition to the aforementioned limitations, evaluation activities were also limited by issues inherent to the program's administrative structure. Program planning committee members, though quite dedicated to the program goals, were voluntary (i.e. unpaid) contributors. Thus, many were faced with competing priorities on their time and efforts. Given their busy schedules, workshop facilitators were not able to fully design the workshop sessions in a timeframe that was conducive to planning the associated evaluation components. As a result, evaluation measures were developed based on an initial outline of the workshop model, rather than on the final model, as it was presented.

3.6 DISCUSSION

Through development and analysis of the MERGE II logic models, four of the five evaluation objectives were met. The MERGE II program theory was described and analyzed to reveal parallels between its strategies and those indicated in the social science literature. Planned processes were described and compared with those implemented, thereby providing insights about the program's degree of adherence to planned activities. For reasons noted in the Results section above, a determination about whether the program reached intended recipients could not be made.

Utilization of the W.K. Kellogg Foundation's Logic Model Development Guide (2004) provided focus for the evaluation through its emphasis on both the program's "big picture," as well as its component parts. The tools found within this guide offered a systematic and visual way of presenting the "road map" of the MERGE II program. Overall, the chain of reasoning illustrated through the logic models was useful for understanding how the program should work, as well as identifying areas of strength and weakness in its conceptualization and implementation.

An important area of weakness to note, in terms of the program theory model (Figure 4), relates the inadequate identification of community assets. As presented in its current form, the model fails to recognize existing community capacity as an asset of the MERGE II program. Residents' collective assets and networks, for example, should be emphasized, and program strategies should specify efforts to mobilize such assets.

Among the strengths illuminated through the program theory model is the intervention's incorporation of Freudenberg's (2004) strategies for building community capacity for

environmental health action (see Table 1, p.17). Workshop sessions aimed to increase leadership capacity by educating community leaders about urban greening and creating a forum for bringing together leaders to consider environmental health issues. Training and technical assistance components presented opportunities for skill-building capacity. Resource capacities were addressed through identification of local assets (e.g. foundations, other funding agencies, and community partners) and grant-writing assistance. By bringing together concerned citizens and environmental activists, network capacity was also targeted for enhancement.

MERGE II focused on empowering processes at the individual level, with community-level empowerment as an indirect goal. Workshop sessions provided participants with opportunities to become individually empower*ed* through acquisition of new resources, increased knowledge, increased connections, and skill development. Further, participants were expected to become empower*ing* in their ability to engage others in creating positive environmental changes in their community, thus contributing to community-level empowerment.

Israel *et al*. (1994) note that a focus on empowerment at the individual level alone may be viable. However, the authors argue that a model of community empowerment that links the individual, community, and organizational levels "provides the most effective means to collectively provide the support and control necessary to develop needed skills, resources, and change" (Israel *et al.* 1994). This suggests that a more social-ecological approach may be necessary if interventions such as MERGE II are to be effective in promoting environmental health.

In alignment with Johnston and Shimada's recommendations for engaging diverse cultural groups in urban forestry, the MERGE II program plan featured a "balance of education, consultation, and participation strategies" (Johnston and Shimada 2004). Workshop sessions

offered educational components, and opportunities were presented for post-workshop consultation on grant writing and accessing resources. In terms of participation, both strengths and weaknesses of the strategies employed through MERGE II should be noted. On one hand, workshop sessions maintained a participatory environment where residents were encouraged to share their neighborhood concerns and brainstorm with others about ideas for community greening projects. However, there was minimal engagement of community residents in the pre- and post-workshop processes.

4.0 RECOMMENDATIONS

The theory and process evaluation conducted for this study provided a first step for assessing the Pittsburgh-based urban greening intervention, MERGE II. Results of this evaluation implicate several recommendations for program improvement, as well as suggestions for future evaluation efforts.

