CERP Guidance Memorandum

South Florida Water Management District – Jacksonville District, U.S. Army Corps Of Engineers

CGM NUMBER-REVISION: 023.01

EFFECTIVE DATE: March 1, 2004

CATEGORY: PIR

SUBJECT: Water Quality Considerations for the Project Implementation Report Phase

DESCRIPTION:

This guidance memorandum addresses water quality considerations necessary for the formulation, evaluation, and design of project component alternatives during the Project Management Plan and Project Implementation Report phases of a CERP project. One of the primary objectives of this guidance is to focus plan formulation efforts on the scope of the project components as defined in the Comprehensive Plan. Controlling growth of project scope is critical because approval of the Comprehensive Plan by Congress and the Florida Legislature brought with it expectations regarding the scope, cost and schedule for each component, as well as for the $7.8 billion CERP program as a whole. Because of the potential impact on cost and schedule, it is important that Corps and SFWMD management make an educated decision in each case where the scope of a project is increased beyond that of the Comprehensive Plan. Consequently, this guidance specifies that as a starting basis, only projects that included water quality features in the Comprehensive Plan will be formulated to improve water quality. However, the guidance acknowledges that increasing the scope of a project to improve water quality may be justified based on new information obtained during PIR development, but only after receiving Corps and SFWMD management approval through the CERP change-control process (See Section 1.3).

For clarification, a “Glossary of Terms” has been included to define CERP planning terms used in this guidance that have not yet been defined in the CERP Master Program Management Plan or another guidance memorandum.

This guidance recommends development of water quality performance measures and evaluation criteria that are focused primarily on the reduction of nutrients and total suspended solids. Performance measures should be those that can be accomplished using passive management measures that rely on naturally occurring biological and physical processes such as wetland treatment areas (e.g., stormwater treatment areas (STAs), including advanced technologies such as periphyton STA (PSTA) and submerged aquatic vegetation (SAV)) or storage areas (e.g., reservoirs and restored wetlands). Unless approved by the Corps and SFWMD management through the

change-control process outlined in CGM #7, other potential pollutants of concern for which CERP project components were not necessarily formulated to address, such as mercury and pesticides, are to be treated as constraints. For pollutants of concern covered by constraints, alternatives must be evaluated to ensure that they will not cause or contribute to a violation of water quality standards.

This guidance is organized on the basis of the six-step water resources planning process in order to provide consistency with other CERP guidance addressing the plan formulation and evaluation steps as well as the work breakdown structure for the PIR Phase. The six planning steps are:

- Identify Problems and Opportunities
- Inventory and Forecast Conditions
- Formulate Alternative Plans
- Evaluate Effects of Alternative Plans
- Compare Alternative Plans
- Select and Design Recommended Plan

Note that not all steps in this guidance are applicable for every project component. Based on component descriptions in Section 9 and Appendix A4 of the Comprehensive Plan (Reference 1), projects include components that can be grouped in three categories:

A) Those components that include water quality improvement features,

B) Those components that do not contain water quality improvement features, but are to be designed to achieve water quality improvement, or

C) Those components for which the Comprehensive Plan does not include water quality improvement features or specifically reference water quality improvement as a criterion to be addressed during design.

This guidance specifies a different approach for addressing water quality in CERP plan formulation, evaluation and comparison depending upon the category of the components included in the project. For example, water quality performance measures will be developed only for Category A components. These performance measures will be used in formulating, evaluating and comparing alternative plans. Performance measures will not be developed for Category B components and alternative plans will

not be formulated to achieve water quality improvements for those components; however, evaluation criteria must be developed for assessing and comparing the water quality improvement achieved by the alternative plans. Category C components will not have performance measures for water quality improvement and are not required to have evaluation criteria for comparing the water quality improvement of alternatives. However, adversely impacting water quality shall be treated as a constraint in the plan formulation and evaluation process for all project components, including those in Category C. Water quality constraints will be identified for all projects and alternative plans will be evaluated in light of these constraints.

Glossary of Terms**:**

Base year condition – a projection of the most likely future condition (e.g., water quality condition) at the time that the project becomes operational.

