

# This presentation premiered at WaterSmart Innovations

[watersmartinnovations.com](http://watersmartinnovations.com)



Landscape Municipal Code  
Requires Landscape and  
Irrigation Plans, Installation and  
Performance Audit:  
West Jordan City, UT

Von Isaman  
QA Consulting & Testing, LLC  
Salem, Utah



West Jordan City  
A Pioneer in Water Efficient Landscaping.



# Background

---

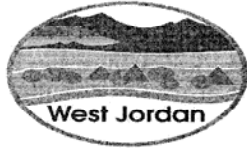
- On July 21, 2005 West Jordan City (the City) became the fifth city in Utah to adopt a water conservation landscape ordinance-Part 7.
- Part 7 encourages waterwise landscape designs, efficient irrigation systems, and responsible watering schedules.
- West Jordan City population growth brings with it a responsibility to use water wisely-160,000 people in 2030; 95,000 now.

# Meetings with City Management

---

- Some questions included:
  - Should we require or prohibit certain plant types – waterwise plant lists?
  - What if plants are chosen carefully, but irrigation systems are poorly designed?
  - Even with quality irrigation systems, how can we ensure proper irrigation scheduling?
  - What incentive will property owners have to irrigate efficiently?
  - Should the ordinance be connected to water rates?

# Action Request



## LAND DEVELOPMENT REVIEW ACTION REQUEST

8/22/05

(Date)

Routed to:

Engineering

Public Works

Project #:

SPCO20050025

Police

Fire

Sidwell #:

21-27-376-014

Attorney

Parks

Project Name:

Independence Square Parking Lot

Building & Safety

Acreage:

1.88

Utility \_\_\_\_\_

Location:

7672 South Redwood Road

School District \_\_\_\_\_

Requested by:

Planning & Zoning

Other USU

(Canal, UDOT, County, Airport, etc.)

Representing:

(property owner)

Type of application:

Land Use

Rezone

Subdivision Plat

Site Plan

\_\_\_\_\_

Description of Request:

Review of the landscape and irrigation plans for the parking lot expansion of Independence Square. Staff has done a first redline review and resubmitted that information to applicant.

### COMMENTS DUE DATE

Please respond to Lead Planner by (date) 8/30/05 Comments should be sent via e-mail, if possible.

Lead Planner: Peter Simmons

8000 South Redwood Road; West Jordan, UT 84088

Phone:

(801) 569-5098

e-mail:

peters@wjordan.com

Lead Engineer: Laura Haskell

8000 South Redwood Road; West Jordan, UT 84088

Phone:

(801) 569-5089

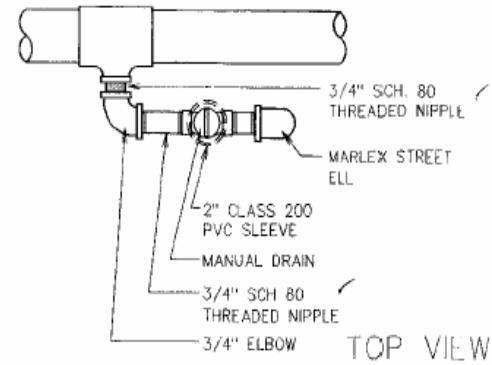
e-mail:

laurah@wjordan.com



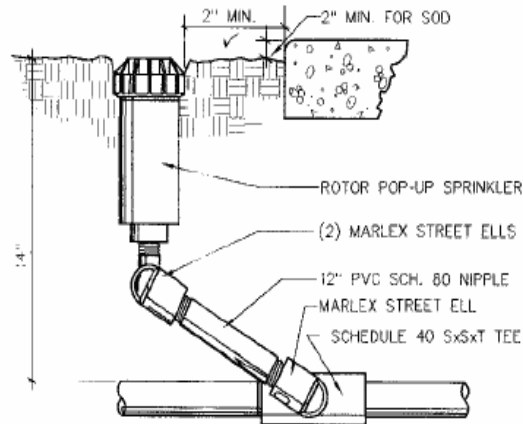
watersmart08  
INNOVATIONS

**C2** Techline ISLAND LAYOUT  
NO SCALE

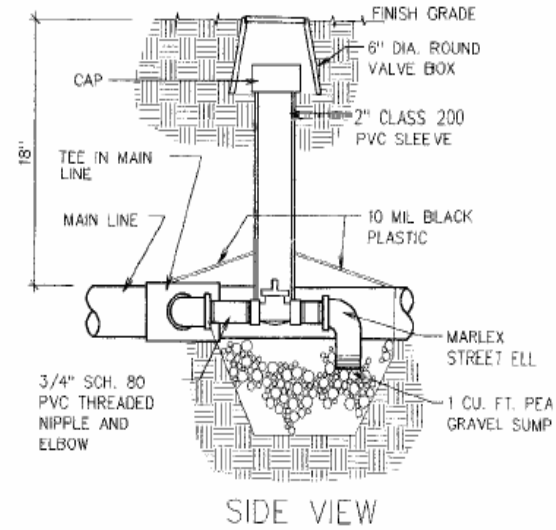


LATERAL LINE BACKFILL:

SETTING BID AND BACKFILL WITHIN 2" OF PIPE TO BE ROCK FREE (NO ROCKS OVER 1" IN SIZE). IF CONTRACTOR IS UNABLE TO SEPARATE ROCK FROM BACKFILL THEN CONTRACTOR SHALL PROVIDE A 2" LAYER OF SAND UNDER PIPE AND A MINIMUM OF 2" OF SAND OVER PIPE BEFORE PLACING EXCAVATED BACKFILL. COMPACT BACKFILL IN TRENCHES.



**A2** ROTOR HEAD SWING JOINT DETAIL  
NO SCALE



**A3** MANUAL DRAIN DETAIL  
NO SCALE

IRRIGATION LEGEND

SYMBOL DESCRIPTION

- ✓ RAINBIRD 1" PEB VALVE
- ✓ RAINBIRD ESP-LX-16 STATION CONTROLLER WALL MOUNTED WITH THIN WALL METAL CONDUIT FOR WIRES TO CLOCK, INTERIOR/EXTERIOR MOUNTED AS PER OWNER. COORDINATE ON SITE WITH OWNER AND GENERAL CONTRACTOR TO PROVIDE CONDUITS FOR WIRE TO CONTROL.
- RAINBIRD 33 DRC LOCKING QUICK COUPLER WITH HOSE BIBB CONNECTION
- ✓ APOLLO GATE VALVE SIZED AS PER MAIN LINE IN VALVE BOX
- LATERAL LINE SCH 40 PVC WITH A 12" BURY, SIZED AS NOTED,  
8 GPM 3/4", 12 GPM 1", 22 GPM 1 1/4", 32 GPM 1 1/2", 56 GPM 2"
- MAIN LINE SCH 40 PVC 1" IN SIZE WITH A 18" BURY, SCH 80 FITTINGS
- IRRIGATION SLEEVE, 4" GREEN SEWER PIPE FOR MAIN LINE AND SCH 40 PVC PIPE 2 SIZES LARGER THAN PIPE AND AS REQUIRED FOR LATERAL LINES

NETAFIM DRIP IRRIGATION PRODUCTS

NETAFIM CV-4-18 PRESSURE COMPENSATING DRIP LINE WITH CHECK VALVE SPACED 18" O.C. WITH SCH 40 PVC HEADERS

PRESSURE REGULATING VALVES (PRV) INSTALLED AFTER ZONE VALVE & FILTER  
 PRV075LF20V42K FOR FLOWS FROM .25 TO 4.4 GPM  
 PRV075HF45V2K FOR FLOWS FROM 3.5 TO 17.6 GPM  
 PRV15045K FOR FLOW FROM 7 TO 35 GPM

