

Lake Maumelle Watershed Policy Advisory Council Meeting May 18, 2006



Facilitated by

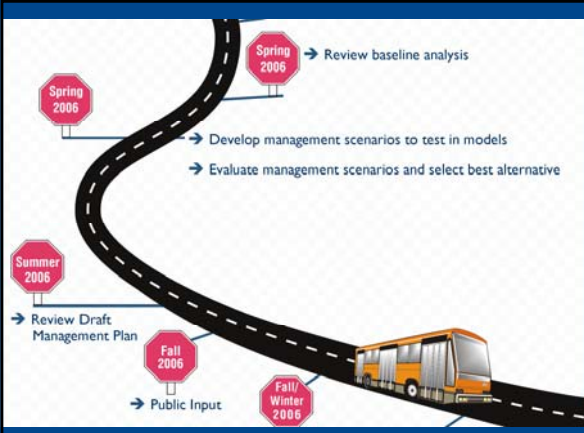


TETRA TECH, INC.

Roadmap for Developing Management Plan



- 10/05 → Orient Stakeholder Committee, Scoping Analysis, Endorse Preliminary Goals and Objectives
- 11/05 → Review/endorse watershed indicators, preliminary water quality targets, proposed models
- 12/05/2006 → Review and screen promising management options
- Spring 2006 → Review baseline analysis
- Summer 2006 → Develop management scenarios to test in models
→ Evaluate management scenarios and select best alternative
- Fall 2006 → Review Draft Management Plan
- Fall 2006 → Public Input
- Fall/Winter 2006 → CAW reviews and adopts Management Plan
- 10/06 → Other Boards endorse or adopt Plan
- Begin Implementation



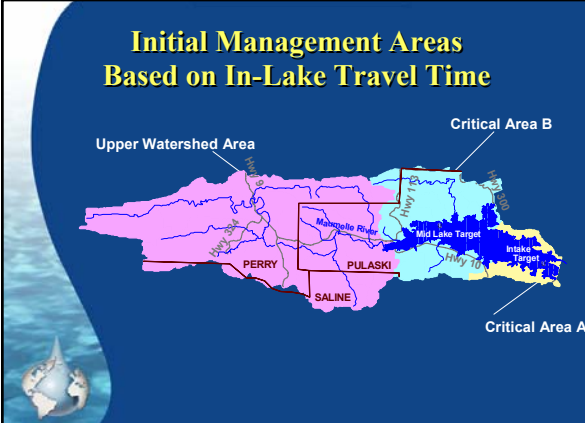
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3/16 Meeting Objectives

- Review Revised Management Areas
- Discuss maximum allowable loading
 - Watershed Scale
 - Nonpoint Source v. Wastewater
 - Site Scale
- Review development options tested
- Discuss requirements for meeting proposed on-site standards

Revised Management Areas

Initial Management Areas Based on In-Lake Travel Time



Revised Management Areas Based On....

- Travel time within lake
- Travel time to lake
- Subwatershed boundaries
- Jurisdictional boundaries
- Development pressure in near term

Revised Management Areas



Maximum Allowable Loading

Updated Modeling

- Adjusted for watershed model code change
- Enhanced lake model phosphorus uptake routine
- Increased length of time modeled from 2 to 8 years
- Results
 - Calibration slightly improved
 - Lake quality under existing land use predicted to be slightly better than before

Watershed Scale Allowable Loading

Indicator	Maximum Allowable Load
Total Phosphorus (TP)	19,250 lb/yr
Total Suspended Solids (TSS)	5,840 t/yr
Total Organic Carbon (TOC)	2,445,000 lb/yr
Fecal Coliform	2.25 · 10 ¹⁵ #/yr

Site-Scale Allocations

	TP (lb/ac/yr)	TSS (tons/ac/yr)	TOC (lb/ac/yr)
Critical Area A	0.200	0.080	33.30
Critical Area B	0.300	0.110	36.30
UWA	0.330	0.130	39.00

Non-Point Source vs. Wastewater

- Wastewater discharge P load ~ 0.95 lb/yr (assuming lowest ADEQ permittable limit of 1 mg/L for community system)
- Wastewater load > total allowable load for 3-acre lot (without even considering nonpoint runoff from lot)
- Wastewater load 63 percent of total allowable load for 5-acre lot in Critical Area B (nonpoint source load requires 100 percent of allowable load or more)

Policy Questions to Discuss



Policy Questions

- Do the recommended management area load allocations adequately reflect the PAC guidance?
- Would the PAC support a policy of no direct discharges in the watershed as part of the management plan?