In order to ensure that MERGE II activities are reaching the appropriate recipients, a more explicit definition of the target audience is needed. The intended "minority" audience should be defined to provide clarity about factors such as the racial, ethnic, geographic, economic, social, age-related, and other identity characteristics of the targeted audience. By more clearly describing the intended audience, greater consideration can be given to the ways in which specific program activities (e.g. promotional efforts) aim to increase their participation.

In addition to more clearly describing and tailoring activities to the intended audience, greater participation of these individuals should be emphasized in the pre- and post- workshop program phases. By involving representatives of the target population in all program phases (including planning, implementation, and evaluation), local expertise may be gained in relation to reaching the targeted community and identifying community assets. Furthermore, greater community capacity may be achieved by encouraging participation in all program phases.

Low attendance rates at the workshops suggest the need for improvement of promotional activities. Findings from MERGE I indicated that the use of formal advertising methods was

relatively ineffective, and thus, such strategies were intentionally avoided by program organizers as primary methods for promoting MERGE II. However, qualitative data gathered from MERGE II indicated that many workshop participants felt there would have been greater attendance if the event had been more widely publicized. While program organizers emphasized the use of churches and other informal social networks as an intended outreach strategies for MERGE II, the utilization of these strategies is not entirely evident. Email invitations provide one example of how informal social networks were utilized for outreach/promotional efforts, but examples of communication efforts through church networks is less clear. Future promotional activities should attempt to better utilize those strategies which are known to be most effective in the targeted community. Outreach strategies identified for one community may not be appropriate for another community. Thus, consultation with members of each distinct neighborhood may be necessary in order for MERGE II promotional efforts to be effective.

Resource limitations may be a constraint in terms of the level of intervention that MERGE II is able to provide. However, it is important to note the potential for a greater impact of MERGE II through employment of a more social-ecological approach. If possible, more direct strategies to promote community- and organizational-level empowerment should be added as complementary approaches to the individually-focused intervention.

Based on the qualitative data gathered from MERGE II participants, several recommendations were made in relation to future training topic ideas. These suggestions included the following: (1) navigation of government resources, (2) budgeting, (3) more on grant-writing and fundraising, and (4) more on motivating others.

Future funding permitting, additional evaluation strategies may be employed to determine the extent to which the short and long-term objectives of MERGE II are met. Additionally, the

evaluation should attempt to measure their impact at the individual, organizational, and community levels within the East End of Pittsburgh. Results from such evaluation efforts may have significant implications for gaining future funding, which may ultimately yield greater opportunities for environmental health promotion.

5.0 CONCLUSIONS

Just as it is important to reduce the environmental hazards that may have devastating effects on human health, it is also critical to capitalize on those aspects of the natural and built environment that may have health-promoting effects. Emerging as part of the broader environmental health promotion movement, urban greening interventions focus on the physical, mental, and social benefits that may result from an increase in urban green space, thus offering a promising approach for addressing many of today's most significant public health concerns.

Evaluation of programs such as MERGE II provides insights on how social and behavioral theory can be incorporated into the design and implementation of urban environmental interventions. Through efforts to increase urban green space, interventions such as MERGE II may combat problems of chronic disease and health disparities by targeting the underlying environmental factors that contribute to such problems. Further, by utilizing capacity-building and empowerment strategies, programs like MERGE II may provide more transferable knowledge and skills that can be employed by residents to improve other, non-environmental (e.g. social and political) influences on their health and quality of life.

While there is still much to be learned about the effect of programs like MERGE II, particularly in terms of program outcomes and impact, the lessons about the processes used in this type of intervention suggest that effective implementation of environmental health promotion interventions requires an adequate allocation of resources, an explicit definition of the

target audience, and a clear plan for the intended level(s) (i.e. individual, organizational, or community) of intervention. With these considerations in mind, future environmental health promotion interventions may realize greater progress in achieving the ultimate goal of improved health and quality of life.