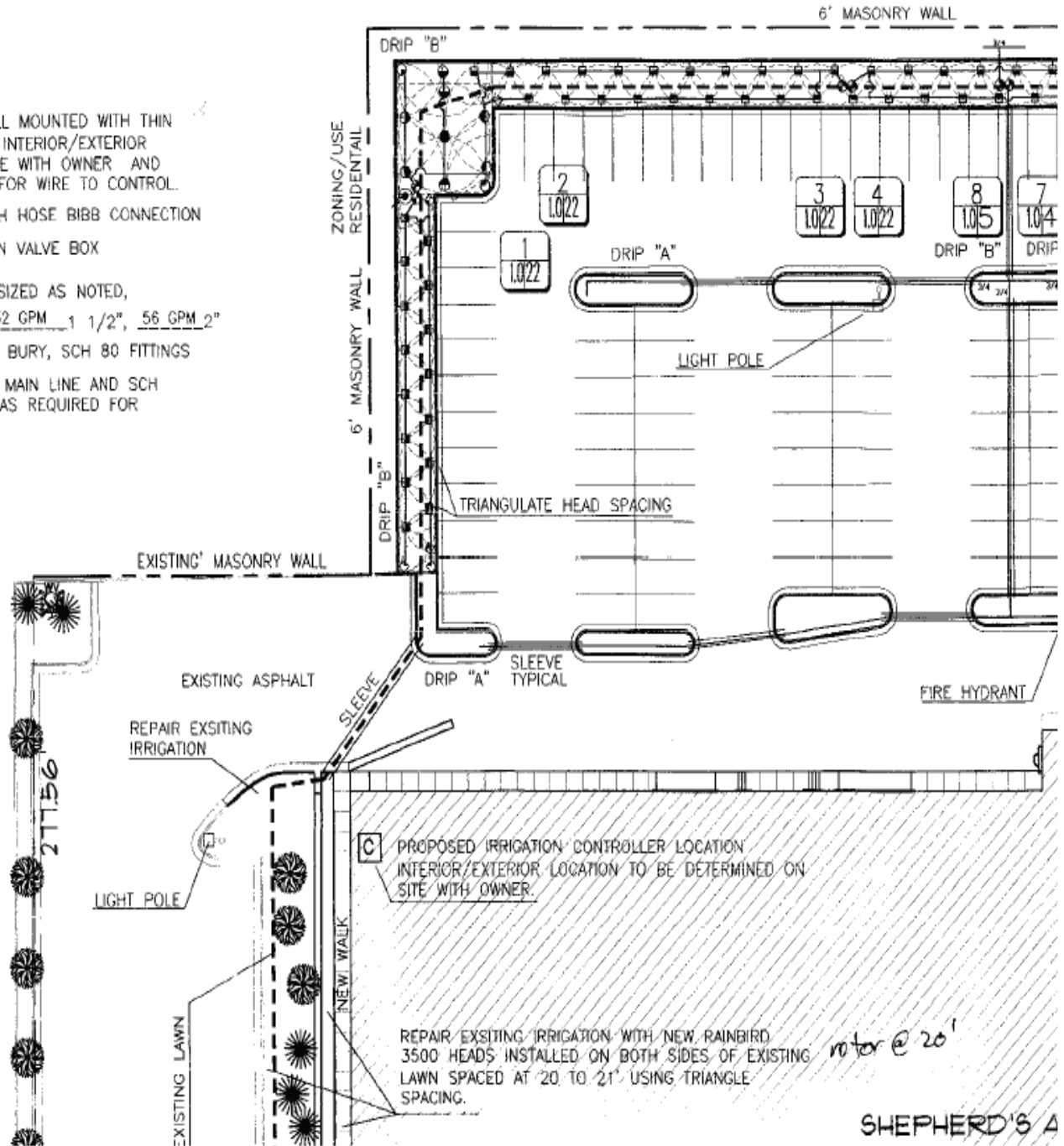
FILTERS PLACE BEFORE OR AFTER THE ZONE VALVE  
 3/4" FILTER FOR FLOWS UP TO 13 GPM  
 1" FILTER FOR FLOWS UP TO 26 GPM  
 1 1/2" FILTER FOR FLOWS UP TO 35 GPM WITH 140 MESH SCREEN

