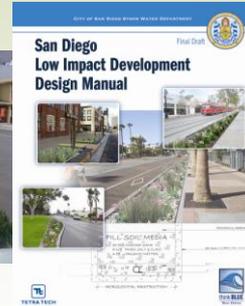




MEANING	BEFORE 2000 B. C. 2000	AIRBAC 2000-2009 B. C. 2009	2010-2019 B. C. 2010	LATE 2020-2021 B. C. 2020
1. The sun	☐	☼	☀	☀
2. God, heaven	☼	☼	☼	☼
3. Mountain	☼	☼	☼	☼
4. Man	☼	☼	☼	☼
5. Ox	☼	☼	☼	☼
6. Fish	☼	☼	☼	☼



The role of codes and ordinances in water quality and stormwater management

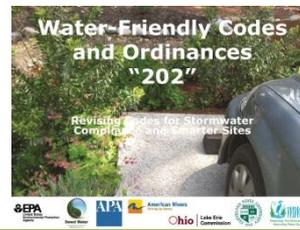
Juli Beth Hinds, AICP

Senior Planner & Water Resources Project Manager

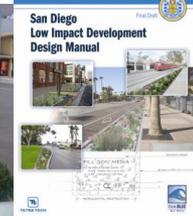
Tetra Tech, Inc. ♦ San Diego, CA

julibeth.hinds@tetrattech.com

Increased focus on zoning: Why?



MEANING	SOILS DISTRICTS S. C. 2002	AREAS OVERFLOW A. C. 2002	ADDITIONAL A. C. 200	LATE DEVELOPMENT S. C. 200
1. The sun	◇	◇	◇	◇
2. God, heaven	✳	✳	✳	✳
3. Mountain	⋈	⋈	⋈	⋈
4. Man	△	△	△	△
5. Ox	▷	▷	▷	▷
6. Fish	∠	∠	∠	∠

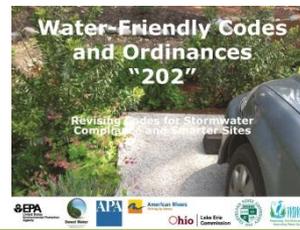


Connections between SITE and water quality outcomes:

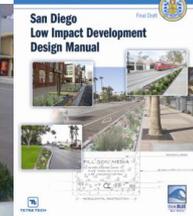
- Correlation between watershed % impervious, and stream health/response
- Effort to reduce effective/connected impervious
- Revised flood control practices & design storms with new information
- Recognize individual sites can have an outsized impact on water quality
- Significant regulatory push for LID, retrofits, disconnection, buffer restoration

It's the site plan, stupid!

Code connections:



MEANING	SOILS DISTRICTS S. C. 200	AREAS OVERFLOW S. C. 200	AREAS S. C. 200	LIFE S. C. 200
1. The sun	☐	☐	☐	☐
2. God, heaven	☼	☼	☼	☼
3. Mountain	☞	☞	☞	☞
4. Man	☺	☺	☺	☺
5. Ox	☐	☐	☐	☐
6. Fish	☐	☐	☐	☐



This is a water quality & zoning issue...

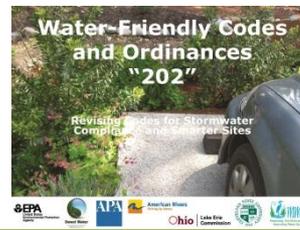
...and this is, too!



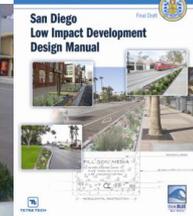
IN THE ZONING: “A curb of at least 4 inches in height shall surround all landscaped islands” = no LID

NOT IN THE ZONING: “Dumpsters shall be fully enclosed and located so that drainage does not reach any storm drain inlets...” = yuck-o!

