

# High Desert Landscape Masterplan



Dekker/Perich/Sabatini

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# Acknowledgments



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# Executive Summary

“THE LAND ETHIC SIMPLY ENLARGES THE BOUNDARIES OF THE COMMUNITY TO INCLUDE SOILS, WATERS, PLANTS, AND ANIMALS, OR COLLECTIVELY: THE LAND.”

—ALDO LEOPOLD



This Landscape Masterplan is anchored in the original High Desert landscape vision. “As stewards of this land we are committed to the vision of a community conceived, designed and built to preserve nature’s intricate balance. Our goal is an integrated and sustainable community which honors its Southwestern roots and natural habitats while providing a place that will endure.”<sup>1</sup>

The Landscape Masterplan presents planning and design principles, an assessment of existing conditions, conceptual designs and priorities for the High Desert landscape. High Desert’s planning principles reflect the importance of natural systems in community development and take the form of preserving views and using the site’s topography to establish circulation, home sites, and public spaces. The assessment documents existing conditions and their alignment or lack thereof with the High Desert vision. The conceptual designs illustrate ways to reinforce High Desert’s development ethos throughout independent neighborhoods and existing landscapes. Priority landscapes are examined and mapped to illustrate locations that could maximize impact and to project phased landscape construction costs over time.

In 2013, the Dekker/Perich/Sabatini (D/P/S) team of landscape architects, planners, and landscape designers were charged with conducting meetings to formulate goals and guiding principles, assess existing conditions, and develop conceptual designs and costs for future phased landscape construction. The planning process entailed meetings with the HDROA board and landscape committee members for over a year to discover and articulate landscape priorities.

## GOALS

The community landscape aesthetic is defined by the surrounding Juniper savannah typical to the foothills of the Sandia Mountains. The original community design sought to allow the ecology to coexist with sustainable development, and to a large extent, the design has been successful. Goals of this Landscape Masterplan include:

- Re-establish aesthetic continuity among the High Desert common areas.
- Establish well-coordinated landscape design, construction, and maintenance principles, practices, and standards.

<sup>1</sup>High Desert Guidelines for Sustainability—Builder Villages, revised 20 January, 2014. [http://www.highdesertliving.net/highdesertliving/external.html?mode=d&mlink=dwnldfile.html%3Fa%3Dsnd%26file\\_id%3D1567](http://www.highdesertliving.net/highdesertliving/external.html?mode=d&mlink=dwnldfile.html%3Fa%3Dsnd%26file_id%3D1567)

- Provide guidance for increasing irrigation efficiencies and reducing water use over the life of the plan
- Provide guidance for decreasing maintenance expenditures over the life of the plan

## FINDINGS OF THE ASSESSMENT

Original design elements remain strong, yet the majority of constructed landscapes have suffered from poor design decisions/enforcement, ongoing drought, and inconsistent maintenance. Inconsistent application of the High Desert development landscape aesthetic and poor plant choices are evident at the Builder Villages and Internal Streetscapes and many other locations. Ongoing effects of drought and inappropriate plant material are seen in the majority of landscape zones. Proactive maintenance that keep a maturing landscape healthy or keep irrigation systems functioning at optimum performance do not appear to be practiced.

## RECOMMENDATIONS

The recommendations in this Masterplan propose stewardship strategies and techniques. General recommendations include a methodical approach to design, maintenance, and ongoing community-wide education. Priorities are established in the final section, Chapter 3.

**Design** Although many of the landscape zones require site-specific design, the guiding principles have been established to reinforce the High Desert community landscape vision and reestablish aesthetic continuity.

- Harvest and reuse water at every opportunity.
- Reinforce cohesiveness and continuity through planting design while taking into account the purpose of each landscape zone.
- Require plant palettes that are resilient in order to decrease potable water use for irrigation, decrease maintenance, and create healthy, thriving landscapes.

**Maintenance** The maintenance of the High Desert landscape vision requires consistent landscape maintenance management. This report emphasizes proactive, rather than reactive, landscape maintenance as an essential future goal.

**Community-wide education** Resident education efforts should include lectures, articles, and web pages with information about wildfire mitigation, native habitats, and ongoing landscape design/construction efforts.

**Priorities** The Landscape Masterplan includes a prioritization matrix and mapping of landscapes, rated by condition, visibility, and public perception to determine levels of importance. Cost estimates are provided per zone for financial planning and dedication of resources. Finally, a suggested design process is outlined and construction delivery method is recommended for High Desert to deliver timely, cost effective quality construction.

The D/P/S consulting team encourages the High Desert community to continue promoting its sustainable vision to other communities in Albuquerque and nationwide.



# CHAPTER 1: GOALS

## I. INTRODUCTION

The High Desert Residential Owners Association (HDROA) manages a diverse landscape made up of over 70 acres of cultivated and maintained landscapes and 240 acres of open space, which is largely unmaintained. The cultivated landscape has matured in the 20 years since its installation, and the HDROA required assistance in defining and reinforcing the vision. To meet these challenges, the HDROA contracted with Dekker/Perich/Sabatini (D/P/S) to masterplan the High Desert landscape using seven categories of landscape found at High Desert:

- Zone 1 Development Entrances
- Zone 2 Streetscapes and Medians
- Zone 3 Builder Village Entrances and Internal Streetscapes
- Zone 4 Estate and Premier Village Entrances
- Zone 5 Parks and Pocket Parks
- Zone 6 Sculpture Gardens
- Zone 7 Arroyos, Open Space, and Ponds

## II. HISTORY OF HIGH DESERT

The High Desert Investment Corporation began building High Desert in 1994 and envisioned a landscape that was to look as if the streets were simply overlaid on top of the existing terrain.<sup>2</sup> The vision was given its three dimensional form by a team of civil engineers, master planners, landscape architects, and contractors. Community construction followed and is now substantially complete.

### Vision

The community commitment to the High Desert vision remains strong and continues to guide community development. The vision has created a strong sense of place by creating a community that clearly respects the natural environment. Careful placement of homes, design of vehicle and pedestrian circulation, and preservation of open spaces and views were just a few of the design characteristics that created the unique High Desert community.

“As stewards of this land we are committed to the vision of a community conceived, designed and built to preserve nature’s intricate balance. Our goal is an integrated and sustainable community which honors its Southwestern roots and natural habitats while providing a place that will endure.”

## Original Landscape Design Philosophy

High Desert was originally designed in a unique, innovative fashion. Tenets of this innovative design include:

- Respect for the existing terrain so that roads and building pads cause minimal disruption to the natural environment.
- Respect for existing drainage corridors and attention to how rainwater is directed and reused.
- Respect for native desert vegetation and habitat.

## Landscape Design Goals

- Create an aesthetically pleasing landscape design that maintains the character of the existing site.
- Minimize water use for irrigation.
- Produce less pollen than an unplanned landscape with similar quantity of plant material.
- Ensure planting in publicly viewed areas (front and side of homes) are from the High Desert approved list.

## Challenges

High Desert has worked hard to nurture their cultivated landscapes and open spaces. All developed landscapes need attention after 20 years of growth and change. High Desert’s landscape is currently challenged by:

- A maturing landscape design that has lost its original cohesiveness.
- Older irrigation systems that struggle to support existing, mature plant material.
- Maintenance techniques that are perceived as detrimental to the vision.
- Ongoing drought conditions that affect landscape health.

The Landscape Masterplan process presented an opportunity to reevaluate and invigorate the community’s commitment to the original vision and to High Desert’s distinctive landscape.

<sup>2</sup>2014. High Desert Guidelines for Sustainability—Builder Homes. <http://www.highdesertliving.net/highdesertliving/page.html>



### III. GUIDING PRINCIPLES FOR CONTINUED STEWARDSHIP

The Landscape Masterplan articulates how to renovate and maintain the established landscape of High Desert. It is, ultimately, a manual for good land stewardship.

#### Philosophy & Guiding Principles of High Desert

The landscape philosophy of High Desert originates from knowledge and respect for natural systems. The landscape development approach can be described as pragmatic sustainability and has resulted in a landscape aesthetic that is an integral part of the community's identity.

For our purposes, pragmatic sustainability applied to High Desert is an empirical approach to landscape stewardship that uses best design and xeriscape practices to reflect natural systems to enrich the built environment and create aesthetic continuity throughout the community.

#### Purpose of the Landscape Masterplan

The Landscape Masterplan provides decision-making guidance to the High Desert Community related to the landscape development of common areas. The term landscape development encompasses landscape design renovations and construction. The Landscape Masterplan addresses topics such as landscape design, materials, irrigation water harvesting, and maintenance techniques.

The original vision for the common area landscapes of the High Desert community has not diminished. Over time, the High Desert Board and HDROA's Landscape Committee members recognized that consistent enforcement of the landscape vision was lacking. The Landscape Masterplan presents an opportunity to evaluate the vision and update principles, standards, and guidelines for landscape design, operations, and maintenance that will facilitate deliberate, coordinated modifications to the landscape over the next 10 years.

#### Principles

- Be deliberate in landscape modifications to support human use and restore landscape health.
- Define High Desert landscape aesthetics with consistency and continuity.
- Promote a land ethic that evolves based on experience and is proactive in response to projections of environmental change.

- Treat water as a precious resource. Harvest and reuse wherever possible and utilize native plants to reduce the need for potable water for irrigation.

### IV. GOALS OF THE LANDSCAPE MASTERPLAN

#### Purpose

- Identify and prioritize landscape improvement projects that can be implemented over time.
- Create guidelines for common area landscape renovations that will lower water use and establish aesthetic continuity.
- Use resilient landscape examples as a guide for future renovations.
- Assess, record, and learn from implemented projects to guide future improvements.

#### Goal Statement

The goal of the High Desert Landscape Masterplan is to use 20 years of lessons-learned to guide landscape renovation, construction and maintenance.

- Re-establish aesthetic continuity among the High Desert common areas.
- Establish well-coordinated landscape design, construction and maintenance principles, practices, and standards.
- Provide guidance for increasing irrigation efficiencies and generally reducing water use over the life of the plan.
- Provide guidance for decreasing maintenance expenditures over the life of the plan.

#### Strategies

- Establish a program/protocol for soil enhancement where needed to promote long term plant health.
- Document plant installation failures and successes.
- Maximize irrigation efficiency.
- Identify High Desert landscapes and plant examples that have endured increasingly unpredictable environmental conditions and use this information to create resilient landscapes.
- Evaluate locations that might be suitable for testing precipitation only landscape design.
- Create a design prototype for each of the seven landscape zones that illustrates appropriate levels of density and water use, and defines characteristics of landscape composition and patterning that will help re-establish a High Desert common area landscape aesthetic.

## CHAPTER 2: ASSESSMENT

### I. INTRODUCTION

The Assessment is divided into two sections: Irrigation Systems—a crucial support system for cultivated landscapes—and Landscape Assessment—an overview of plant materials. An important component of the Landscape Masterplan is the assessment of existing conditions.

### II. IRRIGATION SYSTEMS

As a community, High Desert is keenly aware of its ecological footprint. Water, in particular, is a resource that is closely monitored by residents and board members as a barometer of the community's sustainability. For instance, High Desert is proud to point out that the community uses less water than it is allocated by the City of Albuquerque. "The city's Water Waste and Landscaping Ordinance allows 35 inches of water per year in irrigated areas. That's a water budget of 34,889,889 gallons for our [High Desert's] irrigated area. The city's meters show that we [High Desert] used only 9,720,186 gallons, or only 27.9% of our allowed water

budget for calendar year 2004."<sup>3</sup> This irrigation system assessment is intended to contribute to the continued conservation of potable water at High Desert.

The HDROA manages many irrigation systems that are 20 years old and are perceived as nearing the end of their useful lifespan. Despite the age of the overall system, there have been some improvements made to parts of the system that have significantly improved the ability to control individual zones and make adjustments to watering schedules.

The scope of work for this report includes an overall assessment of the irrigation system per landscape zone but does not address the individual components of each system. This report relies upon the yearly community-wide irrigation system assessment conducted by the landscape contractor who has maintained the irrigation system over the past several years. Heads Up Landscaping annually reports on the condition and performance of the critical components of each irrigation system: the irrigation meter, backflow preventers, controls, valves, and typical zoning of the irrigation system.



Views to the Sandia Mountains

<sup>3</sup> [http://www.highdesertliving.net/highdesertliving/page.html?page\\_id=93](http://www.highdesertliving.net/highdesertliving/page.html?page_id=93)



## Terms

**Water Meter** The meter for potable municipal water that is dedicated to irrigation of common area plantings. This is usually located at the back of curb.

**Backflow Preventer** A device used to protect potable water supplies from contamination or pollution due to backflow. In water supply systems, water is normally maintained at a significant pressure to enable water to flow from the tap, shower, etc. When pressure fails or is reduced, such as when pipes freeze, or if there is unexpectedly high demand on the water system, such as during a fire, reduced pressure in the pipe may allow contaminated water from irrigation systems to be drawn back into the system. Backflow preventers at High Desert are located above ground and are typically freeze protected.

**Irrigation Controller** A low voltage, or sometimes solar, timing device that turns automatic water valves on and off according to a determined irrigation/watering schedule.

**Automatic Valve** An electronically activated water valve.

**Drip Irrigation System** A low pressure (as low as a trickle of water) underground irrigation system that delivers water directly to the plant. Emitters can range from 1 gallon per hour (GPH) to 13 GPH. Systems are typically comprised of buried PVC main and lateral lines, risers and emitters, or poly pipe, thin tubing, and valves. Typical efficiency of drip irrigation systems is 90% of water application. Variations in drip irrigation systems include Netafim, “sweat pipe,” or soaker hose systems. Netafim is a ½” dia. pipe with emitters placed 6”, 12”, or 18” apart and typically used in a grid. Sweat pipe systems are perforated pipe systems that sweat water along the length of a pipe. Soaker hose systems are flexible hoses that ooze water out into the soil for the length of the hose.

**Spray Irrigation System** An underground irrigation system that sprays water into the air to fall onto a broad landscape surface. Typically water travels through a pop-up, impact, or rotor assembly. Spray irrigation systems may be up to 75% efficient.

**Bubbler Irrigation System** An underground irrigation system that delivers water to plant material through a bubbler assembly. Also known as flood bubblers, these emitters typically deliver water quickly at rates between .25 gallons per minute (GPM) and 1 GPM. The efficiency rate of bubbler systems is not documented. Often categorized under Drip Irrigation Systems, bubblers likely have more evaporation than lower flow drip emitters, but less than spray irrigation.



Water quality protection: reduced pressure backflow preventer in heated enclosure

## Overview of the Irrigation Systems

For a diagram of the irrigation systems at High Desert, refer to the Irrigation Controls Map, page 6.

- The irrigation system is comprised of 34 city water meters that range in size from 3/4” to 2”.
- There are a total of 18 controllers.
  - Seven controllers are electric powered and managed via a central control system. The controllers are linked with a two-wire decoder system.
  - Ten controllers are solar powered. These are located primarily in Estate and Premier Villages. Two solar powered controllers are located at Trailhead. All solar powered controllers operate independently.
  - Central controls are housed at the Homeowner Association Management Company (HOAMCO). The landscape contractor can control the irrigation timing, days, and water days with a hand-held smart phone.
  - Controllers were upgraded to Rainbird ESP-LXD controllers in 2011. All controllers are commercial grade, two wire controllers that can maintain a total of between 50 to 200 stations.
- The majority of backflow devices are reduced pressure backflow devices. However, there remain several residential-grade devices, such as pressure vacuum breakers and atmospheric vacuum breakers, at Michial Emery Trailhead and the Estate & Premier Villages.
- The landscape contractor is in the process of standardizing irrigation equipment from one manufacturer—Rainbird.

- In accordance with industry best practices, there are no irrigation zones in High Desert that combine spray or bubbler systems with drip irrigation systems.

## Yearly Assessments of Existing Irrigation System

As part of its scope of work, the landscape contractor conducts an annual check-up of all irrigation systems and their components. This annual assessment includes a backflow preventer test by a subcontracted third party as required by the Albuquerque Bernalillo County Water Utility Authority. The systems are assessed by controller location. The time required by the landscape contractor is one week per location.

## Results of the 2014 Assessment

Per the results of the 2014 Annual Assessment, all irrigation systems, including but not limited to backflow preventers, controllers, valves, and piping are operational. The following yearly repairs contribute to operational irrigation systems:

- Approximately 20 valves replaced (for a variety of reasons).
- Continuous repair of polyethylene tubing and emitters due to animal damage, freeze/thaw conditions, and periodic hard water damage.

## General Observations

As part of the assessment process, D/P/S interviewed and visited the site to gather information related to the efficiency and maintenance of the irrigation systems at High Desert. These observations are applicable to all landscape zones.



Mature trees still irrigated at their trunks

- As a consequence of initial irrigation system installation, irrigation drip emitters are situated around tree trunks at High Desert. In some situations, saturated soil conditions adjacent to tree trunks has damaged trees by causing root rot and/or encourages bacteria or fungus growth at the trunk (see image below left).
- As trees mature their irrigation requirements increase. Emitters must be added to provide water to the extent of roots—which go to the edge of the canopy and beyond by approximately 20%. In many cases this has not been done.
- Although naturalistic shapes of turf lend themselves to a naturalistic aesthetic, naturalistic or undulating patterns and shapes of turf cannot be irrigated efficiently. Curvilinear turf shapes increase overspray on adjacent areas.
- Drip irrigation systems with ½” to ¾” polyethylene tubing are inexpensive and quick to build, but are not durable and not suited to areas that receive significant maintenance or foot traffic. At High Desert these systems are subject to damage by shovels, and emitters can be removed easily from plant materials by an inadvertent foot step.
- The landscape contractor regularly replaces broken irrigation equipment, and on the whole, the existing irrigation systems are functional.
- During site visits, valves and valve boxes were observed to be filled with soil. The contractor typically cleans the valve boxes when replacement or servicing is required.
- As plants die, irrigation emitters are tied off or capped, which can increase pressure within a zone and can lead to increased maintenance.

## Zone Specific Irrigation Observations

For a locator map of zones and irrigation systems at High Desert, refer to the Irrigation Controls map on page 6.

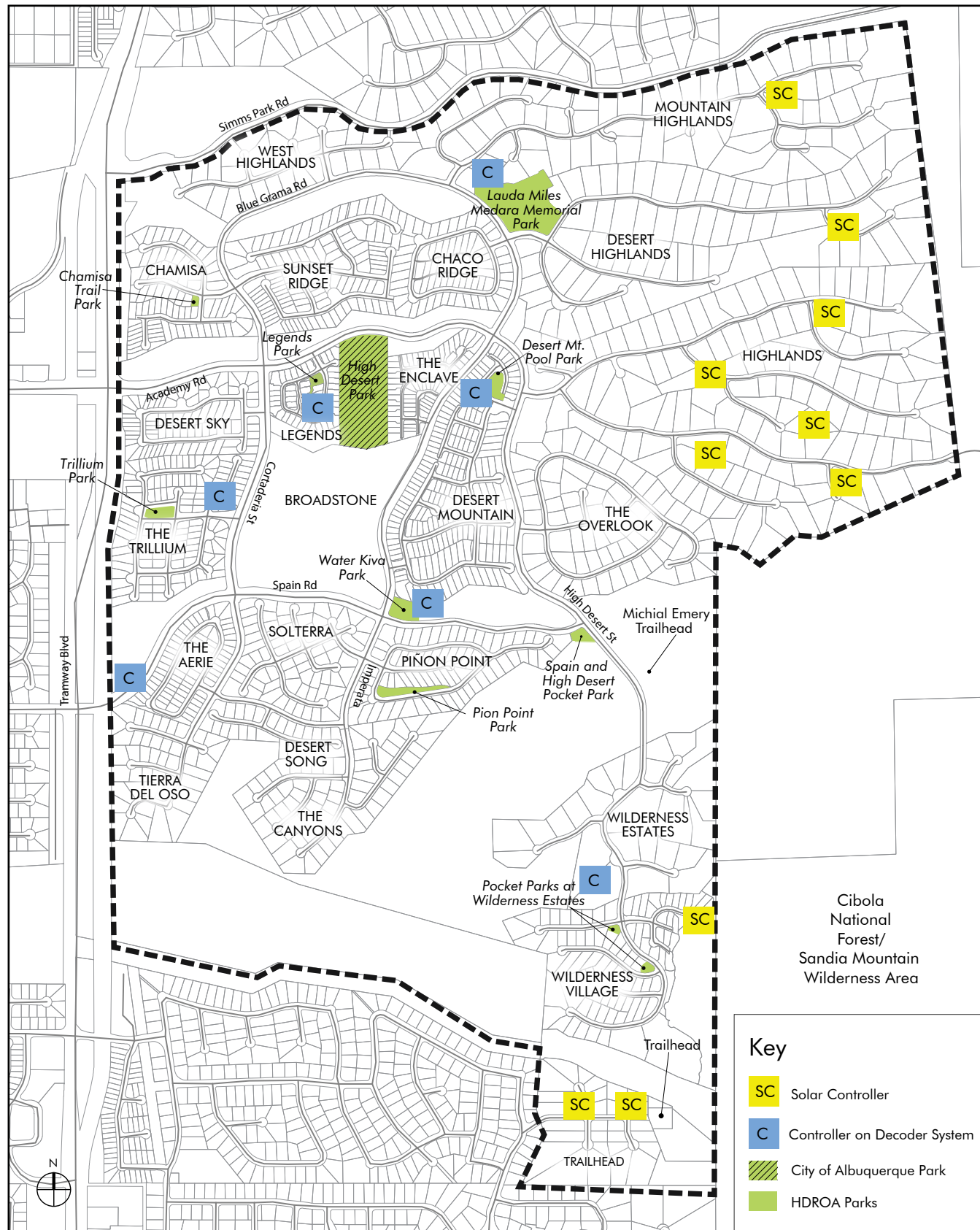
## Development Entrances

Development entries are the most maintained and often the most disturbed landscapes at High Desert. The development entries are located along Tramway Blvd., at Spain and Academy Roads. Maintenance of both development entry irrigation systems is affected by above and below-ground utility easements.

Where the landscape is maintained on a weekly basis the irrigation system suffers cuts and repairs from weeding tools, such as stirrup hoes and shovels, that are used



Figure 1 Irrigation Controls Map



for removing plant material or weeds. The Spain Road entry is unique as it has an underground sweat pipe irrigation system for buffalo grass turf. This system has been damaged in the past by crews maintaining utilities in easements, and more recently, by installation of cable. There is at least one spray irrigation zone behind the entry monuments that was used for temporary native grass seeding establishment.

