SOUTH MIAMI-DADE WATERSHED STUDY TECHNICAL REVIEW COMMITTEE (TRC)

Summary Outline of TRC Comments: Meeting Three

The following outline summarizes the comments

TRC Meeting Overview

The day began with a welcome, introductions, and review of the meeting agenda by Jim Murley, TRC Moderator and Director of the Center for Urban and Environmental Solutions at Florida Atlantic University. The meeting, he noted, would consist of the following components:

- Part One
  - Opening comments by Keith and Schnars, the project consultants on their response to the TRC Meeting Two comments and on the Watershed Study process
  - Review and discussion of the population projections and the parameters and thresholds
- Part Two
  - Review and discussion of the opportunities, constraints, and planning principles to use in building the scenarios
  - Closing TRC comments
  - Public comment

In other opening comments, Murley highlighted the materials that the TRC received for the meeting:

- Consultant response to TRC Meeting Two comments
- Final Draft Work Product for Sub-task 1.8, Parameters and Thresholds
- Transmittal memo identifying key components issues for review by the TRC
- CD of the Watershed Study Overview document
- Hard copy of the Keith and Schnars April 14 PowerPoint Presentation

Process Context

John Hulsey, Watershed Study Project Manager and Senior Planner with the South Florida Regional Planning Council (SFRPC), made the following points about the overall context for the Watershed Study.

- The Watershed Study process is on schedule.
- The Agriculture and Rural Area Study has not been finalized because of Advisory Committee disagreement with the consultant's recommendations. The Miami-Dade County Department of Planning and Zoning currently is working to find a resolution to the differences on the study recommendations.
- The number of building permits (currently for 20,000 new dwelling units) in the Study Area is accelerating in south Miami-Dade County. Most of the permits are occurring where development would have been predicted based on land use plans, and are not in environmentally sensitive areas. However, the acceleration of permits is creating greater

pressure to move the Watershed Study and Plan along, before opportunities to guide development are lost. There also are several pending applications for large Developments of Regional Impact (DRIs) outside of the Urban Development Boundary (UDB), thus creating additional pressure to complete the Watershed Study and Plan and putting pressure on the county to expand the UDB.

Watershed Study Advisory Committee Chair Roger Carlton reinforced comments about the rate of development in the Watershed Study Area. The 20,000 building permits, he noted, are only in the unincorporated areas. Additional development is occurring within the incorporated municipalities. There is also an acceleration of incorporations, some of which are due to the fear of losing development opportunities after the Watershed Study and Plan are completed. Carlton closed his comments by thanking TRC members for their input and noting that their comments would strengthen the final plan and help move it through the political process.

TRC Comments on Sub-Task Work Products

The following summarizes the comments of the TRC and project staff on the draft work products for Subtasks 1.2, Population Growth and Projections; 1.8, Parameters and Thresholds; 2.1, Opportunities and Constraints; and 2.2, Formulate Potential Land Use Scenarios.

Part One

Consultant Response to TRC Meeting Two Comments

Speaking for the Keith and Schnars team, Michael Davis noted that the TRC had a 20-page document summarizing how the TRC Meeting Two comments had been addressed. The TRC's comments fell into three main areas: population projection methodology, water quality modeling, and development of the natural resources element. The TRC had no comments on how Keith and Schnars had addressed the TRC's Meeting Two comments.

Population Projections

Jim Murley kicked off the discussion of population projections with the comment that Keith and Schnars and County were in agreement about the methodology to be used in calculating the population, an important factor to consider as part of this discussion. The TRC comments on the population projections included the following.

- The TRC asked to see more details on how the population projections were constructed. (Keith and Schnars agreed to send this information when it is completed.)
- The population projections should be rounded to the nearest thousand to avoid the appearance of accuracy implied by the use of six-digit figures. This is especially important as the projections go further into the future.
- There is a potential problem with using s-curve fittings that are based on land use assumptions in a planning process that alters those assumptions. Because of this, the population projections may need to be adapted.

TRC members also raised a number of questions about the population projections:

- Does the projected population for Monroe County include seasonal population? (It was noted that the figures include both seasonal and year-around population.)

- Was the projected population increase of 750,000 constrained by zoning and could it be accommodated under full build-out zoning?