LID Principles & Code Connections



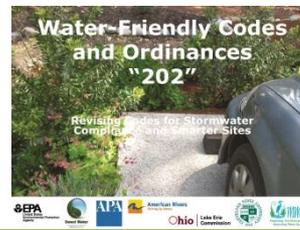
MEANING	SOILS DISTRICTS S. C. 2002	AREAS OVERFLOW S. C. 2002	AREAS S. C. 2002	LIFE S. C. 2002
1. The sun	☐	☐	☐	☐
2. God, heaven	✳	✳	✳	✳
3. Mountain	⋈	⋈	⋈	⋈
4. Man	⋈	⋈	⋈	⋈
5. Ox	⋈	⋈	⋈	⋈
6. Fish	⋈	⋈	⋈	⋈



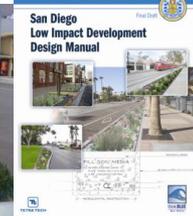
- Less Imperviousness →
 - Disconnection/EIA →
 - Natural Function →
 - Source Reduction →
 - Maintenance →
- Dimensional standards: lot size, frontage, height, coverage, yards, parking
 - Building codes & public works standards (drains, roads, sewers)
 - Landscaping, buffers, trees & tree canopy
 - Site plan review
 - Subdivision, site plan, CC&Rs, stormwater ordinance, utility, enforcement



Hydro-happy sites are happening...



MEANING	SOILS DISTRICTS S.C. 200	AVERAGE DEVELOPMENT S.C. 200	ADDITIONAL S.C. 200	LATE DEVELOPMENT S.C. 200
1. The sun	☐	☐	☐	☐
2. God, heaven	☼	☼	☼	☼
3. Mountain	⚡	⚡	⚡	⚡
4. Man	⚡	⚡	⚡	⚡
5. Ox	⚡	⚡	⚡	⚡
6. Fish	⚡	⚡	⚡	⚡



Clockwise from top left:

Long Beach, CA

Milwaukee, WI



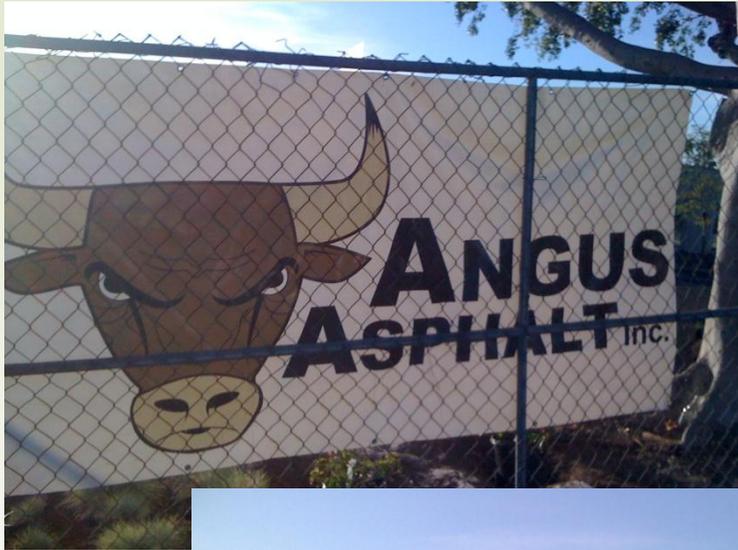
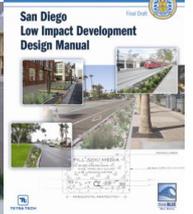
South Burlington, VT

Seattle, WA

...but good sites are still exceptions.

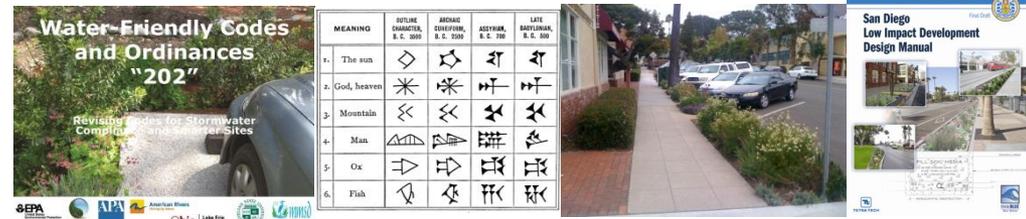


MEANING	SOILS DISTRICTS S. C. 2002	AREAS DEVELOPED S. C. 2002	AREAS S. C. 200	LATE DEVELOPMENT S. C. 200
1. The sun	☐	☐	☐	☐
2. God, heaven	☼	☼	☼	☼
3. Mountain	⚡	⚡	⚡	⚡
4. Man	⚡	⚡	⚡	⚡
5. Ox	⚡	⚡	⚡	⚡
6. Fish	⚡	⚡	⚡	⚡

