

# Natural Environment

## Background

### Problems and Opportunities

The health of natural ecosystems and the benefits to humans of a healthy environment was a priority issue for the Natural Environment Advisory Group. The quality of the natural environment has a direct impact on the health and quality of life of the human community. Clean air, water and land are necessary for human health and well-being; the Advisory Group asserted that we have an imperative to ensure that those conditions provide for the continued well-being of future generations. In addition, the presence of nature and access to nature for residents in the community is closely linked to community health. Studies continue to document the benefits of contact with nature to physical and mental health in many urban contexts, with recommendations for incorporating environmental sustainability.<sup>19</sup>

Healthy ecosystems provide substantial environmental services such as water purification and recharge, nutrient recycling, oxygen production, climate moderation, and assimilation of waste and pollutants.<sup>20</sup> Conserving and restoring natural areas helps to ensure that the essential ecosystem services are continued into the future; those services will contribute toward the healthy condition of Omaha's environment.

The importance of integrating natural features such as the Papio Creek system and other Missouri River tributaries into the development pattern of the city was a critical issue for the Natural Environment Advisory Group. Conserving those features allows establishment of an open space network for recreation, trails providing access, and wildlife habitat. A number of cities and regions have developed plans for open space networks—called green infrastructure plans--to conserve ecosystem values and functions.<sup>21</sup>

The Natural Environment Advisory Group identified the designed landscape of the community as a significant connection to the natural setting. The design of Omaha's built environment incorporates natural aspects such as landscaping that may in part recreate ecosystem functions. Plants that are native or are ecologically well-adapted can best provide benefits such as water purification and nutrient recycling while requiring less water and nutrients in order to thrive. Well-designed landscapes using native plantings can also help to enhance Omaha's image and sense of place - both essential to our quality of life.<sup>22</sup>

### Issues and Directions

Public comments and discussions by the Natural Environment Advisory Group considered many important issues and directions. A sampling and summary of the issues includes:

- ❖ Natural features such as streams, bluffs, woodlands, wetlands, prairie remnants, and other natural open spaces need to be preserved and integrated as open space in the community; education is needed on the value of natural areas and what homeowners and other citizens can do to protect those areas.
- ❖ Stronger requirements and enforcement are both needed to protect trees and natural areas during construction.

- ❖ Conservation and preservation efforts toward natural features need to use a systems-based approach and those efforts should be implemented on a regional scale; coordination and partnerships between and among various entities may produce the best results in preserving natural areas.
- ❖ Education and demonstration projects can show ways of using native species appropriately in urban landscapes, and public lands such as right-of-ways and passive park areas provide opportunities for naturalized landscapes and native grasses; barriers to the use of native species need to be changed.
- ❖ An Urban Forest Plan is needed to develop the urban forest and improve management of it to ensure diversity of species and reduce vulnerability to disease and pests.
- ❖ Demonstration projects can be used to show how changing intense maintenance practices can improve the quality of the natural areas and reduce maintenance costs.
- ❖ Wildlife needs to have habitat preserved, restored and connected through corridors for movement.
- ❖ Urban conflicts with wildlife need to be reduced; wildlife/traffic conflicts need to be addressed, and buildings need to be designed and retrofitted to minimize their potentially hazardous impact on migrating birds.
- ❖ All neighborhoods should have access to open space; vacant lots and other open spaces have the potential to be part of an open space network throughout the City.
- ❖ Appropriate remediation is need for soil contamination; Brownfields sites can be redeveloped to enhance neighborhoods and provide economic development opportunities.
- ❖ Stormwater quality is required to meet state and federal standards; natural treatment alternatives should be pursued for solutions regarding water quality and to prevent and reduce floods.
- ❖ Stormwater fees should be implemented to make people responsible for their contribution to water run-off.
- ❖ Lighting needs to be effective and non-intrusive on night skies (avoid light pollution); a number of cities have model programs or ordinances.
- ❖ Visual elements that detract from the community's appearance such as billboards and very large-scale gas station canopies need to be controlled.
- ❖ The potential for burying power lines in strategic locations should be evaluated.