LINE FLUSH VALVE  
 TISOV INSTALLED IN ROUND VALVE BOX AND GRAVEL SUMP

DESCRIPTION - RAINBIRD 1800's

QTY RAINBIRD 1800 MPR-PRS HEADS ✓

▼	1804-8 & 10F-LA	✓
▼	1804-8 & 10H-LA	✓
▼	1804-8 & 10Q-LA	✓
▼	1804-8 & 10T-LA	✓
■	1804-12F	
■	1804-12H	
■	1804-12Q	





PLANT LIST -- TREES

COMMON NAME	BOTANICAL NAME	SIZE	NUMBER
CRAB APPLE, SPRING SNOW	MALUS SPRING SNOW	2" CAL	9
LOCUST, SHADEMASTER	GLEDITSIA T. SHADEMASTER	2" CAL	11
YES MAPLE, HEDGE	ACER CAMPESTRE	2" CAL	3
YES PINE, VANDERWOLFE	PINUS FLEXILIS VANDER.	5-6'	10

PLANT LIST -- SHRUBS

SYM	COMMON NAME	BOTANICAL NAME	SIZE	NUMBER
BrG	BARBERRY, ROSEY GLOW	BERBERIS T ROSEY GLOW	5 GAL	2
Co	COTONEASTER, PEKING	COTONEASTER ACUITIFOLIA	5 GAL	33
NO	DOGWOOD	CORNUS STOLINNIFERA	5 GAL	18
F	FORSYTHIA	FORSYTHIA LYWOOD GOLD	5 GAL	5
FI	LILAC, FRENCH	SYRINGA VULGARIS HYBRID	5 GAL	33
G	BASKET OF GOLD	ALYSSUM SAXATILE COMP	1 GAL	5
Jb	JUNIPER, BROADMOOR	JUNIPERUS BROADMOOR	5 GAL	49
L	DAY LILIES, STELLA-DE-OR	HEMEROCALLIS, STELLE-DE	1 GAL	14
Sp	SIBERIAN PEASHRUB, PYGMY	CARAGANA PYGMAEA	5 GAL	3
Slg	SLOW GROW SUMAC	RHUS A. GROW LOW	5 GAL	47

