City of Phoenix
REQUEST FOR PROPOSAL
RFP-24-0432
Street Right-of-Way Landscape Maintenance

Attachment A:

List of Exhibit Documents:

- Exhibit 1: **Freeway Landscape** (2 pages)
  - Freeway North, Landscape
  - Freeway South, Landscape

- Exhibit 2: **Street Landscape** (5 pages)
  - North Zone (North)
  - North Central Zone (North Central)
  - South Zone (South)
  - South Central Zone (South Central)
  - Overview
- Exhibit 3: **Water Conveyance Channels**
  - Maps not available, currently.

- Exhibit 4: **Multiuse Pathways and Trails** (2 pages)
  - Multi Use Path Grand Canal
  - Multi-use Paths

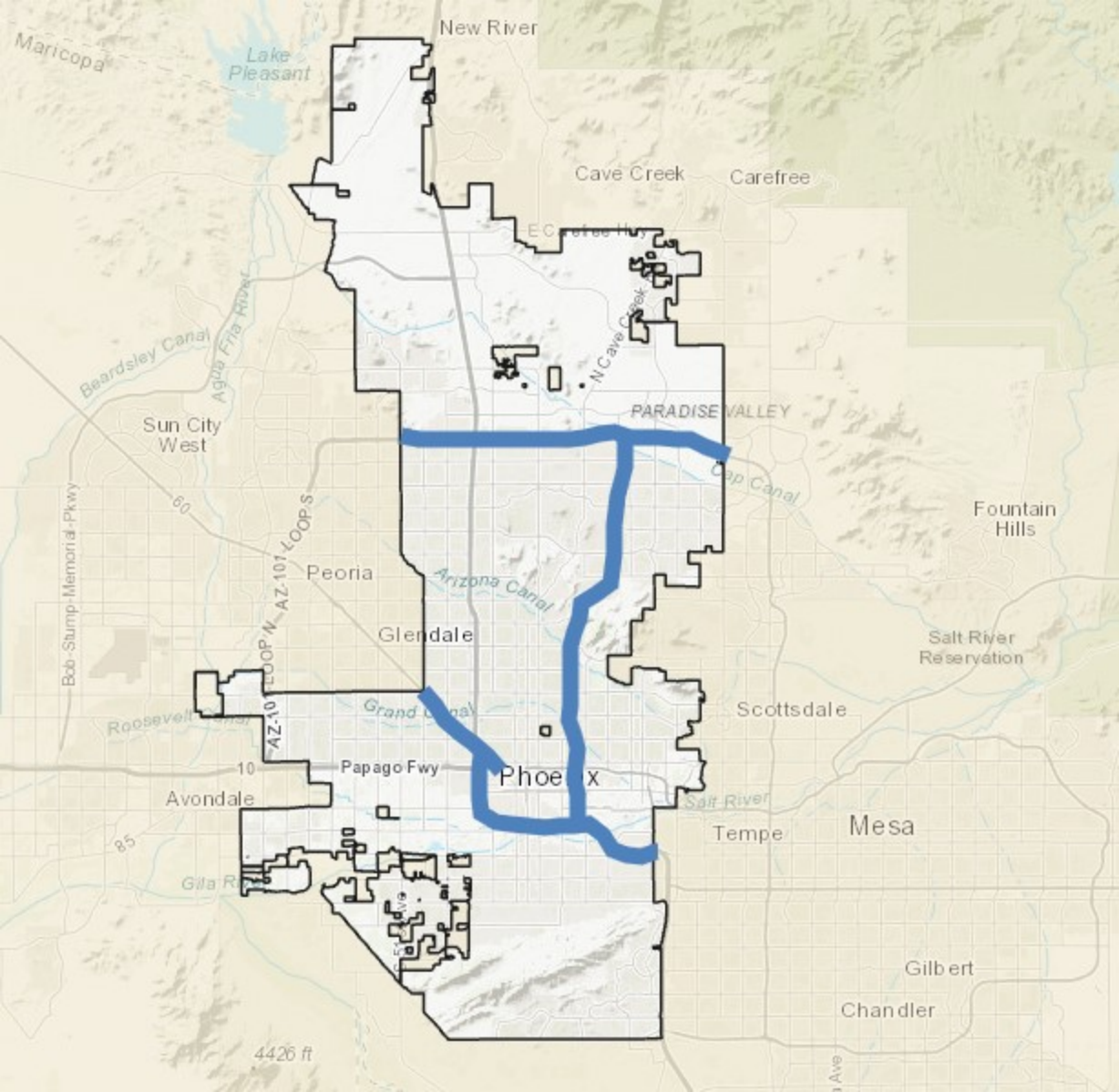
- Exhibit 5: **Retention Basins** (5 pages)
  - 4602 W Pinnacle Peak Dr
  - 2700 South Mountain Ave
  - 4100 W Baseline Rd
  - 6801 E Princess Dr
  - 4501 S Shea Blvd

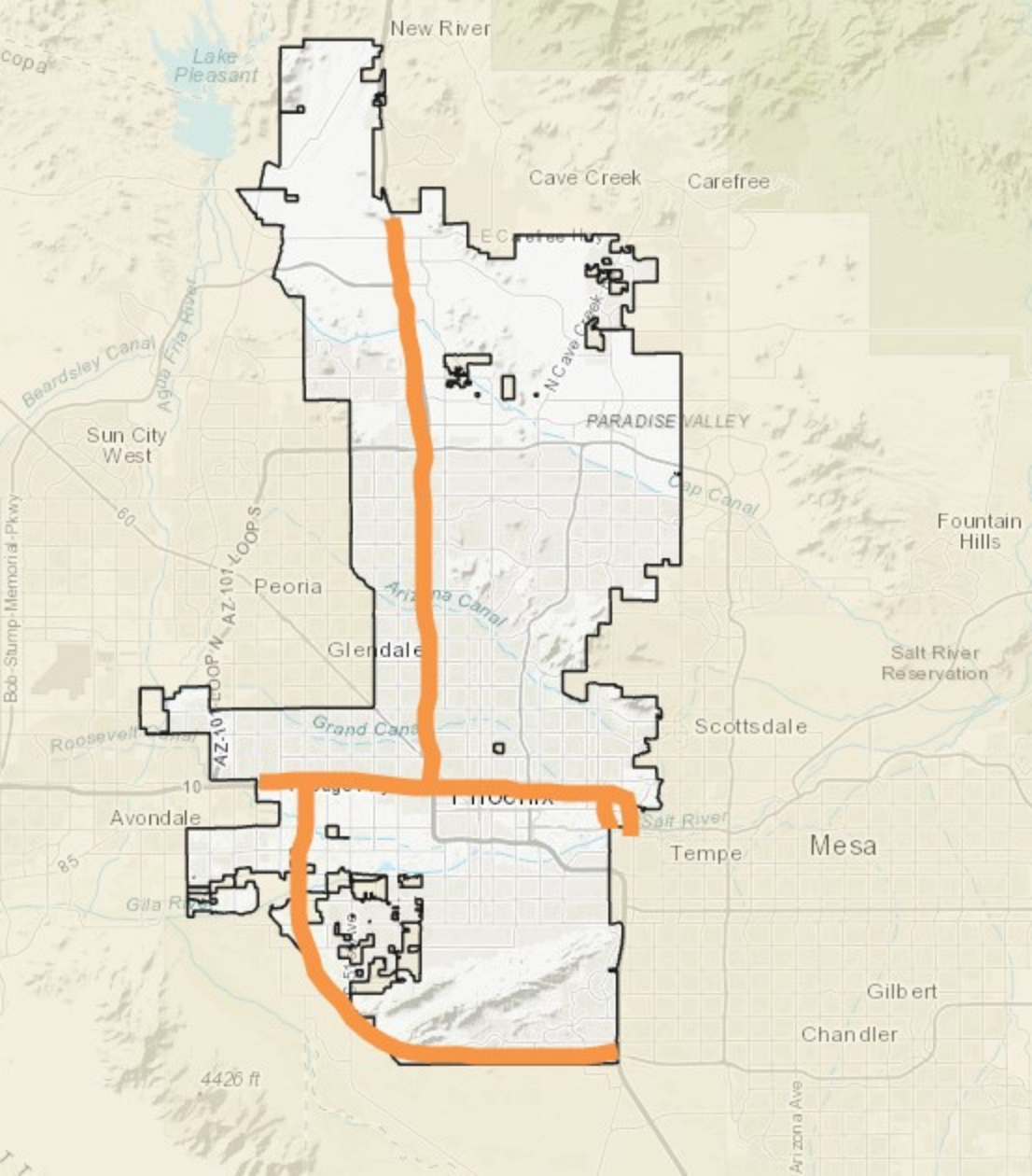
- Exhibit 6: **Dams and Levees** (14 pages)
  - Dams (8 pages)
  - Levee Maps (5 pages)
  - Dam and Levee Instructions (1 page)