Parameters and Thresholds

The discussion of the parameters and thresholds began with a short introduction by TRC Moderator Jim Murley. He noted that the TRC received this work product by email and mail prior to the meeting. The parameters and thresholds, Murley also noted, are a critical part of the planning process and are a core part of the mission for this meeting. The parameters and thresholds are important because they establish the indicators to be used in measuring the performance of the different land use scenarios against the study goals. The timing of the TRC's comments is very important, as Keith and Schnars is required to finalize this work product in May.

Murley then reviewed the questions that Keith and Schnars had requested the TRC to address in their comments:

- Are additional parameters needed to measure scenario performance?
- Are the parameter thresholds appropriate?
- Are there any other data sources relevant to the parameter or threshold?
- Is the evaluation method appropriate?

He also noted that Keith and Schnars's presentation of the parameters and thresholds, and the TRC's corresponding comments, would be organized around the following headings:

- Infrastructure
- Economy and Employment
- Land Use
- Natural Communities
- Water Resources

In the opening discussion of parameters and thresholds, the TRC asked Keith and Schnars to clarify several points:

- If the parameters were inputs or outputs and if there were constant parameters throughout the scenarios. Population, the TRC learned, is a constant in all the scenarios, as are the landscape features (e.g., basins, canals, and the Comprehensive Everglades Restoration Plan {CERP}). The different land use scenarios, which will be policy determined, will drive the economic and employment parameters.
- How the population will be allocated under the different scenarios and density assumptions and if population should be a variable among the scenarios or held as a constant. Keith and Schnars noted that the Watershed Advisory Committee is discussing the same question – i.e., whether population should be a constant in all the scenarios, in order to compare the effects of different land use policies on the environment, or whether population should be a variable among the scenarios based on the needs of the environment.
- The difference in primary and secondary parameters. In summary, the two categories of parameters show the relative importance of each category to the end goal of protecting Biscayne Bay. Primary parameters are those that will be rated as pass/fail, while secondary parameters will be considered as part of the overall evaluation of each scenario. .

Infrastructure

Keith and Schnars kicked-off the TRC's discussion of the infrastructure parameters and thresholds by posing a question: "Should infrastructure capacity limit growth or should it be considered primarily as a cost of improvement issue?" The TRC responded to this question with the general observation that infrastructure capacity should be viewed as a cost issue and not as a factor to be used in limiting growth. TRC members also made a number of specific comments about the cost of infrastructure:

- The cost of infrastructure is broader than the cost of installation. Infrastructure costs also should include human and environmental health costs if land uses result in water contamination.
- The cost of maintaining the level of service defined by the thresholds should be considered. That is, one way to think about the question posed by Keith and Schnars is to determine the cost of maintaining the performance measures at or below the threshold level, and then conduct a cost benefit analysis for each scenario under the assumption that the level of service will be maintained. From this analysis, it will be possible to determine if the cost if too high.
- Recognize that if the population grows, which is a constant in each scenario, without new investments in infrastructure there will be a reduction in level of service. In addition, how the population is allocated in each scenario will drive the infrastructure capacity needed and the related costs.

Other TRC comments related to infrastructure included the following.

- Wastewater treatment capacity:
    - Wastewater treatment capacity will be an issue if or when full build-out occurs.
    - Recognize that areas outside of the UDB are on septic tanks and wells and that in these areas it is not practical to have centralized water and sewer treatment.
    - Develop a definition of when density triggers central water and sewer.
- Level of transportation services:
    - The scenarios should not assume that maintaining transportation Level of Service A is always the most desirable. That is, there should be a change in what seems to be a study bias toward maintaining a Level of Service A, which encourages automobile use and roadways. A lower level of transportation service (e.g., Level of Service E or F) is preferable to encourage pedestrian-oriented communities and greater use of transit.
    - Add information on modes of transportation and vehicle miles of travel.
- Show the differences in residential, commercial, and industrial land uses in the water supply projections. It is very dangerous to use per capita water consumption, one TRC member noted, since the mix of commercial and industrial uses will be changing with each scenario.
- Water consumption:
    - Look at the amount of water consumption (some 70% based on SFWMD projections) that comes from demands for landscape irrigation.
    - Address whether water consumption is a constant in each scenario.
- Be sure to link potable water supply goals to economic development goals in the matrix. Potable water is important for economic development.