Considerations for Wastewater

- **If discharges allowed:**
 - More land would need to be acquired to offset loading rates
 - Performance standards for nonpoint source runoff of new development would be significantly more restrictive
 - Large lots would need to be much larger to achieve overall loading targets
- **If discharges not allowed:**
 - Steep slopes will make it challenging to locate nondischarging systems; alternatives to conventional systems expected

Development Options Tested

Two Management Scenarios Tested for Future Development

1. Non-Engineering/Land Conservation Approach
2. Performance Standards and Land Conservation Approach (using engineering controls)



Guidance from PAC

- Increase stringency of requirements as you move from UWA to Critical Area A
- Vary requirements based on slope
- Don't require lots to be > 5 acres
- Don't require undisturbed open space to be > 50% of site
- Recognize burden of paving driveways and roads in rural areas

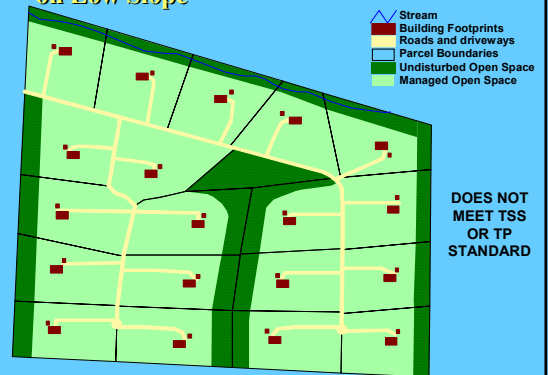
Demand for large lots and smaller lots...

- From 2001-2005, the average home and lot sale was approx. 6 acres in Western Pulaski County (for lots ranging 1 ac to 11 ac)
- In the future, the demand for smaller lots may increase
- The large lot and cluster options provide a way to meet both demands and protect water quality

Land Conservation/Non-Engineering Scenario – Upper Watershed Area

Scenario	Lot Size (acres)	Slope Category	% Impervious	% Undisturbed Area
Non-resid.	NA	Low	70%	15%
Large Lot	5.0	Low	9%	15%
	5.0	High	9%	30%
Cluster	1.3	Low	5.5%	15%
	1.3	High	5.5%	30%
	3.0	Low	7.3%	15%
	3.0	High	7.3%	30%

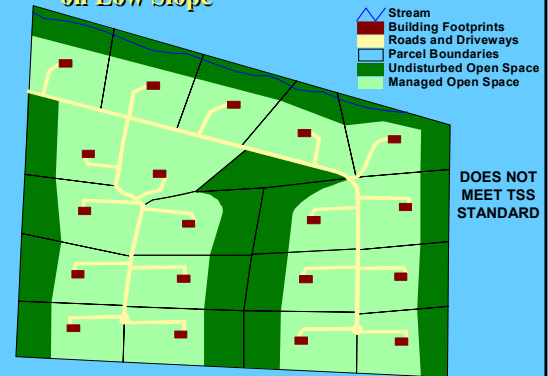
Upper Watershed Area - Large Lot on Low Slope