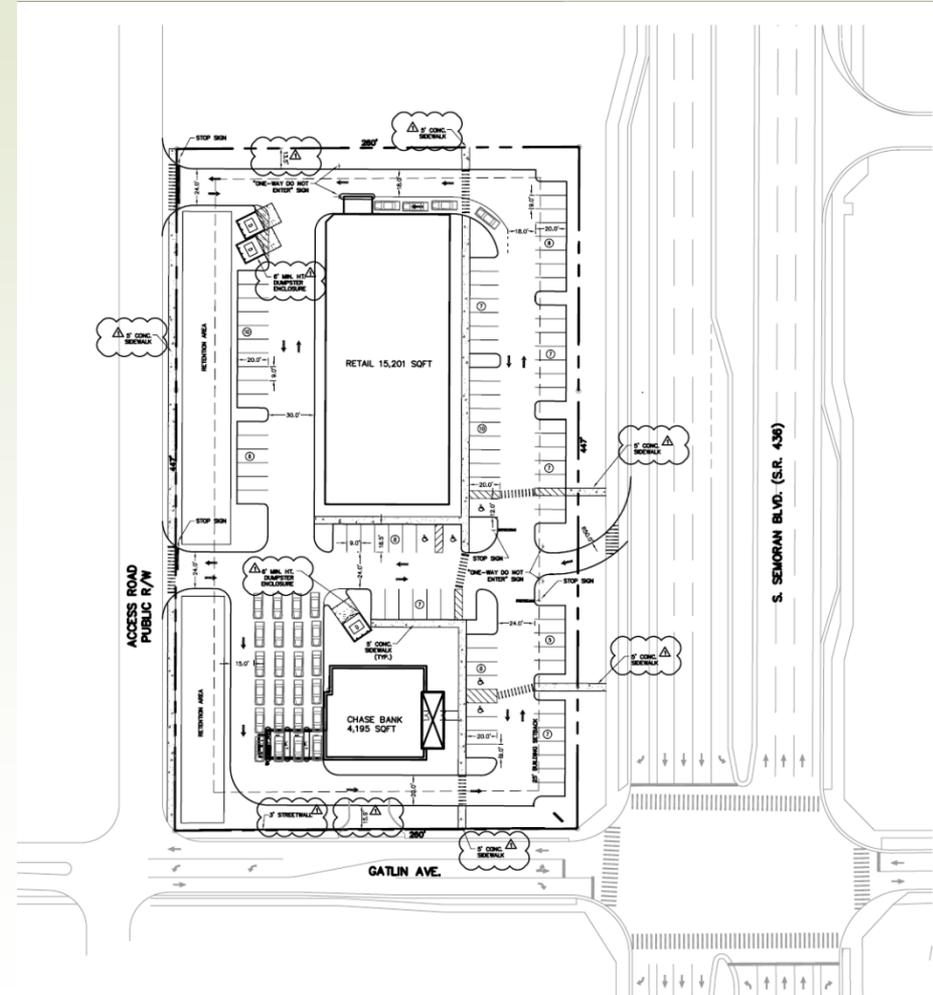


This hydro-un-friendly site is, unfortunately, still the rule (and is a half-mile from the San Diego County Water Authority)

Why did “they” approve “that”?!

