This presentation premiered at WaterSmart Innovations

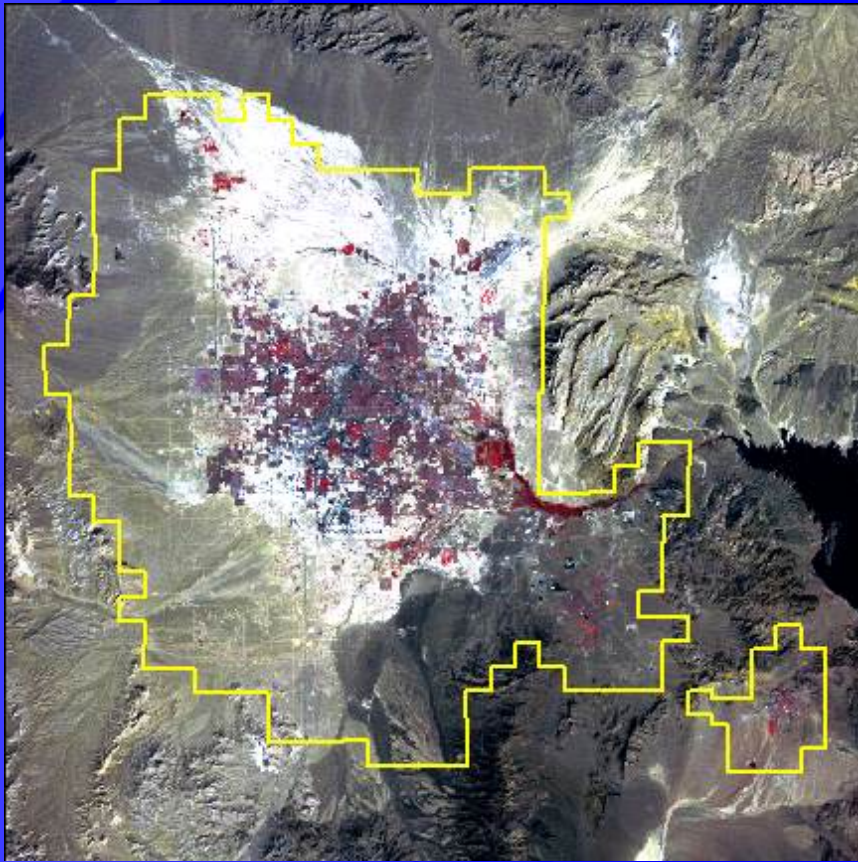watersmartinnovations.com

Using Aerial Imagery Analysis to Benefit Turf Reduction Programs in Las Vegas Valley

Assisting the Southern Nevada Water Authority's Water Conservation Efforts
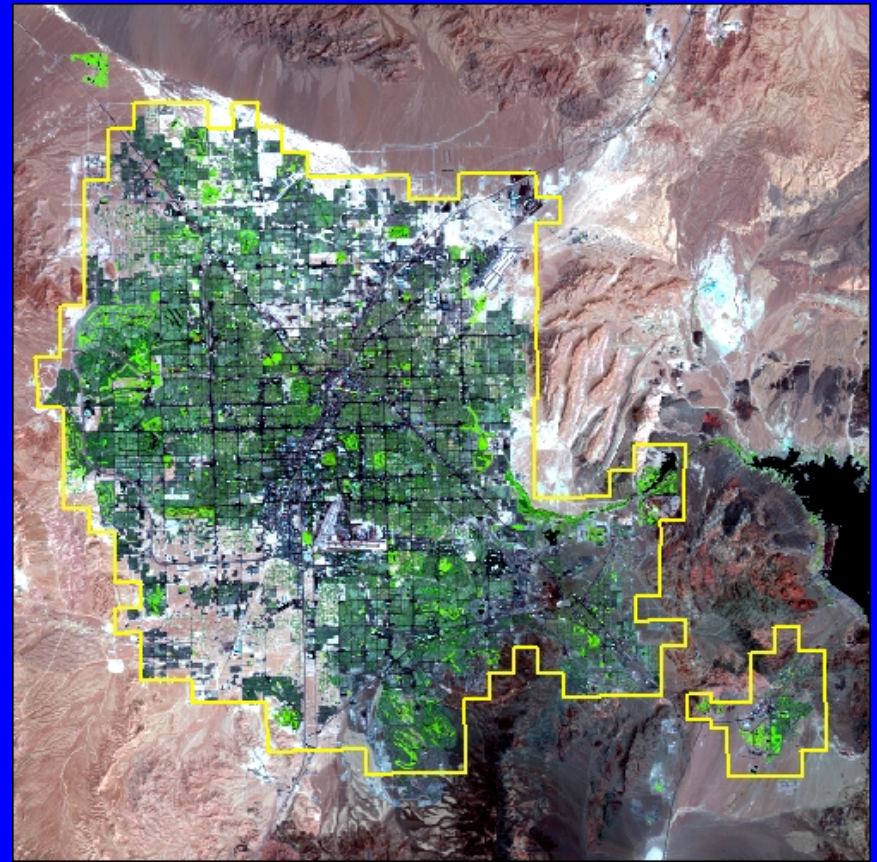