### *Concepts*

The Natural Environment Advisory Group used the following concepts to develop the overall statement, measurements, goals, objectives, and strategies contained in the following sections:

- ❖ The quality of life in Omaha is enhanced through connections with the city's natural setting.
- ❖ Integrating natural features into the urban fabric provides an opportunity for recreation and open space that benefits the community.
- ❖ Natural systems-oriented solutions to urban infrastructure will be the most effective in the long-term.
- ❖ Putting a priority on the health and integrity of the natural environment will benefit people in the community.
- ❖ Development that is done with a goal of regenerative impact on the environment will provide significant benefits to the community.

## *Natural Environment Overall Statement*

Omaha will place the highest value on the natural ecosystems and environmental features that create the setting for the city's built environment and contribute to the city's identity and quality of life. Omaha recognizes that the health and well-being of the people in the community depends on the health and well-being of the natural environment. Integrating the city's urban development into natural ecosystems in ways that respect and maintain the "natural capital" functions and qualities of those ecosystems will result in long-term cost savings and improve the quality of life for people in the community. Omaha will realize these benefits by:

- ❖ Preserving and restoring important natural features, views that enhance the city's setting, and other connections with nature that improve the community's quality of life.
- ❖ Applying a systems-oriented approach to urban solutions (e.g., using natural systems such as the water cycle to influence the design of urban stormwater systems).
- ❖ Designing the urban pattern of development to integrate natural features into an open space and recreation network that extends throughout the community.
- ❖ Prioritizing the health and integrity of the natural environment and the associated benefits to people when making decisions.
- ❖ Striving for a regenerative impact on the environment at all scales of development, from individual sites to the whole community, which will minimize energy consumption, support renewable energy, provide food on a local scale, and ensure that air and water are clean.

## *Measurements*

1. By 2020 all Omaha residents will be within one-half mile of public open space.
2. Support the Nebraska Department of Environmental Quality in an accelerated TMDL development process that addresses potential pollutant sources in a fair and reasonable manner based on sound technical data and scientific approach to achieve attainment of the State Surface Water Quality Standards in Omaha lakes and streams by 2025.
3. Reduce the number of air quality related health alert days to 20 by 2015 and 10 by 2020.
4. By 2020, reduce night sky luminance to less than 200% NNSL (Natural Nighttime Sky Luminance) in public parks and open spaces and 20% below 2012 levels everywhere else.

## *Natural Environment Goal Summary*

### LAND

Ensure that land use and development patterns safeguard natural ecosystems and resources while providing for the long-term health of the community's economy and social climate and the people in the community.

### VISUAL RESOURCES

Preserve natural areas and views that contribute to a scenic setting and distinctive character for the city and metropolitan area. Minimize adverse impacts of air and light pollution on daytime views and night-sky views, balanced with providing for public safety.

### NATURAL HABITATS

Preserve, protect, and restore natural communities, ecosystems and their processes and habitat throughout the city and metropolitan area and provide for the needs of native species in balance with human habitation.

### URBAN LANDSCAPES

Promote the use of native plants in landscaping; eliminate noxious/invasive plants; ensure the health of the city's plant community; and improve the value of the urban landscape for non-pest wildlife.

### AIR AND CLIMATE

Ensure that all areas of the community have a level of air quality that promotes both the health of the people in the community and the natural environment. Enhance the microclimate throughout the community. Take responsible actions to minimize the community's impact on climate change and to mitigate changes that are predicted for the Midwest region's climate.

### ACOUSTIC ENVIRONMENT

Ensure that sounds and noise levels within the community promote a high quality of life and health for metropolitan area residents and avoid harmful effects of noise pollution on wildlife.

### WATER

Preserve and restore natural hydrologic features and their functions; provide opportunities for people to experience and connect with natural water features; reduce the impact of urbanization on stormwater quality and quantity; ensure the safety and security of the community's water supply; and ensure that water supply and demand is balanced and sustainable both for the community's long-term needs and in consideration of potential climate change impacts.

### LAND

Ensure that land use and development patterns safeguard natural ecosystems and resources while providing for the long-term health of the community's economy and social climate and the people in the community.