Economy and Employment

The TRC had a number of comments on the economic and employment parameters and thresholds.

- The agriculture economic mix should not be a constant in each scenario. The agricultural sector of the economy in the Watershed Study Area is experiencing drastic changes in the crop mix due to impacts of the North American Free Trade Agreement, the growth of the area, and the related increase in the number of ornamental nurseries. An advantage of ornamental nurseries is that they can operate year-around, providing more stable employment than row crops, which are seasonal.
- County level data from the 2002 Agricultural Census will be available in June 2004.
- Consider residential use of pesticides in addition to commercial agricultural uses. Residential development uses approximately seven times the amount of pesticides as commercial agricultural uses, a TRC member observed.
- Add data on the significant number of small farms (nine acres or less). The number of small farms is increasing, showing a trend toward smaller hobby farms and fewer large farming operations.

In addition, the TRC asked if the economic and employment parameters were a constant figure in all the scenarios. Keith and Schnars noted that one model run of REMI (Regional Economic Models, Inc.) would be completed, which then will be disaggregated to the Watershed Study Area.

Land Use and Community Character

Keith and Schnars kicked off the TRC discussion of the land use and community character parameters and thresholds with the following questions:

- What is an appropriate mix of land use densities for a sustainable watershed?
- What are the policy issues that should be considered when evaluating proposed expansions to the UDB?
- What types of urban planning techniques should be used to attract well-designed, higher density development to transit corridors and Urban Centers?

In their discussion, the TRC raised the following points about the land use and community character parameters and thresholds:

- Transit, including bus, is an important value to address in the thresholds and parameters. Public plans and funding for transit are in place and should be factored in, including plans to extend transit rail to Homestead. Related to this point, it was noted that the study should look at reducing auto dependency, including evaluating the scenarios by how well they reduce auto dependency.
- Look at the Sector Plan experience in Florida. Those plans would provide useful resource information because they are being evaluated under state growth management laws. One plan, Hillsborough County, is looking at water issues in particular.
- Include parkland, particularly around Biscayne Bay (the Bay), in the thresholds and parameters. The Bay is where most residents recreate; consequently, their access to the Bay is important.

A question was raised as to whether Keith and Schnars was developing a composite (residential and employment) density per acre. It was noted that a composite density could be developed and that jobs could be converted to a floor area ratio (FAR), which could be a better way to look at density. It is more important to have a mix of densities and uses in an area than to have one measure.

Natural Communities

TRC comments about the natural communities parameters and thresholds included the following.

- Simplify the parameters and thresholds for natural communities. As a part of this, add parameters and thresholds that measure the function and quality of wetlands. The aerial extent of wetlands alone is not enough, and it is not realistic to think that the jurisdictional extent will be maintained. What is important is that the function of wetlands is maintained; i.e., the "no loss of wetlands" standard should apply to wetland quality and function, not to the extent of wetlands.
- Add a parameter to track the aerial extent of aquatics, wetlands, and native-dominated versus exotic-dominated plants, as well as the aerial extent of hydrological or contiguous wetlands. Also, add a parameter for natural forests (pinelands), which are unique to this area.
- With regard to Environmentally Endangered Land (EEL):
  - In addition to describing acquired lands "off the table" as a constraint, develop a list of what lands should be or are protected through other means, such as regulations, mitigation banks, conservation easements, or some type of willing seller-willing buyer program.
  - Remember that simply listing EEL is not a measure.
  - The idea of buffer planning areas around EEL is a good one.
- Add the sources of information about threatened and endangered species. The current data seem to be missing some important information. In addition, use more current species data to the extent they are available.
- Consider moving air quality to another section, as it has impacts on more than natural communities, e.g., human health.
- Address the use of 10-year old (1994-1995) Florida Natural Areas Inventory (FNAI) data, especially with respect to the quality of wetlands. Data sets that are more current would bring greater credibility to the study. In addition, a subset of threatened and endangered species should be used to address species such as the burrowing owls next to the Homestead Air Force Base.
- Work on developing special area management plans, using the Bird Drive/North Basin study as a model.