Constraint – a condition that is to be minimized or avoided in the plan formulation and selection process to ensure that the project component does not result in undesirable changes in the project area or downstream waters. Example: The component shall not cause or contribute to a violation of state water quality standards.

Evaluation criteria – specific criteria developed to evaluate and compare alternative plans, and to aid in optimizing the design of the selected alternative plan to achieve a desired condition. Technically, the term evaluation criteria encompasses performance measures, constraints and other criteria to be used for evaluation and comparison of alternative plans. However, for this guidance, the term is used to describe water quality improvement criteria that are established to aid in evaluating and comparing various alternative plans that are formulated to achieve objectives other than water quality (e.g., water supply). These evaluation criteria will be developed for Category B components, where there are no specific water quality improvement features, but effects on water quality, including potential water quality improvements, must be evaluated. Example: Nutrient reduction related to reservoir retention time.

Management measure – a feature or activity that can be implemented at a specific geographical site to address one or more of the planning objectives. Management measures are the building blocks of an alternative plan. Examples: wetland treatment areas and refinement of reservoir operating schedule to increase retention time.

Performance measure – a quantitative indicator, along with a target, used to determine the degree to which an alternative plan meets the planning objective, and compare the

relative performance of alternative plans. Performance measures are developed based on water quality objectives, and are used in formulating alternative plans. Example: Phosphorus load to St. Lucie Estuary (Target = 110 tons per year).

Pollutant of concern – a water quality constituent that has the potential to cause or contribute to violations of water quality standards in receiving waters and/or the restoration objective water body.

Project component purpose – the primary output(s) or benefit(s) to be achieved by a project component, as described in the component purpose statements in Chapter 9 and Appendix A4 of the Comprehensive Plan.

Receiving waters – includes the water body immediately downstream of the project Example: Receiving waters for the Site 1 Impoundment is the Hillsboro Canal.

Restoration objective water body – the major water body downstream of the project targeted for restoration benefits from the project. Examples: Lake Okeechobee for the Lake Okeechobee Watershed Project; Caloosahatchee Estuary for the C-43 Basin Water Storage Reservoir Project.

Water quality objective – a statement of something that an alternative plan should be formulated and designed to accomplish in order to achieve a project or project component purpose. Example: Reduce nutrient loading to the St. Lucie Estuary.

Water Quality Standard - Pursuant to Rule 62-302.200(30), Florida Administrative Code, a "water quality standard" is comprised of four components: (1) a water body's designated present and future beneficial uses, i.e., its classification[1]; (2) the numerical or narrative criteria for the pollutant applicable to that classification adopted under state or Tribal law[2]; (3) Florida's anti-degradation policy[3]; and (4) appropriate moderating

[1] Rule 62-302.400, Florida Administrative Code, provides that all surface waters in the State shall be classified according to one or more of five designated uses: (1) Class I relating to potable water supplies use, (2) Class II for shellfish propagation or harvesting, (3) Class III relating to recreation, propagation and maintenance of a healthy, well-balanced population of fish and wildlife, (4) Class IV for agricultural water supply, and (5) Class V relating to navigation, utility, and industrial use.

[2] Rules 62-302.500 and 62-302.530, Florida Administrative Code, set forth specific numeric and narrative criteria corresponding to each surface water classification. In addition to specific criteria, Florida also has a "free from" rule that requires all waters to be free from domestic, industrial or agricultural wastes that create a nuisance, are toxic, or pose a serious danger to public health and welfare. Rule 62-302.500, F.A.C.

[3] Florida's anti-degradation policy is found in Rules 62-4.242, 62-302.300 and .700, Florida Administrative Code, and Section 403.088, Florida Statutes. It generally provides that discharges to water may not reduce water quality below its use classification

provisions, if any, as authorized in Chapters 62-4 and 62-302 or Tribal law, such as mixing zones and site-specific alternative criteria. The goal of plan formulation and design is to meet all applicable numeric (or narrative) water quality criteria for pollutants of concern. However, if it is determined that the selected plan will not meet a particular pollutant concentration level, the opportunity exists to work with FDEP to determine if variances or other moderating provisions apply, thereby allowing implementation of the plan.

and, in those cases where discharges will reduce water quality below its classification, they may be allowed provided the degradation is necessary or desirable under federal standards and under circumstances that are clearly in the public interest.