VERIFY TOTALS

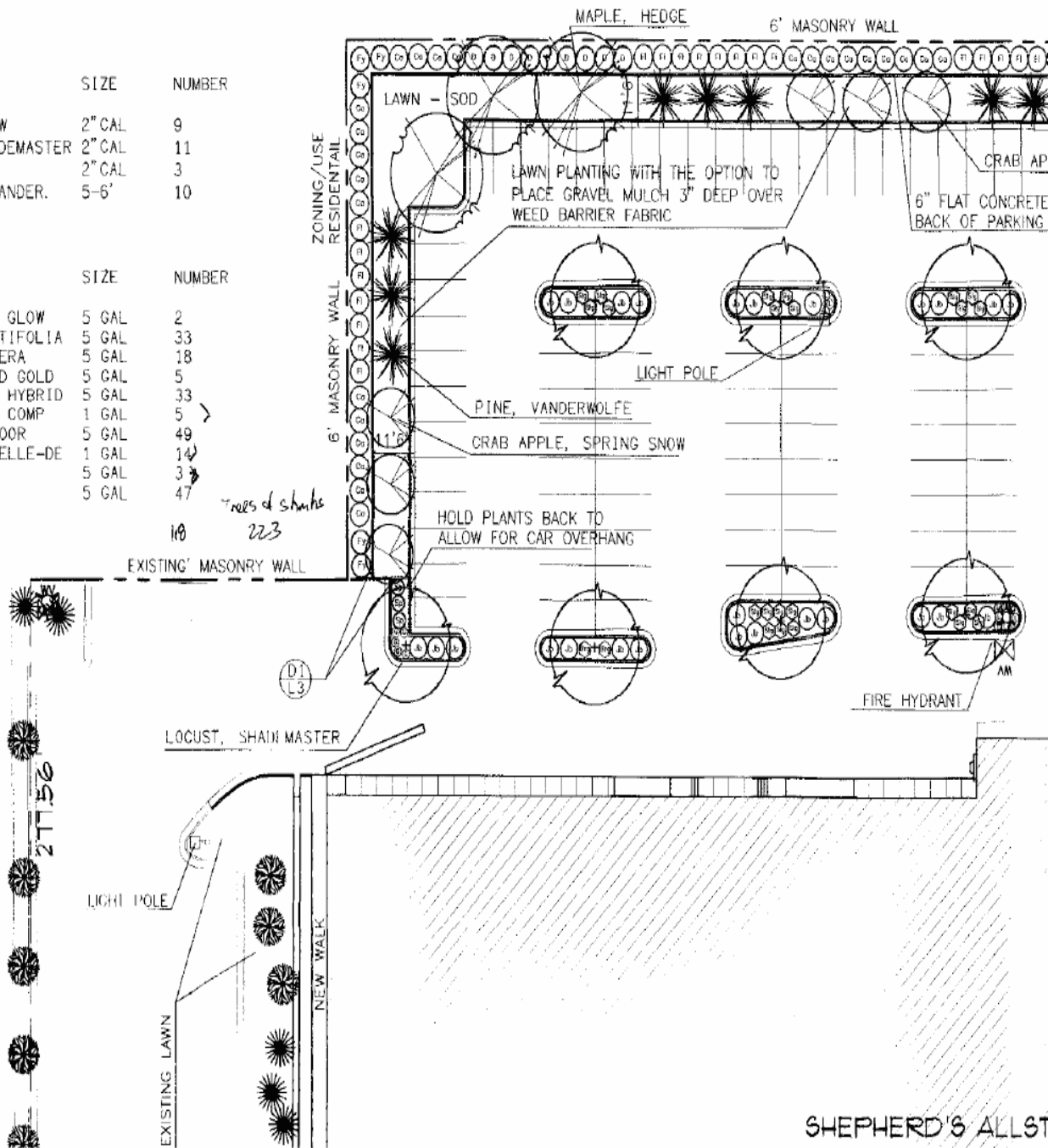
10 trees of shrubs 223

LANDSCAPE AREAS

TOTAL NEW LANDSCAPE AREA OF 14,099 SQ. FT.  
 6,805 SQ. FT. LAWN PLANTING AREA (48%)  
 7,294 SQ. FT. SHRUB PLANTING AREA (52%)  
 14,099 SQ. FT. TOTAL

(LAWN AREA LESS THAN 50% PER CITY REQUIREMENTS)

20 FOOT PERIMETER LANDSCAPE BUFFER (ON WEST AND NORTH PROPERTY LINES OF 8,700 SQ. FT. WITH ONE TREE PER 400 SQ. FT. EQUALS 22 TREES REQUIRED AND SHOWN.



# Part 7 Action Request Comments

- Administrative Information Section
- **Comments: Irrigation System and Landscape Design Plans**
  - 1. Plans show lateral pipe covered to 8" minimum. Standards require 12" of cover.
  - 2. Controller not capable of temporarily shutting down utilizing rain, wind, or freeze devices.
  - 3. Plan shows no specification requiring sleeving having 18" of cover.
  - 4. No separate water meter is specified. See observation 1. below.
  - 5. No separate water meter to be billed separately is specified. See observation 1. below.
  - 6. Plan shows 47% of trees and shrubs are designated from 'Water-Wise Plants for Salt Lake City'. Standards require 80% to be water-wise.
  - 7. Plan shows 0% of herbaceous perennial and groundcover plants are designated from 'Water-Wise Plants for Salt Lake City'. Standards require 80% to be water-wise.
  - 8. Plan specifies 3" of mulch. Standards require 4".
  - 9. Plan specifies 4" of topsoil for turf. Standards require soil scarified at least 6" deep.
- **Observations:**
  - 1. Independence Square Parking Lot Landscape Irrigation Plan is an expansion/addition to an existing system