#### Objectives:

1. Protect and preserve lands that are sensitive to disturbance or that provide unique ecological, cultural or aesthetic features.
  - 1.1. Establish an ongoing inventory process to identify and evaluate sensitive areas (e.g. steep slopes, ravines, bluffs and wooded areas – see Natural Habitats 2.5) and both cultural and aesthetic features. (Natural Habitat Inventory)
  - 1.2. Establish development guidelines that shape development patterns in areas with steep slopes, highly erodible types of soil, and other sensitive features to ensure that those areas are protected. Emphasis should be on applying conservation development principles to protect those areas by maintaining them as open space.
  - 1.3. Form partnerships to increase the effectiveness of land conservation, site restoration and land management.

- 1.4. Develop mechanisms to protect and preserve sensitive areas and unique ecological, cultural or aesthetic features (e.g., by way of legislation, zoning overlays, acquisition plans, coordination with other government agencies and NGO's).
  - ❖ Expand the use of conservation easements.
  - ❖ Monitor and evaluate the effectiveness of protection mechanisms that are utilized.
  - ❖ Review, update, and/or create environmental overlay districts for areas of special natural environmental significance or sensitivity.
    - ◆ North Hills environmental overlay district (update)
    - ◆ Elkhorn Valley environmental overlay district (create)
    - ◆ Cunningham Lake environmental overlay district (complete)
    - ◆ Any other area that meets the criteria of an environmental overlay district
2. Create and conserve open space as integrated, connected green infrastructure in dense neighborhoods throughout the community.
  - 2.1. Develop a green infrastructure plan to create interconnected, multi-functional open space throughout the community.
    - ❖ Apply principles of connectivity, multi-functionality, equitability and accessibility, health and safety, ecological functionality and integrity, feasibility and stewardship promotion.
    - ❖ Identify and acquire land to create neighborhood parks, community gardens, and green play spaces.
    - ❖ Incorporate natural streams and waterways and connect with trails and green streets
    - ❖ Identify partnerships with neighborhood groups, non-profits, and private entities for management and maintenance of open space.
    - ❖ Provide for active transportation, storm water treatment and management, wildlife corridors and habitat, healthy food supply, and an amenity for livable, dense urban neighborhoods.
  - 2.2. Develop resources to promote effective community gardens and local food production.
    - ❖ Ensure that city codes do not contain roadblocks that discourage community gardens and local food production and work with Douglas County offices to eliminate obstacles.
3. Implement infrastructure and development patterns that are compact and contiguous to existing developed areas.

- 3.1. Adopt City development and design guidelines and incentives to promote urban development patterns that will minimize the overall amount of land consumed for new development.
  - 3.2. Increase infill development and higher density redevelopment in strategic areas, using open space as a common neighborhood amenity.
  - 3.3. Continue and strengthen incentives to support infill and redevelopment.
  - 3.4. Promote and support community-oriented uses of vacant and unused land in developed areas that enhance the surrounding neighborhood, such as community renewable energy systems and infill development.
4. Reclaim, restore and/or redevelop land that is degraded by erosion, contamination and pollution, improper filling or dumping.
    - 4.1. Create and maintain an inventory of Brownfield properties.
    - 4.2. Coordinate with appropriate organizations, agencies and others to secure and utilize resources for reclaiming and restoring damaged land.
5. Improve soil quality for the health of the urban plant community.
    - 5.1. Develop and implement guidelines designed to preserve topsoil, improve soil conditions, avoid soil compaction, minimize the loss of soil and reduce erosion.

## VISUAL RESOURCES

Preserve natural areas and views that contribute to a scenic setting and distinctive character for the city and metropolitan area. Minimize adverse impacts of air and light pollution on daytime views and night-sky views, balanced with providing for public safety.

### Objectives:

1. Protect unique and scenic vistas in the city and metropolitan area from encroachment or destruction.
  - 1.1. Recognize that visual resources exist in the context of the region and metropolitan area.
  - 1.2. Manage and control changes to the natural environment that impact views.
  - 1.3. Use mapping tools (e.g., GIS, 3D modeling, etc.) to evaluate the impact of proposed uses, development, or other changes to the City's visual setting.
  - 1.4. Identify unique and scenic views for Omaha and create design and management plans for those areas. Plans should include:
    - ❖ Design guidelines for visible physical changes within, or in proximity of, important views.