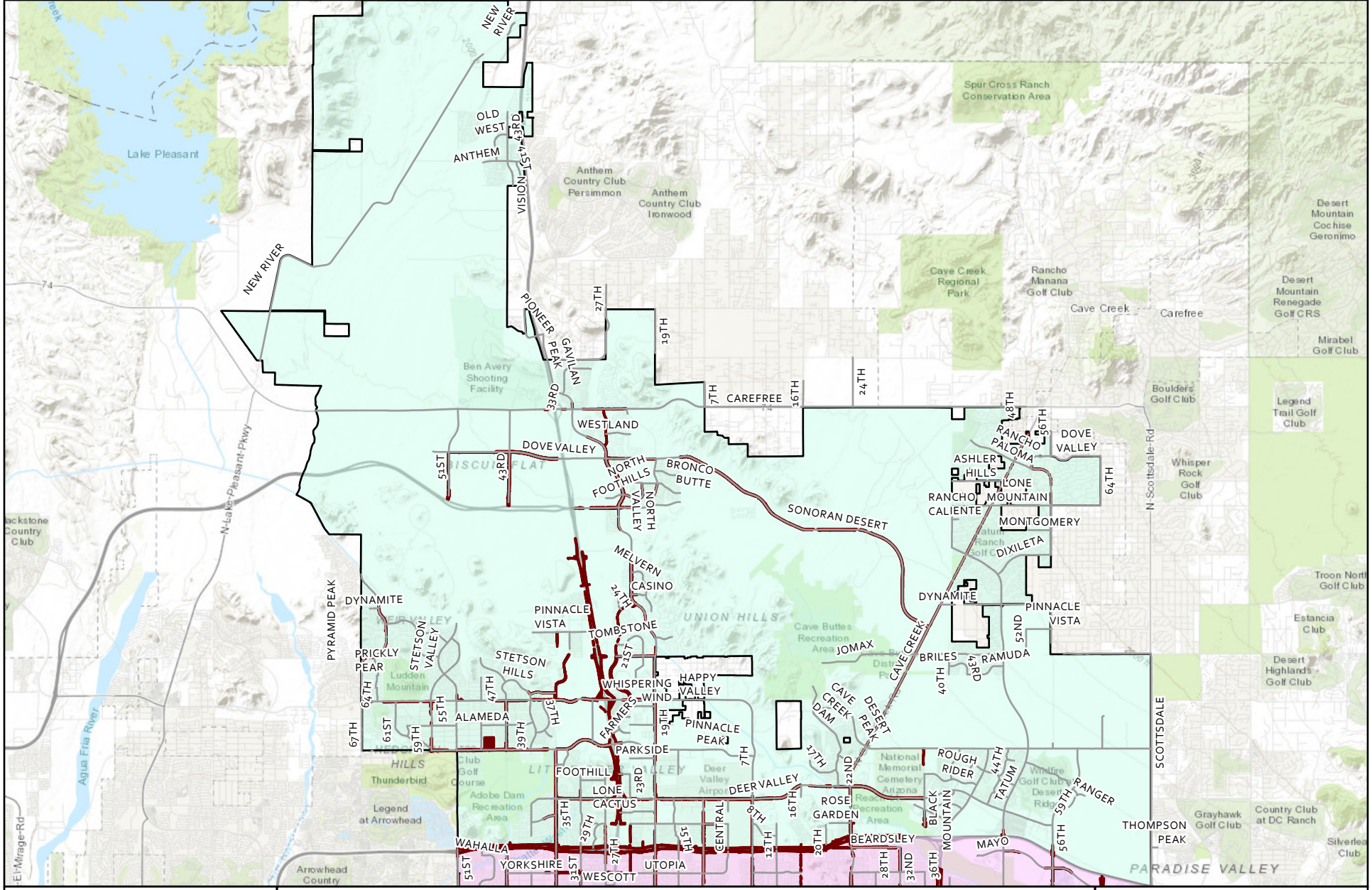
- Exhibit 7: **COP OEP Western Burrowing Owl Flyer** (1 page)

- Exhibit 8: **ANSI 300- Pruning Standards** (16 pages)

- Exhibit 9: **COP - TREE PLANTING – SINGLE** (1 page)


New River
Maricopa
Lake Pleasant
Cave Creek
Carefree
Beardsley Canal
Agua Fria River
N Cave Creek
PARADISE VALLEY
Sun City West
Cap Canal
Fountain Hills
Bob Stump Memorial Pkwy
Peoria
AZ 101 LOOP S
AZ 101 LOOP N
Arizona Canal
Glendale
Salt River Reservation
Roosevelt Canal
Grand Canal
Scottsdale
AZ 10
10
Papago Fwy
Phoenix
Avondale
Salt River
Tempe
Mesa
85
Gila R
Gilbert
Chandler
4426 ft


New River
Lake Pleasant
Cave Creek
Carefree
Beardsley Canal
Agua Fria River
N Cave Creek
PARADISE VALLEY
Sun City West
Cap Canal
Fountain Hills
Peoria
AZ-101 LOOP W
AZ-101 LOOP S
Arizona Canal
Glendale
Salt River Reservation
Bob Stump Memorial Pkwy
Roosevelt Canal
Grand Canal
Scottsdale
Avondale
Phoenix
Salt River
Tempe
Mesa
Gilbert
Chandler
4426 ft
Arizona Ave



