

# DRINKING WATER PLAN REVIEW WORK GROUP FINAL REPORT

November, 2003



November 5, 2003

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## Executive Summary

In 2002 the Drinking Water Advisory Committee (DWAC) identified detail plan review as conducted by the Drinking Water Program as an area of concern. Specific areas of concern included the length of time Ohio EPA took to approve detail plans, inconsistencies between plan reviewers, and excessive requirements to obtain plan approval. In response a subcommittee of DWAC, known as the Drinking Water Plan Review Work Group, was formed to evaluate the current detail plan process and recommend changes. The work group met 6 times from February 2003 - July 2003. The following report and action plan are the outcome of the meetings. Ohio EPA greatly appreciates the efforts of the work groups members:

Mike Baker, Ohio EPA - DDAGW  
Janet Barth, Ohio EPA - DDAGW (Southeast District)  
Dan Binder, Ohio Environmental Council  
Ashley Bird, Ohio EPA -DDAGW  
Jim Brueggeman, Ohio Chapter, American Water Works Association  
Garry Cole, Ohio Campground Owners Association  
Sue Daly, Public Utilities Commission of Ohio  
Ken Davis, Ohio Section, American Water Works Association  
Marvin Gnagy, Ohio Section, American Water Works Association  
Steve Grossman, Ohio Water Development Authority  
Mary Jakeway, Whirlpool Corporation  
Kirk Leifheit, Ohio EPA - DDAGW  
Ken Ricker, Association of Consulting Engineers Council  
Rick Schantz, Ohio Section, American Water Works Association  
Rob Schmidt, Ohio Chamber of Commerce  
Dave Thalman, Ohio Manufactured Homes Association  
Tim Wolfe, Ohio Section, American Water Works Association  
Sara Hendricker, Ohio Municipal League  
Kevin Strang, Ohio Rural Water Association

**The Ohio EPA is committed to working with representatives of Ohio's public water systems to implement the recommendations of the Drinking Water Plan Review Work Group in this report and therefore making real changes in the review of engineering plans for public drinking water facilities.**

## Introduction

A facilitated Plan Review Work Group process was undertaken by the Ohio Environmental Protection Agency (Ohio EPA) Division of Drinking and Ground Waters (DDAGW) based on concerns expressed by members of the Drinking Water Advisory Committee (DWAC). The process was facilitated by Mr. Fred Bartenstein of Fred Bartenstein and Associates. The members of the work group are listed in Appendix C.

The first meeting of the work group was held at the Ohio EPA Central Office in Columbus on February 27, 2003. Subsequent meetings were held on March 18, April 15, May 6, June 5 and July 15, 2003.

Prior to the initial meeting, Mr. Bartenstein interviewed seventeen of the work group members to assess group concerns and expectations. The questions asked were:

1. What is going well with the engineering plan review process?;
2. What is not going well with the engineering plan review process?;
3. What are the best opportunities to improve the engineering plan review process?;
4. What are the obstacles to each of those opportunities?; and
5. What suggestions do you have for how the working group can achieve the greatest impact?

A summary of the responses is shown in Appendix D.

### **Initial meeting**, February 27, 2003

Michael Baker, Chief, DDAGW, expressed his expectations for the process. He indicated the recommendations of the work group may require modification of DDAGW's plan review processes and rules, and the Director's Office is very involved. Mr. Baker also provided a summary of the legal basis for the plan review process.

Mr. Bartenstein distributed the results of the initial interviews, and led a discussion of the interview results. Mr. Bartenstein also led the group in developing ground rules for the process, and a schedule for future meetings.

### **Second meeting**, March 18, 2003

Janet Barth, Ohio EPA, gave a presentation on plan review distribution, goals, performance and process.

Ashley Bird, Ohio EPA, gave a presentation on DDAGW plan review objectives and discussed common issues (potential improvements) identified for major plans which prevent plans from being recommended for approval.

During the work group's discussions, it became clear DDAGW needed to specify the reasons for detail plan reviews. As such, work began on the mission, goals and objectives/guiding principles for plan review.

**Third meeting, April 15, 2003**

Janet Barth and Ashley Bird gave presentations on the further breakdown of plan reviews. Information was presented regarding the number of comment letters sent for plans approved in SFY 2002 and the review time for each subsequent review. A list of common problems resulting in plans not being recommended for approval was provided. Information was also provided on Central Office time accounting for various activities.

The work group discussed an initial draft of the mission, goals and objectives/guiding principles for plan review.

Work group members brainstormed on actions that could be taken to improve the plan review process. The work group members then combined and organized the 36 ideas into eight categories.