Water Resources

Keith and Schnars began the TRC's discussion of the water resources parameters and thresholds by posing a question: Should groundwater supply and surface water flows be a secondary parameter? The TRC comments included the following.

- Add information on the percentage of impervious surfaces to the land use models.
- Refine the flow and distribution parameter and threshold.
  - There needs to be another measure for distribution of water. The parameters and thresholds need to be more complex than the volume of surface water flow.
  - The parameters and thresholds should incorporate language coming out of CERP, which is looking at issues broader than the surface flows.

    - Assess water distribution to the Bay and reconcile data with CERP targets for the Bay. The overall preferred CERP analysis is to reduce the volume of water flows.
    - Focus on water quality in addition to quantity and distribution.
- The timing of when data will be available is important. For example, the Corps of Engineers will not have the answers in time for this study. The new restoration conservation and verification (RECOVER) runs, however, were recently released by CERP.
- Look for opportunities to integrate flow ways together through purchase programs.
- Focus on the impacts of land use on the Bay. Pollutants can be minimized through the land use scenarios.
- Consider water injection to the aquifer (in the northern part of the system).
- Reconcile data differences (e.g., from Miami-Dade County, South Florida Water Management District {SFWMD}, and CERP sources). "If the spatial distribution of the population is different from the county, the SFWMD, and CERP, red lights should be going off."
- Look at rises in sea level, particularly over the long term.
    - Data on rises in sea level to the year 2050 will be available from CERP in the fall of 2004 and will should be modeled into the study.
    - Instead of using surface water flow, use the CERP performance measure that analyzes where the salt intrusion line moves, which will help show changes in land use and sea levels.

A question was raised about whether the pollutant loads would be compared spatially to different areas, as well as collectively to the Bay. Keith and Schnars noted that the analysis would be done spatially and that initially the evaluation of pollutant load will start at the Bay, but that there also will be information on each basin.

Part Two

Keith and Schnars Summary Parameters and Threshold Discussion

To wrap-up the discussion of parameters and thresholds, Keith and Schnars highlighted the main points made by the TRC during their discussion of this topic:

- Infrastructure should be viewed primarily as a cost, rather than a capacity, issue.
- The population projections should be consistent with CERP and Miami-Dade County.
- Water quality is the most important parameter.
- Data more current than 1994 and 1995 should be used for the natural resources parameters and thresholds.
- Recognize that not all wetlands are the same and should be treated differently. The important issue is that there should be no net loss in wetland function.
- The land use parameters should demonstrate how well the scenarios achieve study goals.

Opportunities and Constraints

Keith and Schnars introduced their presentation by noting that the opportunities and constraints are the precursor of the land use scenarios. They are used to segregate land by whether the areas have a high likelihood of change (i.e., the areas exhibit opportunities) or a low likelihood of change (i.e., they exhibit constraints). Following are the TRC comments made in response to the opportunities and constraints presentation.

- Use the latest *Eastward Ho!* map that goes to Homestead.
- Identify future well-field areas in this part of the analysis.
- Recognize that the final product of the study is a plan. Therefore, to be successful, there needs to be flexibility in implementation; i.e., the strength of the plan will depend on its ability to respond to changes over time and on the ability of planners to be nimble in plan implementation.
- Protected lands to be taken off the table for planned development:
    - Take all lands off the table that are in public ownership. This should include not only EEL but also parcels protected through other programs (e.g., flow ways, areas with restrictive covenants, easements, strategically significant parcels in the CERP footprint, etc.).
    - Map and remove from the opportunity list those areas that are designated for future purchase by CERP and the Miami-Dade County Department of Environmental Resources Management (DERM). (Keith and Schnars noted that the level of certainty of this information would determine if it is to be included in the scenarios.)
    - It will be difficult to take all CERP land in the Watershed Study Area off the table. In addition, the study process cannot wait on CERP information.
- Look at how this study could put constraints on CERP, as well as the constraints that CERP puts on the study.
- DRIs can be looked at as both an opportunity (for the designated development potential that has not happened yet) and a constraint (the fact that many DRIs do not develop at the allowed density).
- Examine why land is vacant to be sure, for example, that no agricultural land is identified as vacant. (It was noted that currently vacant land does not include agricultural land.)
- There appear to be two categories of opportunities within the Study Area. One category is where there are large public investments where citizen tax dollars are being used to reinforce desired land uses (e.g., transit and transit corridors). The other category is special opportunities areas, such as those provided by a Community Redevelopment Agency (CRA). Another special opportunity is Homestead Air Force Base, which presents both opportunities and constraints, such as noise zones and runway clearance.
- Treat historic properties and properties held by schools (for school or other uses, such as parks) as a constraint.