Water Smart Innovations Conference - October, 2008
Judy Brandt - SNWA GIS Analyst

Satellite Imagery of the Las Vegas Valley

False Color Landsat 3 MSS Image
1981

Natural Color Landsat 5 TM Image
2007

Why does SNWA care about turf in Las Vegas?

- 90+% of water used within the LV Valley is drawn from the Colorado River – a finite source

- The Colorado River is in a severe drought

- Nearly 70% of water consumed is "lost" due to outdoor use- primarily irrigation

- Reducing turf is the most effective way to conserve water

- Water conservation efforts and results are an important component of negotiations for more water

Las Vegas Valley Turf Analysis Project Goals

- Determine the amount and distribution of turf and vegetation as a baseline

- Create datasets that will help develop new and improve current Water-Smart Landscape turf reduction programs

Water Smart Landscape?

Water Smart Landscape Program

- "Cash-for-grass"
- Residential
- Commercial
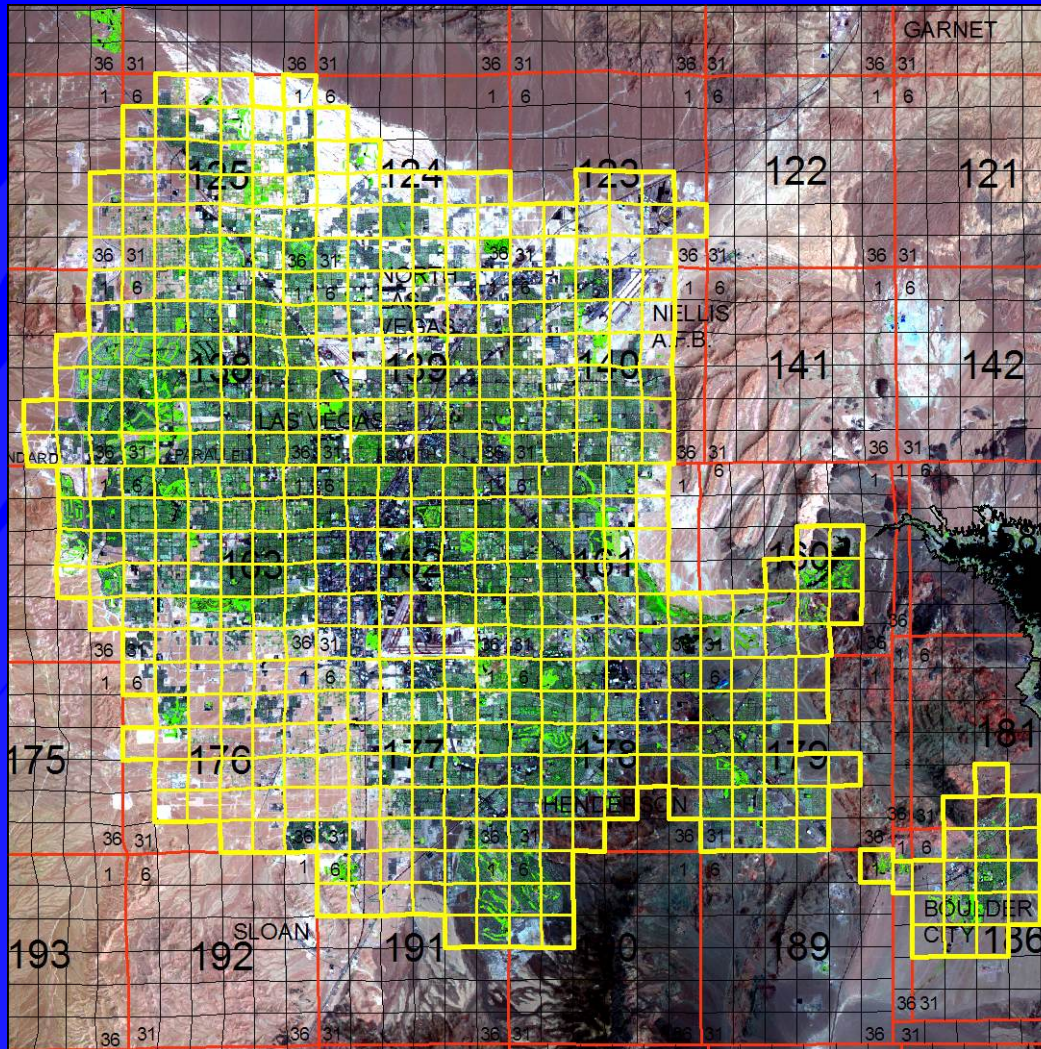- Golf Courses

How do we accomplish our goals?

- Image acquisition

- Image processing and classification

- Geoprocessing/GIS analysis

- Accuracy assessment

- Integrate turf and tree data with other municipal datasets – get results!