Generally speaking, gas lines and overhead electrical power utilities are located behind the entry monuments, and underground communications cables are adjacent to roadways. Water, stormwater, and sanitary sewer lines run under the roadways. When utility crews need to modify or repair lines, there is a corresponding impact on the landscape. Chronic disturbance of the entry landscapes has had a cumulative negative impact on the overall condition of these prominent landscapes.

### Parks and Pocket Parks LAUDA MILES MEDARA MEMORIAL PARK (FORMERLY PINO POND PARK)

The plant material at Lauda Miles Medara Memorial Park suffers from a variety of issues that can partially be attributed to poor irrigation systems. The loss of plant material at the park is also due to poor plant selections. Tree loss can also be attributed to lack of adequate water due to too few and poorly placed emitters. Efforts are currently underway to irrigate trees at the park with a Netafim ring at the drip line of a tree, which is a current industry standard. The wildlife drinker at Lauda Miles Park draws from the irrigation system.

### WATER KIVA PARK

Water Kiva Park was designed to demonstrate passive water harvesting and reuse in a park setting. For many reasons, the park did not function as designed. Its current irrigation system, designed to supplement harvested surface water flows, is the primary method for irrigating the plant material in the park.

The park has both spray and drip irrigation systems which are fully functional. The undulating design of turf is difficult to irrigate efficiently with pop up irrigation heads. No matter the amount of water applied, the aspens in the center of the park continue to fail.

### HIGH DESERT PARK

The irrigation systems at High Desert Park are maintained by the City of Albuquerque (CABQ), and thus not assessed in this report.

### LEGENDS COMMUNITY PARK

Legends Park is the newest park in High Desert and its irrigation system is composed of spray and drip irrigation. The irrigation system is good, though the design of fractured concrete walks adjacent to grass may cause the spray irrigation to spray onto paved surfaces.

### CHAMISA TRAIL PARK

This pocket park is irrigated with both spray irrigation and drip irrigation. The turf/spray irrigation is set against the west and south walls and is far from paved surfaces, thus minimizing overspray onto impervious surfaces.

### TRILLIUM PARK

This pocket park is irrigated with both spray and drip irrigation. There is a large area of turf set 8-10 feet from the southern roadway, and the turf is at the back curb on the north side. The proximity of turf and spray irrigation components to the back of north curb leads to an assumption that the spray irrigation sprays the roadway, though this has not been verified.

### DESERT MOUNTAIN POOL PARK

This pocket park is irrigated with both spray and drip systems. The turf configurations are naturalistic, and water sprays onto adjacent sidewalks and pool deck.

### SPAIN AND HIGH DESERT POCKET PARK

This is a small pocket park at the intersection of Spain and High Desert. This pocket park is informally designed with an undulating turf area, pine trees, and various shrubs and perennials at the turf's edge. The plant material is supported with spray and drip irrigation systems. These systems operate well and are serviced regularly.

### PIÑON POINT POCKET PARK

This is a linear pocket park at Evening Star and Twilight Trail which widens at its west end where there is a playground. The park has both drip and spray irrigation systems. The edge of turf is set far from the roadway and there is a crusher fine trail on its north edge that minimizes spray onto the road.

### WILDERNESS POCKET PARKS

The Wilderness Pocket Parks are designed in a similar fashion with a foreground surface plane of grass separated by an undulating design of stone plating that emulates a river between. The stone plating was installed after there were soil erosion problems at the edge of the grass. Soil erosion may have been caused by the overspray of water from the turf spray irrigation system. Systems include drip



irrigation, bubblers, and spray irrigation. The system is functional, and its controls are connected to the central control system.

## Estate and Premier Village Entrances and Internal Streetscapes

The Estate and Premier Village entry landscapes are supported by drip irrigation systems that are controlled by the central control systems. Internal street plantings are controlled by solar controllers. As a rule, these irrigation systems support native vegetation; however, there are some plants that are regionally native, such as aspens, but not at this location and elevation. The entry irrigation systems are functioning and operational.

## Builder Village Entrances and Internal Streetscapes

The Builder Village irrigation systems are a mix of drip and spray. As plants have died, the irrigation emitters have been capped or tied off. Those emitters that remain are functional.

## Streetscapes and Medians

The public streetscape and median irrigation systems throughout High Desert are centrally controlled and primarily comprised of bubblers. However, there are some interesting variations based on the intent of the landscape design.

### ACADEMY AND SPAIN ROADWAYS

Academy and Spain are primarily irrigated with bubbler systems in accordance with City of Albuquerque standards; however, there are sporadic areas with drip and pop-up spray irrigation. Bubblers are built with flexible risers to the plant location and can withstand kicking and abuse without breaking. The placement of these bubblers and construction of the water well surrounding the tree/shrub can cause the water to flood the area around the tree trunk. These irrigation systems are functional.

### CORTADERIA, IMPERATA AND BLUE GRAMA

Irrigation design along Cortaderia, Imperata, and Blue Grama roads varies greatly. The majority of medians are irrigated by bubblers. South of the intersection of Cortaderia and Spain, the median's buffalo grass turf is irrigated with a sweat pipe system. A strip of buffalo grass turf located on the east side of the roadway is irrigated with a pop up spray irrigation system. These irrigation systems are functional.



Capped bubbler at Sculpture Gardens

## Sculpture Gardens

The sculpture garden irrigation systems are in poor condition. Generally, as plant material has died the irrigation emitters have been either capped or tied off (see image above). Renovation improvements have not been made and the irrigation system will require a full refurbishing to establish and support any new planting. The Spain Road Sculpture Garden irrigation is still partially operating, whereas the Academy Road Sculpture Garden was turned off and is inoperable.

## Arroyos, Open Spaces and Ponds

With the exception of the Michial Emery Trailhead, very little of the arroyo/open space areas are irrigated. The Michial Emery Trailhead irrigation system is a drip system supporting native plants with shade trees in the parking lot. It is unknown if the irrigation system is connected to the frost free hydrant for filling dog bowls. The Michial Emery Trailhead irrigation system is the only system where atmospheric vacuum breakers are used as a backflow device. This irrigation system is functional.

The wildlife watering area at the Wilderness arroyo is supported by an irrigation system.

## II. LANDSCAPE ASSESSMENT

### Introduction

The landscapes at High Desert are organized into zones based on location and maintenance levels.

### High Maintenance Zones

The following zones are to a large extent cultivated to communicate community character.

Zone 1 Development Entrances

Zone 5 Parks and Pocket Parks

### Medium Maintenance Zones

The following zones are a combination of cultivated and uncultivated plant compositions.

Zone 2 Streetscapes and Medians

Zone 3 Builder Entrances and Internal Streetscapes

Zone 4 Estate and Premier Village Entrances

### Low Maintenance Zones

The following zones are comprised primarily of uncultivated plant compositions. The Sculpture Gardens were originally considered cultivated zones, however, community sentiment is to return these areas to more native landscapes.

Zone 6 Sculpture Gardens

Zone 7 Arroyos, Open Space, and Ponds

## Zone Specific Landscape Observations

Refer to Landscape Zone Map, page 10.

## Development Entrances

There is general consensus that community entries must look good at all times of the year. Plant material in front of the community sign walls has been layered to convey a sense of abundance in the desert—with contrasting textures and colors. This layering effect is accomplished by berms and planting. The finish grade adjacent to the signage is higher than the grade adjacent to the sidewalk—bermed approximately 2'-0". Plants at the top of the berm descend in height, creating a miniature foreground/mid-ground, and background landscape. The current planting design includes a foreground layer of turf in a naturalistic shape between pedestrian walks and perennials. The expanse of low-water use turf is broken up by buried boulders and contained by steel edging. The ground plane is native soil that is kept clear of grasses and weeds.

## Initial Landscape Design Principles

Although original drawings were not available for review, the structure and form of the original hardscape design remains intact. Subtle aluminum lettering, the blue grama image logo, and tan stucco on the curved wall remains an iconic gesture for the entire development. There are no bluegrass lawns. Native plants in combination with xeric non-native plants are used to create a memorable composition. The Tramway bike trail is enhanced at the Development Entries with rest areas that include benches, larger steel logo artworks, and significant shade from nearby cottonwood trees. The overall impression of the entry areas is welcoming.

Evergreen trees and some deciduous trees have matured to create the vertical structure at the development entries. Shrubs and perennials are planted in rows, conveying a sense of order in an otherwise native and sometimes unruly landscape. The shrubs, perennials, and turf areas have undergone numerous changes in an effort to keep the landscape looking fresh. Turf areas and boulders have been generally placed in a naturalistic fashion and serve to focus views toward the signage. Landscape improvements generally extend between 10 and 20 feet from the signage, transitioning quickly to the juniper/grassland savannah composition.

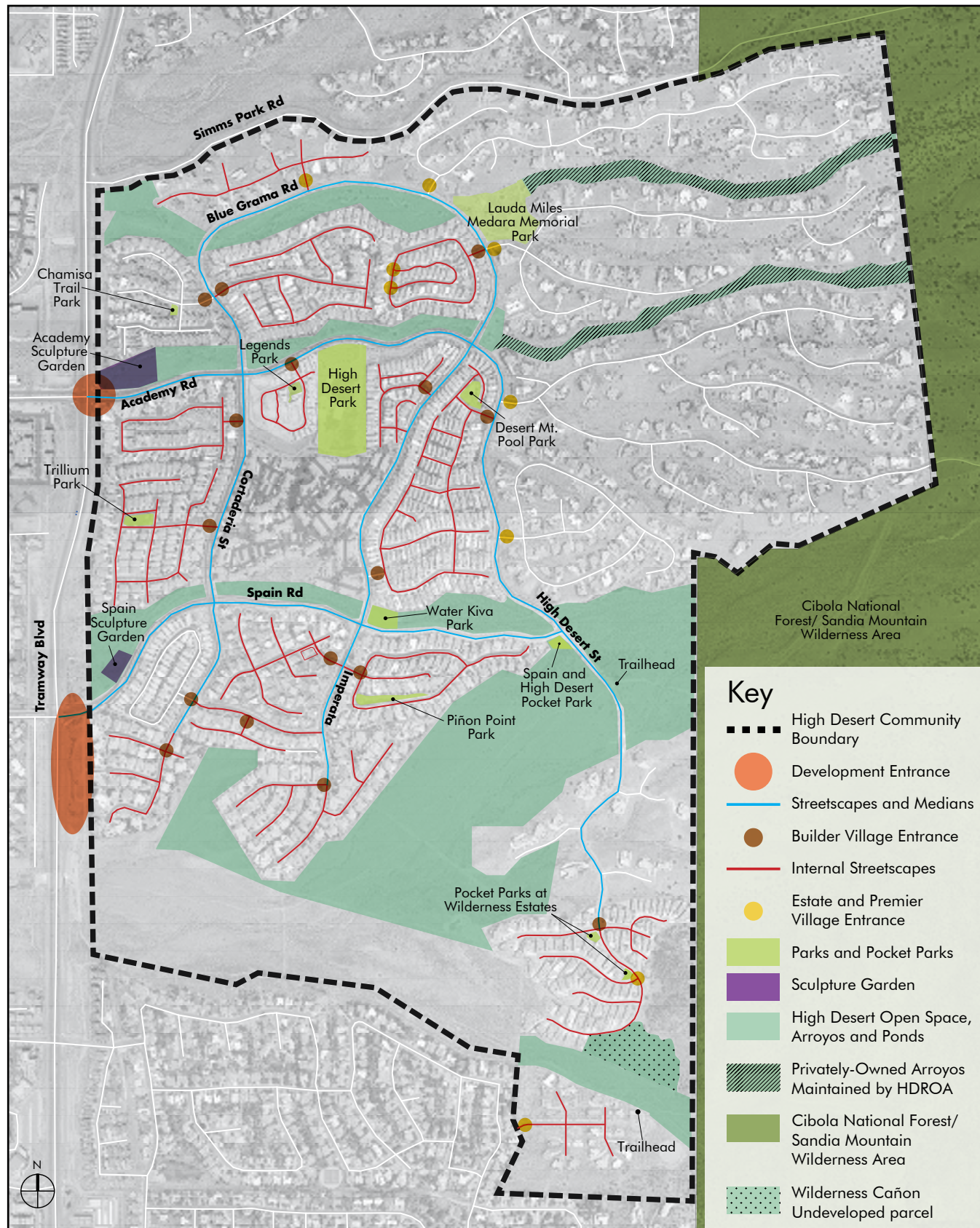
Tramway Boulevard is officially designated State Highway 556, and is subject to New Mexico Department of Transportation (NMDOT) design and maintenance regulations. Most improvements, including tree planting or placement of boulders within the R.O.W., require communication and coordination with the NMDOT District 3 Engineer. Exact property lines must be surveyed prior to landscape design.



Missing plants at a Development Entry



Figure 2 Landscape Zones Map



### Conditions

Development entries convey the sense of commitment to caring for the High Desert landscape. The aesthetic is more cultivated and manicured than any other landscape zone. The landscape is planted with a mix of native and non-native orderly shrubs and flowers that provide seasonal color and are kept tidy. Contained by steel edging, the buffalo grass turf area creates a pleasing soft ground cover. However, the following conditions need to be addressed:

- The buffalo grass turf is very difficult to maintain.
- Layering of the plant material is not consistent.
- Missing plants are obvious and need replacement.
- Boulders are sometimes located haphazardly and require reinstallation.

### Regulatory Context

The development entry sign straddles overlapping jurisdictions between the public right-of-way (ROW) and HDROA maintained properties. The entry areas are in utility easements with overhead and underground utilities, which complicate the views to the entry features and subject the areas to construction and maintenance disturbance.

### ACADEMY ENTRY LANDSCAPE

The Academy Road entrance is the most prominent entry into High Desert. Academy Road is the most direct route to High Desert from the core of the Northeast Heights whereas Spain Road is a shorter road that ends at Arroyo Del Oso Park. The Academy entrance is constrained by transmission towers and power distribution poles that clutter the views into High Desert from Tramway Blvd.

The Academy entrance has been given more attention and care than any other. The landscape is layered with Karl Forester, feather reed grass, turpentine bush, red yucca, yarrow, pincushion flower, and catmint. The tree canopy structure is primarily piñon. From the edge of the asphalt trail, buffalo grass lawn is interspersed with boulders extending west from the sidewalk to the edge of Tramway. Boulders are placed and partially buried for a naturalistic effect.

### SPAIN ENTRY LANDSCAPE

The Spain Road entrance is less cluttered with only transmission towers to contend with. Both entries have open spaces and arroyo drainages to the north and accommodate drainage from Tramway in swales between the multi-use trail and the edge of the road.

The Spain Road entrance landscape is layered with blue avena grass, turpentine bush, red yucca, Spanish dagger,

catmint, and little bluestem. The primary tree is piñon with some cottonwoods at the small resting space adjacent to the entry sign. A big tooth maple survives in the shade of the cottonwoods.

The layering of the plant material is not ideal at the Spain entrance as approached from the south. The grassland shrubs and grasses are larger than the organized plant material and obscure formal cultivation. Additionally, the plant materials have uniform growing heights at maturity, which diminishes the effect of a layered planting design.

### Streetscapes and Medians

#### Initial Site Design and Landscape Design Principles

Careful consideration was given to High Desert’s natural features, topography, and drainage in design of the community. The pervasive principle of design was to give the impression that buildings and roadways were laid upon the land with very little modification to the natural environment.

The planting design employs native plants to enhance the idea that very little of the natural landscape was altered. Native vegetation is located in a naturalistic fashion to mimic natural planting patterns. Higher density plant masses are placed in areas of increased importance, such as road intersections or along walks. Some plantings create a distinct sense of identity for specific areas. For instance, native yuccas punctuate the street south of the Academy Road and Cortaderia Street intersection, and staghorn sumac is prominent along the length of Cortaderia from Spain to Golden Aster. The use of concentrated plantings like these creates subtle but effective wayfinding markers—helping people navigate the roadway network while reinforcing the community’s landscape aesthetic.

Medians and parkways (planting beds between the curbs and sidewalks) are over-seeded with native grasses. These areas are punctuated by an occasional shrub (usually chamisa or Apache plume) or evergreen tree. With the exception of gambel and turbinella oaks there are not many deciduous trees in the medians. No mulch are present in Streetscape and Median Zones. The grasses are cut infrequently and the overall effect is of a soft, continuous carpet between curbs/roads and landscape areas.

The lack of traditional street tree types and their typical planting patterns are a distinct reminder that one is in High Desert. For instance, High Desert does not use rows of shade trees to create an allee over streets and walks. This deliberate streetscape planting strategy breaks with the typical suburban planting treatment of streets and medians and is a signature planting scheme at High Desert.





Trimmed native plant material



Median at Canyons Entry



Improved bus stop with seating



Sunset Ridge Internal Streetscape

School bus stops are important elements of the High Desert streetscapes, but they were not accounted for in the initial streetscapes. There are three school bus routes which currently serve High Desert's school age children. None of the pick-up or drop-off zones accommodate sitting or shelter for children or parents who may be waiting for children to be dropped off. Additionally, special consideration ought to be given to ensuring there is good visibility at these locations, as children are often active in these areas and just becoming aware of vehicular traffic.

### Conditions

In general, the streetscapes and medians convey the vision of a unique landscape aesthetic. However, there are many issues that should be addressed to optimize the community aesthetic in a manner that is maintainable, resilient, and safe. The following conditions need to be addressed:

- Efficacy of the original designs.
- Effects of drought on plant material.
- Old irrigation systems.
- Transitions from HDROA grassland aesthetic to village rock mulched areas.
- Maintenance strategies employed over time.
- School bus pick-up and drop-off areas.

For example not all the original plant choices have been successful at High Desert. The use of aspens and redbuds in streetscapes has posed constant problems for the HDROA, as the trees have struggled with heat, poor soil conditions and a harsh western aspect. Drought conditions have exacerbated challenging conditions, forcing many native trees to be irrigated for longer than anticipated and in a variety of different ways.

### Regulatory Context

The City of Albuquerque has jurisdiction over the design of landscaping in roads and medians in High Desert. Design of streetscapes and medians may follow city guidelines regarding plant and utility infrastructure conflicts and good irrigation design principles.

#### ALBUQUERQUE PUBLIC SCHOOLS BUS STOPS

Currently three bus routes serve High Desert and deliver students to Georgia O'Keefe Elementary School, Eisenhower Middle School, and Eldorado High School. Between 61 and 127 students are served and picked up at 13 separate locations. There are eight shared stops. Shared for all schools are Cortaderia and Sunset Ridge, Cortaderia and Desert Sky, Cortaderia and Trillium Trail, High Desert and Red Yucca, and High Desert and Elena Gallego Place. Shared except for Eldorado HS are Cortaderia and Golden Aster, and Golden Aster and Imperata. Shared except for Georgia O'Keefe ES is Academy and Imperata. These shared routes should be prioritized for improvement.

#### CITY OF ALBUQUERQUE BUS STOPS

The city transit system serves High Desert with the Academy Boulevard commuter bus route. There are six bus stops located on both sides of the roadway on Spain, Academy, and Cortaderia as noted on the Circulation Map in Appendix A. With the exception of the stop on east bound Academy right off of Tramway, the bus stops are signed though not furnished or paved. The stop on east bound Academy has several boulders to sit on and is paved with flagstone. At least one bus stop is hidden in the pinon trees south of Trillium, and it is doubtful if anyone would see a potential passenger in time.

### Strategies

Canvas the community and seek information from City transit about ridership numbers, the necessity of bus stops, bus stop design standards.

Design bus stops with significant ridership with seating and shelter appropriate to High Desert aesthetic standards.

### Builder Village Entrances and Internal Streetscapes

#### Initial Landscape Design Principles

The roadway layouts at Builder Villages were intended to maximize plot sizes and minimize public infrastructure. Generally the roadways do not have medians of any significance except at the entries of the villages, and lane widths are determined by emergency vehicle requirements. There are many cul-de-sacs and looping roads within the Builder Villages. Sidewalks are constructed on both sides of the street except at Wilderness Village and Trailhead and the majority of sidewalks are offset several feet from the back of curb for parkway plantings.

Entry plantings are intended to draw you into the village. They are commonly tidy and well maintained with signage either at the sides or in the entry median. Signage materials typically draw from materials traditionally used at High Desert, including corten steel, stucco, and stone. Entry plantings include a variety of trees and shrubs including aspen, desert willow, and piñon. There are beds of annuals at Legends that are seasonally changed to provide color year-round.

Most planting strips in Builder Villages are covered with rock mulch and sparsely planted. Grade differences are handled either by the walls between private and public

areas or with boulder retaining structures. Many residences have small stacked wall structures that address grade changes as well. Standard rock materials include Santa Fe brown mulch and red sandstone moss rock boulders.

### Conditions

The entries convey distinct village identities and are well maintained, though some need replacement plantings. Many of the entries suffer from clear sight triangle issues that require action (see Section IV, page 19). The following sections note Builder Village entries and streetscapes that need attention.

#### SUNSET RIDGE STREETScape

Sunset Ridge suffers from plants in planting beds that are too small for the plants to thrive, and overgrown trees that obstruct sidewalks and roadways. The original construction did not include boulder placement in a naturalistic composition. Instead, the boulders are set among rock mulches in straight lines. This arrangement of boulders is jarring and not in keeping with the majority of landscape treatment throughout the community. In addition, Sunset Ridge Place dead ends at Kaas Trail Court, and there is a large sloped planting area planted with a variety of trees. Grasses have been completely removed from landscape and is not in keeping with the High Desert landscape approach.

#### THE CANYONS

Native grass seeding is absent from the parkway planting areas from Golden Aster to the gated entry at the Canyons, and native granite soil is the primary mulch material. Completely barren soil erodes quickly, while grasses maintain the soil composition and create consistency throughout High Desert. These conditions are inconsistent with aesthetics found elsewhere at High Desert.





Broadstone plant maintenance



Water Kiva Park structure



Aspens in the center of the Water Kiva Park



Sculpture and drop inlet at Water Kiva Park

## THE BROADSTONE

Much of the Broadstone landscape is comprised of a naturalistic mulch and turf pattern. The segmented block retaining walls, which are not in keeping with the High Desert aesthetic, may be outside the bounds of this report. However, the Broadstone maintains its plant material without regard to species or habitat, making balls of all shrubs. This treatment of plant material is very out of character (see image above and page 12, left).

### Regulatory Context

The City of Albuquerque is the regulatory authority for roads in Builder Villages. Those villages with gated entries are maintained and regulated by the internal neighborhoods.

## Estate and Premier Village Entries

### Initial Landscape Design Principles

Entry monuments at Estate and Premier Village entries are largely signs with vegetation surrounding them. Discerning what is planted and what has volunteered can be difficult. The signage and the landscape designs are understated. There is no significant public sentiment for Estate and Village Entries and streetscape designs to change.