APPENDIX A: PRE WORKSHOP 1 QUESTIONNAIRE

Thank you for taking a few minutes to participate in this survey. The results of the survey will be used to evaluate the effectiveness of MERGE II. All of your responses will be kept confidential. Please note that questions are listed on the front and back side of each page.

Name: _____ **Neighborhood:** _____

For items 1-11, please circle your response.

1. **The number of environmental projects in the East End of Pittsburgh (past or present) about which I am aware is:**

   None *1-2* *3-4* *5 or more*

2. **I feel that environmental projects can have an impact on the following issues.**

Crime	*Strongly Disagree*	*Disagree*	*Neither Agree Nor Disagree*	*Agree*	*Strongly Agree*
Safety	*Strongly Disagree*	*Disagree*	*Neither Agree Nor Disagree*	*Agree*	*Strongly Agree*
Employment	*Strongly Disagree*	*Disagree*	*Neither Agree Nor Disagree*	*Agree*	*Strongly Agree*
Health	*Strongly Disagree*	*Disagree*	*Neither Agree Nor Disagree*	*Agree*	*Strongly Agree*
Quality of Life	*Strongly Disagree*	*Disagree*	*Neither Agree Nor Disagree*	*Agree*	*Strongly Agree*

3. **I am familiar with the overall goals of MERGE.**

   Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

4. **This (MERGE II) workshop series is relevant to me personally.**

   Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

5. This (MERGE II) workshop series is relevant to my organization or business.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

6. I can describe the concept of urban greening to others.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

7. I am likely to participate in a greening project within the next 6 months.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

8. I feel equipped to build partnerships with other individuals or groups in the community.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

9. I have an idea for a greening project that I would like to implement.

Yes *No*

9.1 If yes, please describe your idea in a sentence or two:

_____

_____

_____

_____

10. I have participated in an environmental project before.

Yes *No*

10.1 If *Yes*, how many environmental projects?

_____

10.2 Please describe briefly:

_____

_____

_____

11. I have collaborated on projects with other attendees of today's workshop.

Yes *No*

11.1 If *Yes*, how many collaborative projects?

_____

11.2 Of these collaborative projects, how many were environmentally-focused?

_____

For items 12-17, please check the box next to your response.

12. I previously participated in the following MERGE events:

- ☐ MERGE I – 1st Forum (September 2004)
- ☐ MERGE I – 2nd Forum (March 2005)
- ☐ Wilkinsburg Clean and Green Fair (June 2005)
- ☐ None

13. What is your gender?

- ☐ Female
- ☐ Male

14. With what race do you most identify?

- ☐ Black or African American
- ☐ Asian
- ☐ White or Caucasian
- ☐ Other (please specify): _____
- ☐ Latino

15. What is your highest level of educational attainment?

- ☐ Some high school
- ☐ College Graduate
- ☐ High School Graduate or GED Certificate
- ☐ Technical School
- ☐ Some College
- ☐ Graduate School

16. What type of organization do you represent? (Mark all apply.)

- ☐ Neighborhood group
- ☐ Educational Organization
- ☐ Other (specify): _____
- ☐ Environmental Organization
- ☐ Other Business
- ☐ Individual (I do not represent an organization.)
- ☐ Government
- ☐ Religious Group

17. How did you hear about this (MERGE II) workshop series?

- ☐ Received flyer in mail
- ☐ Colleague or Friend
- ☐ Email invitation
- ☐ Other (please specify):_____
- ☐ Telephone invitation

18. What is your age? (Please fill in the blank.) _____

19. What is your 5-digit zip code? (Please fill in the blank.) _____

THANK YOU!!

APPENDIX B: POST WORKSHOP 1 QUESTIONNAIRE

Thank you for taking a few minutes to participate in this survey. The results of the survey will be used to evaluate the effectiveness of today's workshop. All of your responses will be kept confidential. You will notice that some of the items are identical to those presented in the earlier survey. This is intentional. Please respond to each item again, now that you have completed the workshop. Items are listed on the front and back side of each page.

Name: _____

For items 1-15, please circle your response.