Von Isaman  
October 10, 2008

# West Jordan City Municipal Code Title 89, Chapter 6 PART 7 (Landscaping)

---

## Components

- Auditor
  - person who affirms compliance with PART 7
- Irrigation/landscape plan review
- Irrigation mid-construction inspection
- Final landscape irrigation audit

# Irrigation/Landscape Plan Review

## Checklists

- Municipal code PART 7 (7 pages)
- UIA-Utah Irrigation Association (10 pages)
  - Minimum Standards for Efficient Irrigation System Design and Installation (Version 2002)

PART 7 requires compliance to the UIA minimum standards

# Municipal Code PART 7 (Landscaping) Specific Implementation and Tasks to be Performed

Project: \_\_\_\_\_

## Checklist

Para:	YES	NO	Comments	Standard
<b>89-6-703 (b)</b>	---	---	---	<b>Irrigation Standards BLUE sections for Irrigation System Design review</b>
(1)			Name of IC	Irrigation System (IS) shall be installed by Irrigation Contractor (IC) per section 89-1-203:
(2)				Slopes >33% IS of drip emitters, bubblers or sprinklers w/MAX Precipitation Rate (PR) of 0.85"/hr
(2)			See schedule on controller/clock	Controller clock set with appropriate cycles/run-times to eliminate Runoff

# Minimum Standards for Efficient Landscape Irrigation System Design and Installation

Project: \_\_\_\_\_

Para:	YES	NO	Comments	Standard
1.1	---	---	---	<b>SYSTEM CHARACTERISTICS BLUE sections for Irrigation System Design review</b>
1.			Signature & Date	Design meets applicable codes (approved by the building inspector):
1.			Signature & Date	Construction meets applicable codes (approved by the building inspector):
1.				System components designed per manufacturers guidelines

# General Requirements in the Municipal Code

---

- Turf/non-turf areas on separate valves
- Hydro-zoning
- Irrigation devices on separate valves (sprays, rotors, drip bubblers, etc.)
- Separate water meter for landscape

# General Requirements in the Municipal Code (cont.)

---

- 80% of trees and shrubs from “Water-wise Plants for Salt Lake City.”
- 80% of herbaceous perennial and groundcover plants from “Water-wise Plants for Salt Lake City.”
- Plant water use zones rated 0-2 (index).
  - 0 requires no watering after establishment
  - 1 requires 1 inch of watering monthly after establishment
  - 2 requires 1 inch of watering every 2 weeks





# **WATER-WISE PLANTS FOR SALT LAKE CITY**

Prepared by  
Salt Lake City Corporation

Salt Lake City, Utah  
September 1995  
Updated April 2004



## 2004 Water Conservation Master Plan

Von Isaman  
October 10, 2008

# List of Water-wise Plants for Salt Lake City

Amended April 2004

WATER ZONE	BOTANICAL NAME	COMMON NAME	MATURE SIZE H X W	AREA VALUE (SQ FT)	LIGHT	COMMENTS
VINES & GROUND COVERS						
0	<i>Juniperus communis</i>	Common Juniper	2-4' x 4-6'	20-28'	Full sun to light shade	Evergreen. Low growing junipers; color and texture vary with cultivar.
0	<i>Mahonia repens</i>	Creeping Oregon Grape	2' x 6'	28'	Part to full shade	Evergreen. Utah native. Dry shade.
0	<i>Rhus aromatica</i> 'Gro-low'	Gro-low Sumac	2' x 6'	28	Sun to shade	Glossy green. Three-lobed leaves have red fall color. Yellow spring flower followed by fuzzy red berries
1	<i>Alyssum montanum</i>	Mountain Gold Alyssum	4" x 15"	1'	Sun to part shade	Bright yellow flowers in early spring cover gray green foliage.
1	<i>Anacyclus depressus</i>	Mount Atlas Daisy	2" x 18"	1.75'	Full sun	Silvery green foliage; bright white daisy-like flower mid spring
1 1	<i>Antennaria parviflora</i> ; <i>A. rosea</i>	Pussy Toes Pink Pussy Toes	4" x 18"	1.75'	Sun to part shade	Utah native; silvery foliage, pink or white ball shaped flowers
1	<i>Arctostaphylos uva-ursi</i>	Kinnikinnick	3-6" x 24-36"	7'	Part shade (avoid afternoon sun)	Evergreen. Dark glossy foliage; pinkish bell shaped flower in early spring. Intolerant of soils that stay wet. Utah native