- ❖ Design guidelines and regulations for billboards, signs, lighting, buildings and other structures.
  - ❖ Design guidelines for landscaping within those areas.
  - ❖ Additional guidelines, standards, recommendations or other relevant measures may also be included.
2. Minimize visual clutter and enhance visual quality for both natural and built areas.
- 2.1. Evaluate impacts to nearby visual conditions when reviewing development proposals.
- 2.2. Control lighting, signage, and other structures that impact visual conditions;
- 2.3. Work with interested entities to evaluate the potential visual and auditory impacts of alternative energy system equipment and structures, and establish guidelines that promote their use while minimizing conflicts with both neighboring properties and public views
- 2.4. Collaborate with local utilities and other partnerships in order to:
- ❖ Identify priorities, develop policies and pursue special funding for relocating and/or burying overhead utility distribution lines in strategic areas;
  - ❖ Support and participate in OPPD's collaborative process for locating transmission lines;
  - ❖ Coordinate with utilities when planning for and installing utility structures along boulevards, parkways, and parks.
3. Adopt and promote standards for the appropriate use of lighting to enhance aesthetics and safety while allowing views of the night sky.
- 3.1. Establish lighting standards and practices that minimize impacts on wildlife.
- ❖ Coordinate with professional ecologists.
  - ❖ Encourage reduction in the operation and orientation of lights that may adversely affect wildlife.
  - ❖ Develop lighting information and guidelines for residents.
  - ❖ Work with business districts, commercial/office building owners and managers, and school districts to minimize lighting that may result in bird-building collisions and light trespass.
- 3.2. Develop information and design guidelines for building, site, and parking area lighting to avoid excess or redundant lighting and to avoid light trespass on adjacent property.

- 3.3. Coordinate with public utilities on strategies to reduce excess lighting on public property (e.g., right-of-ways).
- 3.4. Encourage energy conservation by eliminating lighting that is unnecessary for buildings and sites, and by promoting lighting that uses alternative energy sources.

## NATURAL HABITATS

Preserve, protect, and restore natural communities, ecosystems and their processes and habitat throughout the city and metropolitan area and provide for the needs of native species in balance with human habitation.

### Objectives:

1. Promote compact land use patterns integrated with conservation of natural habitats and natural aquatic systems to provide corridors for wildlife movement and protect the sustainability of natural biotic communities.
  - 1.1. Design recreation corridors to be sufficiently large so as to also function as corridors for wildlife movement.
  - 1.2. Include professional ecologists, wildlife biologists and botanists as resources to provide input on the existing urban/suburban park and trail plan and when developing more detailed plans for constructing phases of the system.
  - 1.3. Create a plan for an integrated, open spaces network that establishes connections to greenways and makes the natural environment accessible to neighborhoods throughout the community.
    - ❖ Incorporate a hierarchy and variety of open space.
    - ❖ Establish minimum standards for walking distance to open space in neighborhoods (based on Smart Growth recommendations).
    - ❖ Coordinate with school districts and other partnerships for educational opportunities and for habitat enhancement.
    - ❖ Explore the potential for day-lighting streams and restoring riparian habitat while attempting to remain consistent with other local efforts.
    - ❖ Include ways in which residents and property owners can extend and connect to the greenway network by appropriate native landscaping and other actions that support native wildlife.
    - ❖ Identify partnerships to implement the plan.
2. Protect and restore important plant and wildlife communities when making land use and development decisions.

- 2.1. Ensure that land use decisions that affect important plant and wildlife communities consider both the amount of area needed and the necessary habitat characteristics for protecting those communities.
- 2.2. Develop an Environmental Assessment Handbook/Checklist for developers and planners to use as a guide for designing and reviewing development. The guide should address:
  - ❖ The protection of natural features
  - ❖ Incorporating the services of natural systems
  - ❖ Implementation of appropriate conservation design practices that have been developed with input from a professional ecologist.
- 2.3. Give priority to preserving unique ecological and landscape features in planning for public improvements and in the design of private development.
  - ❖ If a natural feature would be negatively affected by a proposed development or public infrastructure, design alternatives should be evaluated. Value should be assigned to the educational, aesthetic, and “natural systems” functions of natural features when alternatives are considered.
  - ❖ Construction specifications for public and private projects should specify the source of soil to avoid impacting environmentally sensitive areas, including the Loess Hills and steep bluffs.
- 2.4. Ensure that mitigation requirements exceed state and federal requirements and is at a level that is more than that which was destroyed when preservation of a protected natural feature is not possible.
- 2.5. Require that the restoration and mitigation of natural features and ecological systems be science-based in order to restore the function of destroyed or damaged features.
  - ❖ Require that restoration and mitigation plans include both a time limit and a monitoring and maintenance schedule.
  - ❖ Review and update the “Protection of Natural Features” table identified in the appendix, which is also on page 60 of the Land Use Element of the Master Plan, and ensure that the changes are consistent with the goals, objectives and strategies of this plan. After updating and improving the definitions of the natural features, ecosystems and mitigation criteria, codify the table in the applicable City ordinances (e.g. Zoning and Subdivision Ordinances) and remove the table from the Master Plan.
- 2.6. Include adequate, science-based buffers around natural or restored ecosystem conservation areas and natural features in order to minimize potential harm and degradation from urban development.