Legend

- Landscape Maintainance Areas

Managment Zone

- NORTH
- NORTH CENTRAL
- SOUTH
- SOUTH CENTRAL

City of Phoenix: Landscape Maintenance Zone

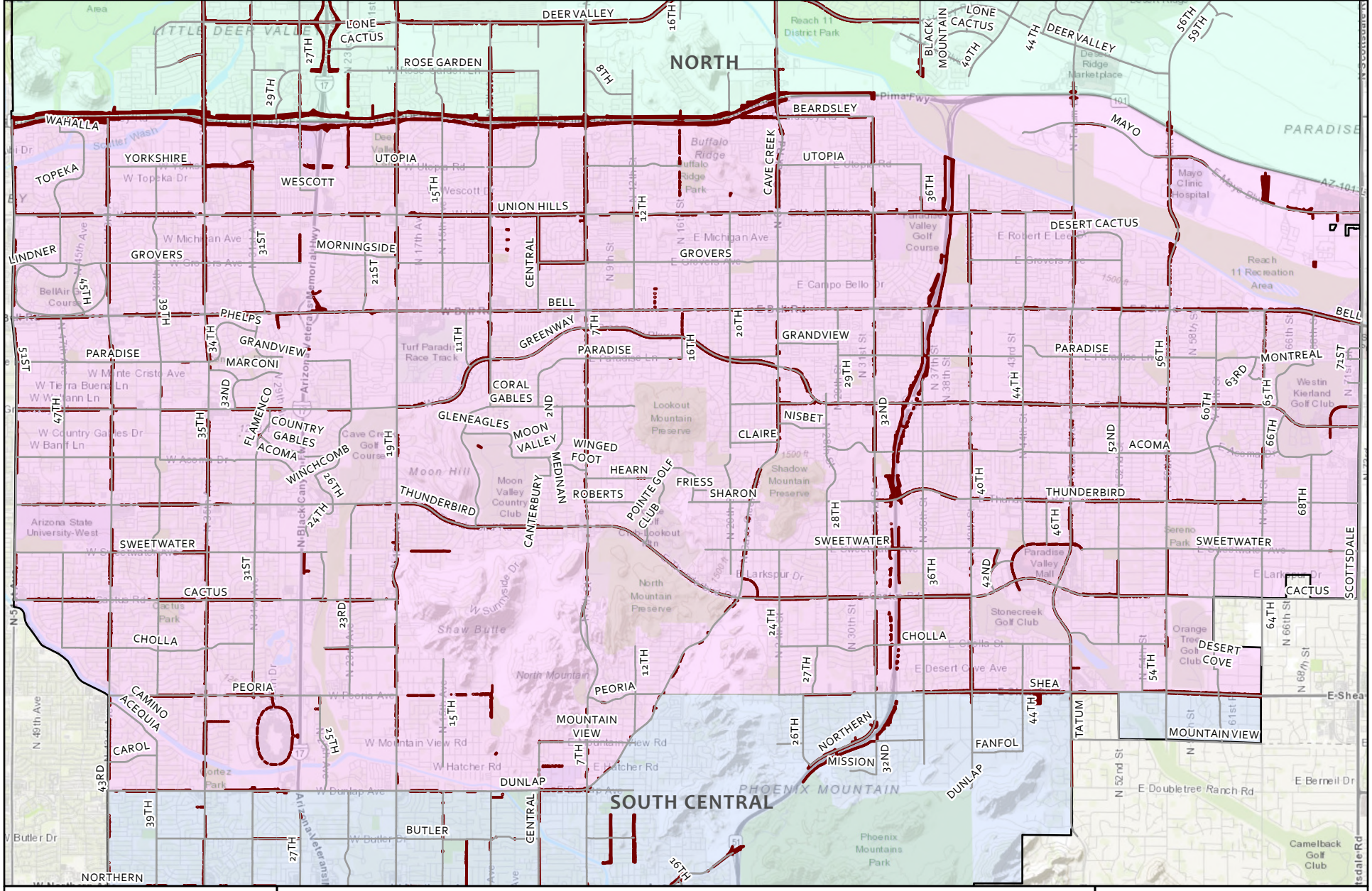
1.5 0.75 0 1.5 3 4.5 6 Miles

NORTH

Streets Transportation Department

City of Phoenix

N



Legend

- Landscape Maintainance Areas

Managment Zone

- NORTH
- NORTH CENTRAL
- SOUTH
- SOUTH CENTRAL

City of Phoenix: Landscape Maintenance Zone

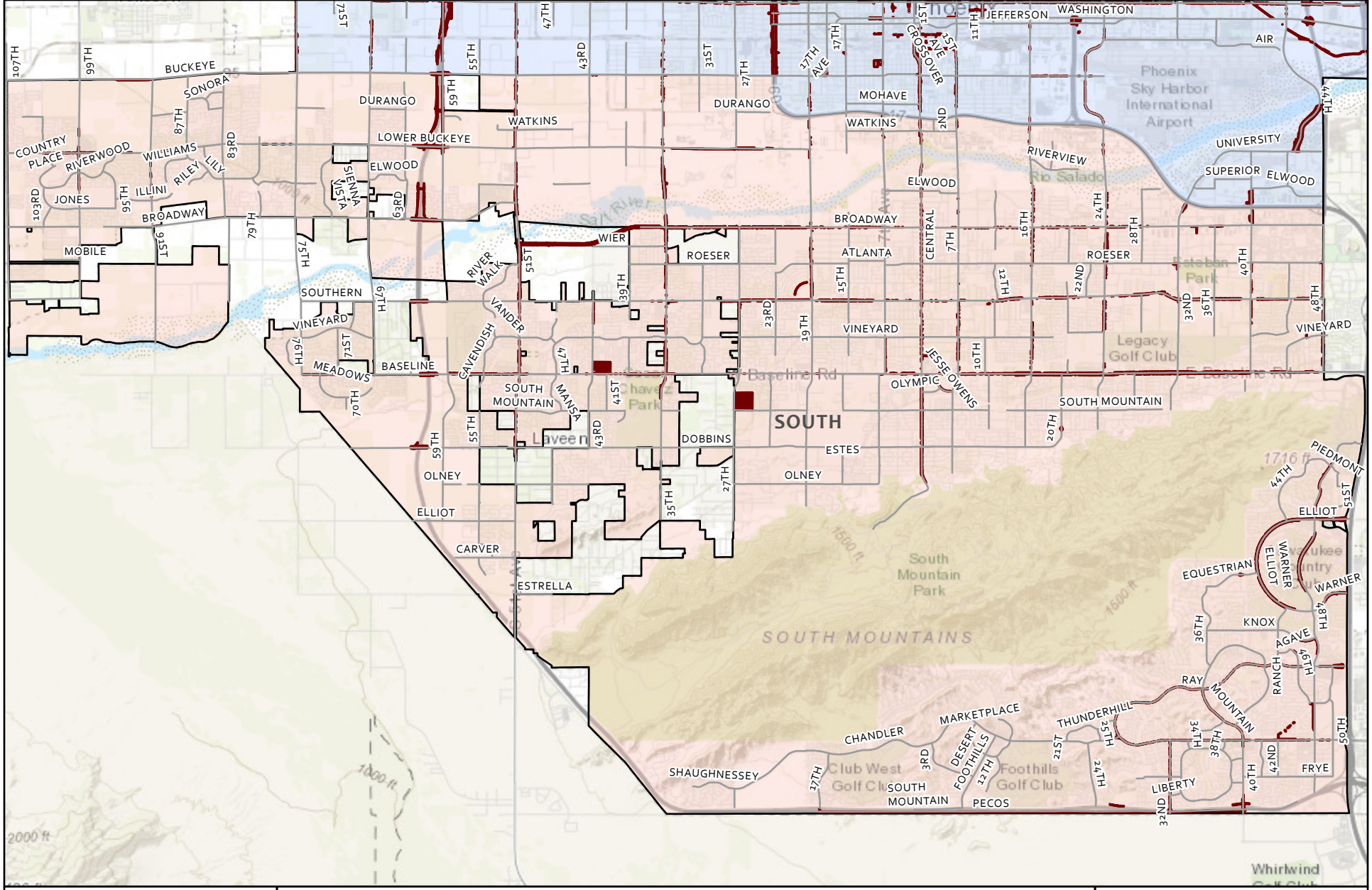
1 0.5 0 1 2 3 4 Miles

Streets Transportation Department

NORTH CENTRAL

City of Phoenix

N



Legend

- Landscape Maintainance Areas

Managment Zone

- NORTH
- NORTH CENTRAL
- SOUTH
- SOUTH CENTRAL

City of Phoenix: Landscape Maintenance Zone

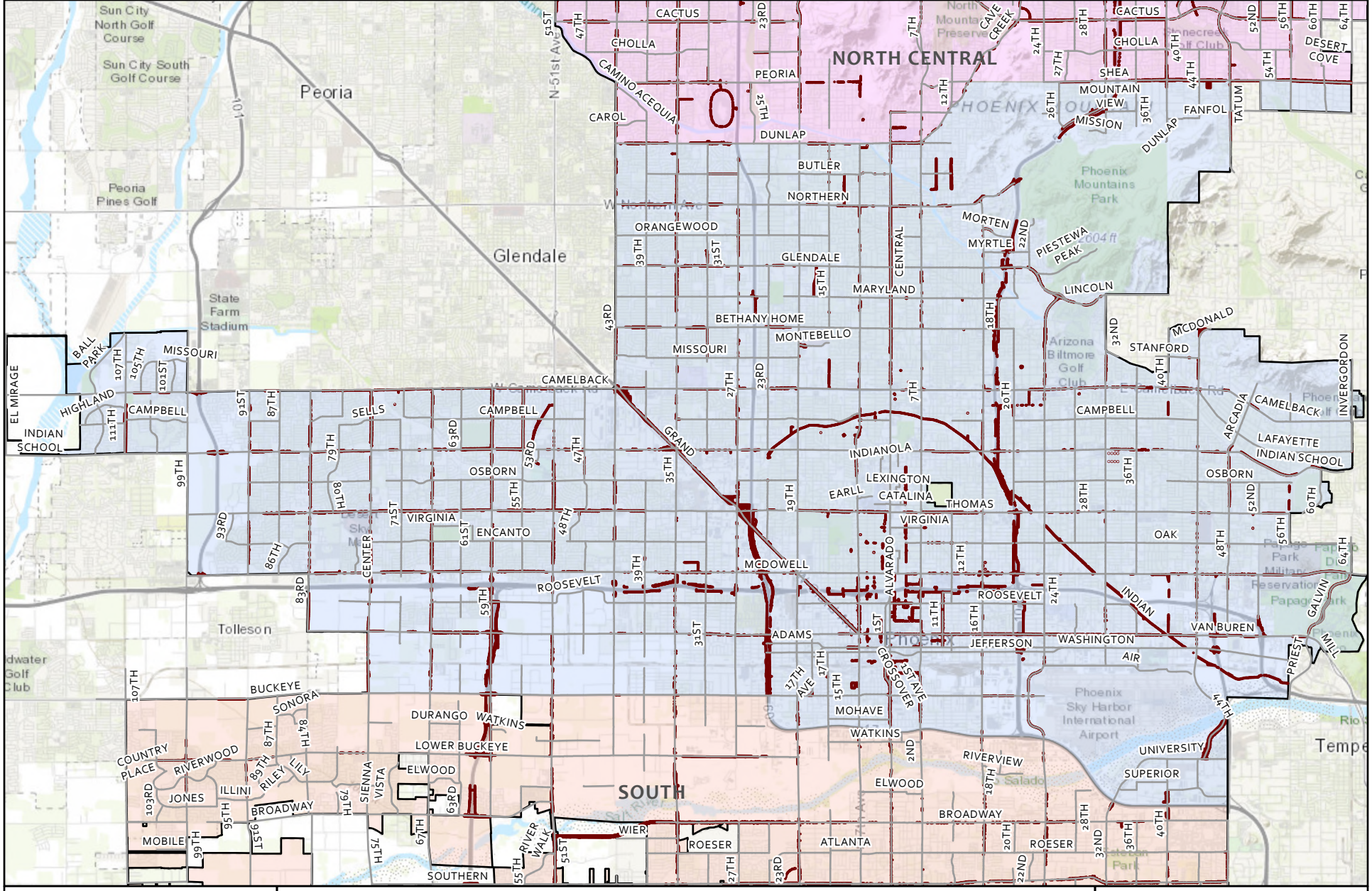
1 0.5 0 1 2 3 4 Miles

SOUTH

Streets Transportation Department

City of Phoenix

N



Legend

- Landscape Maintainance Areas

Managment Zone

- NORTH
- NORTH CENTRAL
- SOUTH
- SOUTH CENTRAL

City of Phoenix: Landscape Maintenance Zone

1.5 0.75 0 1.5 3 4.5 6 Miles

SOUTH CENTRAL

Streets Transportation Department

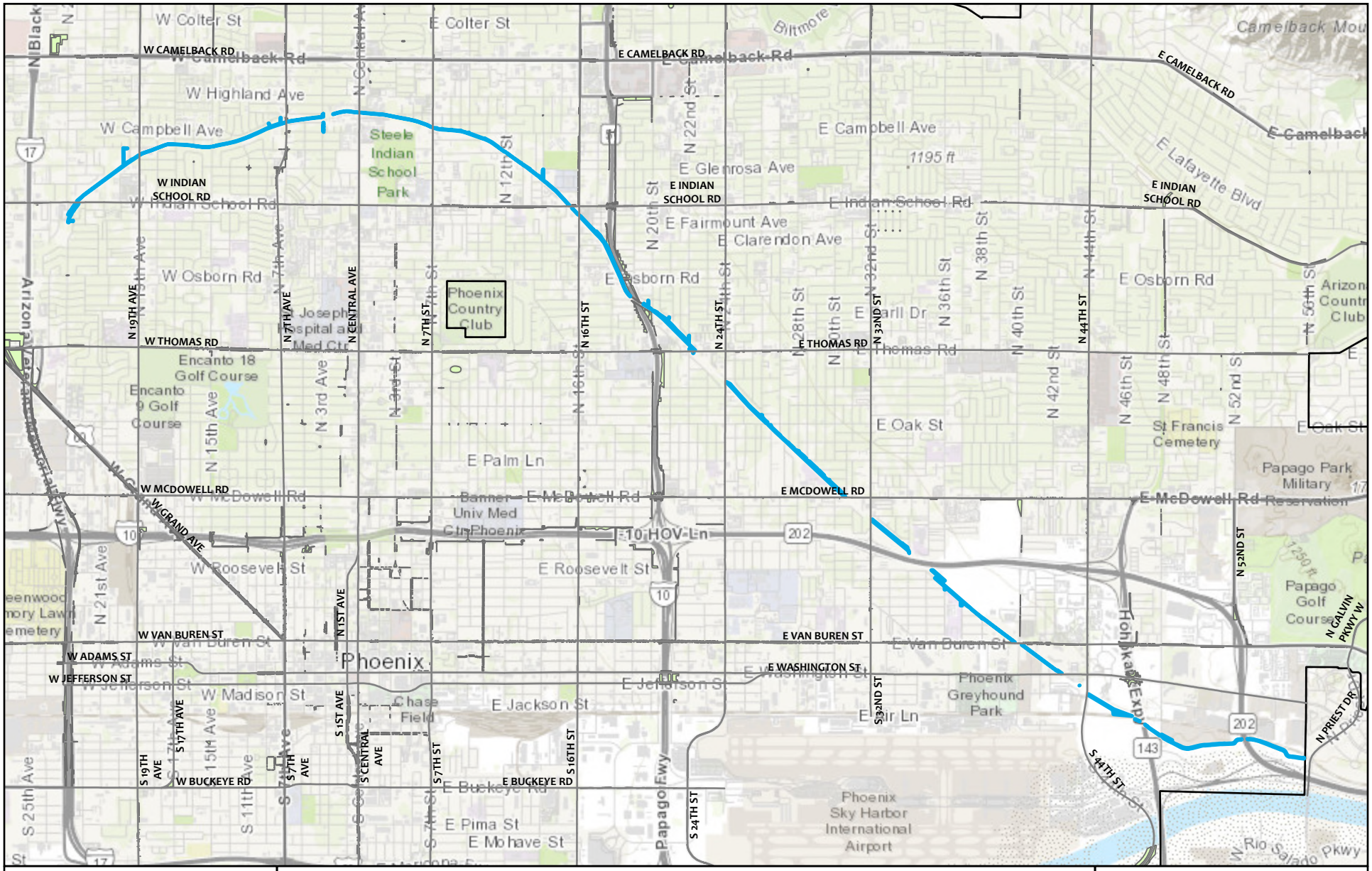
City of Phoenix

N

PHX GIS, City of Phoenix, Bureau of Land Management, Esri, HERE, Garmin, INCREMENT P, USGS, METI/NASA, EPA, USDA

Exhibit 3: Water Conveyance Channels (no pages)

- Maps are not available, currently.