Scenario Building

Keith and Schnars kicked off the TRC discussion of scenario building with a question: "Should

population 'wag the tail' or, the flip, where the quality or end state of the Bay wags the tail (in determining the population)?" TRC members made the following comments in response to this question.

- Use the same population projections in each of the three scenarios in order to have comparative results. A new fourth scenario, if needed, could look at the impacts of reducing the population. Remember that except in special areas of critical concern such as the Keys, the State of Florida limits a community's ability to plan for less than the projected population growth.
- Although the input (population growth) cannot be controlled, it is possible to control the physical form (the output) of growth – its distribution (where it goes), its form, its density, and its intensity. The final plan must have a way to control the physical form of growth, or the physical form will control the population, one TRC member observed.
- As a part of focusing on the form of growth, develop the tools required to make density the more attractive development alternative, as opposed to the current development default, which is single-family, low-density sprawl. Higher density housing is also important to housing affordability, an important issue in the Study Area, particularly with a large immigrant community.

In addition to the discussion of population, TRC members made the following comments about the scenarios:

- Scenario descriptions:
  - The descriptions of Scenarios I and II are too abstract. The descriptions should be more realistic and specific and should clarify the differences between the scenarios.
  - Explain that Scenario I is based on existing plans and how those plans have been implemented. In doing this, be sure to use data that show what has historically been approved and not what is allowed in the Comprehensive Plan, recognizing that current plans are being implemented at less than the allowed density.
  - Clearly illustrate the trend (worse case) scenario so that the choices are clear.
- Never lose sight of impacts of the scenarios on CERP and the Bay. This includes the impact of the scenarios on water quality as well as the view of the Bay, which should stay open and unimpeded under any scenario.
- Compare the impact of the different land use scenarios on pollutant loading. As a part of this, address the practices of households.
- Use an iterative process when the scenarios are viewed through different filters, such as density and land use. Also, be sure to look at the iterations between Scenarios I and II, particularly with regard to population and employment.
- Consider the issue of development rights when testing the impacts of the scenarios on the agricultural lands outside of the UDB. The Bird Drive restrictions should also be factored into the scenarios.
- Create two different approaches when looking at expansion of the UDB: one incremental, with a splice here and a splice there, and the other a major addition in one place. Also, look at density variations as part of a UDB expansion.
- Recognize the limitations of REMI, which is not spatial and does not reflect where development goes. Based on this, it might be better to conduct the economic analysis first and then develop the scenarios.

The TRC asked if the current land use plan for the Study Area would accommodate the projected population. The area, the TRC learned, will run out of land by 2020 using current development practices, which are based on lower than the allowed densities. In closing, several TRC members observed the scenarios, as well as population projections, are on the right course.

Closing Comments and Next Steps

TRC Concluding Observations

TRC Moderator Jim Murley thanked the TRC members for contributing their time and insights. He noted that phone interviews would be conducted with the TRC members who were not in attendance in order to get their comments on the work products reviewed at the meeting. Staff will summarize TRC comments made during these calls as part of the TRC record. He also noted that:

- Additional comments on the parameters and thresholds should be submitted to John Hulsey by April 17.
- The TRC will have a more in-depth opportunity to look at population projections in the next several weeks.
- Representative of Keith and Schnars might be contacting individual TRC members prior to the next meeting to discuss the opportunities and constraints, methodologies for building the scenarios, and best management practices. It is up to the TRC members contacted whether or not they provide additional assistance between meetings.

Murley then asked each TRC member to make any closing comments about the study process and work products. These comments are summarized below.