### Conditions

Entrances are in good condition except for several clear sight triangle issues that need to be addressed.

### Regulatory Context

The known regulatory agency for these entrances is the City of Albuquerque. AMAFCA may have some jurisdiction if the signs are located in a flood zone (see Section IV page 19).

## TRAILHEAD ENTRY AND STREETScape

Trailhead lies off the main roadways and may be overlooked by many community members. However, the residents are vocal supporters for their neighborhood. Trailhead's entry signage and streetscape sit on an exposed ridge with a significant western aspect that is subjected to extreme heat and wind. The landscape, which is predominantly native in materials and composition, manages to stay alive but does not thrive. Plant materials include cherry sage, gray and gambel oak, turbinella oak, chamisa, beargrass, and juniper, to name a few.

## Parks and Pocket Parks

Parks are an important community amenity. The larger parks at High Desert represent efforts to break the typical suburban park design mold with extensive use of native plants, water harvesting, and design that celebrates the High Desert setting.

### LAUDA MILES MEDARA MEMORIAL PARK

Designed by local design firm Sites Southwest, Lauda Miles Medara Memorial Park is approximately nine acres of open space, and is situated at the confluence of the South Pino Tributary Middle Branch and the South Pino Tributary at the NE corner of Pino Canyon Place and Blue Grama Road. The arroyo areas have concrete and boulder-hardened culverts and outfalls. The park has several picnic tables, benches, overlooks, and landscape interpretation areas connected by a trail system, which includes an ADA accessible sidewalk paralleling Pino Canyon Place.

## Initial Landscape Design Principles

The trail and gathering area design follows the topography nicely and leads visitors to shaded areas with excellent views of the mountains. The planting design was conceived as an exploration of the different biomes, or life zones, from the Bosque to the Sandia Mountains. Design and construction saved many existing juniper and piñon trees and incorporated a drinker to attract wildlife.

### Conditions

Many plantings, most notably the Limber pines, have failed to thrive due to drought and unfavorable growing conditions. The irrigation system is a combination of bubblers and drip, which does not irrigate trees effectively.

### Regulatory Context

The primary regulatory body at Lauda Miles Park is AMAFCA. AMAFCA's primary concern is limiting debris that may hinder water conveyance.

### WATER KIVA PARK

Water Kiva Park is approximately an acre in size and located at the NE corner of Imperata Street and Spain Road. Water Kiva Park is located at a tributary of the Bear Canyon Arroyo, and this arroyo was known to run during rain events. However, since the construction of the Bear Arroyo Training Dike, water to the arroyo has been diverted.

### Initial Landscape Design Principles

Designed by local design firm Sites Southwest, Water Kiva Park was designed to harvest and passively reuse water from the arroyo and the adjacent roadway. The form takes the shape of two close circles, connected by paths and stone swales that direct the water into planting areas

(see images above and page 14, right). The first circle is a basin that accepts water from the arroyo, slows the water down allowing sediment to settle, and directs water into channels. In the center of this basin is a steel sculpture of the High Desert logo that sits above a drop inlet in case the water volumes exceed the capacity of the harvesting system. The second circular kiva form accepts water from the first basin and water from a curb cut in Spain Road. Small channels were designed to direct water to spread out and infiltrate around plant material.

### Conditions

The general consensus is that Water Kiva Park, whether from design, construction or upstream conditions, never worked the way it was designed. The result left some plant material saturated and other plants without enough water.

Although original planting design drawings are unavailable, the design originally had lavender and redbud trees and water-loving red osier dogwood shrubs. Current plantings include Karl Foerster feather reed grass, yarrow, blue mist spirea and cherry sage, potentilla, aspens in lieu of redbud trees, Chinese pistache and buffalo grass turf. The aspens are struggling, but the majority of shrubs are surviving fairly well.

There are no imported organic or inorganic mulches in the planting beds.

### Regulatory Context

The arroyo through Water Kiva Park was known to flow during rain events. However, the construction of an upstream dike has diverted flow to the south. Despite the diversion of water to other arroyo systems, AMAFCA is the primary entity with regulatory oversight at Water Kiva Park.





City-maintained High Desert Park

### HIGH DESERT PARK

High Desert Park is the primary active recreation area at High Desert. The park was designed by Design Workshop. The park includes basketball and tennis courts, two playgrounds designed for different ages, and a turf field. The design includes a semicircular walk with a shade structure at its apex, and a turf area inside. Adjacent to the park is a native plant garden designed to introduce residents to the plant material native to the Sandia foothills and specifically, High Desert. The park is in keeping with the principle of water conservation. If high water-use turf is to be used, it is to be used for the common good and regarded as a shared resource. The park is currently maintained by the City of Albuquerque.

#### Initial Landscape Design Principles

The park is designed with a semi-circle turf area and undulating walks. The design reflects a park style that did not have to contend with current park design guidelines established to conserve water and reduce maintenance by the City Parks and Recreation department. For instance, the park was not designed with a strict orthogonal composition to maximize irrigation efficiency.

Trees and plant material include Arizona sycamores and locust trees and native plant material that shades the perimeter of the park and creates a gentle transition to the native landscape.

#### Conditions

The park is well kept and managed, though some of the trash receptacles and site furnishings are beginning to show their age. Consistent with CABQ park design, rock mulches (and probably filter fabric) are employed in the cultivated landscape and parking lot.

Residents consistently use the park as a gathering spot for active recreation. However, the manicured look and the use of rock mulches are objectionable to some residents.

#### Regulatory Context

The City of Albuquerque is in charge of High Desert Park. HDROA does not maintain the park premises, however, the HDROA can make requests to upgrade or change park features.

### LEGENDS PARK

The newest park is in the Legends subdivision and is designed on a steep slope with a fractured-looking paving pattern that adjoins adjacent sidewalks (see image middle left). There are plant materials that are not on the approved list for High Desert. Mail box stands, a shade structure, and a sloping lawn that faces west make up the majority of the park.



Legends Park



Park at Chamisa Trail

#### Conditions

The park is in very good condition.

#### Regulatory Context

The HDROA maintains the park.

### CHAMISA TRAIL PARK

This park occupies a lot in the center of Chamisa Trail Village. The park consists of a shade structure surrounded by curving gravel mulch patterns. Turf is located between the shade structure and the residential walls. Trees include desert willow, gambel oak, Austrian pine, and piñons. There are shrubs as well (see image page 16, bottom).

#### Conditions

Due to the central expanse of gravel, the park appears barren and sterile. Boulders sit on top of the mulch and an abandoned solar controller and backflow enclosure sit exposed in the middle of the park. Functionality of solar controller and backflow is to be determined.

#### Regulatory Context

The park is maintained by HDROA.

### TRILLIUM PARK

This park is suitable for active recreation as there is a significant contiguous high-water-use bluegrass turf area. The park has a shade structure, trash receptacles, dog stations, and benches. Plants include sycamore, juniper, chitalpa, Austrian pine, aspens, and various shrubs. Gravel mulches line the edges of the park (see image, top right).

#### Conditions

The park is in good condition.

#### Regulatory Context

The park is maintained by HDROA.

### DESERT MOUNTAIN POOL AND PARK

This park and community pool are located within the Desert Mountain subdivision. The south side of the park includes a high water-use turf grass lawn. To the north of the pool is a pool house and shade structure. Common areas leading to the pool have spray irrigated turf areas. Plantings include aspen, Austrian pine, desert willow, raywood ash, New Mexico olive, and gambel oak. Other plantings include miscanthus grass, sedum, rosemary, lavender, mugo pine, sand cherry, three leaf sumac, woods rose, Russian sage, catmint, and cherry sage.

#### Conditions

The turf around the pool has recently been renovated and fertilized.



Trillium Park



Pocket Park at Spain and High Desert



Piñon Point Park





Pocket Park at Wilderness

### Regulatory Context

The park is maintained by HDROA.

#### SPAIN AND HIGH DESERT POCKET PARK

This pocket park provides an informal resting area for walkers and serves as a wayfinding landmark for residents. The park consists of a steel High Desert logo on a small mound surrounded by piñon trees, buffalo grass turf, and shrubs. There is a walking path that leads visitors around the artwork to a stone seating area (see image page middle right).

### Conditions

The condition of this park is disputed among residents of the community. The pocket park was recently weeded extensively. Plantings consist of rosemary, red yucca, gambel oak, powis castle sage, beargrass, cotoneaster, and santolina. The trees consist of New Mexico olive and piñon. Rosemary has not performed well due to freezing in the last couple years.

### Regulatory Context

HDROA is the responsible for maintaining the park, and the City of Albuquerque has jurisdiction over portions of the park inside the public right-of-way.

#### PIÑON POINT PARK

This park is within Piñon Point and is a sliver of land between backyard walls and Twilight Trail. The park consists of native plantings at the narrow east end and broadens to a bluegrass turf area on the west end. The turf wraps around a playground and shade structure. There is a crusher fines path on the north side and the turf is set back from the curb approximately 6 to 8 feet (see image page 17, bottom right).

### Conditions

There are some erosion issues that need to be corrected and the sand play surfacing requires replenishment. Some of the cotoneaster shrubs have died and need to be replaced.

### Regulatory Context

Pocket park improvements often extend into the public right of way and include the parkway and slivers of property from the back of sidewalk to the property lines. HDROA is technically responsible for maintaining these improvements, and the City of Albuquerque has jurisdiction over the public rights of way.

#### WILDERNESS POCKET PARK

Comprised of curvilinear shapes of grass with scattered trees and shrubs, Wilderness Pocket Park is the only developed park in the area (see image, top left). The park has piñon, chitalpa, santolina, and Russian sage. The



Spain Sculpture Garden



Arroyo vegetation and proximity to homes

irrigation components—backflow enclosure, electrical meter, and other utilities—are highly visible at the corner of the park.

### Conditions

Runoff from the spray irrigation system has resulted in significant erosion issues at this park. The landscape contractor has installed stone cladding between the turf and the roadway to limit erosion.

### Regulatory Context

HDROA is responsible for maintaining the park, and the City of Albuquerque has jurisdiction over portions of the public right-of-way.

### Sculpture Gardens

The branding effort for High Desert included the commissioning of artwork by Ali Baudoin. The artworks are iconic emblems of abstracted grama seed heads made of brushed steel (see image page 18, middle left). One sculpture has been placed to the north of each development entry. Both are connected to the community through walking trails.

### Initial Landscape Design Principles

The original design of the sculpture gardens included a spiral-like trail lined with plantings that led visitors to the base of the sculptures.

### Conditions

The swirled trail and landscape pattern is almost entirely gone from the site, and there are very few shrubs or trees from the original planting scheme that have survived. The sculptures are a destination for walkers, and as such, should have the ability to shade, and provide rest for visitors. The sculpture areas are barren of significant plant material, shade and places for resting and admiring the sculptures. The irrigation systems are compromised or inoperable.

### Regulatory Context

The Sculpture Gardens are the responsibility of the HDROA.

### Arroyos, Open Space and Ponds

High Desert manages approximately 240 acres of open space. These open spaces are essentially publicly accessible open lands with walking and biking trails.

### Initial Landscape Design Principles

Functionally, open spaces provide recreational opportunities for the community and visual relief from the city. From an environmental standpoint, open spaces serve as wildlife



Open space

corridors and provide wildlife and plant habitat. However, the composition of the open spaces has changed in 15 years, and they are in need of attention as plant materials die and become potential fuel for fire. This assessment reports on specific open space areas that have changed significantly.

#### NORTH OF SPAIN FROM IMPERATA TO HIGH DESERT

This sliver of open space between Imperata and High Desert is 7.5 acres and was reportedly an active arroyo with ephemeral water flow during storm events. Spain Road runs on the south side of the space and Desert Mountain is on the north edge.

**Conditions** The plant material, composed primarily of apache plume, chamisa and grasses, has suffered since the diversion of ephemeral flows as a result of AMAFCA constructing the Bear Canyon Dike. There are also some osage orange trees that have perished on the south side of Trillium due to the restriction of water to this arroyo. The dead plant material represents a fire hazard. Exploration of solutions to this issue are discussed in the recommendations chapter.

**Regulatory Context** These spaces are not maintained except for a yearly visit from the landscape contractor to assure compliance with AMAFCA regulations of keeping the arroyos free of debris and examining for erosion.

#### NORTH OF MICHIAL EMERY TRAILHEAD

This open space area is approximately 3.7 acres and is north of the Michial Emery Trailhead. The area is primarily apache plume and grasses that have been defoliated by an infestation of insects. The majority of the plant material is dead and the area requires some rejuvenation.



### Conditions

The desert willow is thriving at pavement edges and the landscape is in good condition.

### Regulatory Context

These spaces are not maintained except for a yearly visit from the landscape contractor to assure compliance with AMAFCA regulations of keeping the arroyos free of debris.

## IV. CLEAR SIGHT TRIANGLE

Safe, comfortable streets for pedestrians, cyclists, and drivers have clear, unobstructed views. Plant material can complicate and obstruct views and streetscape maintenance needs to be done regularly to keep people safe.

As anticipated the HDROA is responsible for compliance with CABQ ordinance 8-2-2-15 Clear Sight Triangle which states that the owners and occupants of corner lots can be assessed fines, damages, and claims if any obstruction between 3 to 8 feet is not maintained ('74 Code, § 9-5-10.14C-D) (Ord. 65-1974; Am. Ord. 69-1979).

As part of the condition assessment for the High Desert Landscape Masterplan, roadways and intersections were assessed for clear sight line issues from the drivers' perspective (see Clear Sight Triangle Assessment Map, Appendix A, page A-7).

### Clear Sight Triangles

Clear sight triangles are angles of vision that improve a driver's ability to see conflicts before entering an intersection. Clear sight triangles are not required in four-way, stop-controlled intersections, since oncoming traffic is required to stop. However, a two or one-way stop-controlled

intersection should have associated clear sight triangles with views from the stopped position.

Methods to calculate clear sight lines are developed by the American Association of State Highway Transportation Officials (AASHTO) and strict adherence to the rules can limit the use of street trees. CABQ has developed simple criteria from the AASHTO standards to address clear sight lines. (See Figure 3 below and Appendix B for current City of Albuquerque regulations.)

Typical methods of calculating clear sight triangles extend from a driver's position looking to the left and right at a stop-controlled intersection approximately 3.5' ht. above the roadway and approximately 13 feet from the intersection of the curb lines. Clear sight triangles can extend hundreds of feet from this point depending on the roadway configuration (i.e. 2 or 4 lanes, lane width, separated travel lanes with striping or median), the turn being attempted and the speed of the roadway.

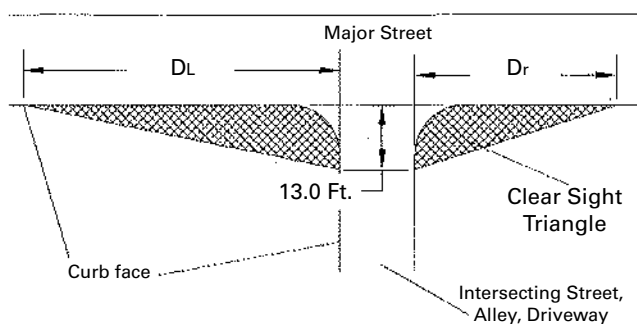
### Plantings and Clear Sight Triangles

Commercially available plant material is known for growing to a certain height and developing a specific form. Choosing the right plant material for placement within the clear sight triangle is important for CABQ approval on roadway planting designs. City staff pays attention to the selection of plant material to allow for an unobstructed view from 3'-0" ht. to 6'-0"ht. within the clear sight triangle. The city often requests trees of a particular size to avoid limbs intruding into the clear sight lines, and vegetation may be evergreen as long as it does not conflict with established clear sight lines.

#### Limitations of this Clear Sight Triangle Assessment

- This report considers corner clear sight triangles only.
- Vertical crests and curves complicate the sight distance measurement. HDROA should consider employing a traffic engineer for an accurate site distance measurement in these circumstances.
- This assessment does not geometrically and/or mathematically calculate clear sight triangles for every stop-controlled intersection. Instead, this report considers several intersections that were determined to be visually problematic and presents an assessment of clear sight issues at these locations, which are typical of conditions in other areas of the community. For example, Estate and Village roads were not comprehensively assessed, but some were observed, and pictures are included in this report.

Figure 3 Intersection Clear Sight Triangles



Source: Department of Municipal Development, Traffic Engineering, City of Albuquerque

## High Desert Roadways and CABQ Regulations

HDROA is responsible for compliance with the CABQ ordinance 8-2-2-15 Clear Sight Triangle. See Appendix B, Clear Sight Triangle Regulations.

The matrix below classifies street types in High Desert according to CABQ regulations.

Table 1 High Desert Road Classifications per CABQ code

Road	Description	Speed	Width of street*
Academy Road	4LD bike lanes	35	65' to 68'
Spain Road	4LD bike lanes	35	65' to 68'
Imperata Street	4LD* bike lanes	30	45'
Cortaderia Street	4LD bike lanes	25	65' to 68' Academy to Spain 50' South of Spain
High Desert Street	4LD to Spain 4LU—2 lanes after Spain bike lanes	30	45' with median 28'—w/out median
Blue Grama Road	4LD Painted, divided from Pino Canyon to Academy bike lanes	25	46' 35'
Golden Aster Road	4LU—2 lanes	25	30'
Trailhead Road	4LU—2 lanes	25	24'
Others—Estate and Village Roads	LUR	25	24' to 30'

LUR Local, undivided, single family residential

LU Local undivided, all other uses

4LU 2 or 4 lanes, undivided

4LD 4 lanes, divided with raised or painted medians

6LD 6 lanes, divided with raised or painted medians

Source: Department of Municipal Development, Traffic Engineering, City of Albuquerque

\*measurements taken from Google Earth

\*\* 2 lane divided road is not classification in CABQ regulations



## Site Views

See Appendix A, Clear Sight Triangle Assessment Map, and Figure 3 page 20.

### 1 MOONDANCE AND SOLTERRA PLACE AND IMPERATA STREET

#### Intersection Notes

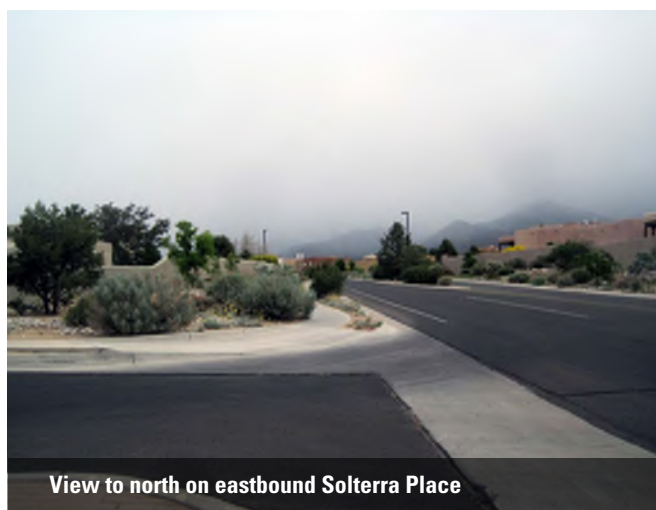
- Two-way stop-controlled intersection
- Clear sight triangle distances- DL= 260', DR= 90'

#### Recommendation

- Remove or train tree and shrubs on northwest and southwest corners.

#### Other Conditions

- Not available



### 2 RED YUCCA AVENUE AND HIGH DESERT STREET

#### Intersection Notes

- One-way stop-controlled intersection
- Clear sight triangle distances- DL= 260', DR= 90'

#### Recommendation

- Remove/train trees and shrubs on southwest corner.

#### Other Conditions

- Not available



### 3 SPAIN ROAD AND HIGH DESERT STREET

#### Intersection Notes

- One-way stop-controlled intersection.
- Clear sight triangle distances- DL= 260', DR= 90'

#### Recommendation

- Remove tree along sidewalk

#### Other Conditions

- Road curves west and a vertical crest



### 4 CUL-DE-SAC AT HIGH DESERT STREET

#### Intersection Notes

- One-way stop-controlled intersection
- Clear sight triangle distances- DL= 130', DR= 130'

#### Recommendation

- Remove or train tree located to the north on the west side of the road

#### Other Conditions

- Vertical crest



### 5 WILDERNESS PLACE AND HIGH DESERT STREET

#### Intersection Notes

- Two-way stop-controlled intersection
- Clear sight triangle distances- DL= 260', DR= 130'

#### Recommendation

- Remove or train trees and shrubs at southwest and northwest corners
- Provide cautionary signage for southbound vehicles

#### Other Conditions

- Not available





**6** PIEDRA GRANDE PLACE AND HIGH DESERT STREET

**Intersection Notes**

- One-way stop-controlled intersection
- Clear sight triangle distances- DL= 260', DR= 130'

**Recommendation**

- Remove tree and shrub on northwest and southwest corners
- Provide cautionary signage for northbound vehicles

**Other Conditions**

- Road curves and vertical crest



**7** EMBUDITO VIEW AND HIGH DESERT STREET

**Intersection Notes**

- One-way stop-controlled intersection
- Clear sight triangle distances- DL= 260', DR= 130'

**Recommendation**

- Provide cautionary signage for northbound vehicles

**Other Conditions**

- Road curves and vertical crest



**8** ELENA GALLEGOS PLACE AND HIGH DESERT STREET

**Intersection Notes**

- One-way stop-controlled intersection
- Clear sight triangle distances- DL= 260',DR= 130'

**Recommendation**

- Remove tree and shrubs along curb south of southeast corner

**Other Conditions**

- Not available



**9** DESERT STAR ROAD AND HIGH DESERT STREET

**Intersection Notes**

- One-way stop-controlled intersection
- Clear sight triangle distances- DL= 260', DR= 130'

**Recommendation**

- Remove tree

**Other Conditions**

- Not available



**10** BUFFALO GRASS COURT AND CANADA DEL OSO PLACE

**Intersection Notes**

- One-way stop-controlled intersection
- Clear sight triangle distances - DR= 35', DL= 35'

**Recommendation**

- Remove tall grasses and shrubs.
- Replace plantings with low growing native seed mix

**Other Conditions**

- Not available





**11 BEARGRASS COURT AND CANADA DEL OSO PLACE**

**Intersection Notes**

- One-way stop-controlled intersection
- Clear sight triangle distances- DR= 35', DL= 35'

**Recommendation:**

- Remove shrubs

**Other Conditions**

- Not available



View to east from northbound Beargrass Court

**13 BLUE GRAMA ROAD AND PINO CANYON PLACE**

**Intersection Notes**

- Two-way stop-controlled intersection
- Clear sight triangle distances- DL= 260', DR= 90'

**Recommendation**

- Remove shrubs; replace with low growing grass seed mix

**Other Conditions**

- Vertical crest



View to north from eastbound Pino Canyon



View to south from eastbound Pino Canyon Place

**12 QUAKING ASPEN PLACE/DESERT ZINNIA COURT AND PINO CANYON PLACE**

**Intersection Notes**

- Two-way stop-controlled intersection
- Clear sight triangle distance-- DR= 35', DL= 35'

**Recommendation**

- Remove tree and shrubs; replace with low growing grass seed mix

**Other Conditions**

- Not available



View to east from southbound Quaking Aspen Place



View to the east on northbound Desert Zinnia Court

**14 CHERRY SAGE COURT AND PINO RIDGE ROAD**

**Intersection Notes**

- One-way stop-controlled intersection
- Clear sight triangle distances- DR=35', DL=35'

**Recommendation**

- Remove shrubs; replace with low growing grass seed mix

**Other Conditions**

- Not available



View to the east from southbound Cherry Sage Court



**15 PARK EXIT AND ACADEMY ROAD**

**Intersection Notes**

- One-way stop-controlled intersection
- Clear sight triangle distances- DL= 350', DR= 110'

**Recommendation**

- Remove shrubs and tall grasses; replace with low growing grass seed mix

**Other Conditions**

- Vertical crest



View to west from northbound Park Exit

**16 HIBISCUS TRAIL AND IMPERATA STREET**

**Intersection Notes**

- One-way stop-controlled intersection
- Clear sight triangle distances- DL= 260', DR= 90'

**Recommendation**

- Remove or train trees

**Other Conditions**

- Not available



View to the south from eastbound Hibiscus Trail

**17 BROADSTONE APARTMENT AND IMPERATA STREET**

**Intersection Notes**

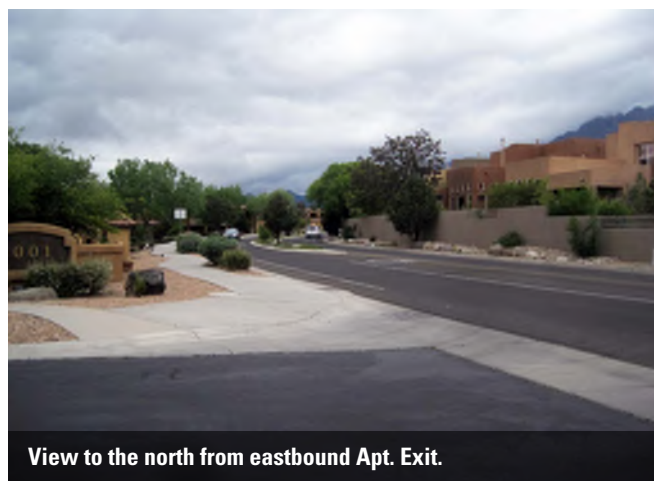
- One-way stop-controlled intersection
- Clear sight triangle distances- DL= 35', DR= 35'

**Recommendation**

- Remove shrubs; replace with low growing grass seed mix

**Other Conditions**

- Not available



View to the north from eastbound Apt. Exit.