Legend

- Street Centerline
- Grand Canal Area
- City Limit

Multi-Use Path Grand Canal

0 0.45 0.9 1.8 2.7 3.6 Miles

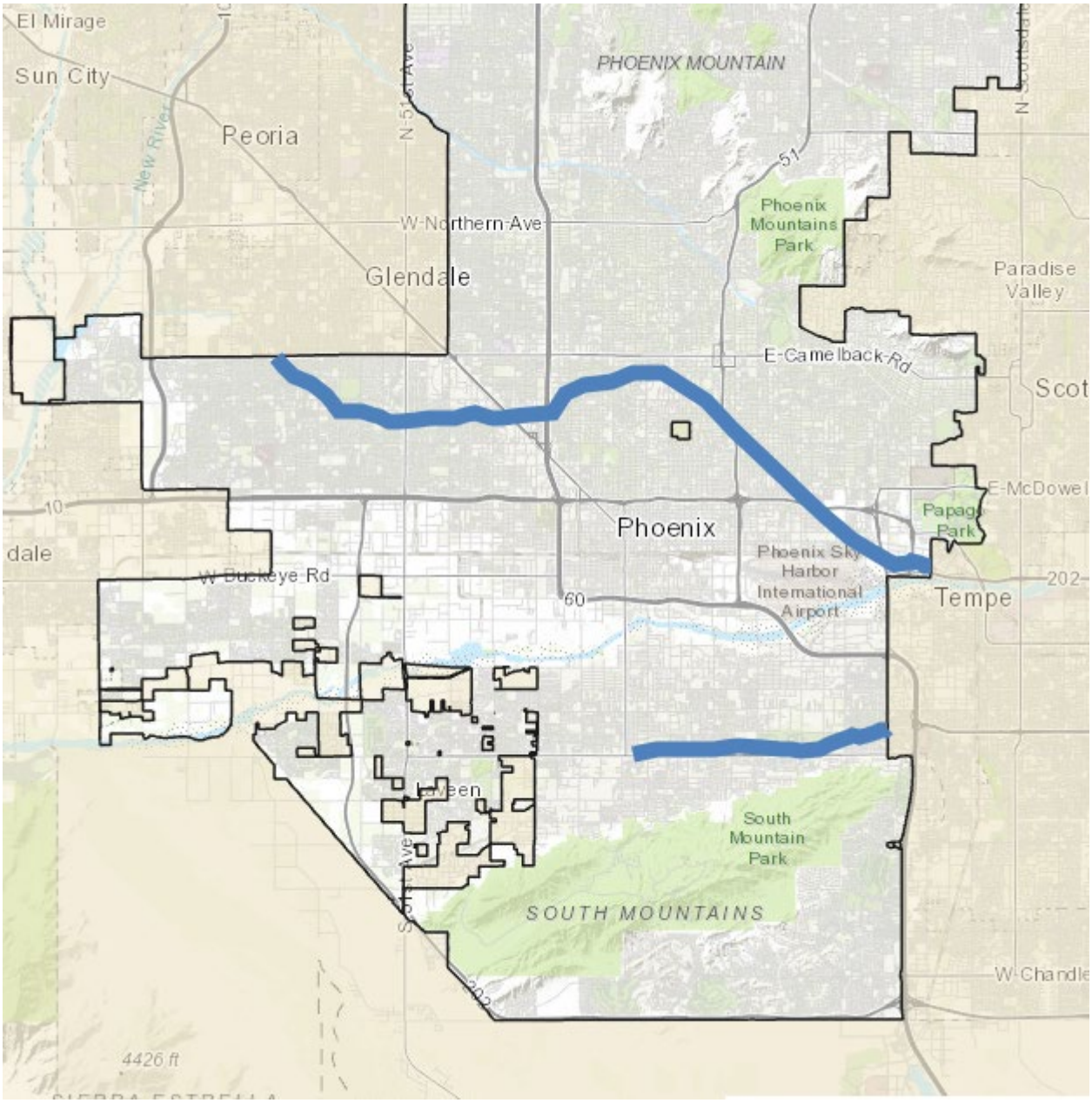
2024

Streets Transportation Department

City of Phoenix

N

Multi-use Paths



Legend

Street Centerline

Retention Basins

4602 W Pinnacle Peak Drive

1,270,00 Square Feet

2024

Street Transportation Department Street Maintenance Division

City of Phoenix

N

Legend

- Street Centerline
- Retention Basins

2700 South Mountain Ave

1,650,000 Square Feet

2024

Street Transportation Department Street Maintenance Division

City of Phoenix

N

Legend

Street Centerline

Retention Basins

4100 W Baseline Rd

650,000 Square Feet

2024

Street Transportation Department Street Maintenance Division

City of Phoenix

N

Legend

Street Centerline

Retention Basins

6801 E Princess Dr

34,000 Square Feet

2024

Street Transportation Department Street Maintenance Division

City of Phoenix

N

Legend

Street Centerline

Retention Basins

4501 E Shea Blvd

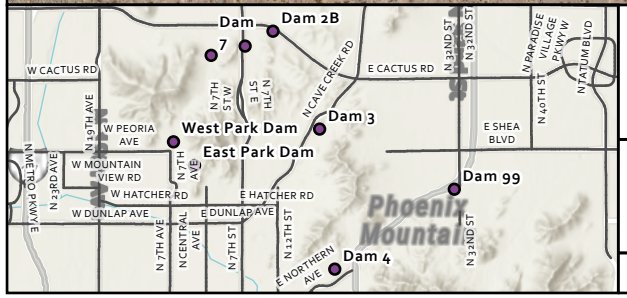
190,000 Square Feet

2024

Street Transportation Department Street Maintenance Division

City of Phoenix

N



North Mountain Flood Detention Dam #2A

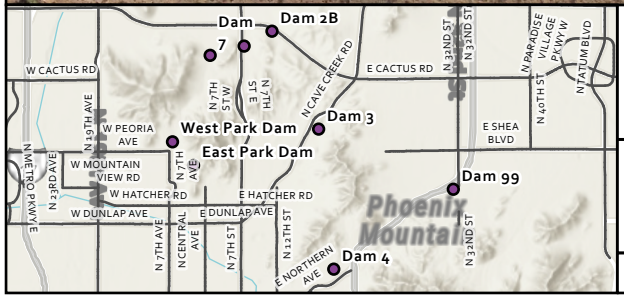
0.030.01 0 0.03 0.05 0.08 0.1 Miles

2024

Street Transportation Department Street Maintenance Division

City of Phoenix

N



North Mountain Flood Detention Dam #2B

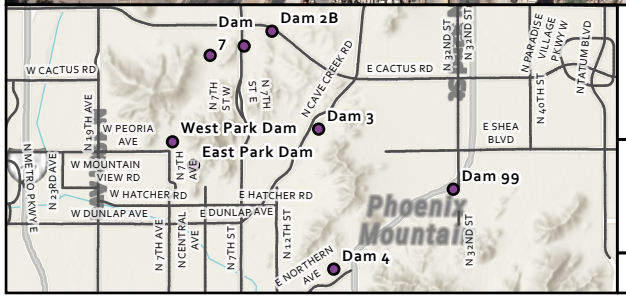
0.01 0.01 0 0.01 0.03 0.04 0.06 Miles

2024

City of Phoenix

N

Street Transportation Department Street Maintenance Division



North Mountain Flood Detention Dam #3

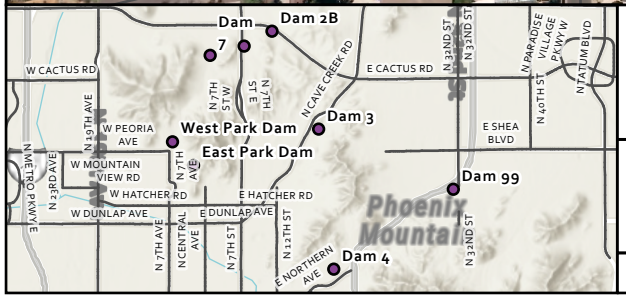
0.030.01 0 0.03 0.05 0.08 0.1 Miles

2024

Street Transportation Department Street Maintenance Division

City of Phoenix

N



Little Dreamy Draw #4

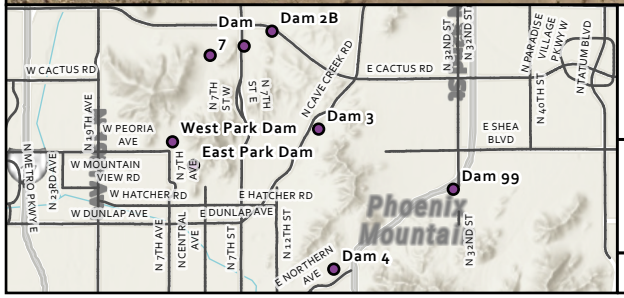
0.030.01 0 0.03 0.05 0.08 0.1 Miles

2024

Street Transportation Department Street Maintenance Division

City of Phoenix

N



North Mountain Flood Detention Dam #7

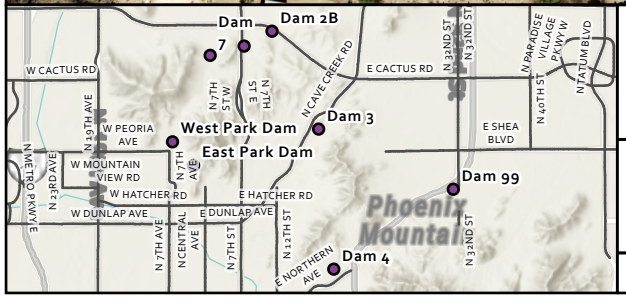
0.01 0.01 0 0.01 0.03 0.04 0.06 Miles

2024

City of Phoenix

N

Street Transportation Department Street Maintenance Division



Mountain View Rd & 32nd Street #99

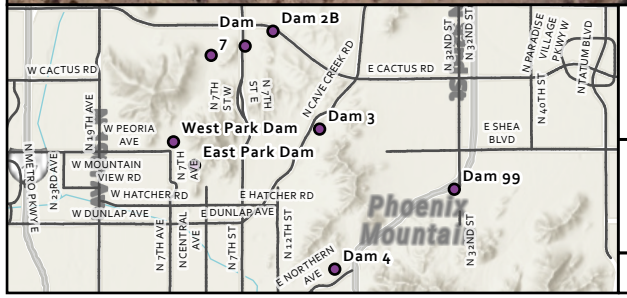
0.01 0.01 0 0.01 0.03 0.04 0.06 Miles

2024

Street Transportation Department Street Maintenance Division

City of Phoenix

N



East Park Flood Detention Dam

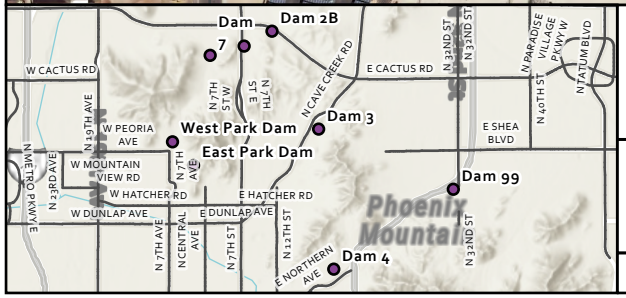
0.01 0 0 0.01 0.02 0.03 0.04 Miles

2024

Street Transportation Department Street Maintenance Division

City of Phoenix

N



West Park Flood Detention Dam

0.030.01 0 0.03 0.05 0.08 0.1 Miles

2024

Street Transportation Department Street Maintenance Division

City of Phoenix

N

Legend

- Levees
- Street Centerline

Scatter Wash

0 0.04 0.07 0.14 Miles

2024

Streets Transportation Department

N

City of Phoenix

Legend

- Levees
- Street Centerline

Cave Creek Levee

0 0.04 0.09 0.17 Miles

2024

Streets Transportation Department

N

City of Phoenix

Legend

- Levees
- Street Centerline

Highline Canal

0 0.1 0.2 0.4 Miles

2024

Streets Transportation Department

N

City of Phoenix

Legend

- Levees
- Street Centerline

Salt River

0 0.17 0.35 0.7 Miles

2024

Streets Transportation Department

N

City of Phoenix

Legend

- Levees
- Street Centerline

Skunk Creek

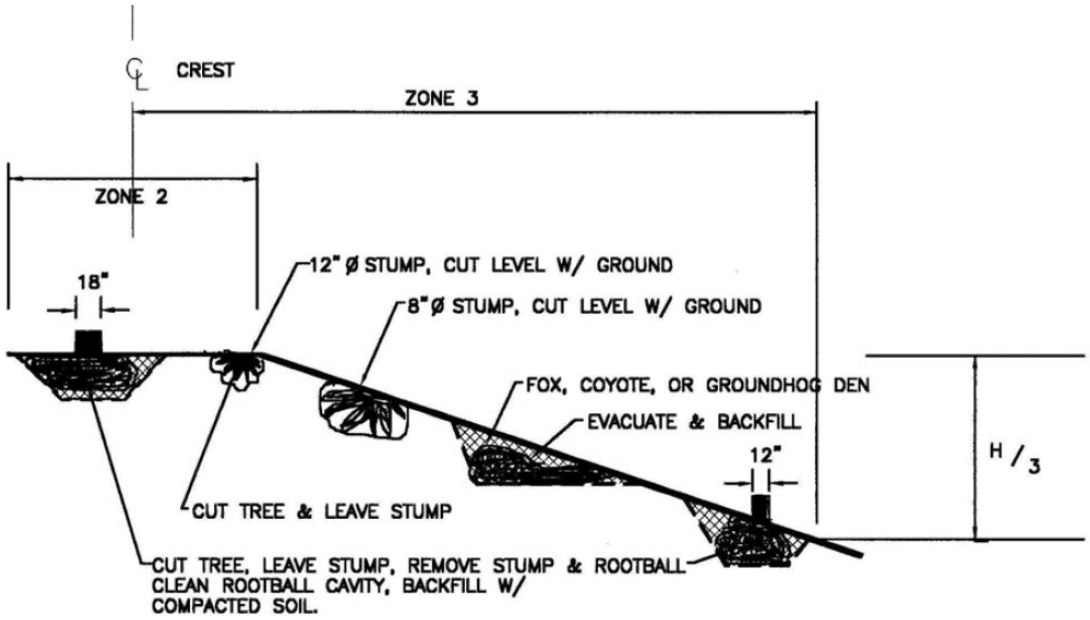
0 0.04 0.07 0.14 Miles

2024

Streets Transportation Department

N

City of Phoenix



1. Objectives
    a. To remove excessive vegetation that may compromise the integrity of the dams and levees.
    b. To thin out vegetation to allow for easier inspection and maintenance.
    c. To ensure compliance with environmental and safety regulations.
2. Work Description
    a. Vegetation Removal
        i. Identify and mark all areas of excessive vegetation growth on the dams and levees.
        ii. Remove trees, shrubs, and large plants that pose a risk to the structural integrity.
        iii. Ensure the removal process does not damage the embankment structure.
    b. Vegetation Thinning
        i. Thin out dense vegetation, maintaining a balance that prevents erosion while allowing easy access for inspections.
        ii. Remove dead or diseased plants to prevent the spread of pests and diseases.
    c. Debris Management
        i. Properly dispose of all removed vegetation in accordance with local regulations and PM assessment.
        ii. Ensure no debris is left on the embankments that could obstruct operations or inspections.
    d. Environmental Considerations
        i. Conduct work in an environmentally responsible manner, minimizing disruption to the surrounding ecosystem.
        ii. Avoid removing vegetation that is crucial for erosion control unless necessary.

City of Phoenix
OFFICE OF ENVIRONMENTAL PROGRAMS

Western Burrowing Owl

(Athene cunicularia)

The purpose of this flyer is to provide City of Phoenix employees and contractors working on City projects with basic knowledge to reduce the risk of impacting western burrowing owls.

Legal Status:
The western burrowing owl is protected under the Migratory Bird Treaty Act of 1918, as amended. All migratory birds and their parts (including eggs, feathers, and nests) are fully protected. They are also protected under Arizona State Law, Title 17-101, Title 17-235, and Title 17-236.

Species Description:

- Small, ground-dwelling owl (mass of approx. 5 oz.)
- Length: 7.6-9.9 inches, with long legs
- Wingspan: approx. 23 inches
- Round head, lacks ear tufts
- Distinct oval facial ruff, framed by a broad, puffy white eyebrow
- Bright yellow iris

Where are they found?

- Dry, open, short grass, treeless plains
- Human dominated landscapes such as:
  - Golf courses, airports
  - Agricultural fields, vacant lots
- Depends on other animals to construct burrows

Identifying an active burrow

- Western burrowing owls use burrows constructed by ground squirrels, badgers, coyotes, tortoises, etc, or may use pipes, culverts, and ditches.
- They may "decorate" the entrance to a burrow with cow, horse, or dog manure, feathers, vegetation, and trash items
- An active burrow may (not always) have owl excrement ("whitewash") and/or pellets near the entrance

How to avoid impacting western burrowing owls:

- Scan ahead as you work
- ***If western burrowing owls or potentially active burrows observed, STOP WORK and MOVE at least 100 feet away from the owl or occupied burrow before resuming work***
  - Do not harass or "shoo" the owl away
- If the project cannot avoid or stay outside 100 feet of the owl or active burrow, call contact listed below

Questions? Need to work within 100 feet of a western burrowing owl or active burrow? Contact the City of Phoenix Office of Environmental Programs, Environmental Programs Coordinator Tricia Balluff at (602) 534-1775 or tricia.balluff@phoenix.gov.

Sources: Arizona Department of Transportation Environmental Planning Group Western Burrowing Owl Awareness Flyer
Arizona Game and Fish Department Animal Abstract: Western Burrowing Owl. Heritage Data Management System

Updated March 2, 2015

Contents

Forward

(This foreword is not part of American National Standard A300 Part 1-2001.)

An industry-consensus standard must have the input of the industry that it is intended to affect. The Accredited Standards Committee A300 was approved June 28, 1991. The committee includes representatives from the residential and commercial tree care industry, the utility, municipal, and federal sectors, the landscape and nursery industries, and other interested organizations. Representatives from varied geographic areas with broad knowledge and technical expertise contributed.

The A300 standard can be best placed in proper context if one reads its Scope, Purpose, and Application. This document presents performance standards for the care and maintenance of trees, shrubs, and other woody plants. It is intended as a guide in the drafting of maintenance specifications for federal, state, municipal, and private authorities including property owners, property managers, and utilities.

The A300 standard stipulates that specifications for tree work should be written and administered by a professional possessing the technical competence to provide for, or supervise, the management of woody landscape plants. Users of this standard must first interpret its wording, then apply their knowledge of growth habits of certain plant species in a given environment. In this manner, the user ultimately develops their own specifications for plant maintenance.

ANSI A300 Part 1 – Pruning, should be used in conjunction with the rest of the A300 standard when writing specifications for tree care operations.

Suggestions for improvement of this standard should be forwarded to: NAA300 Secretary, c/o National Arborist Association, 3 Perimeter Rd. - Unit 1, Manchester, NH 03103, USA or Email: naa@natlarb.com.

This standard was processed and approved for submittal to ANSI by Accredited Standards Committee on Tree, Shrub, and Other Woody Plant Maintenance Operations – Standard Practices, A300. Committee approval of the standard does not necessarily imply that all committee members voted for its approval. At the time it approved this standard, the A300 committee had the following members:

Tim Johnson, Chair (Artistic Arborist, Inc.)
Bob Rouse, Secretary (National Arborist Association, Inc.)

Organizations Represented	Name of Representative
American Forests	Staff (Observer)
American Nursery and Landscape Association	Craig J. Regelbrugge
American Society of Consulting Arborists	Andrew Graham
	Donald Blair (Adviser)
	Beth Palys (Adviser)
American Society of Landscape Architects	Ron Leighton
Asplundh Tree Expert Company	Geoff Kempter
Associated Landscape Contractors of America	Preston Leyshon
	Jeff Bourne (Alt.)
The Davey Tree Expert Company	Joseph Tommasi
	Dick Jones (Alt.)
	Richard Rathjens (Adviser)
The F.A. Bartlett Tree Expert Company	Peter Becker
	Dr. Thomas Smiley (Alt.)
International Society of Arboriculture	Ed Brennan
	Sharon Lilly (Alt.)
National Arborist Association	Ronald Rubin
Tom Mugridge (Alt.) National Park Service	Robert DeFeo
Professional Grounds Management Society	Kevin O'Donnell
Society of Municipal Arborists	Andrew Hillman
U.S. Forest Service	Ed
Macie_	Mike Galvin (Alt.)
	Philip D. Rodbell (Alt.)
Utility Arborist Association	Jeffery Smith
	Matt Simons (Alt.)