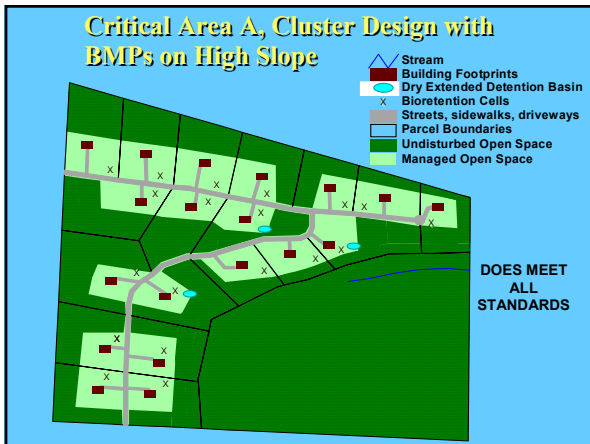
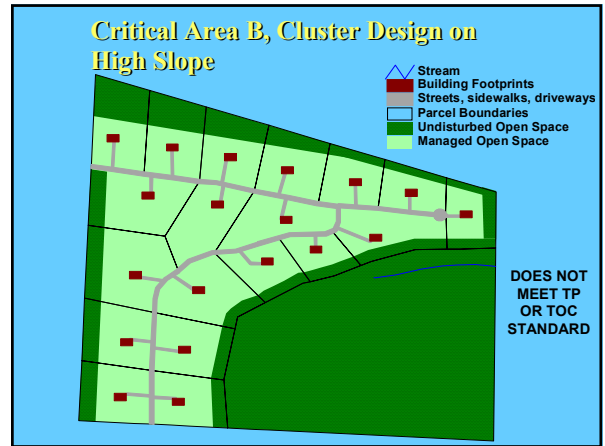
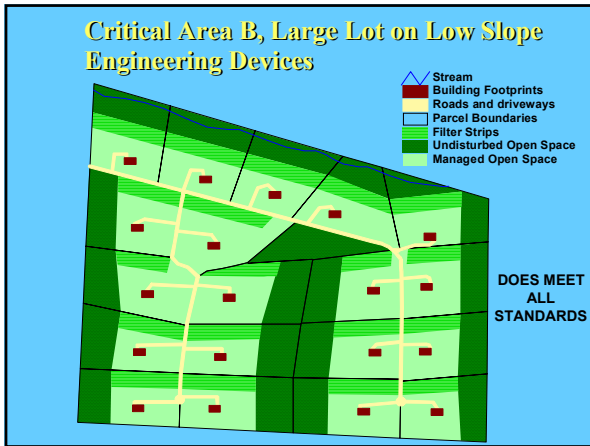


Non-Engineering/Land Conservation Scenario – Critical Area B

Scenario	Lot Size (acres)	Slope Category	% Impervious	% Undisturbed Area
Non-resid.	NA	Low	65%	30%
Large Lot	5.0	Low	8%	30%
	5.0	High	8%	50%
Cluster	1.3	Low	5.5%	30%
	1.3	High	5.5%	50%
	3.0	Low	6%	30%
	3.0	High	6%	50%

Critical Area B, Large Lot on Low Slope





Evaluation of Options for Upper Watershed and Critical Area B

- 5-acre large lot development
 - Exceeds TSS standard in all areas
 - Exceeds all standards in high sloped areas
- Cluster development with average 3 acre or 1.3 acre lots
 - Meets all standards in low slope areas
 - Exceeds standards in high slope areas (except meets TSS standard in UWA)
- Main pollutant source: unpaved roads

Performance Standards for New Development

	TP (lb/ac/yr)	TSS (tons/ac/yr)	TOC (lb/ac/yr)
Critical Area A	0.200	0.080	33.30
Critical Area B	0.300	0.110	36.30
UWA	0.330	0.130	39.00

What's required to meet the proposed allocations and performance standards?

Does it require *existing* landowners in the watershed to change their *existing* uses or practices?

- No. Existing uses of the land are assumed to continue and be exempt from the proposed requirements for new development.

Does this recommend or require that CAW condemn any additional land in the watershed?

- No.
- *Voluntary* purchase or land dedication is being recommended.

Do the proposed requirements include stream buffers for existing or new development, farms, etc.

- No. Stream buffers will be encouraged voluntarily, but not required.

Does it require that *existing* houses be moved?

- No.


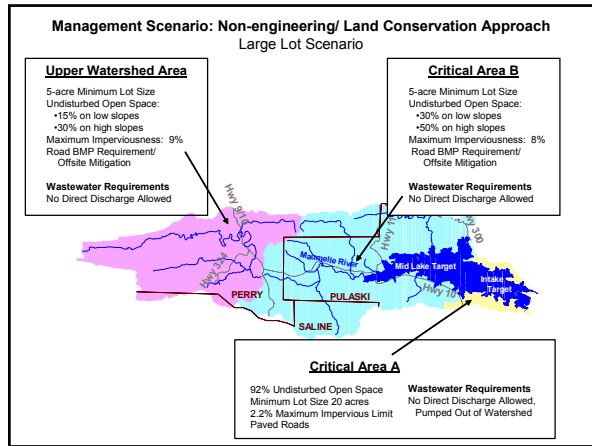
Do the proposed enhanced wastewater requirements apply to *existing* on-site septic tanks?