**18 PIÑON PEAK AVENUE AND IMPERATA STREET**

**Intersection Notes**

- One-way stop-controlled intersection
- Clear sight triangle distances- DL= 35', DR= 35'

**Recommendation**

- Remove or train trees; provide cautionary signage for southbound vehicles

**Other Conditions**

- Not available



View to south from westbound Piñon Peak Avenue



View to north from westbound Piñon Peak Avenue

**19 TRILLIUM AND CORTADERIA STREET**

**Intersection Notes**

- Two-way stop-controlled intersection
- Clear sight triangle distances- DL= 210', DR= 70'

**Recommendation**

- Remove or train tree and shrubs

**Other Conditions**

- Not available



View to northeast from eastbound Trillium Exit



**20 DESERT SKY AVENUE AND CORTADERIA STREET**

**Intersection Notes**

- One-way stop-controlled intersection
- Clear sight triangle distances- DL= 210', DR= 70'

**Recommendation**

- Remove or train trees

**Other Conditions**

- Not available



**V. PRIORITIZATION**

The Prioritization Matrix is a method for prioritizing landscape improvements at High Desert. The matrix on the following page uses a ranking system to identify priority areas, with low number rankings being areas of little concern and high number rankings being of high concern. The rankings for landscape and irrigation conditions are added to rankings for safety, visibility, and aesthetic perceptions (by HDROA Landscape Committee and D/P/S staff) to identify the areas of most concern—the priority areas.

See Appendix A, page A-6 for a map illustrating the priority areas. The mapped areas correspond to priority areas with scores of 8 or above as illustrated on the Prioritization Matrix.

Prioritization Matrix Legend	
0	No Concern
1	Low Concern
2	Medium Concern
3	High Concern

Table 2 Prioritization Matrix

Prioritization Matrix	Landscape	Irrigation	Safety	Visibility	Public Perception	Totals	Clear Sight Issues
<b>Zone 1 Development Entries</b>							
Academy and Tramway	1	1	1	3	2	8	Clear Sight Δ issue
Spain and Tramway	1	2	1	3	2	9	
<b>Zone 2 Streetscapes and Medians</b>							
Academy Road	0	0	2	1	0	3	Clear Sight Δ issue
Spain Road	0	0	2	1	0	3	Clear Sight Δ issue
Cortaderia Street	2	1	2	1	0	6	Clear Sight Δ issue
Imperata Street	2	1	2	1	0	6	Clear Sight Δ issue
High Desert Street	0	0	2	0	0	2	Clear Sight Δ issue
Blue Grama Road	0	0	2	0	0	2	Clear Sight Δ issue
Golden Aster	1	1	2	0	1	5	Clear Sight Δ issue
<b>Zone 3 Builder Village Entrances and Internal Streetscapes</b>							
Chamisa Trail	0	0	0	0	0	0	
Sunset Ridge	3	0	0	1	0	4	
Chaco Ridge	0	0	1	1	0	2	
Desert Sky	0	0	1	1	0	2	
Legends	0	0	0	1	0	1	
The Enclave	0	0	2	1	0	3	Clear Sight Δ issue
The Trillium	1	0	2	1	0	4	Clear Sight Δ issue
Broadstone Apartments	3	0	2	1	0	6	Clear Sight Δ issue
Desert Mountain	0	0	2	1	0	3	Clear Sight Δ issue
The Aerie	0	0	0	1	0	1	
Solterra	0	0	1	1	0	2	Clear Sight Δ issue
Piñon Point	0	0	2	1	0	3	Clear Sight Δ issue
Tierra del Oso	1	0	2	1	0	4	
Desert Song	0	0	0	1	0	1	
The Canyons	2	0	0	1	0	3	
<b>Bus stops</b>							
1	3	3	3	0	1	10	
2	3	3	3	0	1	10	
3	3	3	3	0	1	10	
4	3	3	3	0	1	10	
5	3	3	3	0	1	10	
6	3	3	3	0	1	10	
7	3	3	3	0	1	10	
8	3	3	3	0	1	10	



Table 2 Prioritization Matrix, continued

Prioritization Matrix Category and Site	Landscape		Irrigation			Public		Clear Sight Issues
	Condition	Safety	Visibility	Perception	Totals			
<b>Zone 4 Estate and Premier Village Entrances</b>								
Mountain and West Highlands	0	0	0	1	1	2		
Desert Highlands	0	0	0	1	1	2		
The Highlands	0	0	2	1	1	4	Clear Sight Δ issue	
The Overlook	0	0	2	1	1	4	Clear Sight Δ issue	
Wilderness Estates	0	0	2	0	0	2	Clear Sight Δ issue	
Wilderness Village	1	1	1	1	1	5		
Trailhead	3	2	0	2	2	9		
<b>Zone 5 Parks and Pocket Parks</b>								
High Desert Park	0	0	2	1	0	3	Clear Sight Δ issue	
Lauda Miles Medara Memorial Park	2	2	0	2	1	7		
Water Kiva Park	1	1	0	2	1	5		
Spain/High Desert Pocket Park	1	1	2	3	2	9	Clear Sight Δ issue	
Wilderness Village Pocket Parks	1	1	0	2	1	5		
<b>Community Parks</b>								
Evening Star and Twilight Trail	1	0	1	1	0	3		
Desert Mountain Pool/Park	1	1	0	0	1	3		
High Ridge and Sunset Ridge	0	0	0	1	1	2		
Trillium Trail and Wildflower Trail	0	1	0	0	1	2		
<b>Zone 6 Sculpture Gardens</b>								
At Academy	3	3	0	1	1	8		
At Spain	3	3	0	1	1	8		
<b>Zone 7 Arroyos, Open Space and Ponds</b>								
South Pino Tributary	0	0	0	0	1	1		
South Pino Tributary Middle Branch	0	0	0	0	1	1		
Bear Canyon Arroyo	2	0	3	0	1	6		
Bear Canyon arroyo Tributary	2	0	3	0	1	6		
Unknown (Pino?)	1	0	1	1	1	4		
Embudito Channel	0	0	1	0	1	2		
Diversion Dikes	0	0	0	0	0	0		
<b>Trailheads</b>								
Michial Emery Trailhead	0	0	0	1	1	2		
Embudito Canyon Trailhead	0	0	0	1	0	1		

# CHAPTER 3: RECOMMENDATIONS

## I. INTRODUCTION

The following are the recommendations of the High Desert Landscape Masterplan—recommendations for design, development and operations that will re-establish landscape continuity and reinforce High Desert’s sense of place.

For the purposes of this report a native plant is defined as plants that are endemic or indigenous to the area and that are adapted to the climate, soil, and moisture conditions of the area. Strict adherence to this native plant definition can limit plant choices to the detriment of landscape design. This reports advocates more use of native plant materials while maintaining that adapted native plants (from a nearby or similar region) or introduced plants (from other locales with similar climatic conditions) that have proven resilience are non-native, but appropriate for certain situations where a native is not suitable.

## II. PRINCIPLES

- Create beautiful, sustainable, resilient, and functional landscapes that benefit people and the environment.
- Respect and seek inspiration from growth habits of native plants and natural systems.

### Irrigation Design Principles

- Design irrigation systems in the most efficient, flexible, and durable manner possible to serve new and maturing landscapes.
- Make use of passive water harvesting.
- Audit all existing and new spray irrigation systems to measure efficiency.

### Planting Design Principles

- Reinforce and create plant patterns that create cohesiveness and strengthen identity at High Desert. Planting designs should reflect the priorities of each landscape zone (i.e. seasonal interest, texturing and layering, consistent application of groundcover planting or plants as community identifiers).
- Select the right plant for the right location. Study and utilize microclimates created by natural and man-made structures as a factor in plant selection.

- Create a measurement of landscape resilience for each landscape zone in order to establish a more resilient High Desert Landscape. In response to site conditions and the desired landscape zone’s aesthetic, establish plant palettes with a deliberate ratio of native species to non-native species.

## Maintenance Principles

### Contractor Obligations

- Landscape contractors at High Desert will be expected to educate their staff about arid environment landscape maintenance techniques to perpetuate the vision and goals of the High Desert Landscape Masterplan.
- Landscape maintenance contractors at High Desert will be proactive about creating resilient landscapes. Proactive landscape maintenance means assessing and anticipating landscape and irrigation needs, such as maintaining soil and plant health, making irrigation system replacements and controller timing changes before plants fail, and training plants appropriately to thrive in site specific situations.

### High Desert Residential Owners

#### Association Obligations

- HDROA and the Landscape Committee will establish and perpetuate institutional maintenance knowledge of native landscapes.

## III. RECOMMENDATIONS

This Landscape Masterplan is in part a decision-making document and design manual for current and future HDROA members, landscape architects, and contractors working at High Desert. Recommendations are organized as A. General Recommendations (applicable to all zones) and B. Recommendations for Specific Zones.

### A. General Recommendations

#### 1. View Preservation

Views east to the Sandia Mountains and west to the city lights are to be preserved. Landscape designs must address neighborhood and resident access to views by recommending trees of appropriate heights and in appropriate locations.





One Rock Dam



Filter Bowl



Zuni Bowl

The High Desert Guidelines for Sustainable Development and some Village covenants have tree planting guidelines that are comprehensive. Enforcement of these regulations in HDROA maintained areas will preserve views for residents.

## 2. Harvesting Water

Where existing conditions permit, landscape installations should seek to passively harvest water.

Strategies in the urban/cultivated zones can include: creating swales in between paved surfaces such as walks and curbs; correctly sizing check dams in medians and streetscapes; curb cuts; replacing impervious paving with pervious paving; and boulder/stone terracing to slow runoff.

Strategies in the more naturalized spaces can utilize watershed restoration techniques. These low impact techniques include media lunas, boomerangs, contour berms, one-rock dams, and seed imprinting on slopes. These low impact techniques may be performed by a crew of volunteers with the direction of an experienced contractor. More intensive watershed practices can involve filter dams or Zuni Bowls (see images at left).<sup>1</sup> Intensive earthwork and manipulation of watershed conditions should be done by experienced contractors with guidance from open space experts and approvals from AMAFCA as applicable.

## 3. Ground Surfaces Treatment

Ground surfaces treatment may vary and shall be comprised of a consistent combination of materials for each landscape zone. Preferred ground surfaces are native grasses in naturally occurring soils.

## 4. Paving

Limit impervious paving unless accessibility requires this. Preferred paving treatments include pervious pavers, flagstone on sand setting beds, etc. Paved walks and paths should meander unless existing conditions prohibit such design.

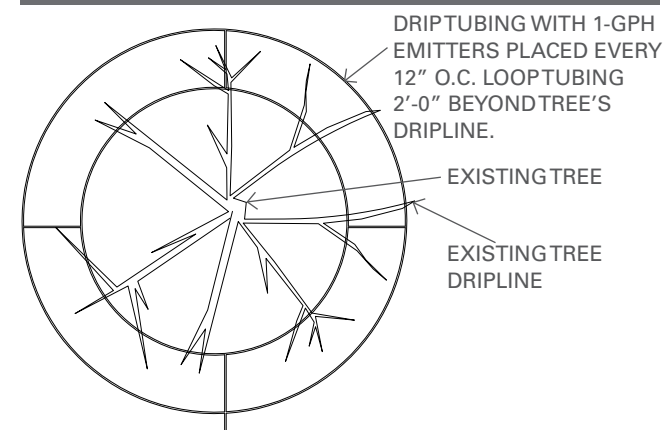
## 5. Irrigation

- Decrease the square footage of irrigated/cultivated plantings by identifying and shutting off zones where the existing plant composition could survive on precipitation. Identify irrigation meters that can be removed to credit the owner for reduced water use and metering services.
- Rehabilitate and/or reconstruct irrigation systems to maximize flexibility and durability.
- Modify drip irrigation systems to existing trees with Netafim tubing placed within the drip line of the tree (see Figure 4, page 35).

<sup>1</sup> For more information on water harvesting techniques refer to *Let the Water Do the Work: Induced Meandering, an Evolving Method for Restoring Incised Channels*, by Bill Zeedyk and Van Clothier, 2014, Chelsea Green Publishing (<http://www.chelseagreen.com/>).

- Bubbler irrigation systems are more robust, however, they are less flexible as young trees mature. Consider standardized practices that allow for additional bubbler locations to be stubbed out further from tree trunks. Ensure design standards that account for additional future pipe flows.
- Look for opportunities to convert entire bubbler systems into Netafim systems. It is often the case that the lateral piping is sufficiently sized to accommodate the typically lower water demand of Netafim systems. Creating a spiraling ring of tubing under the canopies of matured trees will better help sustain the mature tree. Smaller matured shrubs could benefit as well with one or two Netafim rings inside of the dripline. Netafim tubing is best buried slightly below ground 3"–4" to help avoid exposure to the elements and to wildlife.
- Avoid installation of 1/2" or 3/4" poly-type drip tubing in long runs, covering many plantings. It is best to initially pipe water through PVC as it leaves the valve and deliver the water to strategic locations along the entire length of the planting area. Shorter distances of 1/2" or 3/4" poly could be used from those points forward if desired. This will make drip system maintenance, modifications, or eventual replacement a much easier task.
- Consider performing detailed spray irrigation water audits on higher water use turf areas. Water audits typically pin-point mismatched nozzles, and deficient areas and provide guidance that may help improve distribution uniformity, saving thousands of gallons each year.
- Create detailed irrigation standards and techniques dealing with new installations and replacement of existing irrigation components. This will help ensure a high quality installation and a more maintainable system.

Figure 4 Existing Tree Irrigation Expansion



## Maximize Efficiency and Minimize Maintenance

Irrigate new landscapes with a hybrid system of underground PVC lateral piping with multi-outlet drip irrigation emitters. PVC laterals are buried at a minimum of 18" in depth to be free from freezing and are robust enough to handle a shovel hitting them without breaking. Multi-outlet emitters are attached to PVC lateral pipe at the surface to irrigate multiple plants. The emitters that regulate the flow of water to the plant material are within the body of the manifold, reducing the potential for disturbance/line breaks by routine maintenance.

Figure 5 Bubbler Irrigation Expansion Concept

TWO LINES OF IRRIGATION ARE INSTALLED: ONE FOR THE NEW TREE PLANTING AND ONE FOR THE MATURE TREE.

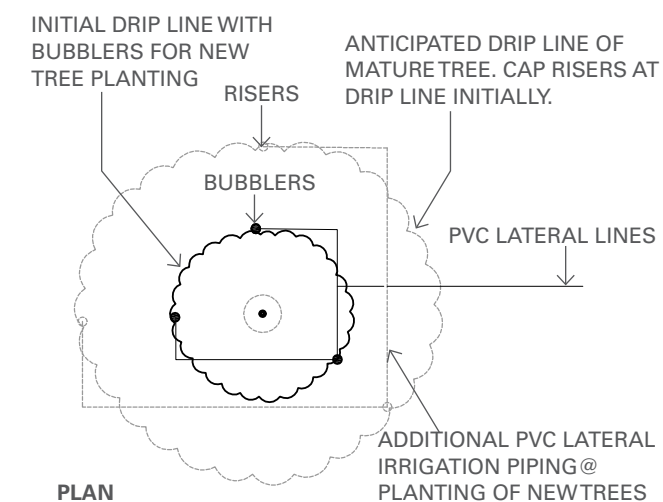
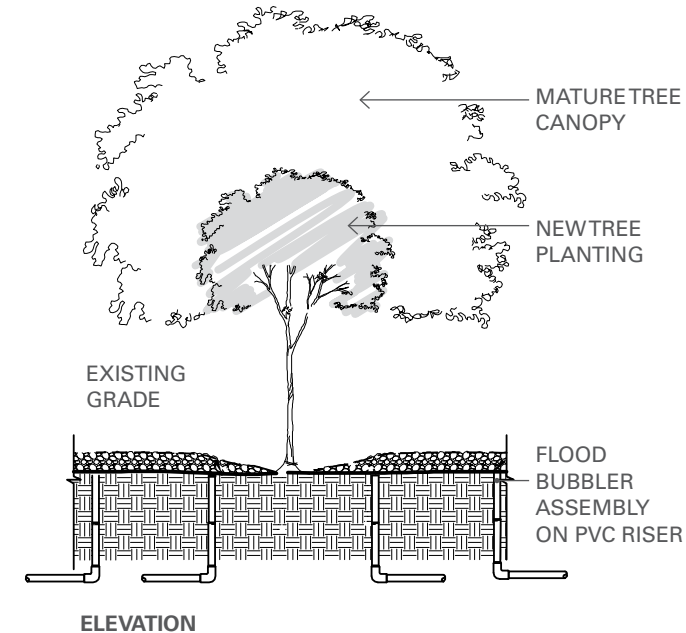




Figure 6 Vertical Mulching

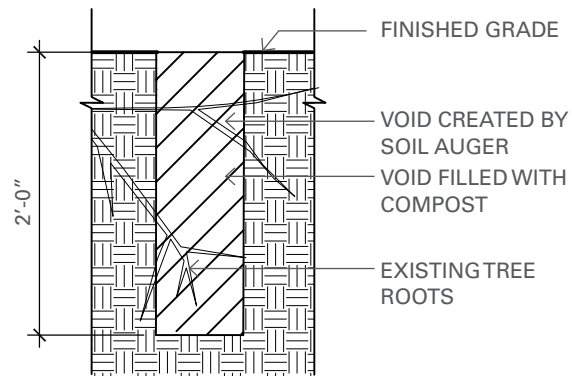
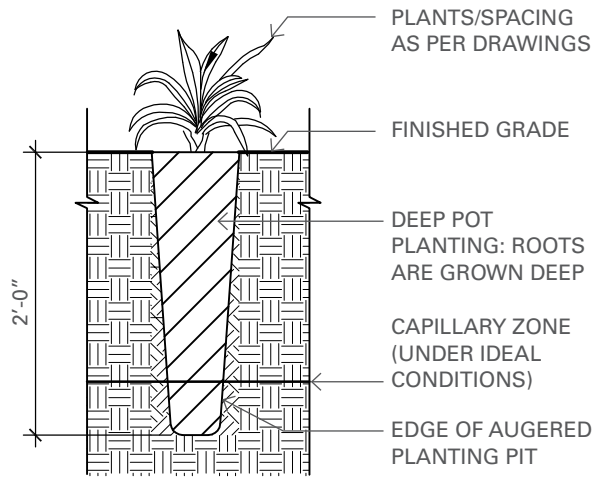


Figure 7 Deep Pot Planting



Irrigate shrubs and trees on different zones to allow for a mix of multi-outlet emitter systems for shrubs and Netafim tubing to trees. This allows for larger rings of continuous irrigation to be placed around existing, mature trees.

### Adhere to Standards and Assure Plant Health in Drought Conditions

- Irrigate all material with streetscapes and medians utilizing the City of Albuquerque bubbler standard.
- Develop details for planting trees and shrubs to minimize water flooding the root crown of the tree or shrub.
- Develop a protocol for water wells surrounding new and mature trees to assure flooding is minimized and water is directed towards plant root hairs.
- Experiment with irrigating trees with deep watering techniques, such as Rainbird RWS root watering system.

### 6. Turf

Turf areas often demand the highest levels of resources and maintenance to mow, remove weeds, and apply herbicide and fertilizers. They also demand high quantities of water and irrigation system maintenance.

Replace turf with a less resource-intensive landscape. Turf replacement will be suggested on a site-by site basis. Where there is community opposition to turf removal, the design team may approach the resident(s) and negotiate a less water and maintenance intensive solution.

### 7. Boulders

Unless there is a precedent in a Builder Village entry or streetscape, designs shall use gray granite boulders common to the foothills. The boulders shall be set at least 1/3 into the surrounding soils to simulate boulders unearthed by natural forces.

### 8. Site Furnishings

Furnishings shall be in conformance with existing designs which utilize sandstone for benches and tabletops. Trash receptacles are not consistent throughout High Desert and shall be chosen site-specifically for suitability (i.e. critter resistance, or maintenance simplicity).