CGM NUMBER-REVISION: 023.01

GUIDANCE:

1.0 Identify Water Quality Problems and Opportunities

1.1 Project Management Plan Phase - Defining Project Scope Relative to Water Quality

In accordance with Section 4.1 of Volume 1 and Appendix B of the Master Program Management Plan, the Project Management Plan (PMP) is to include a description of "Project Scope" (Reference 2). The Project Scope is to be based on the purpose and description of the project components contained in Section 9 and Appendix A4 of the Comprehensive Plan (Reference 1). During development of the Project Scope for the PMP, the level of emphasis to be placed on water quality improvement during the PIR Phase will initially be made based on a review of Table 1 (Click here to view Table 1), which categorizes CERP project components based on the water quality improvement considerations included for each component in the Comprehensive Plan. Where applicable, a preliminary set of water quality objectives and constraints will be developed and factored into the work breakdown structure, costs and schedule for the PMP.

1.1.1 Development of Water Quality Objectives

Water quality objectives are the intended water quality results for which a project or project component is formulated and designed to achieve. For Category A components, the Project Scope is to include a preliminary statement of one or more water quality objectives that are consistent with the original purpose and water quality design commitments for the project components as described in the Comprehensive Plan. The PDT should not spend a great deal of time on objective development during the PMP phase because objectives will be refined during the PIR phase after scoping meetings with the public and stakeholders, and after characterizing the existing water quality conditions. However, it is important to develop some preliminary objectives in order to identify the tasks, schedule and cost estimates for the PMP.

Although it is expected that project components will provide measurable system-wide benefits, including benefits associated with water quality improvement, water quality objectives are to be defined on a watershed or sub-regional basis. For example, it would be appropriate for a component to be implemented north of Lake Okeechobee to have an objective to reduce nutrient loading to Lake Okeechobee. However, it would not be appropriate to have as a project objective reduction of nutrient loading to the

Everglades Protection Area and the estuaries – even though reducing loads to Lake Okeechobee would likely result in these system-wide benefits. Nevertheless, other evaluation criteria could be developed to evaluate the project's potential for causing downstream water quality improvements.

To establish water quality objectives, the first step will be to identify the designated uses of the downstream receiving waters and the restoration objective water body. The second step will be to determine if those water bodies are included on the State's or Tribe's most current verified impaired waters list. Water bodies are included on these lists when the water quality is not adequate to meet the designated use. Next, pollutants of concern in the watershed will be identified, including those pollutants causing the water bodies to be listed. Pollutants of concern in the watershed may include pollutants other than, or in addition to, those causing water bodies to be listed.

For most CERP projects, excessive nutrients (nitrogen, phosphorus) and total suspended solids are likely to be the primary pollutants of concern. Nutrient reduction was the major focus of water quality improvement features included in the Comprehensive Plan. Wetland treatment areas (e.g., STAs, PSTA, and SAV) and storage areas (e.g., reservoirs and natural storage areas) were included in the Comprehensive Plan because they have been demonstrated to be successful at removing nutrients and total suspended solids. However, it is certainly possible that other pollutants may be identified which may not be successfully treated without incorporating technologies that were not originally included in the description of the project components. For most CERP projects, reducing the load for pollutants of concern other than nutrients and total suspended solids, such as mercury and pesticides, will not be considered as water quality objectives. These pollutants will be addressed as water quality constraints - the effect of the component on those pollutants must still be evaluated, compared with the base year condition, to determine whether the operation of the component will cause or contribute to violations of water quality standards. However, if new information arises during plan formulation to demonstrate that reduction of other pollutants of concern is essential to ecosystem restoration and that there are reasonably certain and cost-effective management measures that could be used to address these pollutants, then the Project Managers may request Corps and SFWMD management approval, through the change control process (See Section 1.3), to include performance measures and formulate alternatives to reduce loading of these pollutants. Mercury and other pollutants are also being addressed through other guidance and studies under CERP. New guidance is under development to help PDTs address mercury and other pollutants during the plan formulation for specific projects. In addition, a separate feasibility study has been initiated, the Comprehensive

Integrated Water Quality Feasibility Study, that will evaluate problems and potential alternatives for dealing with pollutants of concern (including nutrients, mercury and other contaminants) on a more system-wide basis.