# Waterwise Plant List for Salt Lake City

## Scientific Name

Abies concolor  
Acer campestre  
Acer ginnala  
Acer glabrum  
Acer grandidentatum  
Acer negundo  
Acer nigrum  
Acer pseudoplatanus  
Acer tataricum  
Achillea ageratifolia  
Achillea filipendula  
Achillea millefolium.  
Achillea serbica  
Adenophora latifolia  
Aesculus glabra  
Aethionema schistosum  
Agastache cana  
Agastache rupestris  
Agave parryi  
Ajuga reptans  
Alcea rosea  
Alchemilla mollis  
Alnus incana; A. tenuifolia  
Alyssum montanum  
Amelanchier alnifolia

## Common Name

White Fir  
Hedge Maple  
Amur Maple  
Rocky Mountain Maple  
Bigtooth Maple  
Boxelder  
Black Maple  
Sycamore Maple  
Tatarian Maple  
Greek Yarrow  
Fernleaf Yarrow  
Yarrow  
Serbian Yarrow  
Lilyleaf Ladybells  
Ohio Buckeye  
Persian Rockcress  
Wild Hyssop  
Licorice Hyssop  
Parry's Agave  
Ajuga Bugleweed  
Hollyhocks  
Lady's Mantle  
Thinleaf Alder  
Mountain Gold Alyssum  
Saskatoon Serviceberry

# General Requirements in the Municipal Code (cont.)

---

- Turfgrass <50% of landscaped area
  - Provide sq ft of total landscape area
  - Provide sq ft of turf area
- Turfgrass on <30 % slopes
- Waterwise plants >30% slopes
- Rock and gravel shall be >1½" diameter
- Mulch layer is 4 inches

# Distribution Uniformity (DU)

---



watersmart08  
INNOVATIONS

Von Isaman  
October 10, 2008

# Catch Cups

---



# General Requirements in the UIA Minimum Standards

---

- Spray heads 60% DU
- Rotors 70% DU
- Pressure regulation devices
- Hydro-zoning and slopes

# General Requirements in the UIA Minimum Standards (cont.)

---

- Lateral lines parallel to slope
- Check valves (low point drainage)
- Considerations for windy conditions (trajectory spacing, etc.)
- One zone, one station
- Master valve (several requirements)



# General Requirements in the UIA Minimum Standards (cont.)

---

- Controller (several requirements)
- Wiring minimum 14 gauge, UF UL or PE UL rated
- Slack in control wires
- 36" of extra wire at each valve box
- Wiring separate colors

## General requirements in the UIA minimum standards (cont.)

---

- One spare wire for every 5 control valves
- Spare wires are 'home run'
- Wiring under hardscape in sleeving
- PVC ASTM D 1784 or 1785
- Poly pipe ASTM D2239

# General Requirements in the UIA Minimum Standards (cont.)

---

- Piping winterized by air blowout
- Minimum pipe depths
  - lateral pipe 12" cover
  - mainline and sleeving 18" cover
- PVC schedule 40: 3/4" to 1½"
- PVC schedule 80: 2 to 3"
- Valves and sprinkler heads (several requirements)

# Mid Construction Inspection

---

- Compliance to plans (prior to backfilling)

# Final Irrigation Inspection

---

- Catch cup tests
- As built drawings, operations and maintenance manuals

# Avoiding the obvious

---