American National Standard for Tree Care Operations –

Tree, Shrub, and Other Woody Plant Maintenance – Standard Practices

(*Pruning*)

1 ANSI A300 standards

1.1 Scope
ANSI A300 standards present performance standards for the care and maintenance of trees, shrubs, and other woody plants.

1.2 Purpose
ANSI A300 standards are intended as guides for federal, state, municipal and private authorities including property owners, property managers, and utilities in the drafting of their maintenance specifications.

1.3 Application
ANSI A300 standards shall apply to any person or entity engaged in the business, trade, or performance of repairing, maintaining, or preserving trees, shrubs, or other woody plants.

1.4 Implementation
Specifications for tree maintenance should be written and administered by an arborist.

2 Part 1 – Pruning standards

2.1 Purpose
The purpose of this document is to provide standards for developing specifications for tree pruning.

2.2 Reasons for pruning
The reasons for tree pruning may include, but are not limited to, reducing risk, maintaining or improving tree health and structure, improving aesthetics, or satisfying a specific need. Pruning practices for agricultural, horticultural production, or silvicultural purposes are exempt from this standard.

2.3 Safety

2.3.1 Tree maintenance shall be performed only by arborists or arborist trainees who, through related training or on-the-job experience, or both, are familiar with the practices and hazards of arboriculture and the equipment used in such operations.

2.3.2 This standard shall not take precedence over arboricultural safe work

practices.

2.3.3 Operations shall comply with applicable Occupational Safety and Health Administration (OSHA) standards, ANSI Z133.1, as well as state and local regulations.

3 Normative references

The following standards contain provisions, which, through reference in the text, constitute provisions of this American National Standard. All standards are subject to revision, and parties to agreements based on this American National Standard shall apply the most recent edition of the standards indicated below.

• ANSI Z60.1, Nursery stock
• ANSI Z133.1, Tree care operations - Pruning, trimming, repairing, maintaining, and removing trees, and cutting brush - Safety requirements
• 29 CFR 1910, General industry 1)
• 29 CFR 1910.268, Telecommunications 1)
• 29 CFR 1910.269, Electric power generation, transmission, and distribution 1)
• 29 CFR 1910.331 - 335, Electrical safety-related work practices 1)

4 Definitions

4.1 **anvil-type pruning tool:** A pruning tool that
has a sharp straight blade that cuts against a flat metal cutting surface, in contrast to a hook-and-bladetype pruning tool (4.21).

4.2 **apical dominance:** Inhibition of growth of lateral buds by the terminal bud.

4.3 **arboriculture:** The art, science, technology, and business of commercial, public, and utility tree care.

4.4 **arborist:** An individual engaged in the profession of arboriculture who, through experience, education, and related training, possesses the competence to provide for or supervise the management of trees and other woody plants.

4.5 **arborist trainee:** An individual undergoing on-the-job training to obtain the experience and the competence required to provide for or supervise the management of trees and other woody plants. Such trainees shall be under the direct supervision of an arborist.

4.6 **branch bark ridge:** The raised area of bark in the branch crotch that marks where the branch and parent meet.

4.7 **branch collar:** The swollen area at the base of a branch.

4.8 **callus:** Undifferentiated tissue formed by the cambium around a wound.

4.9 **cambium:** The dividing layer of cells that forms sapwood (xylem) to the inside and inner bark (phloem) to the outside.

4.10 **cleaning:** Selective pruning to remove one or more of the following parts: dead, diseased, and/ or broken branches (5.6.1).

4.11 **climbing spurs:** Sharp, pointed devices affixed to a climber's boot used to assist in climbing trees. (syn.: gaffs, hooks, spurs, spikes, climbers)

4.12 **closure:** The process of woundwood covering a cut or other tree injury.

4.13 **crown:** The leaves and branches of a tree measured from the lowest branch on the trunk to the top of the tree.

4.14 **decay:** The degradation of woody tissue caused by microorganisms.

4.15 **espalier:** The combination of pruning, supporting, and training branches to orient a plant in one plane (5.7.2).

4.16 **establishment:** The point after planting when a tree's root system has grown sufficiently into the surrounding soil to support shoot growth and anchor the tree.

4.17 **facility:** A structure or equipment used to deliver or provide protection for the delivery of an essential service, such as electricity or communications.

4.18 **final cut:** A cut that completes the removal or reduction of a branch or stub.

4.19 **frond:** A leaf of a palm.

4.20 **heading:** 1. Cutting a currently growing, or a 1-year-old shoot, back to a bud. 2. Cutting an older branch or stem back to a stub in order to meet a defined structural objective. 3. Cutting an older branch or stem back to a lateral branch not large enough to assume apical dominance in order to meet a defined structural objective. Heading may or may not be an acceptable pruning practice, depending on the application.

4.21 **hook-and-blade-type pruning tool:** A pruning tool that has a sharp curved blade that overlaps a supporting hook; in contrast to an anvil-type pruning tool (4.1). (syn.: by-pass pruner)

4.22 **interfering branches:** Crossing, rubbing, or upright branches that have the

potential to damage tree structure and/or health.

4.23 **internodal cut:** A cut located between lateral branches or buds.

4.24 **lateral branch:** A shoot or stem growing from a parent branch or stem.

4.25 **leader:** A dominant or co-dominant, upright stem.

4.26 **limb:** A large, prominent branch.

4.27 **lion's tailing:** The removal of an excessive number of inner, lateral branches from parent branches. Lion's tailing is not an acceptable pruning practice (5.5.7).

4.28 **mechanical pruning:** A utility pruning technique where large-scale power equipment is used to cut back branches (5.9.2.2).

4.29 **parent branch or stem:** A tree trunk, limb, or prominent branch from which shoots or stems grow.

4.30 **peeling:** For palms: The removal of only the dead frond bases at the point they make contact with the trunk without damaging living trunk tissue. (syn.: shaving)

4.31 **petiole:** A stalk of a leaf or frond.

4.32 **phloem:** Inner bark conducting tissues that transport organic substances, primarily carbohydrates, from leaves and stems to other parts of the plant.

4.33 **pollarding:** The maintenance of a tree by making internodal cuts to reduce the size of a young tree, followed by the annual removal of shoot growth at its point of origin (5.7.3).

4.34 **pruning:** The selective removal of plant parts to meet specific goals and objectives.

4.35 **qualified line-clearance arborist:** An individual who, through related training and on-thejob experience, is familiar with the equipment and hazards in line clearance and has demonstrated the ability to perform the special techniques involved. This individual may or may not be currently employed by a line-clearance contractor.

4.36 **qualified line-clearance arborist trainee:**
An individual undergoing line-clearance training and who, in the course of such training, is familiar with the hazards and equipment involved in line clearance and has demonstrated ability in the performance of the special techniques involved.

This individual shall be under the direct supervision of a qualified line-clearance arborist.

4.37 **raising:** Selective pruning to provide vertical clearance (5.6.3).

4.38 **reduction:** Selective pruning to decrease height and/or spread (5.6.4).

4.39 **remote/rural areas:** Locations associated with very little human activity, land improvement, or development.

4.40 **restoration:** Selective pruning to improve the structure, form, and appearance of trees that have been severely headed, vandalized, or damaged (5.7.4).

4.41 **shall:** As used in this standard, denotes a mandatory requirement.

4.42 **should:** As used in this standard, denotes an advisory recommendation.

4.43 **stub:** An undesirable short length of a branch remaining after a break or incorrect pruning cut is made.

4.44 **thinning:** Selective pruning to reduce density of live branches (5.6.2).

4.45 **throwline:** A small, lightweight line with a weighted end used to position a climber’s rope in a tree.

4.46 **topping:** The reduction of a tree’s size using heading cuts that shorten limbs or branches back to a predetermined crown limit. Topping is not an acceptable pruning practice (5.5.7).

4.47 **tracing:** The removal of loose, damaged tissue from in and around the wound.

4.48 **urban/residential areas:** Locations, such as populated areas including public and private property, that are normally associated with human activity.

4.49 **utility:** An entity that delivers a public service, such as electricity or communications.

4.50 **utility space:** The physical area occupied by a utility’s facilities and the additional space required to ensure its operation.

4.51 **vista pruning:** Selective pruning to allow a specific view (5.7.5).

4.52 **watersprouts:** New stems originating from epicormic buds. (syn.: epicormic shoots)

4.53 **wound:** An opening that is created when the bark of a live branch or stem is penetrated, cut, or removed.

4.54 **woundwood:** Partially differentiated tissue responsible for closing wounds. Woundwood develops from callus associated with wounds.

4.55 **xylem:** Wood tissue. Active xylem is sapwood; inactive xylem is heartwood.

4.56 **young tree:** A tree young in age or a newly transplanted tree.

5 Pruning practices

5.1 Tree inspection

5.1.1 An arborist or arborist trainee shall visually inspect each tree before beginning work.

5.1.2 If a condition is observed requiring attention beyond the original scope of the work, the condition should be reported to an immediate supervisor, the owner, or the person responsible for authorizing the work.

5.2 Tools and equipment

5.2.1 Equipment and work practices that damage living tissue and bark beyond the scope of the work should be avoided.

5.2.2 Climbing spurs shall not be used when climbing and pruning trees.
Exceptions:
-when limbs are more than throwline distance apart and there is no other means of climbing the tree;
-when the bark is thick enough to prevent damage to the cambium;
-in remote or rural utility rights-of-way.

5.3 Pruning cuts

5.3.1 Pruning tools used in making pruning cuts shall be sharp.

5.3.2 A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb, without cutting into the branch bark ridge or collar, or leaving a stub (see Figure 5.3.2).

5.3.3 A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem (see Figure 5.3.3).

5.3.4 The final cut shall result in a flat surface with adjacent bark firmly attached.

5.3.5 When removing a dead branch, the final cut shall be made just outside the collar of living tissue.

5.3.6 Tree branches shall be removed in such a manner so as not to cause damage to other parts of the tree or to other plants or property. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark (see Figure 5.3.2). Where necessary, ropes or other equipment shall be used to lower large branches or portions of branches to the ground.

5.3.7 A final cut that removes a branch with a narrow angle of attachment should be made from the outside of the branch to prevent damage to the parent limb (see Figure 5.3.7).