1.1.2 Identification of Water Quality Constraints

During development of the Project Scope for the PMP, a preliminary set of water quality constraints that are applicable to the project components will be identified. As with water quality objectives, this effort should not be extensive, because the list of constraints will be updated based on new information gained during the PIR scoping efforts. The initial PMP effort should focus on identifying the more obvious water quality constraints that will help in planning, scheduling and cost-estimating the tasks to be addressed during the PIR Phase.

In the planning context, constraints are conditions that are to be minimized or avoided. Typically, water quality constraints will be based on regulatory criteria. The following general constraints exist for all CERP project components:

- The tentatively selected plan shall meet applicable water quality standards, including water quality criteria and moderating provisions,

- The tentatively selected plan shall not:

  - Cause or contribute to violations of water quality standards;

  - Increase pollutant load to waters for which a Total Maximum Daily Load (TMDL) has been established unless appropriately mitigated (offset by equivalent load reduction); and,

  - Degrade water quality in Outstanding Florida Waters, unless otherwise authorized by rule or statute.

In addition to these universal constraints, additional project-specific water quality constraints will be identified, as appropriate. The water quality constraints will be used during the PIR phase for evaluating and comparing alternatives.

1.1.3 Developing Task Lists, Schedules and Cost Estimates for Water Quality Evaluations

Based on the water quality considerations identified in the Project Scope and the resulting list of applicable water quality objectives and/or constraints, the appropriate tasks, schedules and cost estimates will be developed for the PMP.

For Category A components, the PMP will include tasks, schedules and cost estimates for:

a) Characterizing existing water quality conditions, including a baseline sampling program, where necessary;
b) Forecasting base-year water quality conditions;
c) Forecasting future without project water quality conditions;
d) Developing performance measures for water quality improvement;
e) Identifying water quality constraints;
f) Developing evaluation criteria associated with water quality constraints;
g) Formulating alternative plans to improve water quality (in addition to other project purposes) and to avoid water quality constraints;
h) Evaluating and comparing alternative plans based on water quality;
i) Selecting the least cost plan that meets the water quality restoration objectives; and,
j) Optimizing the design of the selected plan to maximize water quality improvement.

Regarding item (a) above, if the need for baseline sampling is anticipated, then appropriate tasks, schedules and cost estimates should be included in the PMP. Furthermore, the potential need for acquiring baseline water quality data as early as possible in the PMP process will be evaluated. Since baseline data can take a significant time to acquire, it may be necessary to begin the sampling program before completing the PMP. Starting work in advance of PMP completion requires prior approval of the Corps and SFWMD management.

For Category B components, the PMP will include tasks, schedules, and cost estimates for:

a) Characterizing existing water quality conditions, including a baseline sampling program, if necessary;
b) Forecasting base-year water quality conditions;
c) Forecasting future without project water quality conditions

d) Developing evaluation criteria to determine the extent of water quality improvement associated with alternative plans;
e) Identifying water quality constraints;
f) Developing evaluation criteria associated with water quality constraints;
g) Selecting the least cost plan that meets the water quality restoration objectives; and,
h) Optimizing the design of the selected plan to maximize water quality improvement if optimization does not conflict with the purpose and objectives established for the project.

Water quality improvement evaluation criteria must be developed for Category B projects to evaluate the extent of water quality improvement associated with alternative plans formulated to meet the purpose and objectives established for the project. However, water quality "performance measures" will not be developed because water quality improvement is not a primary project purpose for Category B projects. Additional evaluation criteria associated with project constraints (i.e., degrading the base year water quality condition or causing or contributing to a violation of water quality standards) must also be developed for Category B projects.