Aerial Imagery Product

- Digital Color Infra-red Image

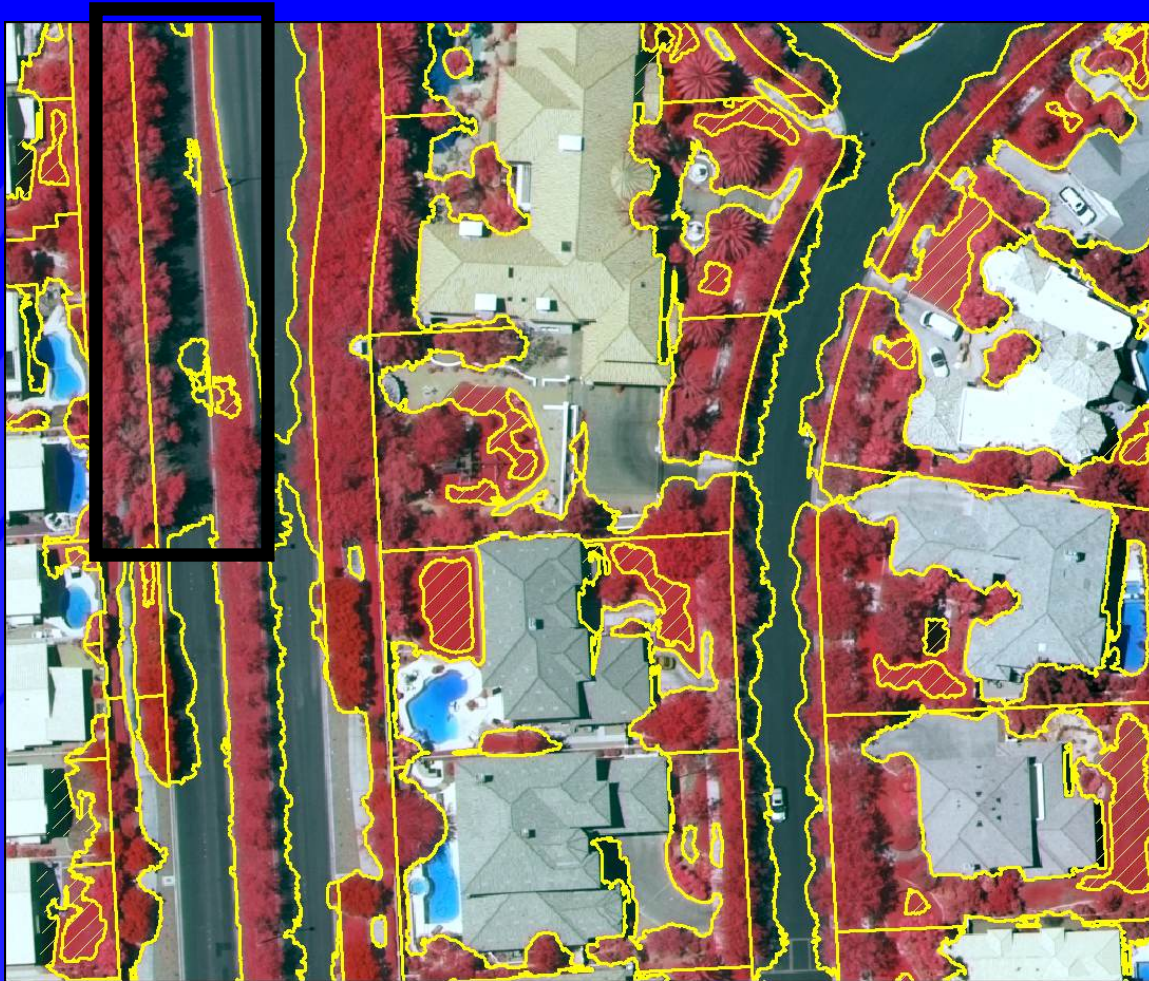- 6 inch spatial resolution

- Flown in June, 2006

Images tiled to Clark County, Nevada Public Land Survey

Classification Results

Errors

Overall Accuracy - 91%

Geoprocessing Results

Parcel tiff Polygons turf vegetation
Neighborhood overlay of a tiff detail
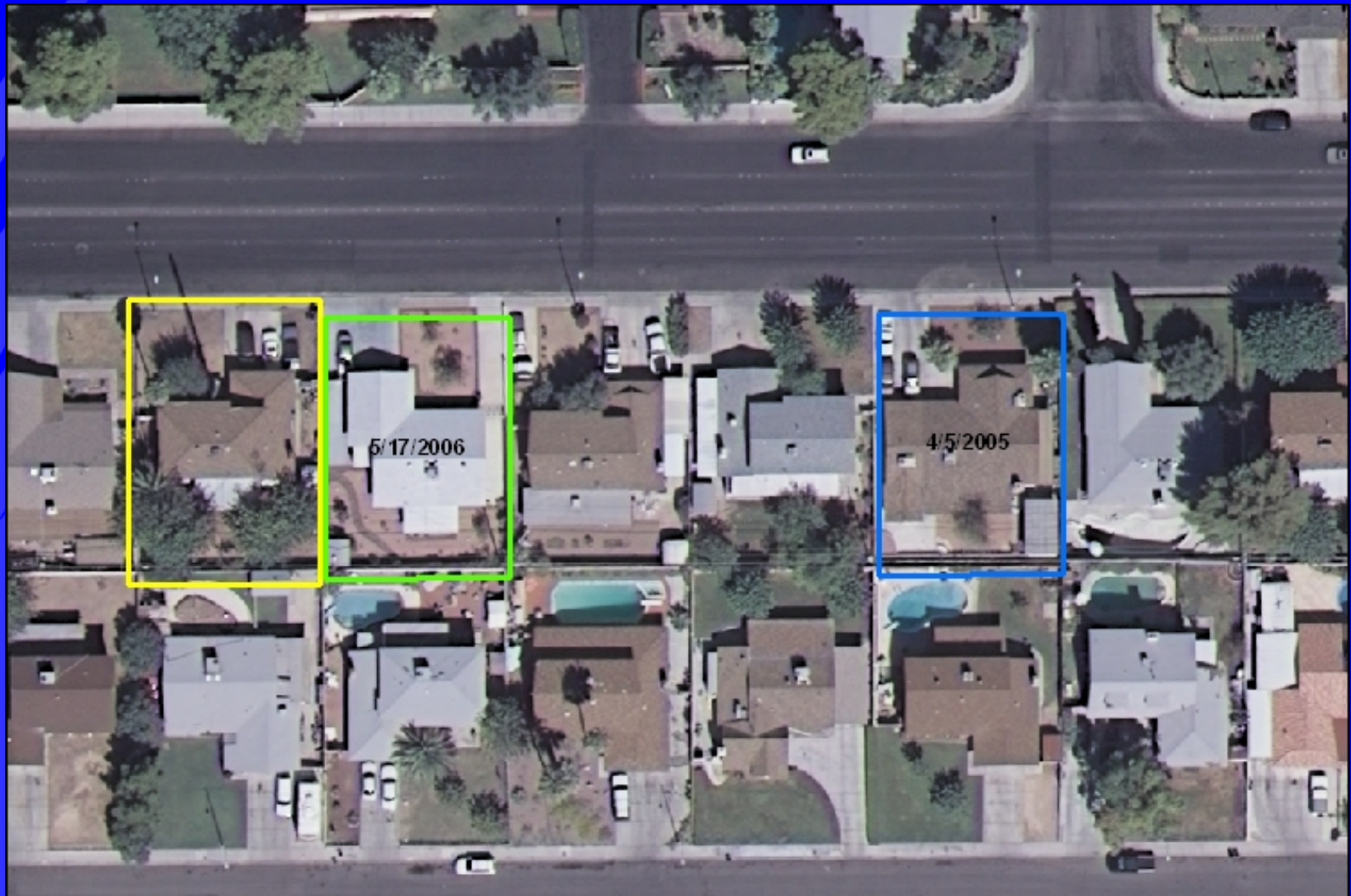
Turf Area Per Parcel

Ratio Turf area/Parcel area > 20%

Marketing Water Smart Landscaping Program

- Direct mailing before turf study

- Turf data enabled TARGET marketing

- Improved response over 300%