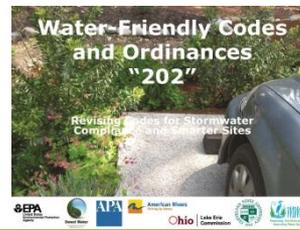


- “Didn’t *THEY* go to the *NEMO LID* workshop?”
- “Didn’t *THEY* listen to the *University Extension* presentation on *LID*?”
- “Didn’t *THEY* require a stormwater permit?”
- “Don’t *THEY* care about water resources?!”

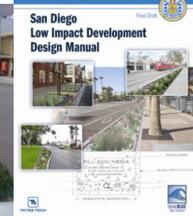


Who's "THEY"?

In zoning:



MEANING	SOILS DISTRICTS S.C. 2002	AREAS OVERFLOW A.C. 2002	AREAS A.C. 200	LIFE BAYVIEW B.C. 200
1. The sun	☐	☐	☐	☐
2. God, heaven	☐	☐	☐	☐
3. Mountain	☐	☐	☐	☐
4. Man	☐	☐	☐	☐
5. Ox	☐	☐	☐	☐
6. Fish	☐	☐	☐	☐



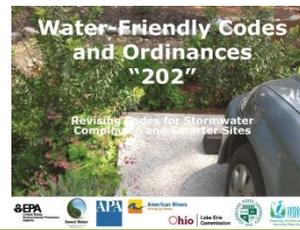
THEY:

- Planning & zoning staff who write the plan and regulations, negotiate with applicants, and write staff reports
- Consulting engineers who prepare plans
- City Engineer, Fire Chief, Public Works who review plans
- The appointed boards who ultimately approve applications

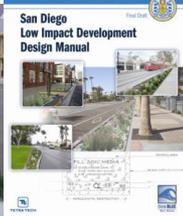
NOT "THEY":

- The guy from NEMO with the model ordinance
- The woman from the Extension service who presented last week
- The stormwater modeler
- The state stormwater/coastal zone/wetlands/on-site regulator (who is not our problem and the developer's engineer will deal with that).

Why did “they” approve it? **ZONING**



MEANING	SOILS DISTRICTS S. C. 2002	REGARD OVERFLOW S. C. 2002	ADDITIONAL S. C. 200	LATE BARTOLINI S. C. 200
1. The sun	☐	☐	☐	☐
2. God, heaven	☐	☐	☐	☐
3. Mountain	☐	☐	☐	☐
4. Man	☐	☐	☐	☐
5. Ox	☐	☐	☐	☐
6. Fish	☐	☐	☐	☐



A. Landscape and plantings.

- Landscaping should be in keeping with the general appearance of neighboring developed areas.
- In particular, **parking areas shall be well screened by berms, plantings, or other screening methods to minimize their visual impact.**



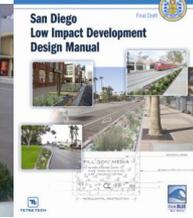
Actual code language governing the Angus Asphalt site.



What *could* the zoning say to “them”?



	MEANING	SOILS DISTRICTS S.C. 200	AREAS OVERFLOW S.C. 200	AREAS S.C. 200	LATE S.C. 200
1.	The sun	◇	◇	◇	◇
2.	God, heaven	✳	✳	✳	✳
3.	Mountain	⋈	⋈	⋈	⋈
4.	Man	△	△	△	△
5.	Ox	▷	▷	▷	▷
6.	Fish	∠	∠	∠	∠



A. Landscape and plantings.

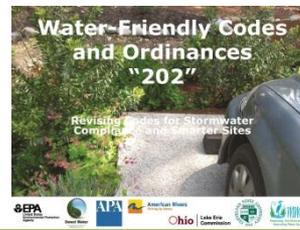
- Landscaping should be designed in keeping with LID stormwater management principles, and shall compliment the general appearance of neighboring developed areas.
- In particular, landscaped edges and islands for parking areas shall be provided which function as stormwater management features and incorporate well-screened by berms, plantings, or and other screening methods to minimize their visual impact of the parking area.