For Category C components, the PMP will include tasks, schedules and cost estimates for:

a) Characterizing existing water quality conditions, including a baseline sampling program, if necessary;
b) Forecasting base-year water quality conditions;
c) Forecasting future without project water quality conditions
d) Identifying water quality constraints;
e) Developing evaluation criteria associated with water quality constraints;
f) Identifying least cost measures to address water quality constraints; and,
g) Selecting the least cost plan that meets the restoration objectives.

The focus of the effort for Category C components will be determining and comparing the extent to which alternative plans avoid water quality constraints.

1.2 PIR Phase – Developing Water Quality Performance Measures and Evaluation Criteria

During the PIR phase, additional consideration will be given to problem identification associated with their specific components to determine if additional water quality problems exist that should be identified in the PIR (Reference 3). This includes scoping

efforts focused on eliciting public concerns related to potential water quality problems identified for further study. New information gathered during these scoping efforts may then be used to refine the water quality objectives and constraints identified in the PMP and, where applicable, development of performance measures and evaluation criteria for water quality improvement.

1.2.1 Development of Performance Measures

For Category A components, performance measures will be developed based on the water quality objectives. The system-wide water quality performance measures developed by RECOVER should be used as a starting point for developing project-specific performance measures. The RECOVER system-wide performance measures can be found at the following ftp site:

ftp://ftp.saj.usace.army.mil/pub/uploads/k3epjmm3/Documentation%20Report/

Project-specific water quality performance measures will be developed in consideration of existing and future without project conditions for the restoration objective water bodies. This will typically involve establishing concentration and/or load targets for the restoration objective water bodies. Concentration targets should be based on conditions necessary to achieve ecosystem restoration of the restoration objective water body. Load targets should be based on numeric calculations of the quantity of the pollutant of concern from the watershed in which the project is located that can be assimilated by the restoration objective water body without impairing the structure or function of the ecosystem. The concentration and load targets will then be used to develop performance measures that the component will be formulated and designed to achieve.

1.2.2 Development of Evaluation Criteria

For Category B components, water quality evaluation criteria will be developed. These evaluation criteria will be used for alternative plan evaluation, comparison, and selection purposes, as well as for maximizing the water quality improvement efficiency during design of the selected plan. The intent is to develop evaluation criteria that will lead to maximizing nutrient and total suspended solid reductions of the component without a significant loss of water storage potential, and without addition of new water quality improvement features such as stormwater treatment areas. Evaluation criteria usually lack the quantitative targets typical of a performance measure. One approach that was used in the development of the Comprehensive Plan is to evaluate and compare the

water quality improvement efficiency of alternative plans based on hydrologic model output. For example, the water quality improvement efficiency of a reservoir might be evaluated using an evaluation criterion that is based on hydrologic retention time, which can be measured using hydrologic models (e.g., the number of times that the water level in the reservoir remains above a specified elevation (depth) for at least 21 days during the period of record).

1.3 Modification of Project Scope

The Project Managers have been given clear guidance that the project purpose and component descriptions included in the Comprehensive Plan are to be used to define the Project Scope in the PMP. However, during development of the PMP or later in the PIR Phase, it is possible that based on new information that becomes available or changes that have occurred since completion of the Comprehensive Plan, there may be adequate justification to modify the scope to include water quality improvement objectives (i.e., change to Category A), or to address water quality improvement during design (i.e., change to Category B). However, because of the potential impacts on project cost and schedule, before making a change in the Project Scope, the Project Managers must first receive approval from Corps and SFWMD management. CERP Guidance Memorandum No. 7 describes the CERP change control process for obtaining management approval for a change in Project Scope.

2.0 Inventory and Forecast Conditions

2.1 Characterize Existing Water Quality Conditions

Water quality characterization is a necessary step for all project components, including those where water quality is only a constraint. The initial step in inventorying existing water quality conditions is the evaluation of available data for waters entering the project as well as the receiving waters and the restoration objective water body. For most projects, it is anticipated that existing water quality data available from sources including SFWMD, FDEP, USGS, USEPA, Tribal and local governments will be sufficient to characterize existing conditions. The parameters to be evaluated will vary depending upon the component features, the source waters, the restoration objective water body and any potential pollutants of concern associated with the project lands. The Project Managers should work with FDEP to identify the list of parameters to evaluate for their project. Data for parameters other than nutrients will be compared to existing water quality criteria in FDEP's Rule 62-302.530 Florida Administrative Code (F.A.C.). Once existing water quality conditions have been determined, the data will be compared to

historical data, established water quality standards, nutrient reduction goals (e.g., TMDLs, Pollution Load Reduction Goals (PLRG)), and "reference"[1] sites in order to develop performance measures and evaluation criteria.