### 9. Wayfinding Signage

The existing wayfinding signage is useful to visitors, though not in keeping

with the overall aesthetic. The signage recently underwent some renovation and the improvements are not a priority for the Board.

### 10. Landscape Education

Part of the educational process can be to post information, articles, and warnings on relevant topics on the website.

- Address landscape issues either in the newsletter or on the website. For example, preparing for wildfires around your home.
- Experiment and use landscape trials as opportunities to educate residents about the complex ecology of High Desert and promote use of the plants that can succeed in various microclimates. These experiments also communicate a commitment to the Guidelines for Sustainability by dedicating resources to a sustainable ideal and landscape resiliency.

The Landscape Committee is already working on showcasing some landscape experiments. Residents may be informed of these test plots through the website, newsletter or signage. Test areas may be in the Demonstration Garden, Michial Emery Trailhead or in other places that are frequented by residents.

- Practice vertical mulching as a soil enhancement technique as preserving existing trees and significant plant material is a priority. Holes are bored around the drip line of existing trees and filled with compost/soil amendments. Organic matter has the capacity to hold more water than High Desert's arid soils and supply nutrients to plant materials, allowing them to be more resilient in changing climate conditions (see Figure 6, middle).
- Promote a precipitation only supported landscape. This type of landscape may be a shocking sight to some residents of High Desert who may be interested in a tidier, more organized landscape. Nonetheless, a precipitation supported landscape may be designed, constructed, and nurtured in a way that maximizes water harvesting, illustrates the beauty of the native landscape, and serves as an educational landscape for residents.

The design of a precipitation supported landscape should reflect the microclimates available on the chosen site and the best plant composition for the situation. Plants may need to be grown in native soils and in special conditions in order to maximize the plant's chance of survival. For example, deep pot planting is a technique used by NMDOT to plant medians and rights-of-way when there is no available irrigation. Deep pots are used in order to increase the chance of plant establishment. Deep pot plantings in

combination with Dri-Water, a time-release irrigation product, will decrease plant loss (see Figure 7 page 36).

- Educate the HDROA in landscape maintenance contractor communication and how to use this Masterplan to guide future maintenance protocols.
- The Landscape Committee is already deeply involved in community landscape education, classes, lectures, and training of residents about the ecology of High Desert. Educational opportunities can generate enthusiasm for water harvesting, soil science, plant materials, and wildfire. Enlisting the help of green industry experts in landscape architecture, plant propagation, and horticulture perpetuates the goals of the Landscape Masterplan.

## B. Technical Recommendations

### Clear Sight Triangle

AASHTO states that clear sight triangle regulations should be followed *where practicable*; thereby allowing some discretion on the part of municipalities and organizations, such as the HDROA. The following recommendations are based on the assessment of several typical intersections at High Desert.

### Administrative Actions

- The HDROA should evaluate intersections noted in the Clear Sight Triangle section (pages 20–30) for compliance with the stated clear sight triangle regulations. CABQ staff may assist the HDROA with the evaluation of problematic clear sight triangles. Sight line development should be conservative when evaluating intersections with curves and vertical crests.
- In areas where walls obstruct views, mirrors or safety signage should be specified and installed to caution drivers and increase visibility and awareness at intersections.
- Increase awareness of clear sight issues by placing periodic public service announcement on the HDROA website.

### Landscape Maintenance—Short Term

- Mow existing grasses within clear sight areas frequently to prevent grasses growing over 2'-0" ht., reduce shrub growth, and/or remove or relocate larger grasses that tend to grow over 2'-0".
- Remove or limb up trees in the triangles to a height of 6'-0" minimum to 8'-0" preferred. If existing trees cannot be limbed up, remove the tree and replace with appropriate plant.



Existing signage



Stone and metal sign example



- Prune, train, remove, or relocate existing shrubs to maintain clear sight lines.

**Landscape Maintenance—Long Term**

- Reseed clear sight areas with low-growing grass seed mixes.
- Train existing streetscape trees to prevent clear sight issues—following pruning techniques as recommended by the International Society of Arboriculture.

**Landscape Design**

- Do not plant trees in the clear sight triangle areas.
- Plant shrubs or succulents with a maximum height of 2.5' ht. in clear sight triangle areas. Suggestions include Gro-low sumac, Pawnee Buttes sand cherry, buckwheat, chocolate flower, verbena, winecups, claret cup cactus, and similar low growing materials.
- Seed areas with only low growing and wispy grass mixes—blue/black grama, buffalo grass, Indian rice grass, and others. Avoid thick or tall grass species such as big and little blue stem, Karl Foerster feather reed grass, and muhly grasses.

**C. Zone-Specific Design Recommendations**

Zone-specific recommendations are organized to take advantage of existing landscape design and structure without entirely reconstructing the zones. The cost estimates, which follow discussion points, are taking into account the existing conditions.

**ZONE 1 DEVELOPMENT ENTRIES**

**Landscape Design Recommendations**

Alter existing grading and retain soils and water for planting pockets to increase passive water harvesting from existing swales. Always locate and install boulders or other accents in a fashion that is consistent with a naturalistic design.

**Plant Recommendations—Short Term**

**Trees** Augment existing evergreen tree structure with trees, shrubs, perennials, and accents that complement the trees and increase seasonal interest.

**Shrubs/perennials and groundcover** Augment, enhance or replace non-performing and overgrown plant material.

Long term planting design should be organized in drifts, rather than rows, so that the loss of one plant is not a loss of composition.

**Turf** Redesign turf configurations to maximize irrigation efficiency without losing the established aesthetic.

**Plant Recommendations—Long Term**

Maintain a strong evergreen backbone with strategic deciduous trees by planting trees to succeed diseased or dying trees. These successional planting strategies can create a landscape that is differentially sized, giving a sense of landscape longevity.

**Turf** Remove turf.

**Boulders** Remove and relocate existing boulders to areas that do not conflict with NMDOT requirements.

**Native Plant Structure**

Development Entries currently have approximately 70% native species and 30% non-native species. This report recommends a minimum of 65% native species for Development Entries. The rationale for the lower

percentage is that development entries require higher density and seasonal interest plant design. Non-native species provide more opportunities for color. Use of more non-native plants provides HDROA more flexibility in plant selection to achieve seasonal color and creative layering of plants with ranges of heights and habits.

**Reduce Water Waste**

Rehabilitate or reconstruct the existing irrigation systems to more efficiently address changes in the landscape. Drip systems must be expandable in order to provide water to newly planted and maturing plant material. Irrigation emitters must be designed to withstand repeated use of stirrup hoes. Older, underground Netafim irrigation systems should be eliminated.

**Maintenance Recommendations**

Revisit the plant replacement contract provisions for the maintenance contractor to make it easier to replace plants that die and minimize gaps in the landscape.

Figure 8 Zone 1 Development Entries, Plan

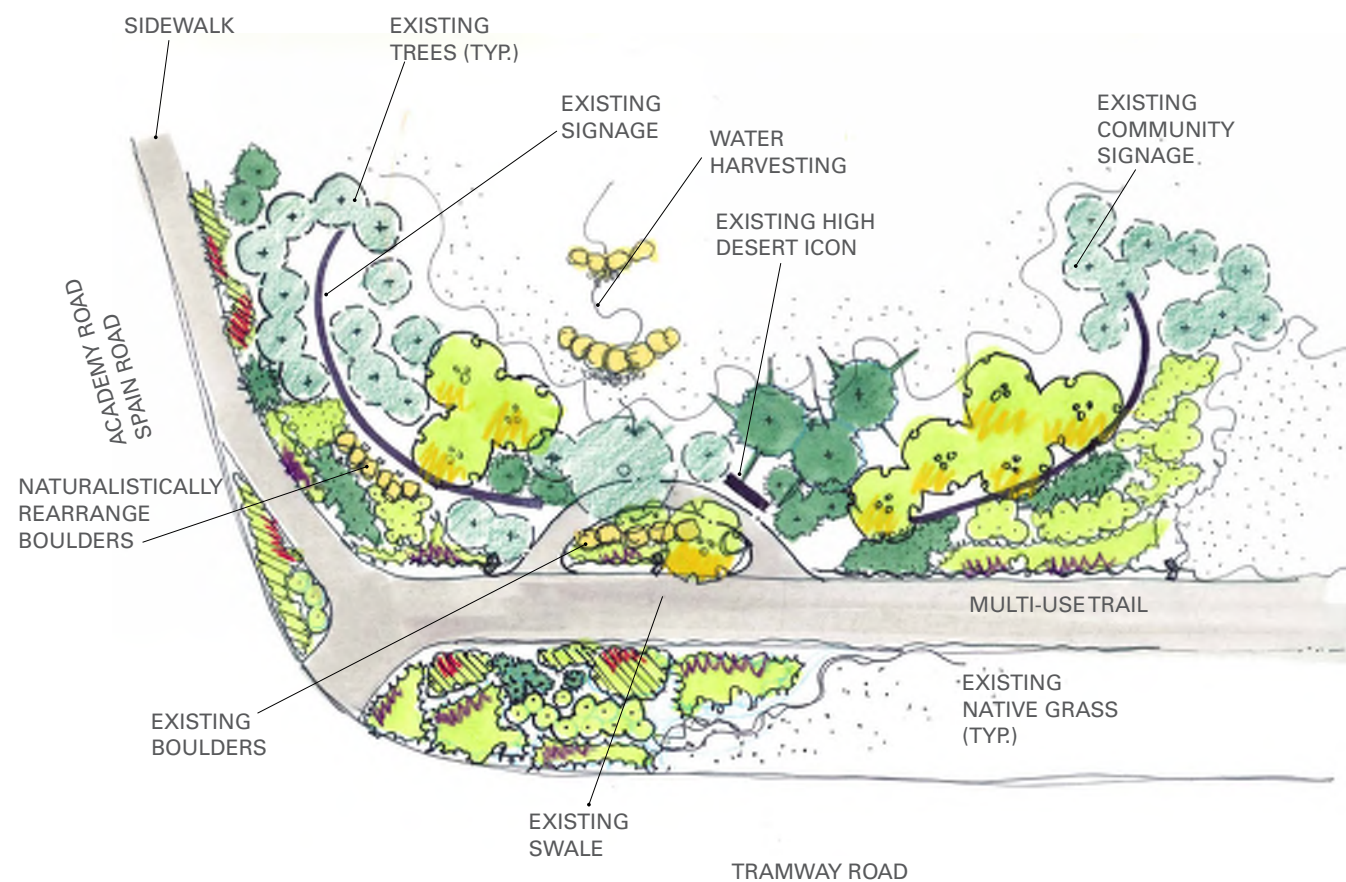


Figure 9 Zone 1 Development Entries, Perspective

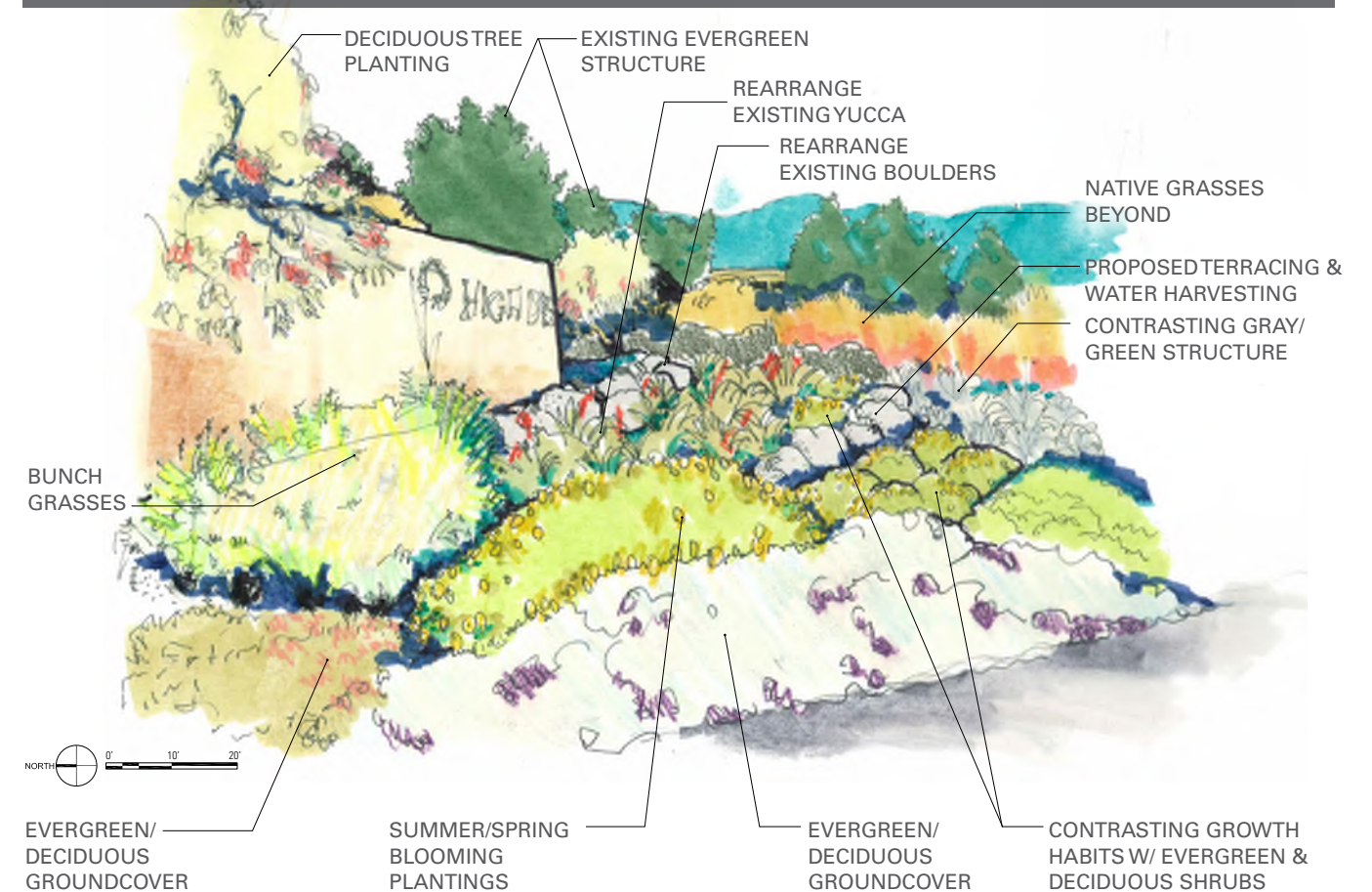




Table 3 Zone 1 Development Entries: Costs per entry

Statement of Probable Construction Cost

ITEM / DESCRIPTION	SIZE	UNIT	EST. QTY.	EST. 2015 UNIT COST	EST. TOTAL COST
<b>DEMOLITION AND PLANT PROTECTION</b>					
		ACRE	1	\$2,500.00	\$2,500.00
<b>GRADING AND EARTHWORK</b>					
		ACRE	1	\$3,500.00	\$3,500.00
<b>IRRIGATION</b>					
New irrigation		SQUARE FOOT	12,000	\$2.50	\$30,000.00
<b>IRRIGATION SUBTOTAL</b>					\$30,000.00
<b>PLANTING</b>					
<b>TREES</b>					
Deciduous	24" Box	EACH	7	\$300.00	\$2,100.00
Evergreen	6'-8'	EACH	4	\$300.00	\$1,200.00
<b>SHRUBS</b>					
Groundcover	1 gal.	EACH	50	\$15.00	\$750.00
Perennials	5 gal.	EACH	100	\$45.00	\$4,500.00
Large shrubs	15 gal.	EACH	24	\$125.00	\$3,000.00
<b>MULCH</b>					
Angular cobble	4"-6"	SQUARE FOOT	926	\$0.80	\$740.80
High Desert Seed Mix		SQUARE FOOT	12,000	\$0.30	\$3,600.00
Boulders	3' x 3' x 3'	EACH	12	\$250.00	\$3,000.00
<b>SOIL PREPARATION</b>					
Compost/amendment		CUBIC YARD	10	\$30.00	\$300.00
<b>PLANTING SUBTOTAL</b>					\$19,190.80
<b>Sub-total</b>					\$55,190.80
<b>Contingency (20%)</b>					\$11,038.16
<b>GRAND TOTAL</b>					\$66,228.96

Cost Estimate Assumptions

- Cost assumes irrigation controls and valve wiring is in good working condition and will not have to undergo significant renovation.
- Cost assumes contractor will protect trees and shrubs to remain by irrigating trees during construction, hand dig around roots for irrigation construction, and observe vegetation protection specifications.
- Site-wide selected soil amendments are to boost the germination rates of grasses and assist general health of new and existing shrubs and trees.
- Actual tree and shrub quantities may differ significantly from those indicated and are based on averages of shrubs and trees per acre.

ZONE 2 - STREETSCAPES AND MEDIANS

Landscape Design Recommendations

- Maintain Clear Sight Triangles. Maintaining vehicular and pedestrian safety requires the maintenance of clear sight areas between 3'-0" and 8'-0" in certain triangular zones adjacent to intersections. Landscape installations in clear sight triangle areas must account for safety by using low growing shrubs and specifying pruned trees.
- Harvest water. Except in cases where existing trees will be disturbed or it would create a tripping hazard, finish grade elevations in medians and ancillary spaces will be lowered to passively harvest water. The low point should be located as far as possible from curbs and other flatwork to minimize water disturbance to subgrade under roadways and walks.

- Improve bus stops for children by providing a stone bench, unobtrusive signage and a cleared crusher fine area. Verify clear sight lines from the bus stops to assure safety. (The clear sight lines do not have to be per ASHTO standards, but clear enough for drivers to be aware of student gathering spaces.)

Plant Recommendations—Long Term

**Trees** Augment existing plant material with trees that contribute to cohesive aesthetic or contribute to the distinct planting design for special areas in High Desert. Tree locations and tree choices should not impact homeowner views, if feasible. Comply with City of Albuquerque Parks and Recreation Streetscape Design Criteria which excludes evergreen trees in medians that are less than 6 feet in width.

Figure 10 Zone 2 Streetscapes and Medians, Plan

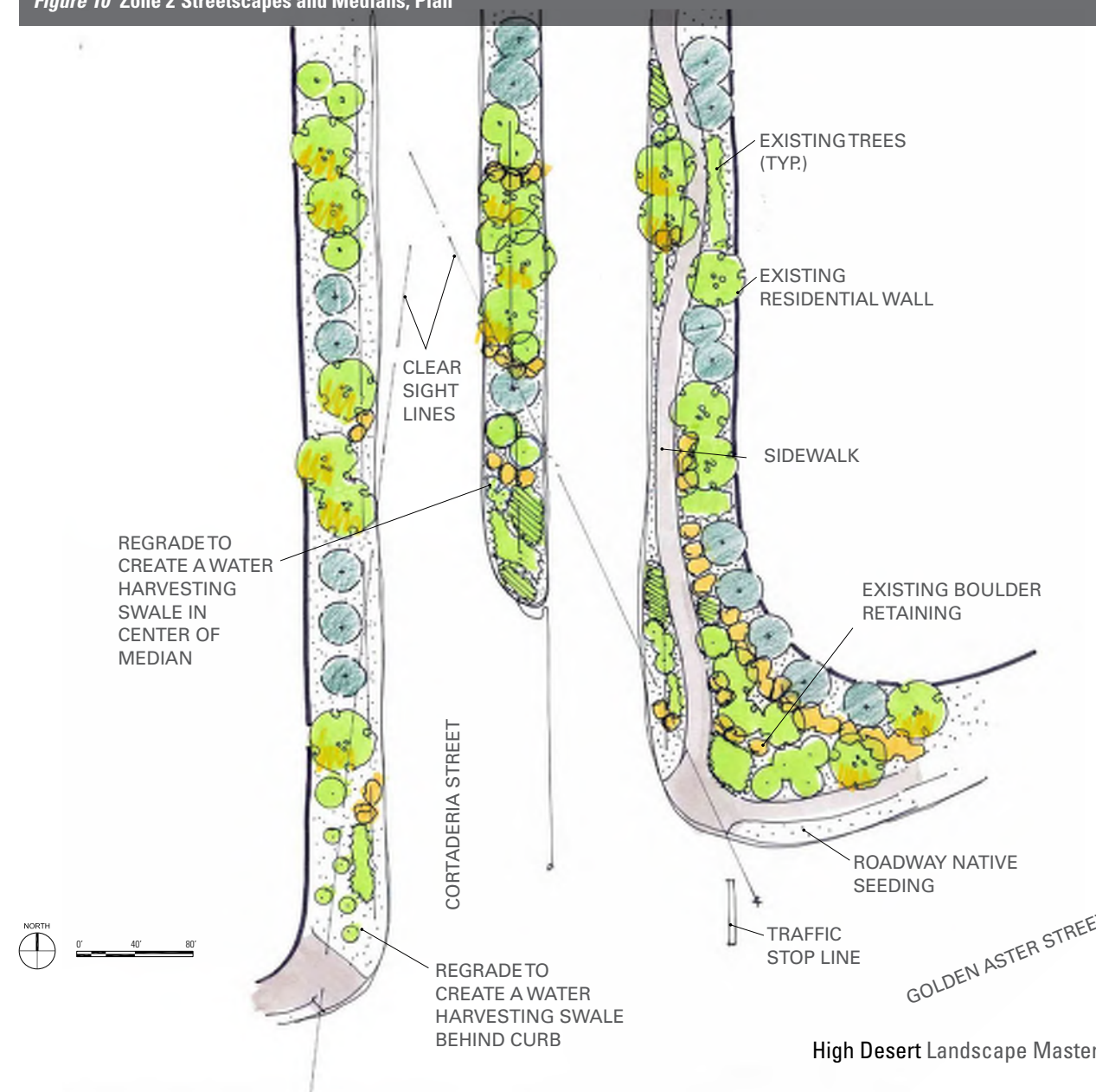
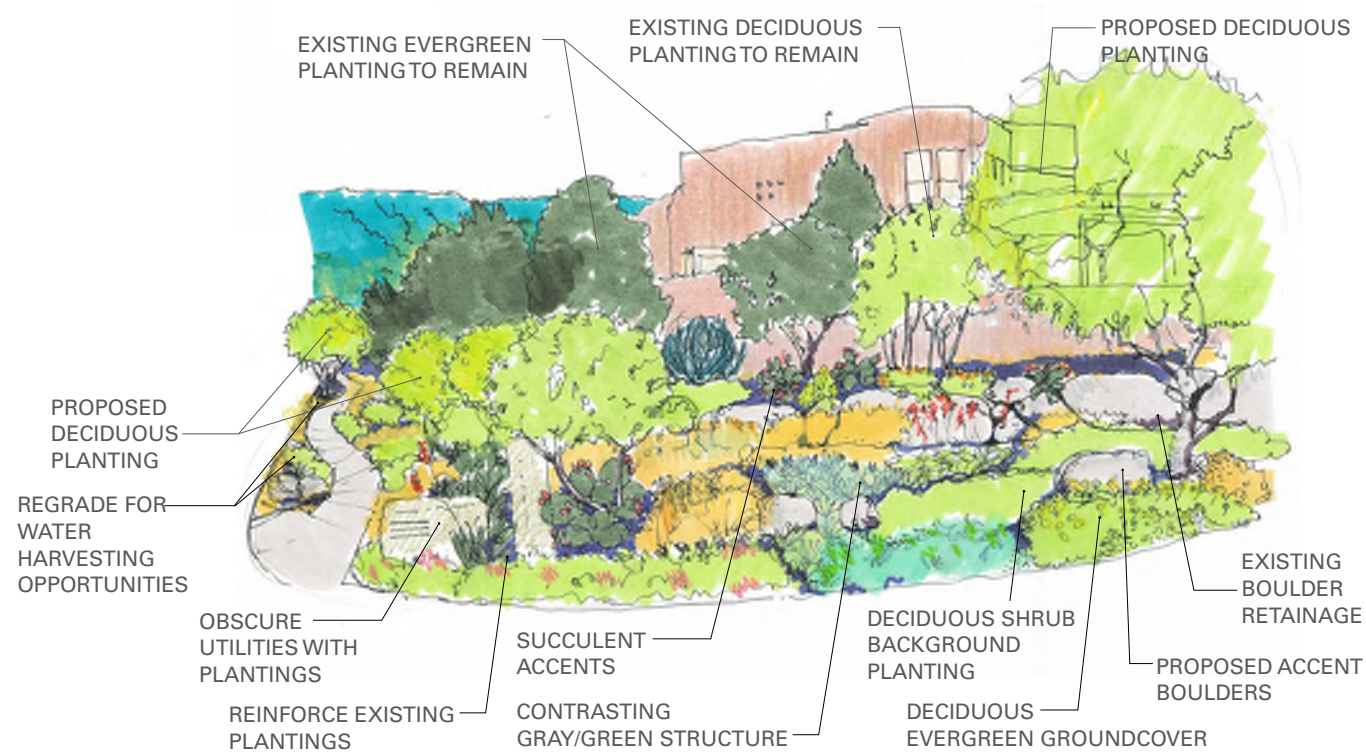




Figure 11 Zone 2 Streetscapes and Medians, Perspective



**Shrubs/perennials and groundcover** Augment, enhance, or replace non-performing plant material. Re-establish shrub patterning lost to time and old maintenance practices by planting shrubs in tall pots or tubes far from curb lines minimizing future interference with roadways.