- I am happy with the discussions about water resources. The discussion has been very enlightening.
- It would be helpful to learn more about how public and WSAC comments are being addressed.
- Education on more sustainable practices is important. Best management practices for agriculture are in process, including for the landscaping industry, and eventually will be developed for residential uses.
- Add tools such as purchase of development rights to the study process, in recognition of the importance of property rights outside the UDB, particularly when agriculture is no longer viable.
- Make the parameters and thresholds for the natural communities more practical and show how different standards can improve outcomes.
- We are seeing the information verified and our questions and comments answered, which is important to the big issues still to come.
- The Portland 2020, Envision Utah, and Seattle plans are good models for the next steps in the study process.
- To help decision-makers understand the choices, make sure that the trend (worse case scenario) clearly demonstrates the negative impacts on the Study Area.
- Incentives are needed to make Scenario II, as opposed to trend sprawl, successful as an alternative form of development.
- The ultimate benchmark by which to define success should be not to pollute the Bay or its inland portions. The preferred scenario should not breach this benchmark.

Next Meeting Dates

The next TRC Meeting (meeting four) will be on July 20, 2004. This meeting will focus in more detail on the modeling and methodologies for assessing the performance of the scenarios, as well as the initial draft scenarios. The fifth TRC meeting will be held in the fall of 2004 and will focus on the results of the scenario assessments. The sixth TRC meeting, which will be held in 2005, will focus on the preferred scenario.

Public Comments

No public comments were made during the TRC meeting.

APPENDIX A: TRC MEMBERS

TRC Members Participating in Meeting Three

Technical Review Committee (TRC)

Liz Abbott
Mahadev Bhat
David Chin
Gerrit Knaap
Joe Kohl
Susan Markley
Steve Nix
Donald Pybas
Roy Rogers
Edwin J. Stacker

Other Meeting Participants

Miami-Dade County
Subrata Basu
Cindy Dwyer
Carlos Espinosa
Maria Valdes

South Florida Regional Planning Council
John Hulsey

Keith and Schnars
Michael Davis
Marie Ecton
Samantha Horowitz
Melissa Karlin
Marc LaFerrier
Ian Miller
Michael Phelps
Bryan Piersol
Richard Punnett
Eric Silva

Center for Urban and Environmental Solutions at Florida Atlantic University
Patricia Bryk
Angela Grooms
Jim Murley
Jean Scott

SOUTH MIAMI-DADE WATERSHED STUDY TECHNICAL REVIEW COMMITTEE (TRC)

Summary of TRC Phone Interview Comments: Meeting Three

The following outline summarizes the comments made by members of the Technical Review Committee (TRC) for the South Miami-Dade Watershed Study who could not attend the third meeting of the TRC, which was held on April 14, 2004. The comments were made during phone interviews following the April 14 meeting.

The phone interviews were organized into three segments:

- TRC member questions about the work products to be discussed
- TRC member comments about the work products for the following subtasks, which were reviewed at the April 14 TRC meeting:
    - 1.2, Population Growth and Projections
    - 1.8, Parameters and Thresholds
    - 2.1, Opportunities and Constraints
    - 2.2, Formulate Potential Land Use Scenarios
- TRC member comments on a set of specific questions (see next paragraph) posed by Keith and Schnars, the Watershed Study project consultant

The specific questions for TRC phone interview participants fell into three primary topics: infrastructure, land use and community character, and population.

- Infrastructure:
    - Should limits on growth be primarily a capacity or a cost improvement issue?
    - What is the appropriate level of detail for the infrastructure analysis portion of the Watershed Study?
    - Should schools be a separate parameter or included as an element in the infrastructure analysis?
    - Should the potable water parameter be combined with the water supply resource parameter?
- Land Use and Community Character:
    - What is an appropriate mix of land use densities for a sustainable watershed?
    - What are the policy issues that should be considered when evaluating proposed expansions to the Urban Development Boundary (UDB)?
    - What types of urban planning techniques should be used to attract well-designed, higher density development to transit corridors and urban centers?
- Population:
    - Should population be a parameter?
    - Should the Watershed Study use a consistent level of population projections to develop the preliminary scenarios?