- 2.7. Include professional ecologists on planning teams whenever natural ecosystems are a component of a planning study and when proposed actions may potentially affect flora and fauna.
3. Preserve and restore native plant communities as a valued community resource, as habitat for native biota, and as a means to maintain ecosystem processes.
  - 3.1. Take a regional approach toward preserving and protecting natural features and ecosystems. Omaha should coordinate efforts with other area communities and interested entities to develop a strategic plan for conservation and protection of the area's natural ecosystems.
  - 3.2. Develop a complete Natural Resources Inventory and a Natural Habitat Master Plan.
    - ❖ Use the best available information regarding the location and characteristics of existing natural ecosystems for the Omaha area. Develop GIS maps with a database of information about the mapped features.
  - 3.3. Establish a local Land Trust to own land, accept donations and conservation easements, and/or manage natural areas and open spaces that are important to the community.
    - ❖ Create partnerships and combine resources to maximize the effectiveness of the Land Trust.
    - ❖ Coordinate with Non-governmental organizations (NGOs), such as the Nebraska Land Trust, to provide for conservation and management of locally important lands as well as regional ecosystems.
  - 3.4. Develop a natural area preservation/restoration project in a highly visible place to create an iconic landscape for Omaha.
    - ❖ Identify locations with the potential for landscape restoration, focusing on sites that are associated with visitor attractions and entryways to the City.
    - ❖ Create public art opportunities that relate to the natural environment.
    - ❖ Develop partnerships with street and highway agencies to create a strategic plan for implementing prairie landscape plantings on rights-of-way and to develop appropriate strategies to manage the native landscape.
  - 3.5. Develop an urban ecology handbook for the community. The handbook should, at a minimum, include:
    - ❖ Alternative development approaches that preserve and promote the natural habitat and flora and fauna of the area.
    - ❖ Concept of "carrying capacity" for a community and a systems-based approach to the functions of the community.

- ❖ Design standards that incorporate a systems-based approach to building, site and neighborhood development.
4. Prevent pollution, damage, and adverse changes to aquatic habitats; pursue and encourage restoration of natural hydrology and aquatic habitats.
    - 4.1. Create a system to coordinate between the local, state, and/or federal levels for reviewing, permitting, mitigating, and monitoring impacts to natural features. Design the system to:
      - ❖ Streamline the process between the jurisdictions
      - ❖ Ensure that activity falling under the process is satisfactorily addressed for all jurisdictional entities.
  5. Minimize the impact of noise, lights, hazards, and other disturbances on wildlife in the design of infrastructure and development.
    - 5.1. Ensure that collaborative efforts are taken when evaluation the impact of building development and building operations on wildlife, particularly migrating birds, because of Omaha's location being directly within migratory routes of many species.
      - ❖ Guidelines for building design and management/operation should be developed and promoted to reduce mortality and injury to birds from bird-building collisions.
      - ❖ Initiate a "Lights Out" campaign to encourage building owners and managers to minimize lighting at night, particularly during bird migration seasons.
  6. Establish land management and maintenance practices to restore and sustain natural communities, habitats, and ecosystem processes.
    - 6.1. Use mechanisms such as conservation easements to local or regional land trusts to ensure long-term protection, management, and maintenance of natural features and ecosystems.
    - 6.2. Establish and adopt environmentally responsible strategies for the maintenance and management of natural systems and features. Strategies should be based on flexibility, adaptability and intelligent implementation. Maintenance practices should accommodate the seasonal cycles of plants and wildlife.
    - 6.3. Develop information and education resources regarding best management and maintenance practices for natural systems and natural features.
      - ❖ Develop brochures, on-line manuals, workshops and other information resources for property owners regarding appropriate management and maintenance practices.
      - ❖ Identify and promote information resources to provide an understanding of the functions of trees for native birds and wildlife, and of the effect that tree removal and replacement may have on birds and other wildlife species
  7. Provide appropriate and strategic access to natural areas for the community's residents.