**Turf** Remove turf from medians and parkways.

**Native plant Structure**

Streetscapes and median zones currently have 75% native species and 25% non-native species. These percentages of native to non-native plants ought to remain stable.

**Reduce Water Waste**

Rehabilitate or reconstruct the existing irrigation systems to more efficiently address changes in the landscape. The drip systems associated with the irrigation system must be flexible and expandable to provide water to newly planted and maturing plant material.

**Irrigation Recommendations**

- Replace all of the irrigation systems in medians with bubbler systems. Irrigation in medians and parkways can take a beating from vehicular traffic, and the City of Albuquerque recommends the use of bubbler systems in roadways. Strictly speaking, however, the

streetscapes are maintained by the Association, so the CABQ regulations do not have to be followed. Nonetheless, bubbler systems are durable, efficient, and can be built to maximize flexibility (see Figure 5, page 35).

- Parkway irrigation systems shall be drip irrigation systems. Parkway can have significant slopes from sidewalks to residential walls. Unless carefully monitored, bubblers can flood plants easily and cause erosion on steep slopes.

**Maintenance Recommendations**

- Train and prune existing and new trees and shrubs to grow within medians following ISA (International Society of Arboriculture) pruning and training guidelines.
- Maintain clear sight lines from intersections. Identify limbs/plants for removal or relocation with flagging ribbon for committee review and approval, and then perform maintenance.
- Identify disturbed and bare soil areas larger than 2 square feet. Seed yearly to assure a consistent grass ground surface aesthetic.

Table 4 Zone 2 Streetscapes and Medians: Costs per acre

Statement of Probable Construction Cost

ITEM / DESCRIPTION	SIZE	UNIT	EST. QTY.	EST. 2015 UNIT COST	EST. TOTAL COST
<b>DEMOLITION AND PLANT PROTECTION</b>					
	ACRE		1	\$2,500.00	\$2,500.00
<b>GRADING AND EARTHWORK</b>					
	ACRE		1	\$3,500.00	\$3,500.00
<b>TRAFFIC CONTROL</b>					
	LUMP SUM		1	\$5,000.00	\$5,000.00
<b>IRRIGATION</b>					
New irrigation		SQUARE FOOT	44,000	\$2.00	\$88,000.00
<b>IRRIGATION SUBTOTAL</b>					\$88,000.00
<b>PLANTING</b>					
<b>TREES</b>					
Deciduous	2 1/2" Cal.	EACH	7	\$300.00	\$2,100.00
Evergreen	6'-8'	EACH	3	\$300.00	\$900.00
<b>SHRUBS</b>					
Groundcover	1 gal.	EACH	50	\$15.00	\$750.00
Perennials	5 gal.	EACH	100	\$45.00	\$4,500.00
Large shrubs	15 gal.	EACH	24	\$125.00	\$3,000.00
<b>MULCH</b>					
Angular cobble	4"-6"	SQUARE FOOT	926	\$0.80	\$740.80
High Desert Seed Mix		SQUARE FOOT	12,000	\$0.30	\$3,600.00
Boulders	3' x 3' x 3'	EACH	12	\$250.00	\$3,000.00
<b>SOIL PREPARATION</b>					
Compost/amendment		CUBIC YARD	40	\$30.00	\$1,200.00
<b>PLANTING SUBTOTAL</b>					\$19,790.80
<b>Sub-total</b>					\$118,790.80
<b>Contingency (20%)</b>					\$23,758.16
<b>GRAND TOTAL</b>					\$142,548.96

**Cost estimate Assumptions**

- Cost assumes irrigation controls and valve wiring is in good working condition and will not have to undergo significant renovation.
- Cost assumes contractor will protect trees and shrubs to remain by irrigating trees during construction, hand dig around roots for irrigation construction, and observe vegetation protection specifications.
- Site-wide selected soil amendments are to boost the germination rates of grasses and assist general health of new and existing shrubs and trees.
- Actual tree and shrub quantities may differ significantly from those indicated and are based on averages of shrubs and trees per acre.



### ZONE 3 - BUILDER VILLAGE ENTRANCES AND INTERNAL STREETSCAPES

#### Landscape Design Recommendations

- Signage and lighting remains as existing.
- Utilizing native gray rounded boulders, terrace steep grades at village entries and streetscapes to create soil pockets for planting, capture runoff, and decrease erosion.

#### Plant Recommendations—Long Term

- Transition streetscape ground surfaces into Villages by removing rock mulch and fabric and replacing with native seeding. This treatment will soften the look of the High Desert Development aesthetic colliding with the hard edge of the mulched ground plane of Village Entrances.
- Create an independent yet complementary identity for each entry with signature plantings at the entry.

Introduce and present native plant material to Village representatives to encourage the selection of native plant species as signature plantings.

#### Native Plant Structure

Village entries and streetscape zones currently have 60% native species and 40% non-native species. This report recommends the percentage increase to 75% native and 25% non-native.

#### Maintenance Recommendations

- Ask Broadstone management to maintain landscape plantings in the same manner as the High Desert maintenance contractor. For example, minimize shrub shaping practices.
- Rigorously practice native seeding and weed removal in Villages that maintain native soil to promote a seamless integration of the village entry landscape aesthetic with the High Desert landscape aesthetic.

Figure 12 Zone 3 Builder Village Entrances and Internal Streetscapes, Plan and Perspective

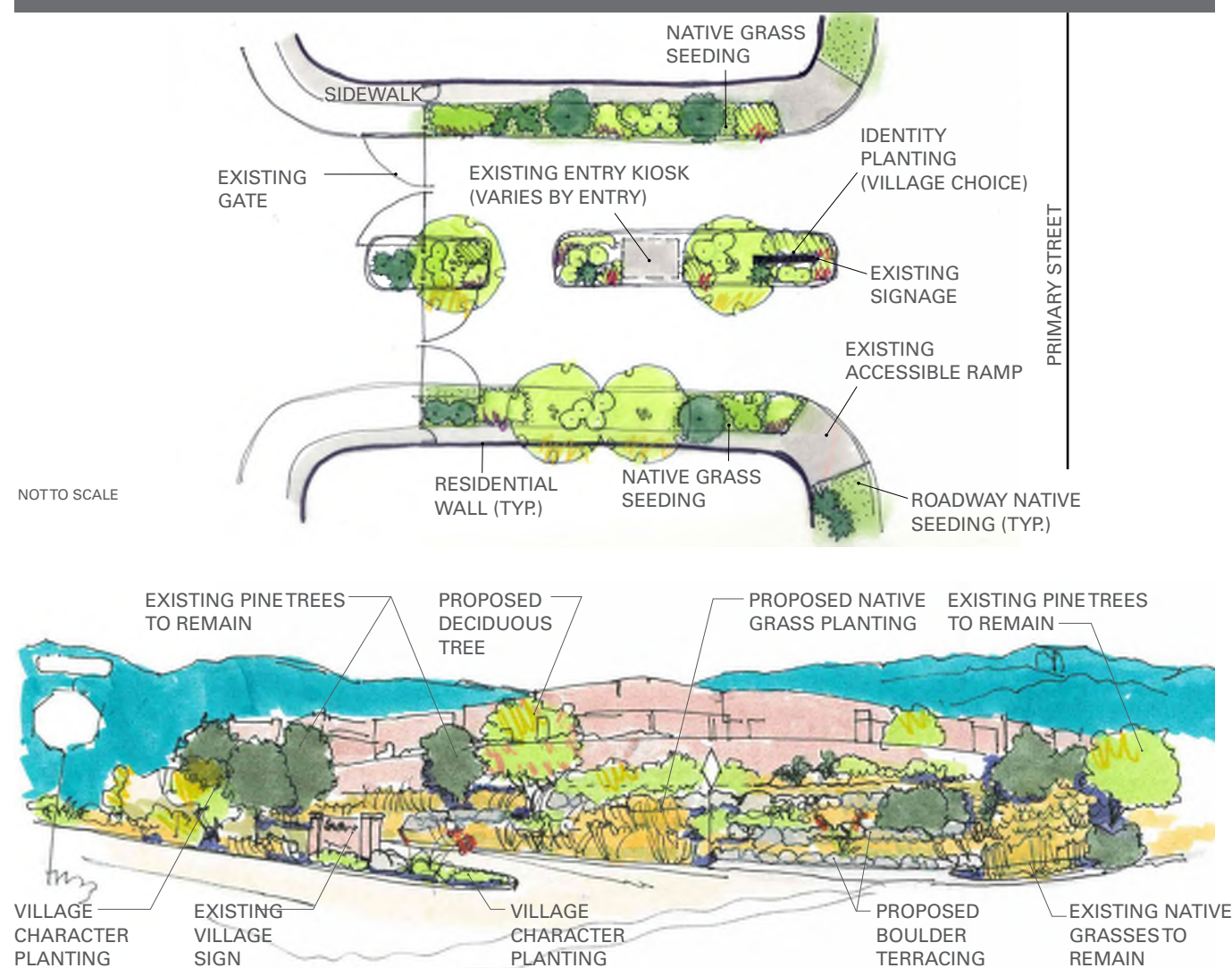


Table 5 Zone 3 Builder Village Entrances and Internal Streetscapes: Costs each entrance

#### Statement of Probable Construction Cost

ITEM / DESCRIPTION	SIZE	UNIT	EST. QTY.	EST. 2015 UNIT COST	EST. TOTAL COST
<b>DEMOLITION AND PLANT PROTECTION</b>					
		ACRE	1	\$2,500.00	\$2,500.00
<b>EARTHWORK</b>					
		ACRE	1	\$2,500.00	\$2,500.00
		LS	1	\$5,500.00	\$5,000.00
<b>IRRIGATION</b>					
New Irrigation		SQUARE FOOT	4,500	\$2.00	\$9,000.00
<b>IRRIGATION SUBTOTAL</b>					\$9,000.00
<b>PLANTING</b>					
<b>TREES</b>					
Deciduous	2 1/2" Cal	EACH	1	\$300.00	\$300.00
Evergreen	6'-8'	EACH	2	\$300.00	\$600.00
<b>SHRUBS</b>					
Groundcover	1 gal.	EACH	0	\$15.00	\$0.00
Perennials	5 gal.	EACH	4	\$45.00	\$180.00
Large shrubs	15 gal.	EACH	4	\$125.00	\$500.00
<b>MULCH</b>					
Angular cobble	4" TO 6"	SQUARE FOOT	0	\$0.80	\$0.00
High Desert Seed Mix		SQUARE FOOT	1,500	\$0.30	\$450.00
Boulders	3' x 3' x 3'	EACH	4	\$250.00	\$1,000.00
<b>SOIL PREPARATION</b>					
Compost/amendment		CUBIC YARD	40	\$30.00	\$1,200.00
<b>PLANTING SUBTOTAL</b>					\$4,230.00
<b>Sub-total</b>					\$22,230.00
<b>Contingency (20%)</b>					\$4,646.00
<b>GRAND TOTAL</b>					\$27,876.00

#### Cost Estimate Assumptions

- Cost assumes irrigation controls and valve wiring is in good working condition and will not have to undergo significant renovation.
- Cost assumes contractor will protect trees and shrubs to remain by irrigating trees during construction, hand dig around roots for irrigation construction, and observe vegetation protection specifications.
- Site-wide selected soil amendments are to boost the germination rates of grasses and assist general health of new and existing shrubs and trees.
- Actual tree and shrub quantities may differ significantly from those indicated and are based on averages of shrubs and trees per acre.



## ZONE 4 - ESTATE AND PREMIER ENTRANCES

### Landscape Structure

The entries borrow views of foothills and mountains and sometimes utilize an evergreen accent behind the entry signage. Streetscapes have flush concrete curbs that allow the vegetation to hang over into the street. Storm water runs from the road into the landscape. There are periodic accent plantings near intersections and bridges that are irrigated by solar controllers.

Trailhead is the southernmost portion of High Desert and is not accessed from any of the primary development entries off of Tramway but by Glenwood Hills Drive through the Glenwood Hills neighborhood. The Trailhead Premier Village Entry may have been forgotten in the excitement of developing High Desert and is located in an exposed area that is notoriously difficult to landscape.

### Landscape Design Recommendations— Long Term

- Unless specifically requested by residents, no design modifications are required for the Overlook, Highlands and Desert Highlands except to modify vegetation to maintain clear sight lines. The West Highlands, and Mountain Highlands entries could be enhanced with new vegetation to provide color and seasonal interest.

- The Trailhead entry is a mixed opportunity to both borrow the influence of the open space landscape and enliven the impact of the entry signage. The entry requires a mix of extremely resilient plantings and higher levels of maintenance for plant material to thrive. With the permission of the residents, the entry may be the best place to experiment with unusual species that are hardy in hot and windy environments, such as the mesquite and yuccas.

### Native Plant Structure

Streetscapes and Median zones currently have 75% native species and 25% non-native species. This report recommends planting be 100% native species.

Native plant material for Trailhead should dominate the plant palette, though experimental species may change the averages to 85% native and 15% non-native.

### Maintenance Recommendations

- Maintain clear site lines.
- Keep vegetation from obscuring lighting.
- Wean streetscapes supported with solar controlled irrigation systems from irrigation.

Precipitation supported landscapes in these areas are possible. Remove and get a credit for irrigation meter removal supporting these landscapes.

Figure 13 Zone 4 Estate and Premier Entrances, Plan

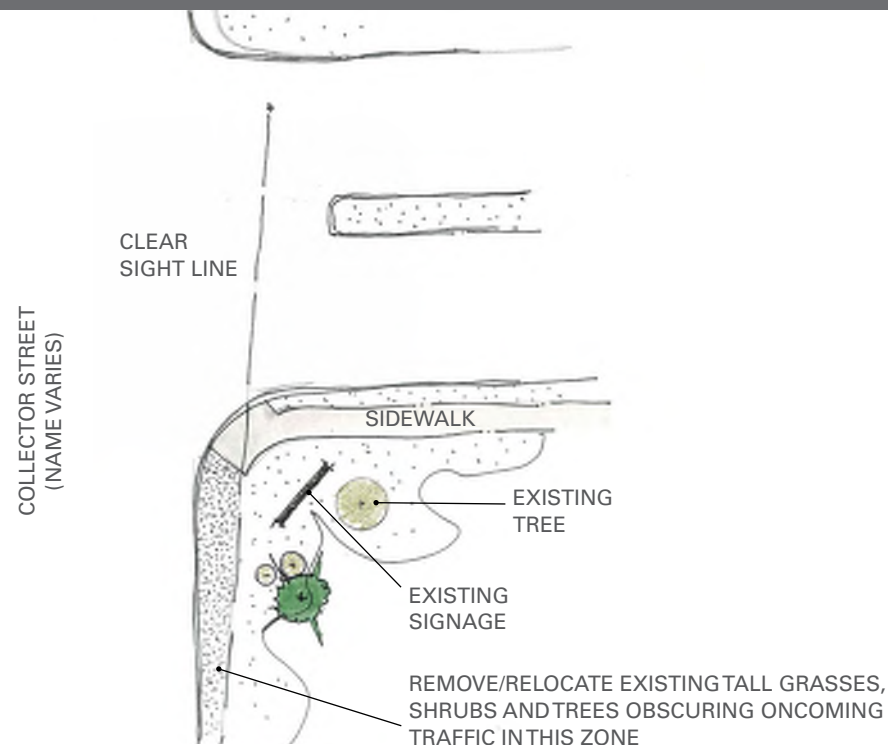


Table 6 Zone 4 Estate and Premier Entrances: Costs each entrance

### Statement of Probable Construction Cost\*

ITEM / DESCRIPTION	SIZE	UNIT	EST. QTY.	EST. 2015 UNIT COST	EST. TOTAL COST
<b>DEMOLITION AND PLANT PROTECTION</b>					
		ACRE	1	\$2,500.00	\$2,500.00
<b>TRAFFIC CONTROL</b>					
		LUMP SUM	.5	\$2,500.00	\$2,500.00
<b>IRRIGATION</b>					
New irrigation		SQUARE FOOT	1,500	\$2.00	\$3,000.00
<b>IRRIGATION SUBTOTAL</b>					\$3,000.00
<b>PLANTING</b>					
<b>TREES</b>					
Deciduous	2 1/2" Cal.	EACH	0	\$300.00	\$0.00
Evergreen	6'-8'	EACH	2	\$300.00	\$600.00
<b>SHRUBS</b>					
Groundcover	1 gal.	EACH	0	\$15.00	\$0.00
Perennials	5 gal.	EACH	0	\$45.00	\$0.00
Large shrubs	15 gal.	EACH	0	\$125.00	\$0.00
<b>MULCH</b>					
Angular cobble	4"-6"	SQUARE FOOT	0	\$0.80	\$0.00
High Desert Seed Mix		SQUARE FOOT	1,500	\$0.30	\$450.00
Boulders	3' x 3' x 3'	EACH	1	\$250.00	\$250.00
<b>SOIL PREPARATION</b>					
Compost/amendment		CUBIC YARD	2	\$30.00	\$60.00
<b>PLANTING SUBTOTAL</b>					\$1,360.00
<b>Sub-total</b>					\$9,360.00
<b>Contingency (20%)</b>					\$1,872.00
<b>GRAND TOTAL</b>					\$11,232.00

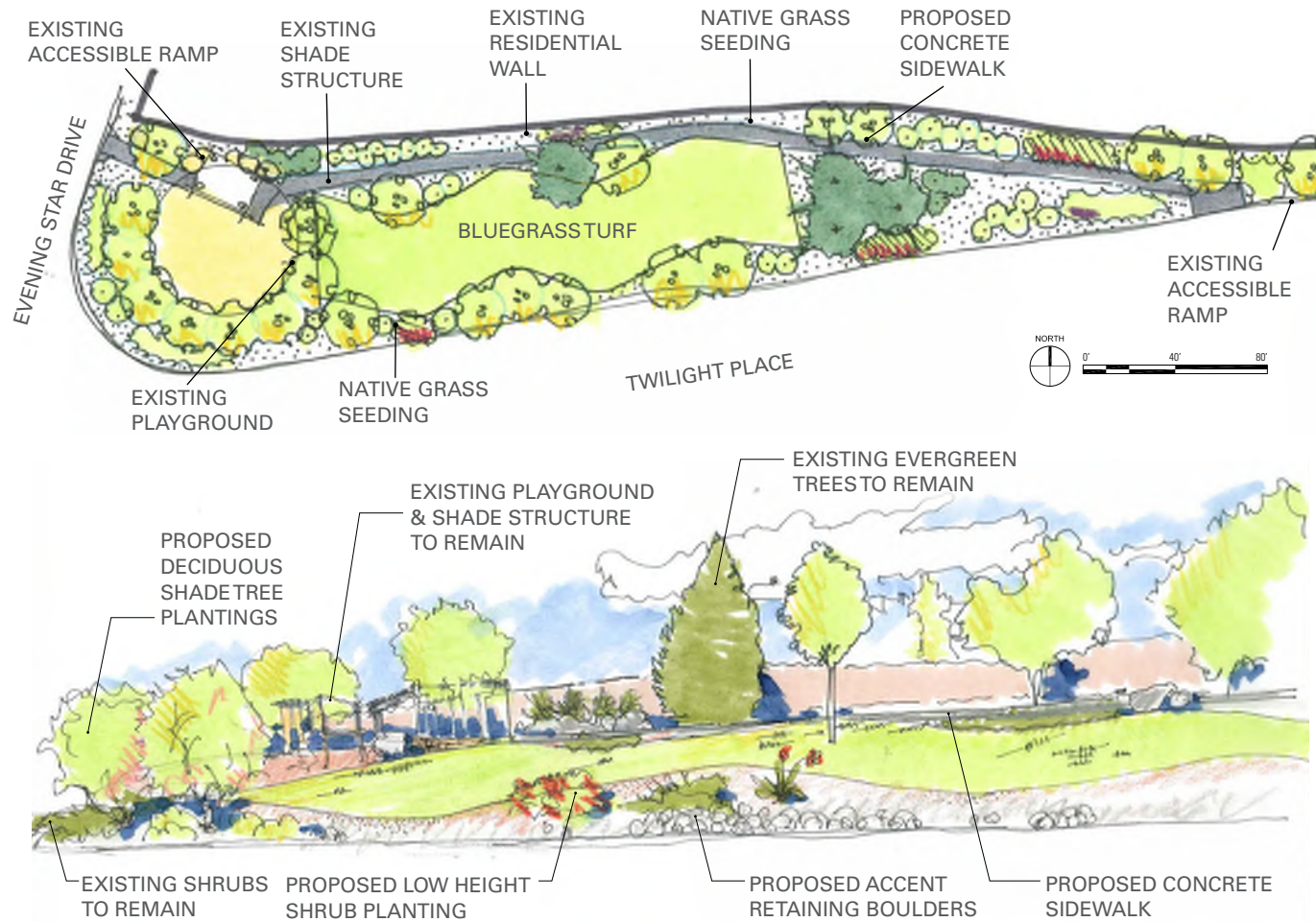
\*Note: This table may be used to calculate cost for those Estate and Premier Entrances that require significant rehabilitation.