1. The ice breaker activity provided a meaningful way of meeting others and sharing concerns.

Strongly Disagree	*Disagree*	*Neither Agree nor Disagree*	*Agree*	*Strongly Agree*

2. The testimonial, delivered by Dianne Swann, was relevant to my interests and goals.

Yes ⇩ *No*

2.1 If yes, what made it relevant to you?

_____

_____

_____

3. Overall, this workshop was informative.

Strongly Disagree	*Disagree*	*Neither Agree nor Disagree*	*Agree*	*Strongly Agree*

4. As a result of this workshop, I feel more comfortable engaging in a community greening project.

Strongly Disagree	*Disagree*	*Neither Agree nor Disagree*	*Agree*	*Strongly Agree*

5. The amount of time allotted for the workshop was:

Much Less than Needed	*Less than Needed*	*Just Right*	*More than Needed*	*Much More than Needed*

6. As a result of the brainstorming exercise on partnerships, I discovered new opportunities for collaboration.

Strongly Disagree | *Disagree* | *Neither Agree nor Disagree* | *Agree* | *Strongly Agree*

7. I feel equipped to build partnerships with other individuals or groups in the community.

Strongly Disagree | *Disagree* | *Neither Agree nor Disagree* | *Agree* | *Strongly Agree*

8. The number of environmental projects in the East End of Pittsburgh (past or present) about which I am aware is:

None | *1-2* | *3-4* | *5 or more*

9. I feel that environmental projects can have an impact on the following issues.

Crime	*Strongly Disagree*	*Disagree*	*Neither Agree Nor Disagree*	*Agree*	*Strongly Agree*
Safety	*Strongly Disagree*	*Disagree*	*Neither Agree Nor Disagree*	*Agree*	*Strongly Agree*
Employment	*Strongly Disagree*	*Disagree*	*Neither Agree Nor Disagree*	*Agree*	*Strongly Agree*
Health	*Strongly Disagree*	*Disagree*	*Neither Agree Nor Disagree*	*Agree*	*Strongly Agree*
Quality of Life	*Strongly Disagree*	*Disagree*	*Neither Agree Nor Disagree*	*Agree*	*Strongly Agree*

10. I am familiar with the overall goals of MERGE.

Strongly Disagree | *Disagree* | *Neither Agree nor Disagree* | *Agree* | *Strongly Agree*

11. This (MERGE II) workshop series is relevant to me personally.

Strongly Disagree | *Disagree* | *Neither Agree nor Disagree* | *Agree* | *Strongly Agree*

12. This (MERGE II) workshop series is relevant to my organization or business.

Strongly Disagree	*Disagree*	*Neither Agree nor Disagree*	*Agree*	*Strongly Agree*

13. I can describe the concept of urban greening to others.

Strongly Disagree	*Disagree*	*Neither Agree nor Disagree*	*Agree*	*Strongly Agree*

14. I am likely to participate in a greening project within the next 6 months.

Strongly Disagree	*Disagree*	*Neither Agree nor Disagree*	*Agree*	*Strongly Agree*

15. I have an idea for a greening project that I would like to implement.

Yes *No*

15.1 If yes, please describe your idea in a sentence or two:

_____

_____

_____

_____

For items 16-18, please fill in your response.

16. The least valuable aspect of this workshop was:

_____

_____

17. The most valuable aspect of this workshop was:

_____

_____

18. More community residents might attend this workshop if:

_____

_____

THANK YOU!!

APPENDIX C: PRE WORKSHOP 2 QUESTIONNAIRE

Thank you for taking a few minutes to participate in this survey. The results will be used to evaluate the effectiveness of MERGE II. All of your responses will be kept confidential. You may notice that some of the items are identical to those presented in surveys at the first workshop. This is intentional. Even if you responded previously, please respond to each item again, now that you have had an opportunity to reflect on the workshop. Items are listed on the front and back side of this page, and continue on the next page.