Where data are insufficient, a baseline water quality sampling program will be conducted to provide data that can later be used to determine water quality improvements of various alternatives and compliance with constraints. One important consideration in determining the sufficiency of existing water quality data and for developing a water quality sampling plan is the type and amount of data needed to support the methods to be used for evaluating and comparing alternative plans (e.g., models, statistical analyses). The water quality database, performance measures and evaluation methods are interdependent. The evaluation methods must be capable of evaluating and comparing alternative plans relative to performance measure targets, and adequate data must be available for calibration, verification and use of the evaluation methods. Development of baseline sampling programs should be coordinated with the Corps and SFWMD monitoring units, as well as FDEP and RECOVER.

2.2 Identify Sources for Pollutants of Concern (POCs)

For Category A and B components, the general source(s) of pollutants of concern must be determined. Both point and nonpoint sources should be identified. Relative contributions of pollutants of concern from nonpoint sources should be determined using existing and future land uses.

2.3 Characterize Base Year and Future Without Project Water Quality Conditions

For all projects, base year and future without project water quality conditions must be described and forecasted for the pollutants of concern.

The base year and future without project conditions should not include components or management measures which are a part of the project under consideration or other CERP projects that have not yet been authorized. However, the future without project condition may include other CERP projects if those projects have been approved and authorized by the Secretary of the Army or Congress, as appropriate. Both base year and future without project water quality conditions are to be based on projected changes

[4] Observed conditions in nearby water bodies with similar physiographic and hydrologic characteristics but which are either minimally impacted or pristine with respect to anthropogenic activities.

in land uses and pollution loads (from both point and nonpoint sources). Projected pollutant loading into the restoration objective water body associated with those future sources and projected land uses should be forecast in consideration of existing and anticipated water quality protection and pollution abatement programs that are likely to affect these pollutants of concern. The Project Managers should work with FDEP to identify the list of parameters for which the future without project and base year conditions must be established.

2.4 Establish Methods for Evaluating Water Quality Impacts

Based on the availability of adequate water quality models and evaluation techniques, as well as the specific needs for the project components, the method to be used for evaluating the water quality performance of the alternative plans must be identified. The selected method will also be used for comparing the alternatives with the future without project condition. The effect of alternative plans on water quality may be evaluated using complex water quality simulation models or simple spreadsheet models. The performance may also be determined using hydrologic models or another method that is based on acceptable scientific and engineering practices. The method must be selected early enough in the process to ensure that the evaluation techniques and/or models can be used to evaluate the performance of each alternative against water quality performance measures. The data gathered during characterization of existing conditions must be sufficient to support the evaluation techniques and/or models.

3.0 Formulate Alternative Plans

For Category A components, a strategy will be developed for early screening of water quality improvement management measures and identifying conceptual alternatives consistent with the water quality purposes and objectives of the project. Screening will allow the PDT to focus more detailed evaluation and comparison efforts on those alternatives with the greatest potential for achieving the water quality objectives while avoiding constraints. Alternative plans will be formulated to achieve water quality objectives based on performance measure targets and to avoid water quality constraints. When formulating alternative plans, emphasis should be placed on using passive management measures with proven efficiency in reducing nutrients and total suspended solids; particularly those that rely on naturally occurring biological and physical processes. Examples include wetland treatment systems (e.g., STAs, PSTA, and SAV) and storage areas (e.g., reservoirs and natural storage areas). Example: a Category A component's purpose is reduction of nutrient load to the downstream

restoration objective water body. Different types and scales of management measures that accomplish nutrient load reduction should be included in the alternative plans.