### Cost Estimate Assumptions

- Cost assumes irrigation controls and valve wiring is in good working condition and will not have to undergo significant renovation.
- Cost assumes contractor will protect trees and shrubs to remain by irrigating trees during construction, hand dig around roots for irrigation construction, and observe vegetation protection specifications.
- Site-wide selected soil amendments are to boost the germination rates of grasses and assist general health of new and existing shrubs and trees.



Figure 14 Zone 5 Parks and Pocket Parks, Plan and Perspective



### ZONE 5 - PARKS AND POCKET PARKS

#### Landscape Design Recommendations

Construct or reconstruct accessible walks to comply with the Americans with Disabilities Act. This design recommendation includes, but is not limited to, grading to achieve longitudinal and cross slope compliance, designing accessible ramps from roadways, crosswalk striping, and concrete (or other accessible material) sidewalk construction.

#### Plant Recommendations—Long Term

- Renovate high water use turf areas to increase irrigation efficiency. Renovate the turf configurations into grids that minimize over spraying water. Irrigation renovation shall comply with the CABQ wastewater ordinance.
- Supplement existing planting, and anticipate the replacement of dead or dying trees.
- Replace unsuitable plantings for the location.
- Experiment with vertical mulching techniques.

#### Native Plant Structure

Pocket park zones currently have 60% native species and 40% non-native species. This report recommends increasing the percentage of native/non-native plant species to 75/25%.

Parks are another matter altogether as the majority of a park is planted with turfgrass and non-native shade trees. This report recommends a 50/50 percentage at parks.

#### Harvest Water

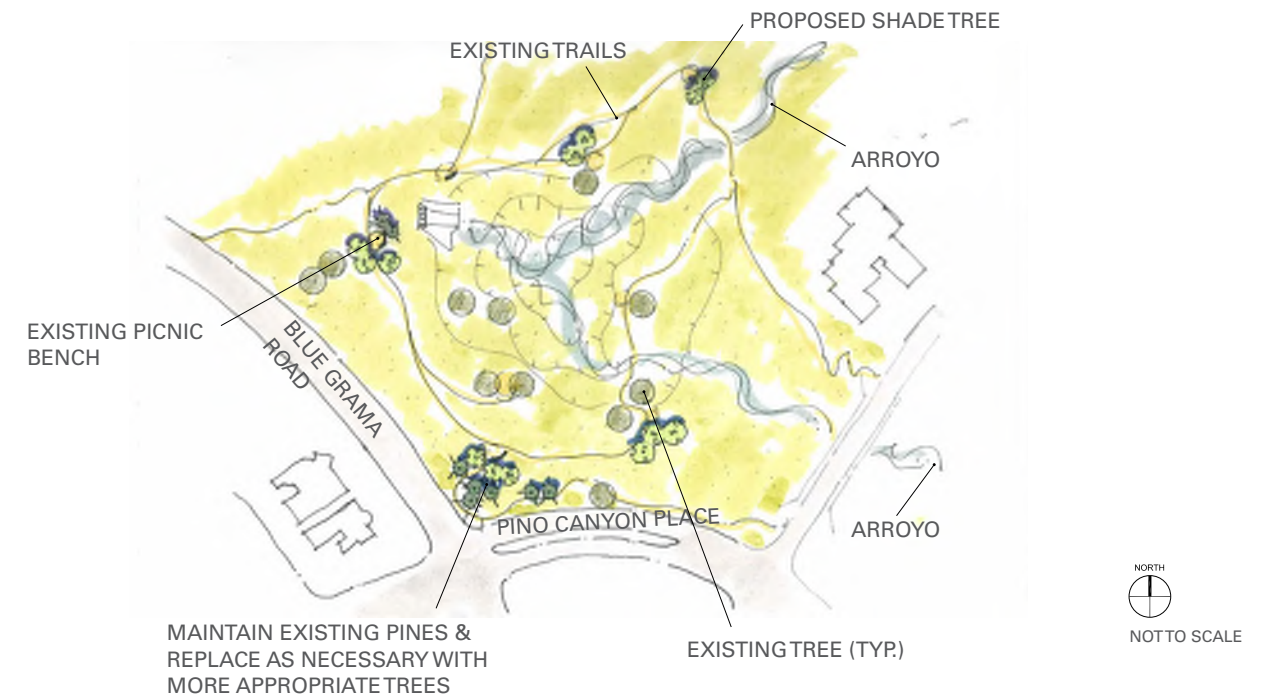
Regrade planting beds to accept runoff and passively harvest water from park areas. Grading plans shall not disturb root zones of existing trees.

#### Note

Water Harvesting Kiva Park is a unique exception in the park recommendations. The park has a remarkable history and demands study to determine why the park does not function in the manner it was designed and how the park may be altered to perform as designed. A complete ground survey is the first step to this research.

Figure 15 Additions to Lauda Miles Medara Pond

Redesign the pond planting to thrive with the western aspect of the pond.





**Table 7 Zone 5 Parks and Pocket Parks: Costs per park acre**

**Statement of Probable Construction Cost**

ITEM / DESCRIPTION	SIZE	UNIT	EST. QTY.	EST. 2015 UNIT COST	EST. TOTAL COST
<b>DEMOLITION AND PLANT PROTECTION</b>					
	ACRE		1	\$2,500.00	\$2,500.00
<b>GRADING AND EARTHWORK</b>					
	ACRE		1	\$3,500.00	\$3,500.00
<b>IRRIGATION</b>					
New irrigation	SQUARE FOOT		16,000	\$2.50	\$40,000.00
<b>IRRIGATION SUBTOTAL</b>					\$40,000.00
<b>SITE WORK</b>					
Concrete sidewalk	CUBIC YARD		5	\$2,500.00	\$12,500.00
<b>PLANTING</b>					
<b>TREES</b>					
Deciduous	2 1/2" Cal.	EACH	32	\$300.00	\$9,600.00
Evergreen	6'-8'	EACH	8	\$300.00	\$2,400.00
<b>SHRUBS</b>					
Groundcover	1 gal.	EACH	20	\$15.00	\$300.00
Perennials	5 gal.	EACH	35	\$45.00	\$1,575.00
Large shrubs	15 gal.	EACH	20	\$125.00	\$2,500.00
<b>TURF</b>					
Bluegrass Sod	CUBIC YARD		161	\$9.00	\$1,449.00
<b>MULCH</b>					
Angular cobble	4"-6"	SQUARE FOOT	2,000	\$0.80	\$1,600.00
High Desert Seed Mix		SQUARE FOOT	29,000	\$0.30	\$8,700.00
Boulders	3' x 3' x 3'	EACH	16	\$250.00	\$4,000.00
<b>SOIL PREPARATION</b>					
Compost/amendment	CUBIC YARD		40	\$30.00	\$1,200.00
<b>PLANTING SUBTOTAL</b>					\$33,324.00
<b>Sub-total</b>					\$91,824.00
<b>Contingency (20%)</b>					\$18,364.80
<b>GRAND TOTAL</b>					\$110,188.80

**Cost Estimate Assumptions**

- Cost assumes irrigation controls and valve wiring is competent and will not have to undergo significant renovation.
- Cost assumes contractor will protect trees and shrubs to remain by irrigating trees during construction, hand dig around roots for irrigation construction, and observe vegetation protection specifications.
- Site-wide selected soil amendments are to boost the germination rates of grasses and assist general health of new and existing shrubs and trees.
- Actual tree and shrub quantities may differ significantly from those indicated and are based on averages of shrubs and trees per acre.
- Costs do not include site furnishings or shade structures.

**Figure 16 Zone 6 Sculpture Gardens, Plan and Perspective**

**ZONE 6 - SCULPTURE GARDENS**

**Planting Recommendations—  
Long Term**

Reinforce the existing swirled trail design by formalizing the path with compacted or stabilized crusher fines. Locate two stone seating areas under existing or new trees to allow visitors to enjoy looking at the sculpture and rest. Till compost into soils and conduct-seeding operations with the custom High Desert seed mix containing only native grass seed, and shrubs and wildflowers.

**Native Plant Structure**

Sculpture zones currently have 100% native species and 0% non-native species. This report recommends the plantings be 100% native plantings.

**Maintenance recommendations**

- Maintain grasslands with weeding and mowing once a year. Leave grass clippings on site.
- Reseed bare areas.

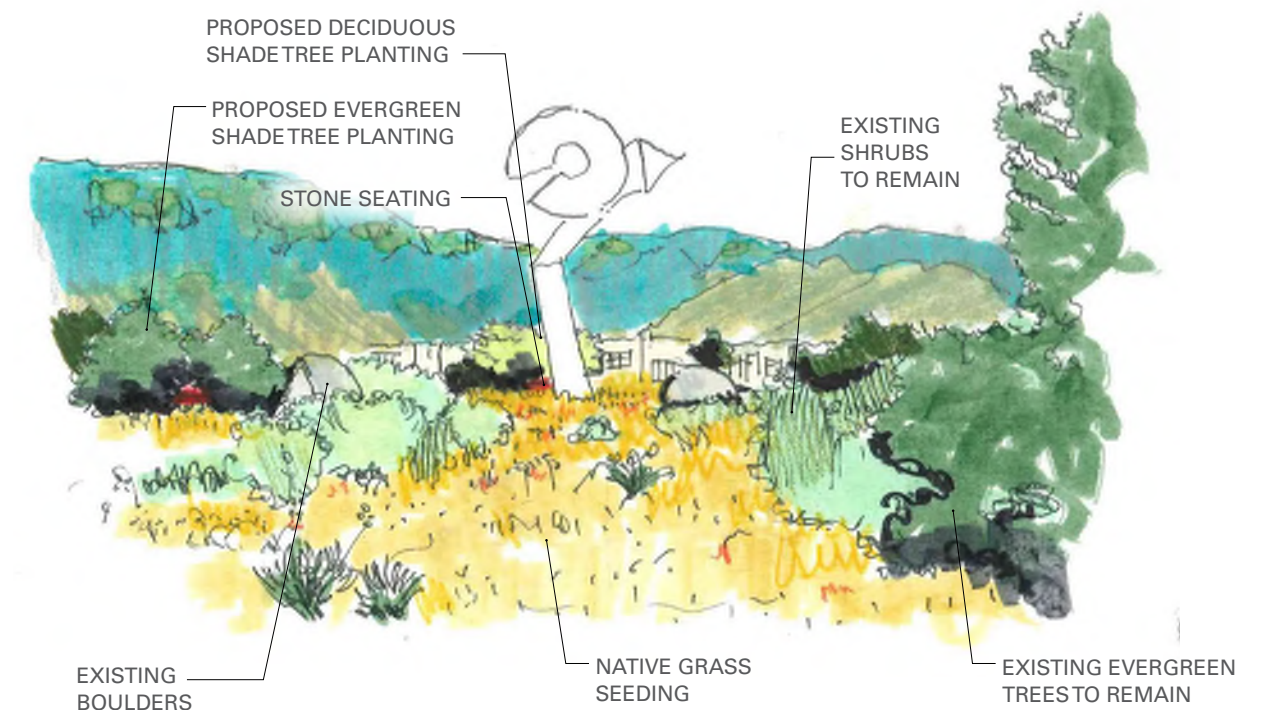
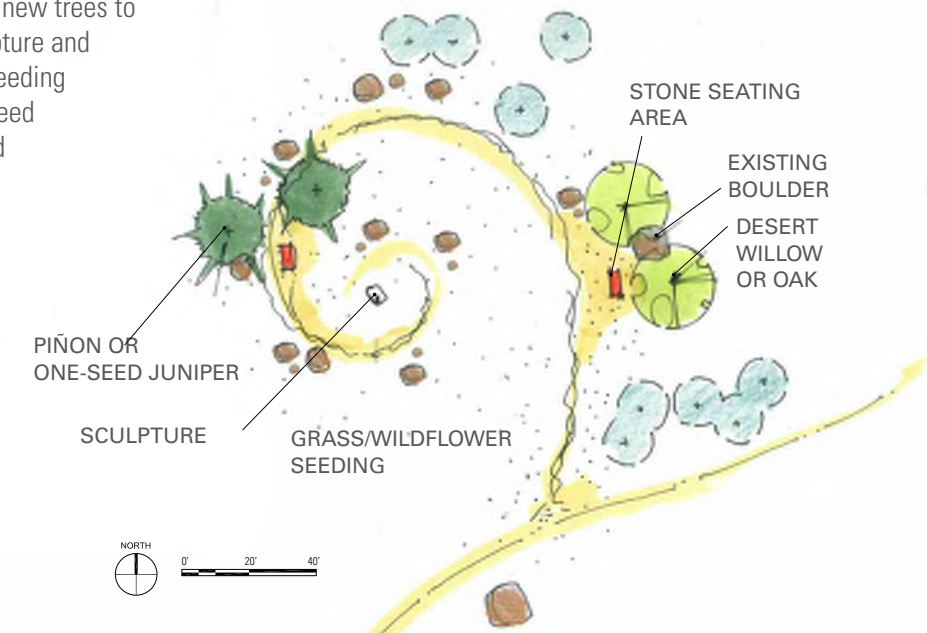




Table 8 Zone 6 Sculpture Gardens, Cost per Sculpture Garden

Statement of Probable Construction Cost

ITEM / DESCRIPTION	SIZE	UNIT	EST. QTY.	EST. 2015 UNIT COST	EST. TOTAL COST
<b>CLEARING AND MULCHING</b>		ACRE	1	\$2,500	\$2,500.00
<b>IRRIGATION</b>					
New irrigation (to new trees only)		SQUARE FOOT	2,000	\$2.50	\$5,000.00
<b>IRRIGATION SUBTOTAL</b>					\$5,000.00
<b>PLANTING</b>					
<b>TREES</b>					
Deciduous	2 1/2" Cal.	EACH	2	\$300.00	\$600.00
Evergreen	6'-8'	EACH	2	\$300.00	\$600.00
<b>SHRUBS</b>					
Groundcover	1 gal.	EACH	0	\$15.00	\$0.00
Perennials	5 gal.	EACH	0	\$45.00	\$0.00
Large shrubs	15 gal.	EACH	0	\$125.00	\$0.00
<b>MULCH</b>					
Angular cobble	4"-6"	SQUARE FOOT	0	\$0.80	\$0.00
High Desert Seed Mix		SQUARE FOOT	43,560	\$0.30	\$13,068.00
Boulders	3' x 3' x 3'	EACH	0	\$250.00	\$0.00
STONE SEATING/BENCHES		EACH	3	\$800.00	\$2,400.00
<b>SOIL PREPARATION</b>					
Compost/amendment		CUBIC YARD	4	\$30.00	\$120.00
<b>PLANTING SUBTOTAL</b>					\$16,788.00
<b>Sub-total</b>					\$24,288.00
<b>Contingency (20%)</b>					\$4,857.60
<b>GRAND TOTAL</b>					\$29,145.60

Cost Estimate Assumptions

- Cost assumes irrigation controls and valve wiring is competent and will not have to undergo significant renovation.
- Cost assumes contractor will protect trees and shrubs to remain by irrigating trees during construction, hand dig around roots for irrigation construction, and observe vegetation protection specifications.
- Site-wide selected soil amendments will boost the germination rates of grasses and assist general health of new and existing shrubs and trees.

ZONE 7 - ARROYOS, OPEN SPACE AND PONDS

Recommendations for Fire Prone Areas—  
Long Term

Reduce risk of fire damage by selectively clearing vegetation that has died. Selective clearing is the practice of clearing and chipping the dead or diseased brush. After clearing, conduct seeding operation and use wood mulch as required to protect seeding.

Maintenance recommendations

- Clear debris from arroyos on a yearly basis
- Adjust irrigation to better serve new and maturing plant material in pond areas.

Native Plant Structure

Open Space and Arroyos zones currently have 100% native species and 0% non-native species. This report recommends that plantings be 100% native species.

Figure 17 Zone 7 Arroyos, Open Space and Ponds, Plans

GENERAL TREATMENT FOR FIRE PRONE AREAS





**Table 9 Zone 7 Arroyos, Open Space and Ponds: Costs**

**Statement of Probable Construction Cost**

ITEM / DESCRIPTION	SIZE	UNIT	EST. QTY.	EST. 2015 UNIT COST	EST. TOTAL COST
<b>DEMOLITION AND PLANT PROTECTION</b>		ACRE	1	\$5,500.00	\$5,500.00
<b>IRRIGATION</b>					
New irrigation		SQUARE FOOT	5,000	\$2.50	\$12,500.00
<b>IRRIGATION SUBTOTAL</b>					\$12,500.00
<b>PLANTING</b>					
<b>TREES</b>					
Deciduous	2 1/2" Cal.	EACH	2	\$300.00	\$600.00
Evergreen	6'-8'	EACH	2	\$300.00	\$600.00
<b>SHRUBS</b>					
Groundcover	1 gal.	EACH	0	\$15.00	\$0.00
Perennials	5 gal.	EACH	0	\$45.00	\$0.00
Large shrubs	15 gal.	EACH	0	\$125.00	\$0.00
<b>MULCH</b>					
Angular cobble	4"–6"	SQUARE FOOT	0	\$0.80	\$0.00
High Desert Seed Mix		SQUARE FOOT	43,560	\$0.30	\$13,068.00
Boulders	3' x 3' x 3'	EACH	0	\$250.00	\$0.00
CRUSHER FINES PATH		SQUARE FOOT	2,200	\$1.75	\$3,850.00
STONE BENCHES AND PET STATIONS		LINEAR FOOT	3	\$800.00	\$2,400.00
<b>SOIL PREPARATION</b>					
Compost/amendment		CUBIC YARD	5	\$30.00	\$150.00
<b>PLANTING SUBTOTAL</b>					20,668.00
<b>Sub-total</b>					\$38,668.00
<b>Contingency (20%)</b>					\$7,733.60
<b>GRAND TOTAL</b>					\$46,401.60

**Cost Estimate Assumptions**

- Cost assumes irrigation controls and valve wiring is competent and will not have to undergo significant renovation.
- Cost assumes contractor will protect trees and shrubs to remain by irrigating trees during construction, hand dig around roots for irrigation construction, and observe vegetation protection specifications.
- Site-wide selected soil amendments are to boost the germination rates of grasses and assist general health of new and existing shrubs and trees.
- Actual tree and shrub quantities may differ significantly from those indicated and are based on averages of shrubs and trees per acre.

**III. PHASING RECOMMENDATIONS**

**Long Term Phasing Recommendations**

Phasing recommendations are made based upon the prioritization matrix (Page 31) and discussions with the HDROA board and landscape committee. The Board may decide the phasing of the implementation based upon budgetary considerations.

**Funding Sources**

The landscape construction recommended in this Plan can be funded from either Operating Funds or Reserve Funds, subject to qualification criteria for the Reserves as established by the IRS. Generally, expenses would be paid from the Capital Replacement Reserves or from Operating Funds as shown:

The Association should seek the advice of its CPA for any final determination of how to charge landscape replacement expenses.

**IV. DESIGN AND CONSTRUCTION SEQUENCE RECOMMENDATIONS**

The High Desert Board can get the most out of landscape design and construction with a thorough understanding of both design and construction processes.

Furthermore, the Board's continued involvement in the development of working drawings, bidding, and construction will provide transparency and allow trusting relationships to develop. This report assumes that a design/bid/build

construction delivery method will be used to implement the Landscape Masterplan. However, the Board may elect to pursue alternate methods of contractor selection that can be based on invitations, qualifications, or on-call services.

Below is a simplified version of the design and construction process. Involving a landscape professional in these stages of the processes can ensure that the High Desert homeowners get quality and cost effective landscapes that are in keeping with the vision of High Desert.

**Research/Planning/Programming**

**Programming Meeting** Determine function and spatial requirements and site-specific features of the landscape.

**Survey** A survey may not be required in certain circumstances and may be costly. Surveys may be limited to areas known to be encumbered with utilities/easements or property boundary issues.

- Evaluate past plant failures site by site. Use this information to develop a plant list.

**CABQ Clear Sight Line Assessment** As necessary.

**Permitting Requirements** Plan which agencies will receive drawings for permit or courtesy copies.

**Conceptual and Schematic Design**

**Conceptual Design Review** Board review of conceptual sketches for compliance with the Landscape Masterplan. Selection of a preferred alternative concept.

**Preferred Conceptual/Schematic Review** Present schematic drawing of landscape plan and cost estimate to the Board.

**Table 10 Funding Sources**

Expense qualifying from Capital Reserve	Expense from Operating Funds
Replacement of major assets of irrigation system, such as a controller	New plantings, including shrubs, trees, grass seed
Extension of irrigation system to new areas	New landscape areas converted from non-landscaped areas
Replacement trees	Replacement of shrubs and grass due to normal end of life
Replacement of shrubs in an entire planting area such as the front entrance	New mulch—gravel and organic
Replacement gravel mulch, but not organic mulch	New hardscape
Repair and replacement of hardscape	Replacement of irrigation system components due to normal wear and tear
Labor expenses for above	Labor expenses for above

**Presentations/Discussions** As required, present schematic plans to the Board and nearby residents.

## Design Development and Construction Documents

**Design Development Drawings** Deliver working drawings, details, specifications and cost estimates. Integrate landscape plan into survey and resolve grades and details. Develop specifications, with descriptions of quality expectations, products, and execution techniques. Refine cost estimate to price labor and materials, anticipate bidding environments and secure funding.

**Review** Review of deliverables by Board for approval.

**Construction Documents** Develop 100% construction documents. Develop drawings and project manual for bidding.

## Bidding and Negotiation

The following assumes a design/bid/build delivery method.