5.3.8 Severed limbs shall be removed from the crown upon completion of the pruning, at times when the tree would be left unattended, or at the end of the workday.

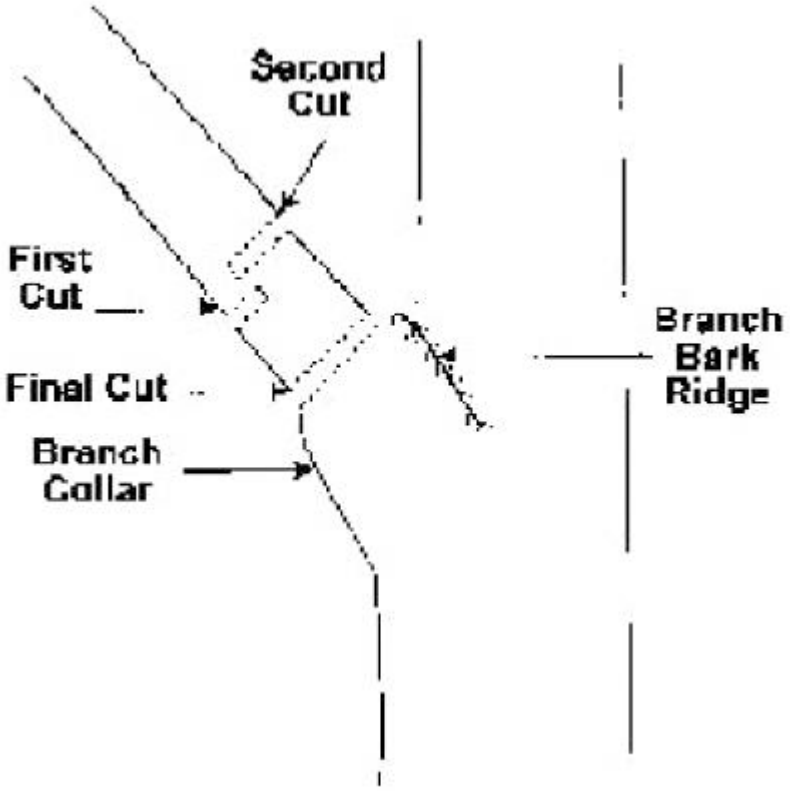


Figure 5.3.2. – A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb, without cutting into the branch bark ridge or collar, or leaving a stub. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark.

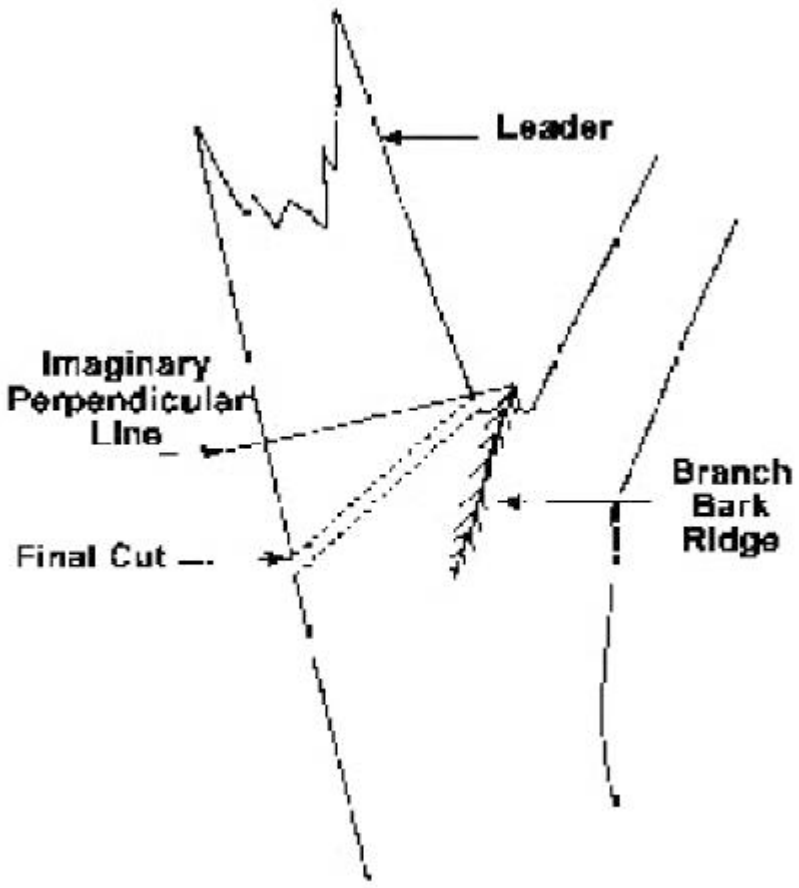


Figure 5.3.3. – A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem .

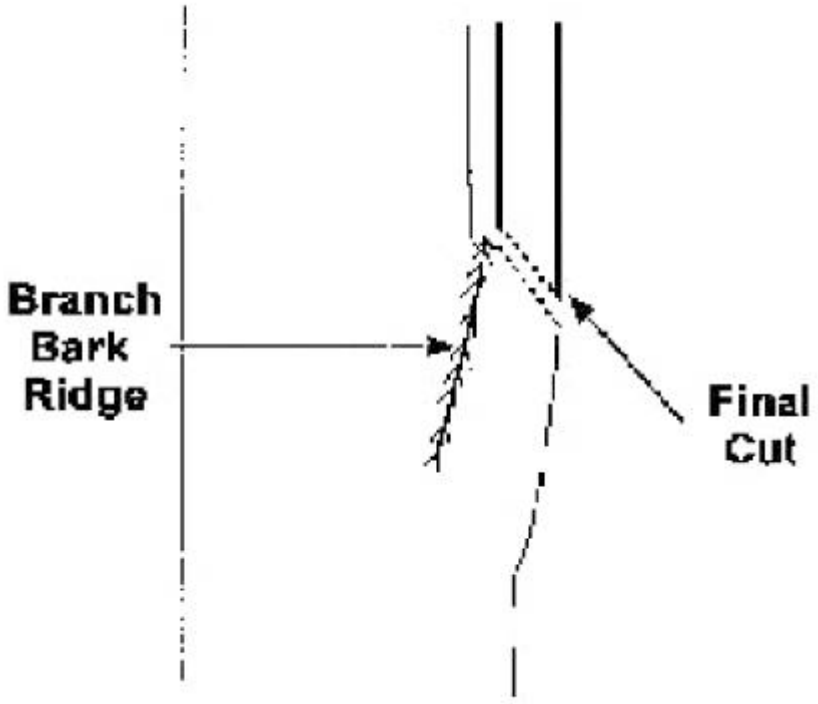


Figure 5.3.7. – A final cut that removes a branch with a narrow angle of attachment should be made from the outside of the branch to prevent damage to the parent limb.

5.4 Wound treatment

5.4.1 Wound treatments should not be used to cover wounds or pruning cuts, except when recommended for disease, insect, mistletoe, or sprout con trol, or for cosmetic reasons.

5.4.2 Wound treatments that are damaging to tree tissues shall not be used.

5.4.3 When tracing wounds, only loose, damaged tissue should be removed.

5.5 Pruning objectives

5.5.1 Pruning objectives shall be established prior to beginning any pruning operation.
To obtain the defined objective, the growth cycles and structure of individual

species and the type
of pruning to be performed should be considered.

5.5.3 Not more than 25 percent of the foliage should be removed within an annual growing season. The percentage and distribution of foliage to be removed shall be adjusted according to the plant's species, age, health, and site.

5.5.4 Not more than 25 percent of the foliage of a branch or limb should be removed when it is cut back to a lateral. That lateral should be large enough to assume apical dominance.

5.5.5 Pruning cuts should be made in accordance with 5.3 Pruning cuts.

5.5.6 Heading should be considered an acceptable practice for shrub or specialty pruning when needed to reach a defined objective.

5.5.7 Topping and lion's tailing shall be considered unacceptable pruning practices for trees.

5.6 Pruning types

Specifications for pruning should consist of, but are not limited to, one or more of the following types:

5.6.1 Clean: Cleaning shall consist of selective pruning to remove one or more of the following parts: dead, diseased, and/or broken branches.
5.6.1.1 Location of parts to be removed shall be specified.
5.6.1.2 Size range of parts to be removed shall be specified.

5.6.2 Thin: Thinning shall consist of selective pruning to reduce density of live branches.
5.6.2.1 Thinning should result in an even distribution of branches on individual limbs and throughout the crown.
5.6.2.2 Not more than 25 percent of the crown should be removed within an annual growing season.
5.6.2.3 Location of parts to be removed shall be specified.
5.6.2.4 Percentage of foliage and size range of parts to be removed shall be specified.

5.6.3 Raise: Raising shall consist of selective pruning to provide vertical clearance.
5.6.3.1 Vertical clearance should be specified.
5.6.3.2 Location and size range of parts to be removed should be specified.

5.6.4 Reduce: Reduction shall consist of selective pruning to decrease height and/or spread.

5.6.4.1 Consideration shall be given to the ability of a species to tolerate this type of pruning.
5.6.4.2 Location of parts to be removed and clearance should be specified.
5.6.4.3 Size range of parts should be specified.

5.7 Specialty pruning

Consideration shall be given to the ability of a species to tolerate specialty pruning, using one or more pruning types (5.6).

5.7.1 Young trees

5.7.1.1 The reasons for young tree pruning may include, but are not limited to, reducing risk, maintaining or improving tree health and structure, improving aesthetics, or satisfying a specific need.
5.7.1.2 Young trees that will not tolerate repetitive
pruning and have the potential to outgrow their space should be considered for relocation or removal.
5.7.1.3 At planting
5.7.1.3.1 Pruning should be limited to cleaning (5.6.1).
5.7.1.3.2 Branches should be retained on the lower trunk.
5.7.1.4 Once established
5.7.1.4.1 Cleaning should be performed (5.6.1).
5.7.1.4.2 Rubbing and poorly attached branches should be removed.
5.7.1.4.3 A central leader or leader(s) as appropriate should be developed.
5.7.1.4.4 A strong, properly spaced scaffold branch structure should be selected and maintained.
5.7.1.4.5 Interfering branches should be reduced or removed.

5.7.2 Espalier

5.7.2.1 Branches that extend outside the desired plane of growth shall be pruned or tied back.
5.7.2.2 Ties should be replaced as needed to prevent girdling the branches at the attachment site.