- No, only to wastewater associated with new development unless an existing system is an illegal discharge threatening water quality.

Do the road, street, and driveway BMPs apply to *existing* roads, streets, and driveways in the watershed?

- No. Existing unpaved roads and driveways are assumed to remain unpaved.
- Paved road and driveways may be required for *new* development (alternatively gravel with BMPs or Best Available Technology may be required)

So what would be required for new development?


Non-Engineering/Land Conservation Scenario – Large Lot, cont.

- Meets TP, TOC, and TSS performance standards if
 - Road improvements required and
 - Off-site mitigation required for conservation land
- Paved roads/driveways + 5, 255 acres
- Gravel roads/driveways + 27, 220 acres



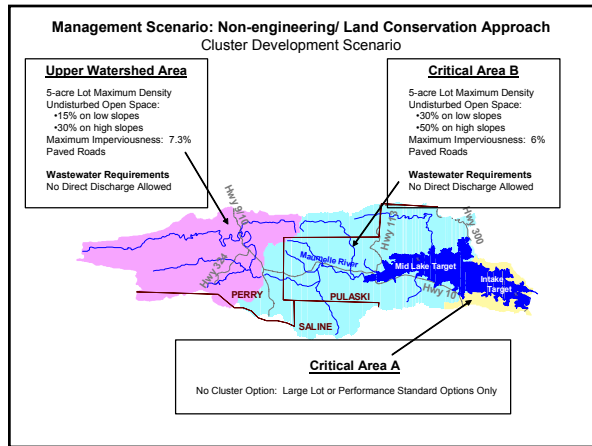
Non-Engineering/Land Conservation Scenario – Large Lot, cont.

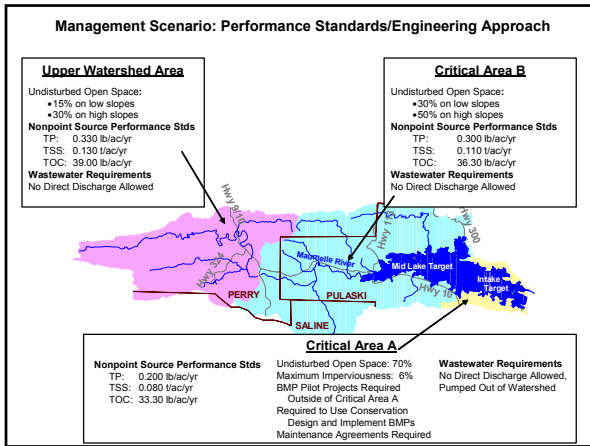
- Meets TP and TOC performance standards only if
 - Road improvements required and
 - Off-site mitigation required for conservation land
- BAT w/BMPs roads/driveways + 5,206 acres
- Paved roads/driveways on steep slopes + 7, 176 acres



Land Conservation/Non-Engineering Scenario – Large Lot, cont.

- Big picture requirement:
 - Road improvements + at least 10% of the developable land in the watershed for off-site mitigation (conservation land) would be needed



Summary

- Non-Engineering/Land Conservation Scenario meets targets if
 - Road improvements and off-site land conservation are required, or
 - Stricter on-site requirements are met
- Performance Standards/Land Conservation Scenario meets targets if
 - On-site engineered BMPs are used

NOTE: Engineered BMPs are untested in areas similar to the watershed; pilot projects must be conducted to determine effectiveness before they can be used

Policy Questions to Discuss

Policy Questions

- Does 5-acre minimum lot size meet the right balance between minimizing burden on property owner and trying to preserve rural nature of the watershed?

Policy Question

- To meet TP, TOC, and TSS allocation limits under the Nonengineering/Land Conservation Scenario ...
 - Should off-site conservation land mitigation be required? Or...
 - Should there be stricter on-site requirements? (e.g., larger lot sizes, greater undisturbed space requirements, less impervious surface)

Policy Question

- If off-site mitigation is required, should the mitigation land be targeted in the management areas closest to the lake, or be allowed in the same zone?

Policy Question

- Should off-site mitigation be required of the developer, CAW, or some combination?

Discussion of Upcoming Tasks and Meeting Wrap Up