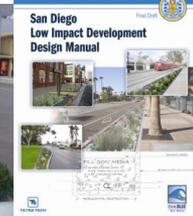
LID-friendly code language:

Makes water quality a priority, not just aesthetics

LID: Code Connections



MEANING	SUNLITE DIAMETER S. C. 2002	AREAS OVERFLOW S. C. 2002	AREAS S. C. 2002	LITE S. C. 2002
1. The sun	◇	⬢	⬢	⬢
2. God, heaven	✳	✳	✳	✳
3. Mountain	⋈	⋈	⋈	⋈
4. Man	△	△	△	△
5. Ox	▷	▷	▷	▷
6. Fish	⚡	⚡	⚡	⚡

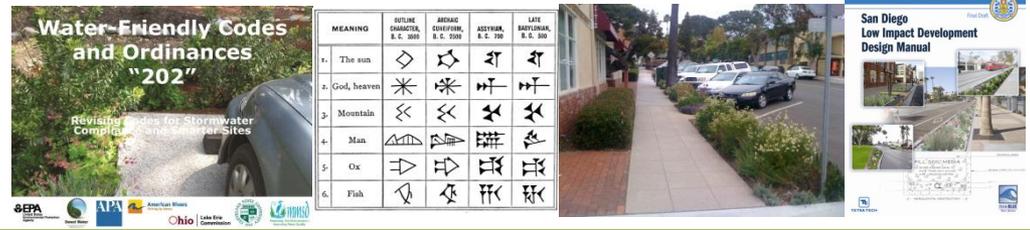


Water Quality Principle

- Less Imperviousness →
- Disconnection/EIA →
- Natural Function →
- Source Reduction →
- Maintenance →

Where are the code barriers?

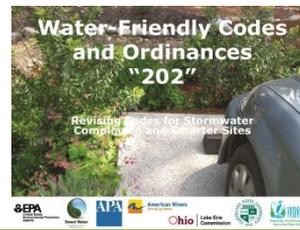
- Dimensional standards: lot size, frontage, height, coverage, yards, parking
- Building codes & public works standards (drains, roads, sewers)
- Landscaping, buffers, trees & tree canopy
- Site plan review
- Subdivision, site plan, CC&Rs, stormwater ordinance, utility, enforcement



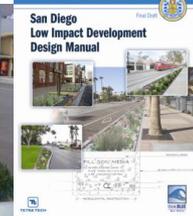
Ending Angus Asphaltation: "STORMWATER 201 & 202" CODE AUDITS

"SW 101" Code Audits

(for those wondering "didn't I do this already?")



MEANING	SOILS DISTRICTS S. C. 2002	AREAS OVERFLOW S. C. 2002	AREAS S. C. 2002	LATE S. C. 2002
1. The sun	☐	☐	☐	☐
2. God, heaven	☐	☐	☐	☐
3. Mountain	☐	☐	☐	☐
4. Man	☐	☐	☐	☐
5. Ox	☐	☐	☐	☐
6. Fish	☐	☐	☐	☐



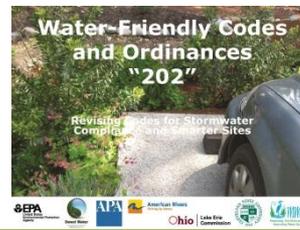
Purposes

- Reduce total impervious cover *per parcel/ project*
- Put formal stormwater controls in place
- Implement surface water setbacks

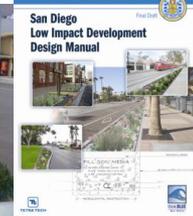
Zoning Strategies

- Compact development (including TDRs) and reduced parking
- Conservation development
- Erosion & sediment control
- SWPP/stormwater ordinances
- Flood hazard mitigation
- Stream/wetland setbacks

Stormwater 201 & 202 Code Audits:



MEANING	SOILS DISTRICTS S.C. 2002	AREAS OVERFLOW A.C. 2002	AREAS WITH A.C. 200	LIFE DISTRICTS L.C. 200
1. The sun	☐	☐	☐	☐
2. God, heaven	☐	☐	☐	☐
3. Mountain	☐	☐	☐	☐
4. Man	☐	☐	☐	☐
5. Ox	☐	☐	☐	☐
6. Fish	☐	☐	☐	☐