- 7.1. Opportunities for connection and appreciation of the natural environment must be built into the urban fabric
  - 7.2. Promote educational partnerships throughout the community to ensure that people understand and care about natural areas. Use modern communication methods such as websites, podcasts, and social media, as well as tangible demonstration projects and hands-on practical training.
8. Manage human and wildlife interaction to improve biodiversity and native species in the community.
- ❖ Minimize human impacts that reduce the number and type of native species.
  - ❖ Minimize human/urban wildlife conflicts.
- 8.1. Support education and regulation toward reducing the harm that unrestricted movement of pets has on native songbirds and small animals.
- ❖ Develop an educational initiative explaining the negative impact of irresponsible pet ownership.
  - ❖ Provide information for the management and protection of the “urban mammal” population as well as for birds.
  - ❖ Enter into partnerships that support stronger penalties for owners that allow their pets to roam and prey on native species.
  - ❖ Support feral cat management and protection strategies that are designed to protect native bird species.
  - ❖ Work with local merchants to educate customers and encourage proper bird feeding and housing that will promote native bird species.

## URBAN LANDSCAPES

Promote the use of native plants in landscaping; eliminate noxious/invasive plants; ensure the health of the city’s plant community; and improve the value of the urban landscape for non-pest wildlife.

### Objectives:

1. Create a distinctive image and sense of place for Omaha by emulating native prairie, wetland, and woodland areas and by using Native and Ecologically Well Adapted Non-Invasive Plants (NEWANIP) in landscapes.
  - 1.1. Work with landscape architects, landscape designers, botanists, horticulturists and nurseries/plant suppliers to develop a palette of native species recommended in urban landscapes and develop design guidelines for property owners. Incorporate the use of new propagation techniques that improve the health of plant material.

- 1.2. Coordinate various City landscape planting and design standards to ensure that they are consistent.
  - ❖ Update the City's "Standards for Urban Landscaping," the urban design components of the city's zoning code, "Green Streets for Omaha," and the "Streetscape Handbook" to ensure consistency among them.
  - ❖ Collaborate with the community, professional ecologists, wildlife biologists, botanists, landscape architects, landscape designers, horticulturists and urban foresters in this effort, and include the use of new propagation techniques that provide for healthy plant material.
- 1.3. Use NEWANIP along greenway corridors as they continue to be developed. As repairs and stabilization projects are done on existing corridors, replace disturbed areas with NEWANIP.
- 1.4. Promote the principles of conservation landscaping in public/private spaces. Continue to work with other entities in developing demonstration projects that promote the use of NEWANIP.
- 1.5. Educate and promote a community appreciation of the benefits of using suitable native species in the urban landscape. Promote the aesthetic of NEWANIP.
- 1.6. Landscape non-active areas in parks and public open space with Native and Ecologically Well Adapted Non-Invasive Plants (NEWANIP) and incorporate restoration of ecosystems where feasible.
- 1.7. Work through partnerships to create activities, programs and promotional events promoting the use of NEWANIP:
  - ❖ Plan and coordinate through public and private resources;
  - ❖ Pair with education and landscaping information, and
  - ❖ Include activities such as workshops, demonstration projects, and other events to encourage people to use NEWANIP.
2. Reduce stormwater runoff and improve water quality by using NEWANIP with deep root systems characteristic of native prairie in landscaping and by preserving/restoring vegetated buffer zones along waterways.
  - 2.1 Promote the utilization of NEWANIP in post-construction, stormwater best management practices to reduce stormwater run-off in urban landscapes.
  - 2.2 Promote the principles of conservation landscaping in public/private spaces.
  - 2.3 Use landscape stream buffers designed to provide plant and wildlife habitat, bank stabilization, and improve water quality.
3. Strategically use ecosystem restoration/enhancement projects, urban forestry, and landscaping to:

- ❖ Offset the heat island effect of urban development
  - ❖ Offset the city's greenhouse gas emissions
  - ❖ Mitigate the effect of higher temperatures predicted to result from climate change.
- 3.1 Evaluate the effectiveness of large-scale planting of trees and other ecosystem restoration/enhancement projects to offset the city's greenhouse gas emissions.
- 3.2. Manage the urban forest and plant community for long-term health of the ecosystem and the aesthetic value to the community. Identify critical areas for preservation; manage to prevent problems; and evaluate opportunities to reduce the city's carbon footprint.
- 3.2 Promote the protection of existing trees for their shade and heat island reduction effects.
4. Recommend and implement the use of NEWANIP and landscape maintenance practices that will reduce air and water pollution while also allowing for fewer resources to be used in maintenance.
- 4.1. Compile information and guidance toward reducing the maintenance costs of fertilizing, mowing, etc. and for best management practices for natural areas and native landscaping. Coordinate with entities such as the Extension Service to promote the information to the public and to property owners.
- 4.2. Investigate integrated pest management (IPM), organic practices, phosphorus restrictions, and other environmentally-responsible practices for use on public right-of-way and property. Monitor the results of those practices and adopt those that prove environmentally safe and effective.
- 4.3. Develop a maintenance manual for native landscapes and provide training for park and right-of-way maintenance workers and contractors.
- 4.4. Develop a plan for conversion of high maintenance turf to low maintenance native landscaping in public right-of-way and City of Omaha property where appropriate; identify funding sources for replacement and maintenance of public landscaping.
- ❖ Establish outreach programs that engage partnerships and volunteerism by neighborhoods in right-of-way landscape planting and maintenance.
  - ❖ Provide training and education opportunities specifically for volunteers.
5. Improve the health of the urban landscape through practices that improve soil quality and use stormwater as a valued asset.
- 5.1. Minimize land development practices that result in conditions that make plant survival difficult.
- 5.2 Develop design guidelines for landscaping in stormwater best management practices to ensure healthy and attractive landscapes.

6. Develop landscape/structure design and operation practices for the urbanized environment that will reduce noxious, nuisance and/or invasive plant and wildlife species.
  - 6.1. Amend the weed control code to allow for planting NEWANIP and work with Douglas County to provide the same allowances.
  - 6.2. Coordinate through partnerships to provide information resources on preventing and removing problem species.

### AIR AND CLIMATE

Ensure that all areas of the community have a level of air quality that promotes both the health of the people in the community and the natural environment. Enhance the microclimate throughout the community. Take responsible actions to minimize the community's impact on climate change and to mitigate changes that are predicted for the Midwest region's climate.

#### Objectives:

1. Maintain or improve air quality compliance with the National Ambient Air Quality Standards to continue designation as an "Attainment Area."
  - 1.1. Limit land use or site incompatibilities that may result from air pollutants and odors.
  - 1.2. Continue to collaborate with the EPA and other metropolitan communities to accomplish voluntary reduction of ozone levels through targeted education, community outreach, and incentives. Targeted strategies need to address:
    - ❖ Emissions from coal-fired plants and from automobiles.
    - ❖ Citizen awareness regarding ozone creation through volatile organic carbon (e.g., paint).
    - ❖ Transportation strategies to reverse the trend toward increases in Vehicle Miles Traveled in the Omaha metropolitan area.
    - ❖ The use of alternative energy and improvement in the efficiency of the city fleet, MAT, and other public modes of transportation.
2. Minimize urban heat island effects.
  - 2.1. Incorporate microclimatic factors in site planning and design
  - 2.2. Develop and implement urban heat island reduction plans in priority areas.
    - ❖ Identify existing urban heat island areas where strategies will have the greatest impact.
    - ❖ Use available modeling techniques to evaluate the effectiveness of the urban forest in shading and cooling within the urbanized area.

- 2.3. Adopt incentives for the use of green roofs; eliminate disincentives and obstacles in city codes and ordinance.
- 2.4. Adopt green roof design guidelines that follow “Industry Best Practices.”
- 2.5. Promote the use of roofing materials that will increase and maximize the albedo (reflectivity of solar radiation) of structures.