**Pre-bid Meeting and Site-Walk** Walk the site with potential bidders and describe the scope of construction.

**RFI/ASI/Addendum** Consultant to respond to contractor questions with addendum to the contract documents.

**Bid Opening** Public meeting to open bids and announce apparent winner.

**Notice of Award and Contract Negotiation** Confirm winner by researching contract requirements and issue a notice of award. Negotiate contract.

## Construction

**Pre-construction Meeting** Meet with contractor and discuss schedule, schedule of values, and administration of pay applications, etc.

**Permitting** Seek permits as required.

**Construction Review and Status Meetings** Weekly meetings between contractor, landscape architect, and owners' representative to review construction status and resolve issues. Document visits with field reports.

**Submittals/RFI/ASI** Issue clarifications and changes to construction as required. Review submittals for product quality and compliance.

**Substantial Completion Walk-Through** At the request of the contractor, review the completed construction for compliance with documents. Document substantial completion walk-through with a punch list for completion before acceptance by owner. Maintenance period and warranty period begins.

**Eleven month walk-through** Review the construction after 11 months and prepare punchlist for contractor.

# Conclusion

Many American communities unknowingly (and sometimes emphatically) import their landscapes from elsewhere (i.e. the English garden or American rusticism found in national parks). A more authentic approach allows the surrounding landscape to influence lifestyle/culture. This is the legacy of High Desert and a development idea that needs diligent management and oversight.

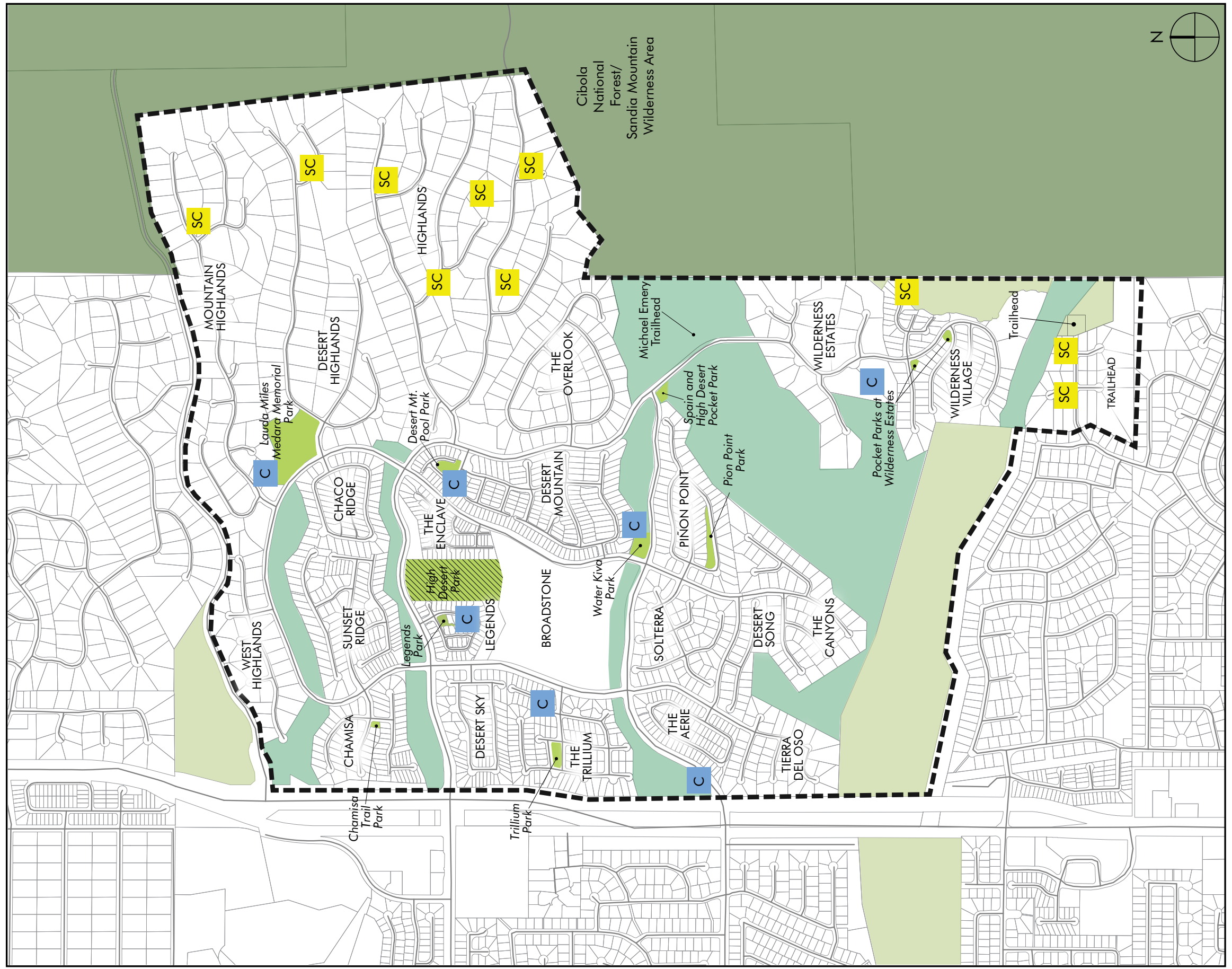


Trail riding, High Desert



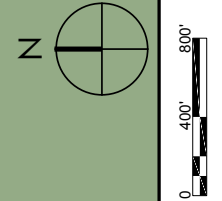
# Appendix A

MAPPING



Key

- High Desert Community Boundary
- Cibola National Forest/  
Sandia Mountain Wilderness Area
- City of Albuquerque Open Space
- High Desert Open Space
- City of Albuquerque Park
- HDROA Maintained Parks
- Controller on Decoder System
- Solar Controller



# High Desert Landscape Masterplan Irrigation Controls





**Key**

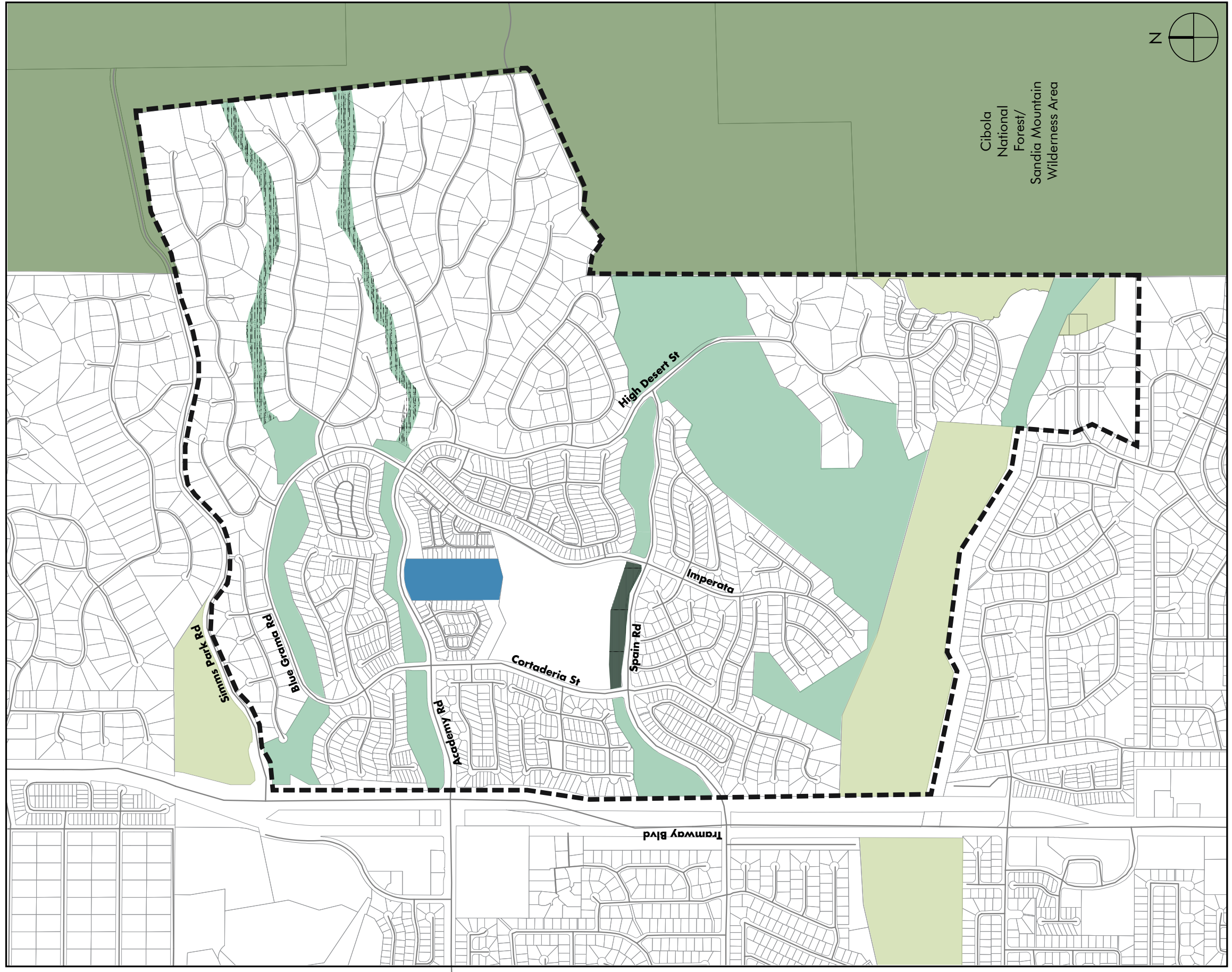
- High Desert Community Boundary
- Development Entrance
- Streetscapes and Medians
- Builder Village Entrance and Internal Streetscapes
- Estate and Premier Village Entrance
- Parks and Pocket Parks
- Sculpture Garden
- High Desert Open Space, Arroyos and Ponds
- Privately-owned Arroyos Maintained by HDROA
- City Park, Not Owned or Maintained by HDROA
- Open Space Maintained by Broadstone Apts.
- Wilderness Cañon Underdeveloped Parcel
- Cibola National Forest/Sandia Mountain Wilderness Area



# High Desert Landscape Masterplan

## Landscape Zones





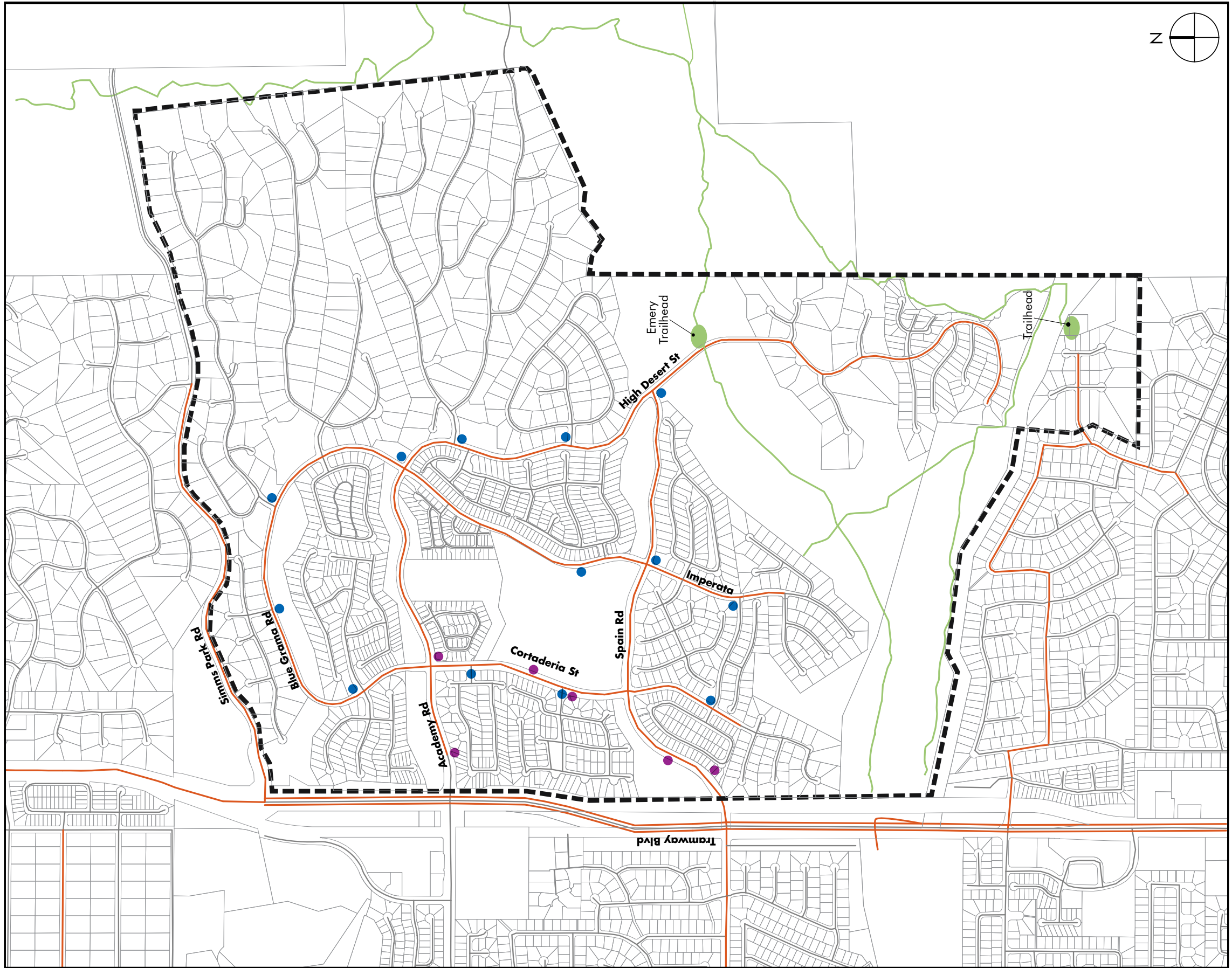
Key

- High Desert Open Space
- Privately-owned Arroyos Maintained by HDROA
- City of Albuquerque Owned and Maintained Park
- Private Land
- Cibola National Forest/Sandia Mountain Wilderness Area
- City of Albuquerque Open Space
- Open Space Maintained by Broadstone Apts.
- High Desert Community Boundary

# High Desert Landscape Masterplan

## Land Ownership



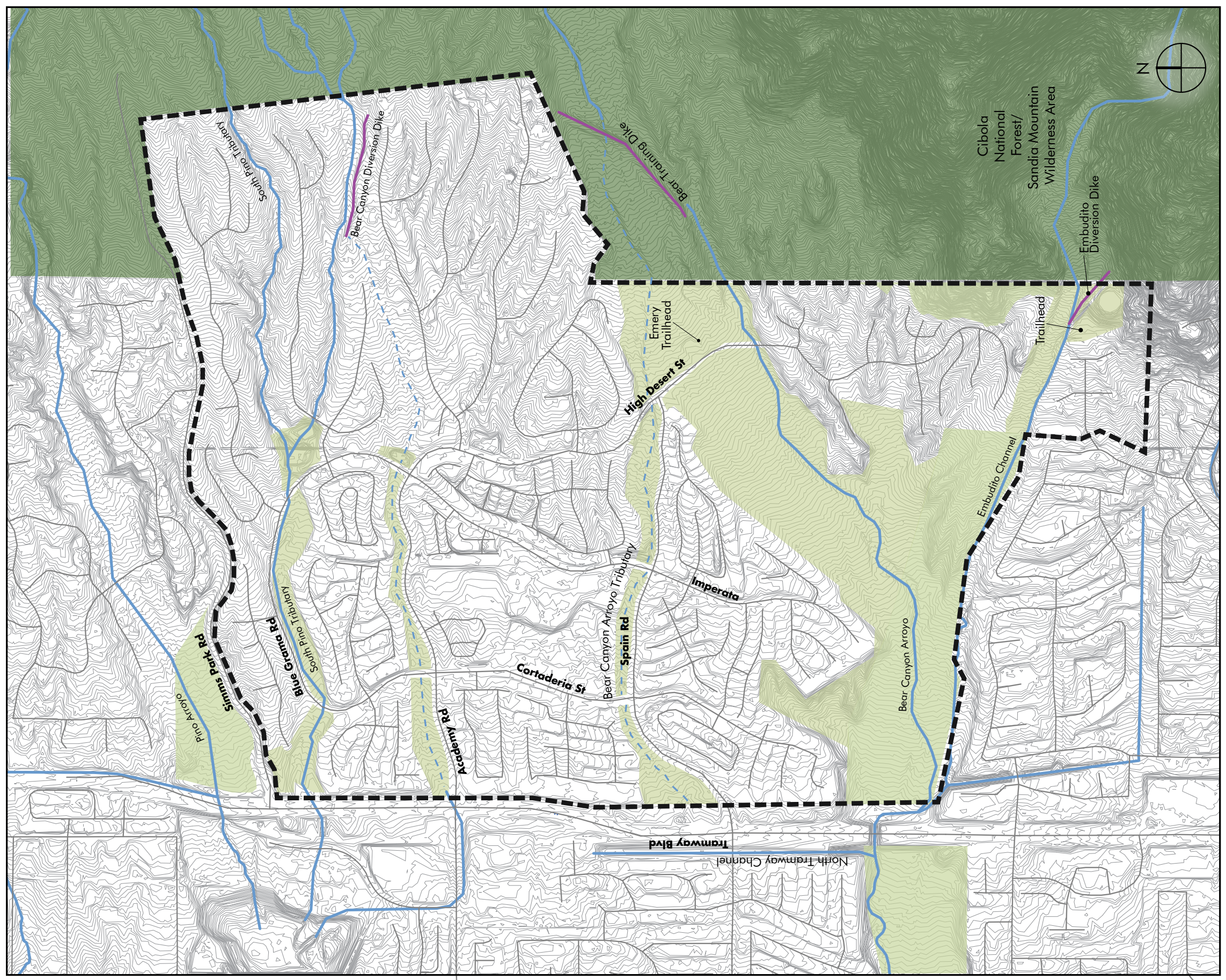


**Key**

- High Desert Community Boundary
- Roadways
- Open Space Trail
- Bike Paths
- Official Trailhead
- APS Bus Stops (as of 1/2015)
- CABQ Bus Stops (as of 2/2015)

# High Desert Landscape Masterplan Circulation





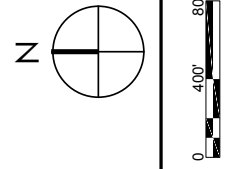
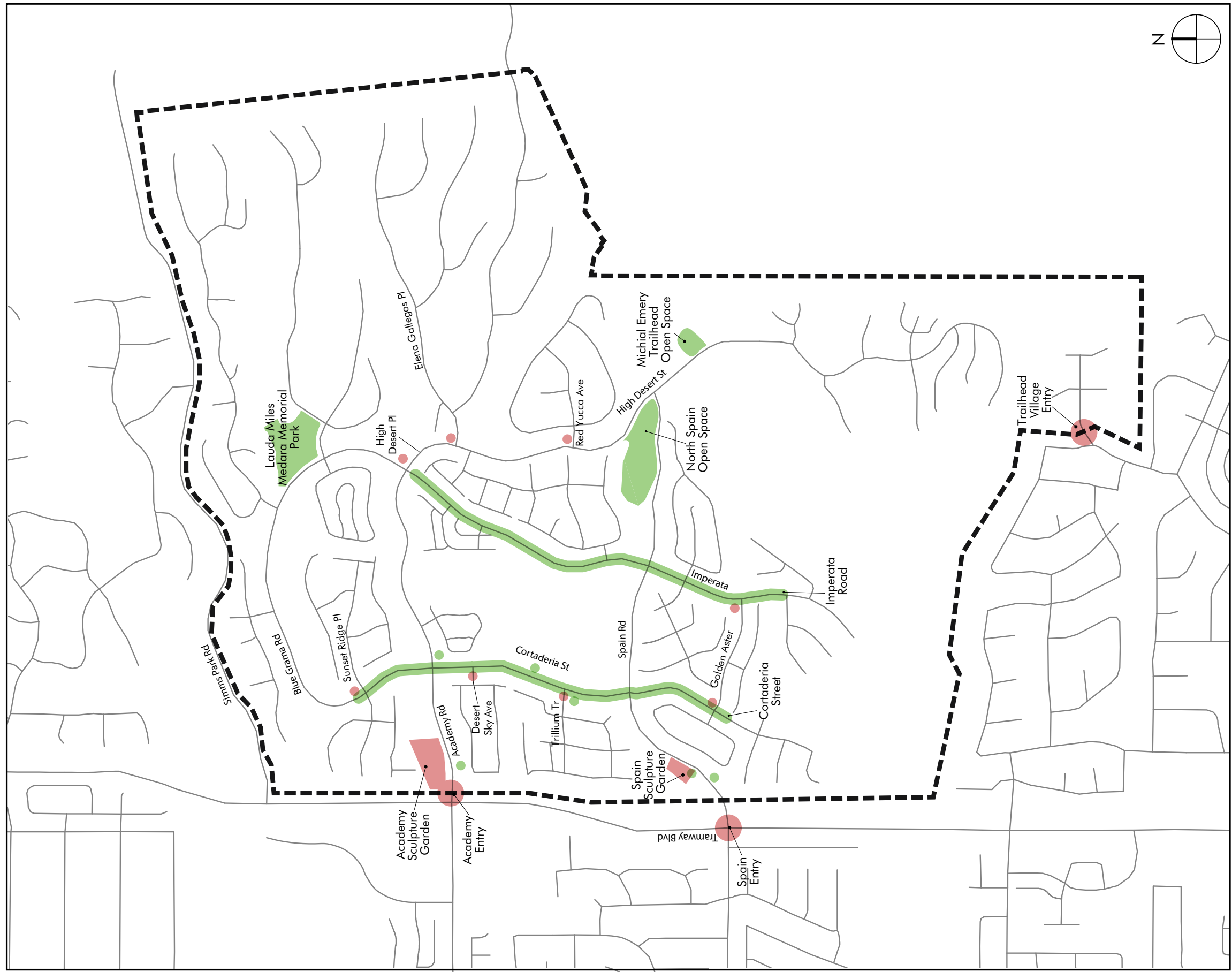
**Key**

- High Desert Community Boundary
- Cibola National Forest/  
Sandia Mountain Wilderness Area
- Open Space
- Secondary Arroyos
- Arroyos
- AMAFCA Diversion Structure

# High Desert Landscape Masterplan

## Natural Features



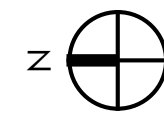


**Key**

- High Desert Community Boundary
- Roadways
- Priority 1
- Priority 2
- APS Bus Stops
- CABQ Stops

# High Desert Landscape Masterplan Prioritization





**Key** ■ Site View. See following pages for notes and recommendations

# High Desert Landscape Masterplan Clear Sight Triangle Assessment