For Category B components, emphasis should be placed on identifying conceptual alternatives that will improve water quality without adversely affecting the purpose and objectives of the components. Alternative plans will be formulated, designed, evaluated and compared based on achieving the overall project purposes and the objectives and performance measures established consistent with those purposes. Alternatives are not to be formulated to achieve water quality objectives, since specific water quality objectives and performance measures will not be established for Category B components. The design of Category B components for water quality should not have a significant effect on the cost or other restoration benefits of the project. The relative performance of alternative plans in light of the project-specific water quality improvement evaluation criteria will be displayed for all alternatives. Example: a Category B component's purpose is storage of basin runoff. Alternatives that would result in a reduction of the storage volume below the targeted amount because of potential water quality improvements should not be formulated.

Category C components do not include water quality improvement features, and improvement of water quality is not to be specifically included as part of the design and evaluation of alternative plan components and features. Alternative plans will be formulated, designed, and evaluated based on the project purpose and the objectives and performance measures established consistent with the component’s purpose. Alternative plans will also be compared to assess incidental adverse and beneficial impacts on water quality using the project-specific constraints. The relative performance of alternative plans in light of the water quality constraints will be displayed for all alternatives. Example: a Category C component's purpose is diversion of basin flows. Alternatives that would potentially cause a violation of water quality standards or contribute additional pollutants to an already-impaired water body would not be acceptable and should be screened out an early stage of plan formulation.

4.0 Evaluate Effects of Alternative Plans

For Category A components, each alternative must be evaluated using performance measures and evaluation criteria to determine its relative improvement in water quality. For Category B components, only evaluation criteria will be used. Evaluations will be accomplished using the methods selected in accordance with Section 2.4. An iterative approach involving additional formulation may be necessary to maximize water quality

improvement to achieve ecosystem restoration. The PDT will conduct these project-specific evaluations.

In addition to project-specific evaluations, measurement of water quality improvement benefits attributable to each alternative must consider system-wide effects and interdependencies among projects. Project benefits will be evaluated based on the project's contribution to the achievement of system-wide goals and objectives identified by RECOVER. System-wide evaluation of alternatives will be conducted by the RECOVER Team.

For Category A, B and C components, alternatives will be evaluated to determine whether they avoid water quality constraints. The PDTs will evaluate the potential of alternative plans to contribute additional pollutants into the watershed, especially those that would impair designated uses in downstream water bodies (i.e., contributing to existing violations of water quality standards). For Outstanding Florida Waters (OFWs), alternatives should be evaluated to determine whether there would be any degradation of water quality associated with the construction and operation of the component. This would normally involve characterizing the quality of the water to be discharged by the component, identifying specific pollutants that may be discharged by the component, and evaluating the effect on the downstream OFW. For example, waters discharged by a project component may comply with water quality standards at the discharge point; however, ambient water quality in a downstream OFW may be of "higher quality" than the standard at the discharge point (e.g., average dissolved oxygen concentration of 7.0 mg/l exists in the OFW compared to the regulatory criterion of 5.0 mg/l for Class III waters). In this case, the potential degradation of water quality in the downstream OFW is a constraint that would prevent operation of the component and must be avoided.

5.0 Compare Alternative Plans

Results of alternative evaluations will be used to identify and describe significant differences between alternative plans. The alternative plans will be compared based on: 1) the degree to which each plan achieves system-wide water quality objectives (Category A); 2) the degree to which each plan achieves project-specific water quality performance measure targets (Category A) and evaluation criteria (Category A and B); and 3) the degree to which each plan avoids project-specific or system-wide constraints (Category A, B and C).

In order to evaluate and compare alternative plans, ecosystem restoration and other benefits (e.g., flood damage reduction, water supply improvements) associated with

each alternative plan must be calculated and displayed in the PIR to identify incremental benefits and economic costs. For Category A components, the effect of water quality improvements will be included in the overall benefits calculation for each alternative. Similarly, for Category B components, the net effect on ecosystem restoration benefits associated with water quality improvement in the component design will be calculated for each alternative.