- 110 million square feet of turf converted since 2003

WSL Program – the Joneses?

2007 image

Back v. Front Yard Turf

PARCEL	TREE_AREA	TURF_AREA	BACK_TURF	FRONT_TURF	NA_TURF
12428217037	821.5	301.4	0	301.4	0
12428217038	309.9	138.9	0	138.9	0
12428217039	791.6	585.9	231.9	353.9	0

Turf Study Results Summary

- Total turf area in the LV Valley 11,430 acres

- Tree and shrub area: 18,471 acres

- Market Analysis – improved results

- Enforce turf reduction ordinances

- Relate vegetation data to consumption

- Spatial distribution of vegetation in road right-of-ways, medians

Turf Concealed by Canopy

Additional analysis…swimming pools

- Supplement Clark County permit data

- Shows above ground pools

- Calculate surface area/evaporation

- Use to marketing pool cover rebate program

- Identify trends in pool size

Continued Work

- Image Data Collection and processing

  – May 2007 Image Data was collected. Processing recently completed, data distributed.

  – May 2008 Image Data was collected. Will begin processing fall, 2008

- Document changes over time

Contact Information

Judy Brandt
GIS Analyst
SNWA Groundwater Resources Dept.
Data Resources Division
(702) 862-3727
judy.brandt@snwa.com

www.snwa.com

Questions??