5.7.3 Pollarding

5.7.3.1 Consideration shall be given to the ability of the individual tree to respond to pollarding.
5.7.3.2 Management plans shall be made prior to the start of the pollarding process for routine removal of watersprouts.
5.7.3.3 Internodal cuts shall be made at specific locations to start the pollarding process. After the initial cuts are made, no additional internodal cut shall be made.
5.7.3.4 Watersprouts growing from the cut ends of branches (knuckles) should be removed annually during the dormant season.

5.7.4 Restoration

5.7.4.1 Restoration shall consist of selective pruning to improve the structure,

form, and appearance of trees that have been severely headed, vandalized, or damaged.
5.7.4.2 Location in tree, size range of parts, and percentage of watersprouts to be removed should be specified.

5.7.5 Vista pruning
5.7.5.1 Vista pruning shall consist of selective pruning to allow a specific view.
5.7.5.2 Size range of parts, location in tree, and percentage of foliage to be removed should be specified.

5.8 Palm pruning

5.8.1 Palm pruning should be performed when fronds, fruit, or loose petioles may create a dangerous condition.

5.8.2 Live healthy fronds, initiating at an angle of 45 degrees or greater from horizontal, with frond tips at or below horizontal, should not be removed.

5.8.3 Fronds removed should be severed close to the petiole base without damaging living trunk tissue.

5.8.4 Palm peeling (shaving) should consist of the removal of only the dead frond bases at the point they make contact with the trunk without damaging living trunk tissue.

5.9 Utility pruning

5.9.1 General
5.9.1.1 The purpose of utility pruning is to prevent the loss of service, comply with mandated clearance laws, prevent damage to equipment, avoid access impairment, and uphold the intended usage of the facility/utility space.
5.9.1.2 Only a qualified line clearance arborist or line clearance arborist trainee shall be assigned to line clearance work in accordance with ANSI Z133.1, 29 CFR 1910.331 – 335, 29 CFR 1910.268 or 29 CFR 1910.269.
5.9.1.3 Utility pruning operations are exempt from requirements in 5.1 Tree Inspection:
5.1.1 An arborist or arborist trainee shall visually inspect each tree before beginning work.
5.1.2 If a condition is observed requiring attention beyond the original scope of the work, the condition should be reported to an immediate supervisor, the owner, or the person responsible for authorizing the work.
5.9.1.4 Safety inspections of the work area are required as outlined in ANSI Z133.1 4.1.3, job briefing.

5.9.2 Utility crown reduction pruning

5.9.2.1 Urban/residential environment

5.9.2.1.1 Pruning cuts should be made in accordance with 5.3, Pruning cuts. The following requirements and recommendations of 5.9.2.1.1 are repeated from 5.3 Pruning cuts.

5.9.2.1.1.1 A pruning cut that removes a branch at its point of origin shall be made close to the trunk or parent limb, without cutting into the branch bark ridge or collar, or leaving a stub (see Figure 5.3.2).

5.9.2.1.1.2 A pruning cut that reduces the length of a branch or parent stem should bisect the angle between its branch bark ridge and an imaginary line perpendicular to the branch or stem (see Figure 5.3.3).

5.9.2.1.1.3 The final cut shall result in a flat surface with adjacent bark firmly attached.

5.9.2.1.1.4 When removing a dead branch, the final cut shall be made just outside the collar of living tissue.

5.9.2.1.1.5 Tree branches shall be removed in such a manner so as not to cause damage to other parts of the tree or to other plants or property. Branches too large to support with one hand shall be precut to avoid splitting of the wood or tearing of the bark (see Figure 5.3.2). Where necessary, ropes or other equipment shall be used to lower large branches or portions of branches to the ground.

5.9.2.1.1.6 A final cut that removes a branch
with a narrow angle of attachment should be made from the bottom of the branch to prevent damage to the parent limb (see Figure 5.3.7).

5.9.2.1.2 A minimum number of pruning cuts should be made to accomplish the purpose of facility/utility pruning. The natural structure of the tree should be considered.

5.9.2.1.3 Trees directly under and growing into facility/utility spaces should be removed or pruned. Such pruning should be done by removing entire branches or by removing branches that have laterals growing into (or once pruned, will grow into) the facility/utility space.

5.9.2.1.4 Trees growing next to, and into or toward facility/utility spaces should be pruned by reducing branches to laterals (5.3.3) to direct growth away from the utility space or by removing entire branches. Branches that, when cut, will produce watersprouts that would grow into facilities and/or utility space should be removed.

5.9.2.1.5 Branches should be cut to laterals or the parent branch and not at a pre-established clearing limit. If clearance limits are established, pruning cuts should be made at laterals or parent branches outside the specified clearance zone.

5.9.2.2 Rural/remote locations – mechanical pruning

Cuts should be made close to the main stem, outside of the branch bark ridge and branch collar. Precautions should be taken to avoid stripping or tearing of bark or excessive wounding.

5.9.3 Emergency service restoration

During a utility-declared emergency, service must be restored as quickly as possible in accordance with ANSI Z133.1, 29 CFR 1910.331 – 335, 29 CFR 1910.268, or 29 CFR 1910.269. At such times it may be necessary, because of safety and the urgency of service restoration, to deviate from the use of proper pruning techniques as defined in this standard. Following the emergency, corrective pruning should be done as necessary.

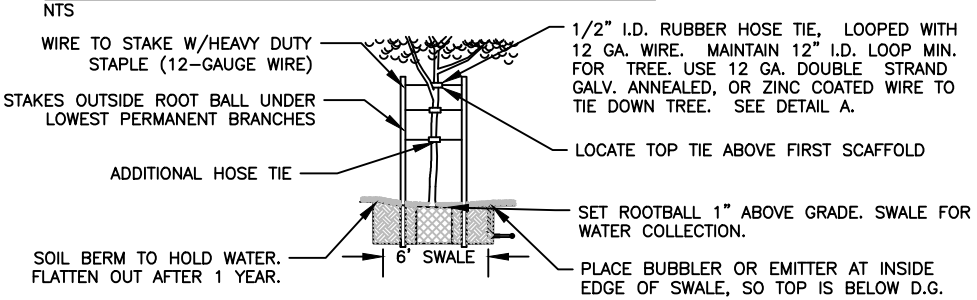
Annex A (informative)

Reference publications

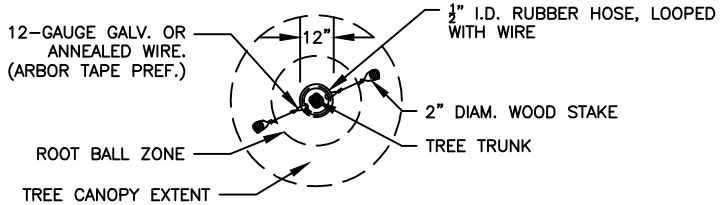
International Society of Arboriculture (ISA). 1995. Tree Pruning Guidelines . Savoy, IL: International Society of Arboriculture (ISA).

SINGLE-TRUNK TREE PLANTING & STAKING

NTS



DETAIL A. WIRE & HOSE TIES



PLANTING NOTES:

1. SIDES OF PLANTING PITS ARE TO BE LOOSENED OR RAKED BEFORE SETTING TREE IN PIT.
2. EXCAVATE DEPTH OF PLANTING PIT TO THE SAME DEPTH AS THE ROOTBALL.
3. THE WIDTH OF THE PLANTING PIT SHALL BE 2X THE WIDTH OF THE ROOTBALL
4. GENTLY LOOSEN ROOTS AROUND EXTERIOR OF ROOTBALL.
5. CENTER TREE IN PLANTING PIT.
6. INSPECT ROOT BALLS AT POINT OF PURCHASE TO AVOID PURCHASE OF ROOT BOUND MATERIALS
7. REMOVE ENTIRE CONTAINER FROM ALL PLANTS PRIOR TO PLANTING.
8. NEW TREES SHALL NOT BE PRUNED UNLESS DIRECTED BY OWNER.
9. FORM SWALE AROUND EACH TREE AS SHOWN FOR WATER COLLECTION.
10. REMOVE ALL NURSERY STAKES.

BACKFILL NOTES:

1. PROVIDE MULCH AMENDMENT WITH BACKFILL FOR NON–DESERT TREES.
2. BACKFILL MIX SHALL CONSIST OF 3 PARTS NATIVE SOIL TO 1 PART MULCH. PROVIDE 1 CUP GYPSUM IN BOTTOM OF PLANTING PIT
3. INCLUDE 16:20:0 AMMONIUM PHOSPHATE FERTILIZER IN PLANTING PIT FOR NON DESERT TREES. MIX INTO BACKFILL. DO NOT SPREAD ON TOP OF SOIL.

STAKING NOTES:

1. USE 2– 2" DIA. LODGE POLE STAKES– DOUGLAS FIR OR APPROVED HARDWOOD.
2. DRIVE STAKE MIN 12" INTO FIRM UNDISTURBED SOIL BELOW THE EXCAVATED DEPTH.
3. PLACE STAKES OUTSIDE THE ROOTBALL.
4. HEIGHT OF STAKE MAY VARY DEPENDING ON NEED FOR SUPPORT.
5. PLACE THE TOP TIE FOR MAXIMUM SUPPORT. THE BOTTOM TIE SHOULD BE APPROXIMATELY HALFWAY BETWEEN THE TOP TIE AND GROUND.
6. ALWAYS PLACE STAKE TO PREVENT DAMAGE TO TREE AND CAMBIUM.

MISC. NOTES:

1. REMOVE ALL PLASTIC TREE TIE TAPE, BAMBOO NURSERY STAKE, WIRE TIES, AND LABELS FROM TREES AFTER THEY HAVE BEEN APPROVED.
2. BACKFILL ANY HOLES LEFT IN ROOTBALL LEFT FROM NURSERY STAKES. BACKFILL SHALL BE CLEAN SOIL, NOT D.G.
3. SWALE SHALL BE A SMOOTH TRANSITION–NO ABRUPT GRADE CHANGES.
4. SWALE SHALL BE WATER TESTED FOR WATER HOLDING CAPACITY PRIOR TO PLACING D.G.
5. PROVIDE ADDITIONAL WIRE HOSE TIE WHEN THE TREE IS NOT RIGIDLY SUPPORTED BY THE TWO REQUIRED SUPPORTS.
6. 2–3" MULCH TOP LAYER, NOT AROUND BASE. 1" D.G. TOP LAYER ALSO SUITABLE.