## ACOUSTIC ENVIRONMENT

Ensure that sounds and noise levels within the community promote a high quality of life and health for metropolitan area residents and avoid harmful effects of noise pollution on wildlife.

### Objectives:

1. Minimize noise impacts of transportation corridors and other noise-producing land uses in the community.
  - 1.1. Review and improve guidelines for reducing noise impacts in land use planning, in evaluating the relationship of land uses, and in the design of mixed-use developments.
    - ❖ Update the City’s noise ordinance to better address noise impacts, particularly in mixed-use areas.
    - ❖ Assess current standards for buffers and screens scaled to the intensity of uses in the zoning code.
    - ❖ Assess the placement of development in relation to natural areas and the impacts of noise levels on habitats. Monitor effectiveness and adjust guidelines as needed.
  - 1.2. Minimize adverse noise impacts along major transportation corridors and airport zones.
    - ❖ Continue to require noise buffers in developments along major roadway corridors. Monitor effectiveness and adjust design standards as needed.
    - ❖ Maintain up-to-date mapping of noise contours by creating and maintaining information through current technology.
  - 1.3. Address the impact of traffic noise in planning for street rights-of-way, street widening projects, and adjacent development.
    - ❖ Consider noise impacts on human beings and wildlife in roadway design.
  - 1.4. Give priority to vegetative screens and living walls in the design of sound barriers because of the beneficial effects of plants on ozone issues and air quality.
2. Increase the quality of public spaces and important civic areas by incorporating sound in their design.
  - 2.1. Enhance public spaces with features that create appropriate sounds or at least mask sounds that make objectionable noise.

- 2.2. Institute pilot projects to test effectiveness of using sounds to mask objectionable noise.

## WATER

Preserve and restore natural hydrologic features and their functions; provide opportunities for people to experience and connect with natural water features; reduce the impact of urbanization on stormwater quality and quantity; ensure the safety and security of the community's water supply; and ensure that water supply and demand is balanced and sustainable both for the community's long-term needs and in consideration of potential climate change impacts.

### Objectives:

1. Base stormwater management plans on the characteristics of each watershed.
  - 1.1. Conduct/support studies to evaluate the characteristics of watersheds and sub-watersheds as a basis for stormwater plans for areas in Omaha's jurisdiction that are not addressed in the current Papillion Creek Watershed Plan
  - 1.2. Ensure that the City's stormwater management programs follow the Papillion Creek Watershed Stormwater Management Policies
  - 1.3. Omaha should work through partnerships with other communities and entities for the purpose of managing stormwater.
  - 1.4. Periodically review Omaha's Stormwater Design Manual and implement enhancements that increase its utility as environmental conditions change.
2. Prevent damage to aquatic ecosystems (rivers, streams, lakes, wetlands, and springs or seeps) resulting from development practices or from changes in hydrology as a result of development. Restore aquatic systems where feasible.
  - 2.1 Identify potential aquatic ecosystem restoration projects and implement them through a variety of funding sources.
  - 2.2. Require conservation, restoration and/or mitigation of aquatic ecosystems as part of development and redevelopment projects which will drain into these creeks.
  - 2.3. Work with the Corps of Engineers to develop preferred techniques that may be used to streamline the regional and specific 404 permit process.
3. Improve water quality in the metropolitan area's rivers, lakes, streams, and wetlands to meet or exceed state and federal regulations.
  - 3.1. The City should implement a long term control plan consistent with the consent order with the state of Nebraska Omaha CSO Program (omahacso.com)

- 3.2. The City will include efficient, practical utilization of “Low Impact Development” techniques in stormwater management for infrastructure and building projects. Continue to seek funds to implement low impact development demonstration projects and monitor the effectiveness of those projects.
4. Minimize the potential for flooding as well as the potential cost of damage and loss of life in case of flooding. Control stormwater volumes that contribute to flooding, and prevent or reduce development within the floodplain.
  - 4.1. Support studies to update flood mapping for all watersheds.
  - 4.2. Use “full build-out” flood elevations for development.
5. Minimize the demand for water supply by promoting and adopting conservation measures.
  - 5.1. Collaborate with entities such as the Metropolitan Utilities District and the Cooperative Extension Service to create demonstration projects, to develop local techniques for landscaping to reduce the consumption of potable water, and other conservation measures.