Prior to the phone interviews, each TRC participating member received the following information:

- Keith and Schnars' response to the TRC Meeting Two comments
- Final Draft Work Product for Subtask 1.8, Parameters and Thresholds (the primary focus of the phone interviews)
- Transmittal memorandum from Keith and Schnars identifying key issues and questions to be addressed by the TRC

- CD of the Watershed Study Overview document
- CD and print copy of Keith and Schnars' April 14 PowerPoint presentation

The following summarizes TRC member comments about the work products prepared for the April 14 TRC meeting and the specific questions from Keith and Schnars.

Comments on the Work Products

Parameters and Thresholds

- There is a risk in using only the parameters and thresholds that can be measured. By eliminating values that are not quantity based, the scenarios may not reflect the goals of the process. Either take the goals more seriously or create more parameters. One way to approach this would be to create a new category of qualitative parameters and thresholds based on the goals that could be used in combination with the more quantitative parameters and thresholds to analyze outcomes. By having both types of parameters and thresholds, it would be possible to start seeing patterns when qualitative and quantitative measures lead to the same conclusions.
- Types and sources of data:
    - To help decision-makers understand the consequences of policies, make certain that the parameters and thresholds provide the data needed to make choices. Currently, many of the parameters and thresholds are too generic to demonstrate clear choices. For example, the economic parameters should address the number of jobs required for a sustainable economy. The community character parameters also should be defined more clearly. For instance, there is no information on trails and greenways, which provide a way to measure the connectivity of open space. (Dave Barth noted that he has examples of more specific sustainable community factors.)
    - The parameters and thresholds should be based on hard numbers. (Keith and Schnars noted that they had hard numbers for transportation and parts of the water and sewer and water resource parameters, but not for parameters such as natural communities and land use, which are harder to define and are more intuitive.) Related to this point, one TRC member interviewed noted that suggested hard numbers for the agricultural related parameters and thresholds had been submitted after the second TRC meeting.
    - Clarify the sources of data in the parameter and thresholds paragons (e.g., provide the source of the data and the year it was developed). In addition, each parameter should have a distribution associated with it in order to obtain a range of outcomes.
- Visual preference surveys to tease out the qualitative parameters run the risk of being biased, although when done correctly, they can be helpful in getting people to identify what they care about and to see the larger picture.
- Natural resource parameters and thresholds:
    - Develop measurable parameters and thresholds to maintain habitat for species to be protected.
    - The data used in developing the parameters and thresholds for natural communities are inconsistent and the 1998 photographs are out of date. Based on this, consider conducting a new natural communities inventory, similar to what Broward County did for its recent bond issue. It is difficult to evaluate connectivity without knowing what areas have been disturbed. (In response to this comment, Keith and Schnars noted that the project scope of work does not call for field verification of existing data and that the Watershed Plan will not include the same level of detail as a natural resource plan. It was agreed that Keith and Schnars would do another cut at the natural community analysis and then work with John Volin to develop a

methodology for conducting some sample field checks based on aerials to see where connectivity has been disturbed.)
    - Add parameters and thresholds for the benefits of the fisheries in the Biscayne Bay (the Bay) – both the visual and economic benefits. Many livelihoods in the study area rely on the fisheries and they bring some $8 billion a year into the economy.
- Population parameters and thresholds:
    - Add parameters and thresholds for evaluation of the impacts of population growth on the Bay. (It was noted that the focus of the Watershed Study is on the landside impacts on the Bay, with the goal to not cause further detriment to the Bay, and if possible, to enhance it.)
    - Define the population for whom affordable housing should be provided, including the elderly and the households that will become poor over the study period. The cost of housing and the mix of incomes are two parameters that can be used to define those who will be in need of affordable housing in the future. In addition, to help meet housing goals, include provisions for inclusionary zoning and strategies to correct deteriorated housing.

Opportunities and Constraints

- In addition to taking lands in public ownership "off the table," identify the land that should be preserved. This should include information on the cost of protecting these areas and options for sources of funding.