Name: _____ **Neighborhood:** _____

For items 1-6, please circle your response.

1. I have worked on a grant application in the past.

Yes *No*

1.1 If Yes, about how many grant applications have you worked on? (Please check the box next to your response.)

- ☐ One
- ☐ Two
- ☐ Three
- ☐ Four or more

2. I am confident in my ability to *assist* others in writing a grant.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

3. I am confident in my ability to *lead* others in writing a grant.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

4. I am likely to participate in a greening project within the next 6 months.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

5. I have an idea for a greening project that I would like to implement.

Yes *No*

5.1 If yes, please describe your idea in a sentence or two:

_____

_____

_____

_____

6. I am aware of effective strategies for involving others in community projects.

Yes *No*

6.1 If yes, please note the most effective strategies that you have used in the past:

_____

_____

_____

_____

For items 7 and 8, please fill in your response.

7. Two organizations or groups with whom I could partner on a greening project include:

(1) _____

(2) _____

8. Three organizations that provide funding opportunities for greening projects are:

(1) _____

(2) _____

(3) _____

For items 9-14, please check the box next to your response.

9. I previously participated in the following MERGE events: (Mark all that apply)

- ☐ MERGE I – 1st Forum (September 2004)
- ☐ MERGE I – 2nd Forum (March 2005)
- ☐ Wilkinsburg Clean and Green Fair (June 2005)
- ☐ None

10. What is your gender?

- ☐ Female
- ☐ Male

11. With what race do you most identify?

- ☐ Black or African American
- ☐ White or Caucasian
- ☐ Latino
- ☐ Asian
- ☐ Other (please specify): _____

12. What is your highest level of educational attainment?

- ☐ Some high school
- ☐ High School Graduate or GED Certificate
- ☐ Some College
- ☐ College Graduate
- ☐ Technical School
- ☐ Graduate School

13. What type of organization do you represent? (Mark all that apply.)

- ☐ Neighborhood group
- ☐ Environmental Organization
- ☐ Government
- ☐ Educational Organization
- ☐ Other Business
- ☐ Religious Group
- ☐ Other (specify): _____
- ☐ Individual *(I do not represent an organization.)*

14. How did you hear about this (MERGE II) workshop series?

- ☐ Received flyer in mail
- ☐ Email invitation
- ☐ Telephone invitation
- ☐ Colleague or Friend
- ☐ Other (please specify):_____

15. What is your age? (Please fill in the blank.) _____

16. What is your 5-digit zip code? (Please fill in the blank.) _____

THANK YOU!!

APPENDIX D: POST WORKSHOP 2 QUESTIONNAIRE

Thank you for taking a few minutes to participate in this survey. The results will be used to evaluate the effectiveness of MERGE II. All of your responses will be kept confidential. You may notice that some of the items are identical to those presented in the earlier survey. This is intentional. Please respond to each item again, now that you have had an opportunity to participate in each workshop session. Items are listed on the front and back side of each page.

Name: _____

For items 1-10, please circle your response.

1. The session on resources, presented by the UEC members, provided information that was both new and valuable to me.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

2. The grant-writing tips, provided by the Sprout Fund's Mac Howison, will be useful for my situation/needs.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

3. I am confident in my ability to *assist* others in writing a grant.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

4. I am confident in my ability to *lead* others in writing a grant.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

5. As a result of this workshop, I feel more comfortable engaging in a community greening project.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

6. I am likely to participate in a greening project within the next 6 months.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

7. I have an idea for a greening project that I would like to implement.

Yes *No*

7.1 If yes, please describe your idea in a sentence or two:

_____

_____

_____

_____

8. I am aware of effective strategies for involving others in community projects.

Yes *No*

8.1 If yes, please note any new strategies that you learned at the workshop today:

_____

_____

_____

_____

9. Overall, this workshop was informative.

Strongly Disagree *Disagree* *Neither Agree nor Disagree* *Agree* *Strongly Agree*

10. The amount of time allotted for this workshop was

Much Less than Needed *Less than Needed* *Just Right* *More than Needed* *Much More than Needed*

For items 11-16, please fill in your response.