LID Practices

- Disconnection
- Permeability
- Landscape for ecological function
- Tree canopy restoration
- Open space area management
- Assigning responsibility

Coding Cousins

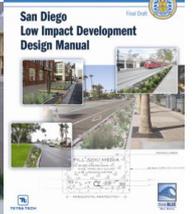
- Zoning: Dimensions, uses, procedures,
- Design districts
- Public works standards
- Stormwater design manuals/regs/ordinances
- Tree ordinances
- Municipal
- Building codes

RULE OF THUMB: ANY MUNICIPAL ORDINANCE WITH THE WORDS "ROOF," "CURB" OR "TREE"

201 Audits: Asking if "they" can approve:



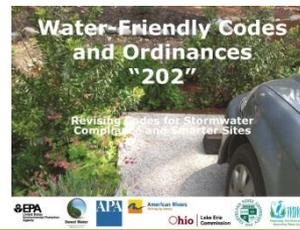
MEANING	SOILS DISTRICTS S. C. 2002	AREAS OVERFLOW S. C. 2002	AREAS S. C. 200	LIFE S. C. 200
1. The sun	☐	☐	☐	☐
2. God, heaven	☼	☼	☼	☼
3. Mountain	☶	☶	☶	☶
4. Man	☺	☺	☺	☺
5. Ox	☮	☮	☮	☮
6. Fish	☰	☰	☰	☰



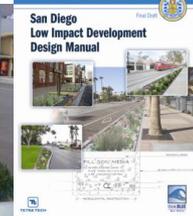
1. Sidewalk/parking lot bioretention areas
2. Permeable pavements and surfaces
3. Planter boxes, rain barrels, rainwater harvesting
4. Multi-use storm water treatment systems/restoration areas
5. Xeriscaping/landscape changes
6. Green streets
7. Green walls & roofs



"202" Audit: zoning + SW regs/standards



MEANING	SOILS DISTRICTS S.C. 2002	REGARD OVERFLOW S.C. 2002	ADDITIONAL S.C. 2002	LIFE SUSTAINABLE S.C. 2002
1. The sun	◇	◇	◇	◇
2. God, heaven	✳	✳	✳	✳
3. Mountain	⋈	⋈	⋈	⋈
4. Man	△	△	△	△
5. Ox	▷	▷	▷	▷
6. Fish	∩	∩	∩	∩



- Zoning drives LOCATION of SW facilities on a site
- Regulator confidence in maintenance affects TYPES of facilities allowed
- SOIL ASSUMPTIONS in SW regs affect design options, sizing
- WQv determines sizes for storage & basins, affects use of LID
- Hydromodification requirements (matching pre- and post-development) = "I will need a lawyer to design my basin."

TAKEN TOGETHER:

If $x=2$ and $y=3.7$, LID stormwater BMPs enhance the site

If $x=2.1$ and $y=3.1$, stormwater goes to jail

Zoning Code + SW Regs = stormwater jails

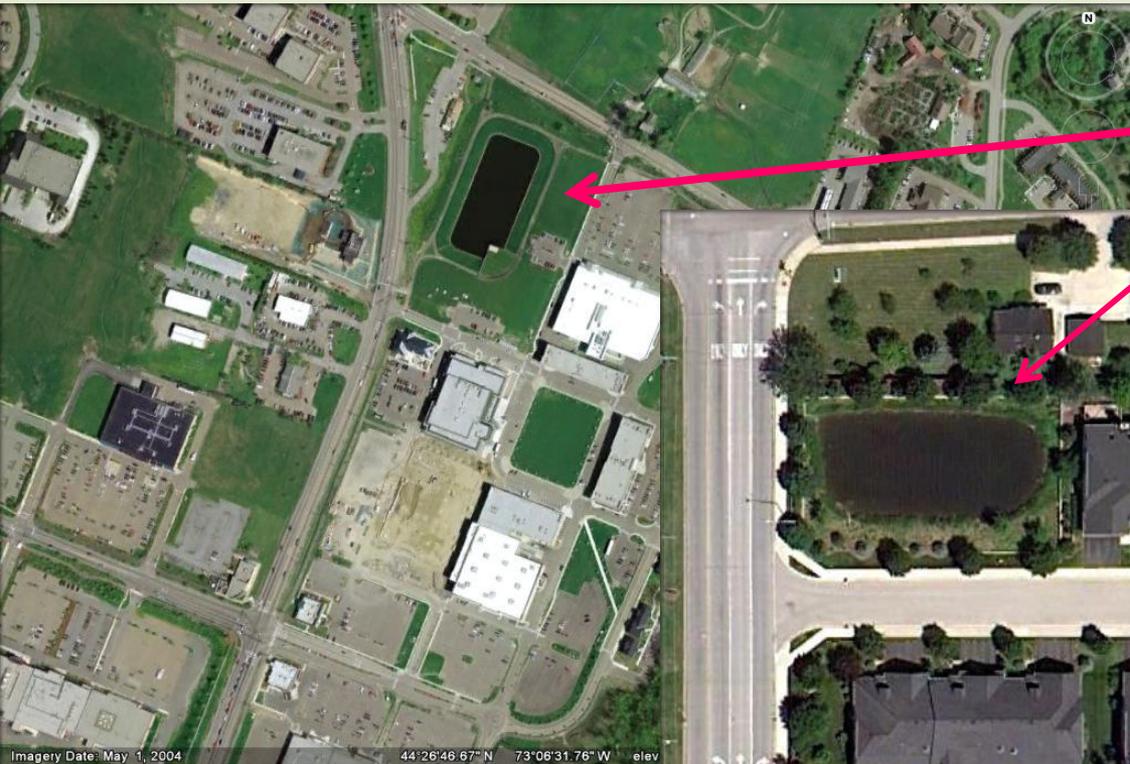
Water-Friendly Codes and Ordinances "202"