Scenarios

- When developing the scenarios, avoid becoming a slave of the scope of work. For example, to make the choices clear, first develop a smart growth scenario that would create a sustainable future when viewed against the end goals of the study – a sustainable ecosystem. This scenario then can be compared to a more mediocre scenario that would not sustain the ecosystem.
- In addition to the preceding:
    - Clearly illustrate the trend (worse case) scenario so that the choices between trend and the alternative scenarios are clear.
    - Consistently show the ecosystem protection scenario in comparison to each of the other scenarios.
    - Identify the big issues and real trade-offs in each category of the parameters and highlight the issues that need to be resolved.
- Include in the scenarios information on, and illustrate various levels of, density, including its form and character.
- Rather than basing the scenarios on unbounded population growth, consider developing a scenario that uses quality of life and the primary goal of preserving Biscayne Bay as the binder on future growth. (Keith and Schnars noted that the Florida Department of Community Affairs regulations do not allow plans to be based on limiting population growth. Monroe County is the one exception to this requirement. The data to document the impact of human population growth on the ecosystem of the study area is not yet of a sufficient level to obtain such an exception.)
- Related to the preceding, it was noted that the data does exist to document the impacts of human population on water use and estuaries.

Response to Specific Questions by Keith and Schnars

Infrastructure

- Capacity, not cost, should limit growth, although one TRC member interviewed noted that the cost of infrastructure should be a factor. An example of using capacity as the limiting factor is the amount of pollution loading coming out of sewage treatment plants.
- The infrastructure analysis should include information that is more detailed; for example, the consequences of different forms of development (such as the cost impact of a grid versus a cul-de-sac road system) and the walking distance from schools to residential areas.
- Potable water:
    - Combine the potable water parameter with the water supply parameter.
    - When looking at potable water, variables to consider are the size of homes and yards and the amount of lawn watering. Less water will be consumed if there are fewer lawns, which can be a result of more clustering of single-family homes or more attached or multi-family housing. Another important factor in analyzing potable water is the location of housing – i.e., whether it is closer to existing developments or closer to the Bay.
- Schools:
    - Include schools as part of the human infrastructure.
    - The Watershed Plan should have a goal that calls for maximizing existing school plants, as opposed to building new schools on greenfield sites (something that the state of Maryland has done). Schools could be a separate parameter depending on the age breakdown of the population.
- Service area and treatment plant capacity is a sufficient level of detail for this study.

Land Use and Community Character

- When evaluating proposed expansions to the UDB, consider requiring lands outside the UDB to have a maximum density level in order to encourage new development to occur within the UDB. In addition, evaluate the impact of land use policies on natural resources and the water quality of the Bay.
- Density in transit corridors and urban centers:
    - To attract well-designed, higher density development to transit corridors and urban centers, first define what makes more attractive, desirable, and sustainable communities. “It goes back to the character and form of development."
    - Mixed-use zoning, bonus densities for good design, expedited plan review and approval, and programs to help assemble land can be used to attract well-designed, higher density development to transit corridors and urban centers.
- There is no one answer to the question about an appropriate mix of land use densities for a sustainable watershed. One approach could be to analyze the mix of land uses in an existing area in the watershed that is performing well in terms of the amount of pollutants. Another suggestion was to look at the experience of other areas. For example, a consulting firm in Maryland is doing work on the impact of land use mixes on watersheds. In addition, Lexington, Kentucky did some similar analysis when analyzing an expansion of the UDB. Although not directly related to land use mix, as a rule, more than 10% impervious surface will lead to water quality problems.

Population

- Keep jobs and population as a constant in all the scenarios, using each scenario to show different ways to accommodate the population.
- The scenarios should look at how much new population growth can be accommodated and still sustain the ecosystem and economic productivity of the Watershed Study Area.

- The information provided for the April 14 TRC meeting that shows the population by canal and sub-watershed provides a much better measurement of the carrying capacity of an area.

Other Comments

- The goals need more definition to show, for example, what natural communities are vibrant.
- Related to the preceding, the analysis uses too many buzzwords. Terms should be defined much more clearly before modeling the scenarios. Discussions will become contentious if there are not clear definitions and it will be more difficult to defend study results.
- Be sure that the Watershed Study is linked to current information from the Comprehensive Everglades Restoration Plan (CERP).
- To make a direct link between land use and marine water quality, look at the west side of the Bay where there is a peak density of organisms. This is the location where most of the development will occur. Consequently, if this area is paved over, it will destroy natal areas, which will have an impact on the Bay. (A good resource is a book by Jerry Ault on the water quality of the Bay.)