11. The most practical thing I learned from Marna Taylor, who provided the testimonial on the Wilkinsburg Clean and Green Fair, was:

_____

_____

12. Three organizations that provide funding opportunities for greening projects are:

(1) _____

(2)_____

(3) _____

13. Two organizations or groups with whom I could partner on a greening project include:

(1) _____

(2) _____

14. The least valuable aspect of this workshop was:

_____

_____

15. The most valuable aspect of this workshop was:

_____

_____

16. This workshop could be improved in the following way(s):

_____

_____

_____

THANK YOU!!

APPENDIX E: EVALUATION PLANNING TEMPLATE

Evaluation Focus Area	Audience	Question	Use

Source: W.K. Kellogg Foundation 2004

APPENDIX F: MERGE II EVALUATION PLANNING TOOL

Evaluation Focus Area	Question	Instrument (s)			
		Pre WS1	Post WS1	Pre WS2	Post WS2
Attitude					
Relevance	I feel that environmental projects can have an impact on the following issues…	X	X		
	This (MERGE II) workshop series is relevant to me personally.	X	X		
	This (MERGE II) workshop series is relevant to my organization or business.	X	X		
Motivation	I am likely to participate in a greening project within the next 6 months.	X	X	X	X
	I have an idea for a greening project that I would like to implement.	X	X	X	X
	If yes, please describe your idea in a sentence or two.	X	X	X	X
Knowledge					
Outreach	I am aware of effective strategies for involving others in community projects.			X	X
	If yes, please note the most effective strategies that you have used in the past.			X	
	If yes, please note any new strategies that you learned in the workshop today.				X
Environmental/Urban Greening	The number of environmental projects in the East End of Pittsburgh (past or present) about which I am aware is…	X	X		
	I can describe the concept of urban greening to others	X	X		
	The most practical thing I learned from Marna Taylor, who provided the testimonial on the Wilkinsburg Clean and Green Fair, was:				X
MERGE	I am familiar with the overall goals of MERGE.	X	X		
	I previously participated in the following MERGE events:	X		X	
Community Resources	Three organizations that provide funding opportunities for greening projects are…			X	X
Partnering	As a result of the brainstorming exercise on partnerships, I discovered new opportunities for collaboration.		X		
	Two organizations or groups with whom I could partner on a greening project include:			X	X

Evaluation Focus Area	Question	Instrument (s)			
		Pre WS1	Post WS1	Pre WS2	Post WS2
Skills					
Partnering	I have collaborated on projects with other attendees of today's workshop.	X			
	I feel equipped to build partnerships with other individuals or groups in the community.	X	X		
Grant Writing	I have worked on a grant application in the past.			X	
	If yes, about how many grant applications have you worked on?			X	
	I am confident in my ability to *assist* others in writing a grant.			X	X
	I am confident in my ability to *lead* others in writing a grant.			X	X
Environmental Projects	I have participated in an environmental project before.	X			
	If yes, how many environmental projects?	X			
	Please describe.	X			
Workshop					
Delivery	The amount of time allotted for this workshop was…		X		X
Content	The ice breaker activity provided a meaningful way of meeting others and sharing concerns.		X		
	The testimonial, delivered by Dianne Swann, was relevant to my interests and goals.		X		
	The session on resources, presented by the UEC members, provided information that was both new and valuable to me.				X
	The grant-writing tips, provided by the Sprout Fund's Mac Howison, will be useful for my situation/needs.				X
General	Overall, this workshop was informative.		X		X
	As a result of this workshop, I feel more comfortable engaging in a community greening project.		X		X
	The most valuable aspect of this workshop was…		X		X
	The least valuable aspect of this workshop was…		X		X
	More community residents might attend this workshop if:		X		
	This workshop could be improved in the following ways…				X

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