Revising Codes for Stormwater Compliance and Better Sites

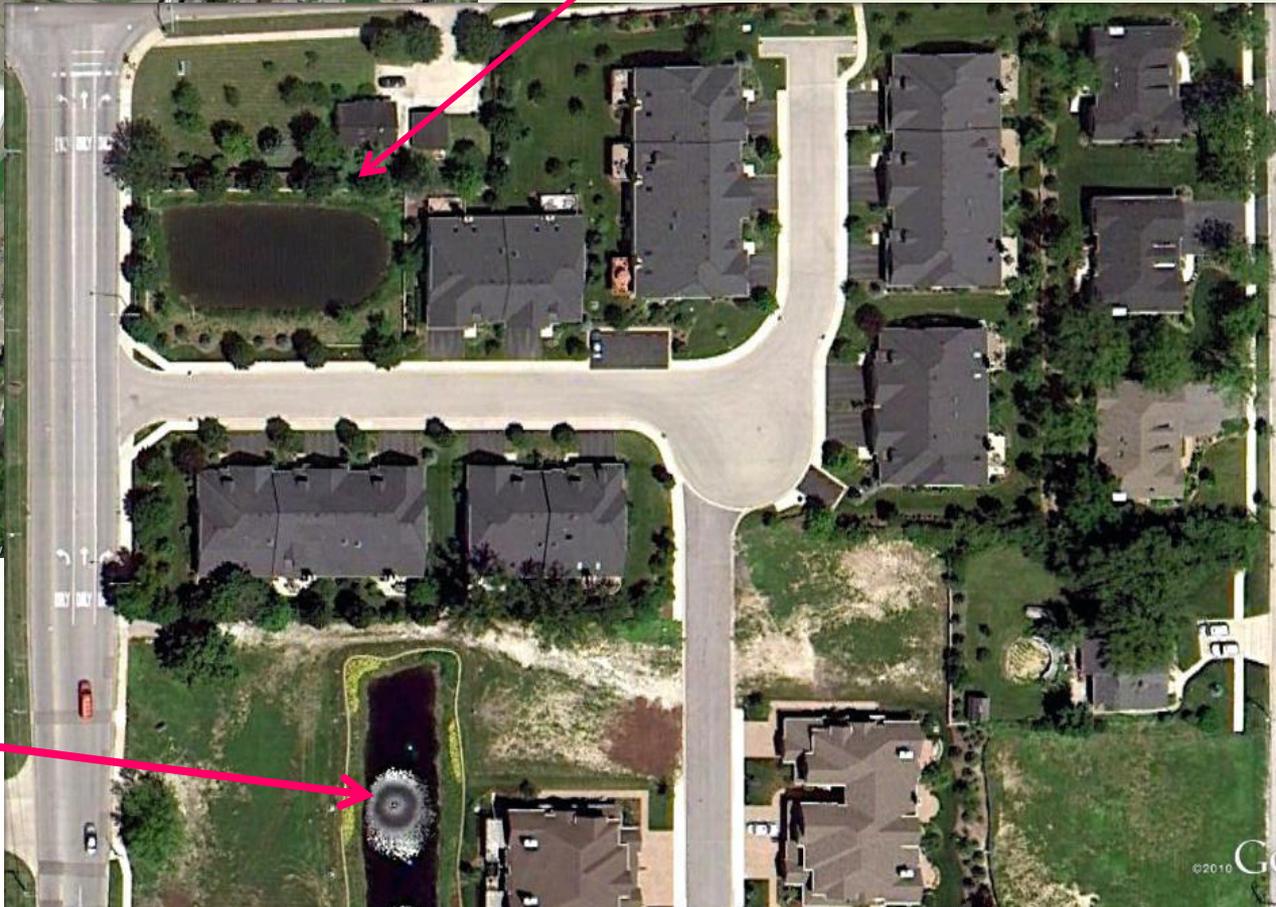
MEANING	SOULS DIAMETER S. C. 2002	ARMED OVERFLOW S. C. 2002	ARMED S. C. 200	LATE S. C. 200
1. The sun	☐	☐	☐	☐
2. God, heaven	☼	☼	☼	☼
3. Mountain	⚡	⚡	⚡	⚡
4. Man	♂	♂	♂	♂
5. Ox	♂	♂	♂	♂
6. Fish	♂	♂	♂	♂



San Diego Low Impact Development Design Manual



Stormwater
Jails



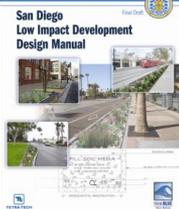
Look!
A fountain!

Imagery Date: May 1, 2004 44°26'48.67" N 73°06'31.76" W elev

But if the code + regs formula changes, better outcomes happen:



MEANING	SOILS DISTRICTS, S. C. 2002	AREAS OVERFLOW, S. C. 2002	AREAS, S. C. 200	LIFE, S. C. 200
1. The sun	☐	☐	☐	☐
2. God, heaven	☐	☐	☐	☐
3. Mountain	☐	☐	☐	☐
4. Man	☐	☐	☐	☐
5. Ox	☐	☐	☐	☐
6. Fish	☐	☐	☐	☐



Stormwater NOT in jail!

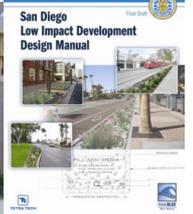


Look!
A green roof!

Why audits – 201 & 202 – are crucial:



MEANING	SOILS DISTRICTS S. C. 200	AVERAGE OVERFLOW S. C. 200	ADDITIONAL S. C. 200	LATE DEVELOPMENT S. C. 200
1. The sun	☐	☐	☐	☐
2. God, heaven	☼	☼	☼	☼
3. Mountain	⚡	⚡	⚡	⚡
4. Man	♂	♂	♂	♂
5. Ox	♂	♂	♂	♂
6. Fish	♂	♂	♂	♂



- Every site plan approved is a many-year footprint
- Every site is an opportunity for leadership & building LID experience
- Every site could represent a lost opportunity
- Takes some trial & error and much capacity building
- “They” need the codes, regs & resources to make better decisions!