Methods for calculating the effect of water quality improvements on ecosystem restoration benefits may vary between projects. Regardless of the method used, water resource planning procedures require the ecosystem restoration "lift" associated with water quality improvements be included in the overall calculation of ecosystem restoration benefits for CERP projects. This should be displayed in an incremental fashion so that PDT members, the public and decision makers can readily determine the relative proportion of the project benefits that are attributable to the water quality improvement features.

6.0 Select and Design Recommended Plan

For Category A and B components, a more in-depth design of the tentatively selected plan will be initiated after receiving management approval for the tentatively selected plan. Typically this will be initiated immediately after the Alternative Formulation Briefing. It is at this stage that the performance of the plan may be optimized relative to the water quality performance measure targets or evaluation criteria. As an example, this may be achieved through design of component features such as inclusion of littoral shelves in a reservoir, or through operational criteria such as increasing the retention time in a reservoir or STA. For Category C components, no further design optimization is required; however, the PDTs may evaluate operational procedures that have potential to improve water quality.

References:

1. Central and Southern Florida Project Comprehensive Review Study – Final Integrated Feasibility Report and Programmatic Environmental Impact Statement, U.S. Army Corps of Engineers and South Florida Water Management District, April 1999.

2. Master Program Management Plan, Comprehensive Everglades Restoration Plan. U.S. Army Corps of Engineers, Jacksonville District and South Florida Water Management District, August 2000.

3. Master Program Management Plan, Appendix D, “Description and Content for Project Implementation Reports, p. 1.

4. Water Resources Development Act of 1996, Section 528 (b)(4)(A) – “Water Quality”.

5. Water Resources Development Act of 2000, Title VI –“Comprehensive Everglades Restoration”.

6. Russell L. Fuhrman, Director of Civil Works: Memorandum for Commander, South Atlantic Division – “Water Quality Policy for South Florida Ecosystem Restoration”, November 7, 1997.

7. Section 373.1501 of the Florida Statutes – “South Florida Water Management District as Local Sponsor”

8. Section 373.1502 of the Florida Statutes - "Regulation of Comprehensive Plan Project Components."

9. Section 373.4592 of the Florida Statutes – “Everglades Improvement and Management”

10. Section 373.4595 of the Florida Statutes – “Lake Okeechobee Protection Program”

APPLICATION:

Effective the date of this memorandum, this guidance will be utilized when preparing Project Management Plans and when conducting plan formulation and evaluation during the PIR phase of a CERP Project. If the PDT already has an approved PMP, it is not necessary to update or revise the PMP to incorporate directives from this guidance unless the revised plans would result in a significant change in the cost and/or schedule for the project. However, the approach for plan formulation and evaluation should be modified, as necessary, to be consistent with this guidance.

This guidance was designed specifically to address additional formulation of project components included in the Comprehensive Plan. The guidance applies only in part to Pilot Project Design Reports (PPDRs). Since alternatives are not formulated, evaluated and compared as part of the PPDR process, only those parts of the guidance dealing

with Category C components (e.g., identifying water quality constraints associated with construction and operation) apply to CERP pilot projects.

For questions or clarification regarding this guidance, contact one of the following: Eric Bush or Jim McAdams from the Corps; Greg Knecht or Temperince Morgan of FDEP; Paul Warner and Tom Teets from SFWMD.

CERP Guidance Memorandum

South Florida Water Management District – Jacksonville District, U.S. Army Corps Of Engineers

CGM NUMBER-REVISION: 023.01

APPROVALS:

Kenneth G. Ammon, P.E.
Director, Ecosystem Restoration Department
South Florida Water Management District

DATE: 3/9/04

Dennis R. Duke
CERP Program Manager,
U.S. Army Corps of Engineers

DATE: 3/9/04

This document provides working level guidance to assist Project Delivery Teams in the implementation of the Comprehensive Everglades Restoration Plan (CERP) program executed between the South Florida Water Management District and the U.S. Army Corps of Engineers. The guidance does not constitute policy for either agency nor does it create authority beyond that granted to any agency member carrying out their duties. Guidance reflecting agency policy on subjects listed in the guidance memoranda section of the programmatic regulations for CERP will be issued when the final programmatic regulations are adopted, using the process stated in the regulations.