**Fourth meeting, May 6, 2003**

Ohio EPA provided a written summary of the overall plan review process in both the District Offices and Central Office. The Central Office process was discussed. Ashley Bird also provided information on plan review disagreements identified in the 51 sets of plans approved in SFY 2002 from Central Office and items identified in SFY 2002 as possible sequencing.

Another draft of the mission, goals and objectives/guiding principles of plan review was discussed. DDAGW utilized the work group's list of improvement actions to formulate an initial list of proposed actions Ohio EPA could implement to enhance the plan review process. These initial ideas were presented to the work group. Overall the work group supported the recommendations. There was some additional discussion on the recommendations with additions and clarifications suggested. The refined process enhancement list incorporates those changes and will serve as a basis for finalizing a plan of action for implementing plan review enhancements.

**Fifth meeting, June 5, 2003**

Work group members were given an initial rough draft of the final report document. Discussions clarified issues the work group wanted to see in the report. A current list of plan review reference documents was provided to the group. An updated copy of the Engineering Plan Review Process Enhancements documents and a list of engineering documents the DDAGW Policy Implementation Group is working to consolidate was provided. The group discussed the process enhancements document and work began on developing an action plan. The action plan will include: action items, responsible party information, time frame for completion and the desired output/outcome.

Ohio EPA Director Christopher Jones met with the work group to offer his thanks for the work done and to state the agency's commitment and perseverance to find solutions to problems.

It was decided a sub-set of this work group would continue to work on developing checklists to be used for various source and treatment processes using 10 States Standards as the basis for the checklists.

**Sixth meeting, July 15, 2003**

The draft final report and chemical feed system checklist provided by Ken Ricker were distributed. The draft report was discussed with the majority of the discussion focusing on the action plan. Work group members were asked to provide additional comments/changes. Once the report is completed it will be provided to Ohio EPA Director Christopher Jones. Ohio EPA will notify DWAC that a sub-group of the Plan Review Work Group will work on required versus recommended criteria for the various sections of 10 States Standards and request DWAC representatives to participate on the work group.

## Legal Basis for Plan Review

### **Code of Federal Regulations/Safe Drinking Water Act**

TITLE 40-- PART 142-- Subpart B--142.10 A State has primary enforcement responsibility for public water systems in the State during any period for which the Administrator determines, based upon a submission made pursuant to Sec. 142.11, and submission under Sec. 142.12, that such State, pursuant to appropriate State legal authority:

- (a) Has adopted drinking water regulations which are no less stringent than the national primary drinking water regulations in effect under part 141 of this chapter;
- (b) Has adopted and is implementing adequate procedures for the enforcement of such State regulations, such procedures to include: ...
  - (5) The establishment and maintenance of an activity to assure that the design and construction of new or substantially modified public water system facilities will be capable of compliance with the State primary drinking water regulations.

### **Ohio Revised Code**

6109.07 (A) No person shall begin construction or installation of a public water system, or make substantial change in a public water system, until plans therefor have been approved by the director of environmental protection under division (A)(1) or (2) of this section.

- (1) Upon Receipt of a proper application, the director shall consider the need for compliance with requirements of the Safe Drinking Water Act, and generally accepted standards for the construction and equipping of water systems, and shall issue an order approving or disapproving the plans. In granting approval the director may stipulate conditions designed to meet the requirements of this chapter and rules adopted under it.

### **Ohio Administrative Code**

3745-91-08(A) "Recommended Standards for Water Works", Great Lakes-Upper Mississippi River Board of State and Provincial Health and Environmental Managers, or such other publications as may be prepared by the Ohio environmental protection agency for guidance of designers of public water systems, shall be used as a guide in the technical review of plans submitted under this chapter of the Administrative Code.

3745-91-08(D) Approval of plans submitted under this chapter of the Administrative Code may be conditioned upon requirements that may be necessary or desirable to ensure that the system being constructed, or of which the proposed project is a part, will be able to meet generally accepted standards for the design, equipping and operating of water systems.

## **Plan Review Process**

The Ohio EPA drinking water plan review process is described in *Ohio EPA Plan Review Procedures for Drinking Water Facilities*, May 24, 1999, which was developed in cooperation with the Technology Committee of the Ohio Section of the American Water Works Association. The document includes turnaround goals for the review and approval of plans, as well as a listing of reference documents for plan approval.

Before submitting detail plans, the owner and engineer are encouraged to meet with a representative of DDAGW's engineering staff. In general, pre-design meetings should be considered essential for projects with a high degree of complexity, non-standard technologies, unusual features and/or deviations from standards and guidelines used by DDAGW, or special scheduling needs. A pre-design meeting should also be considered essential for an owner unfamiliar with DDAGW's plan review process.

Although plan reviews are completed on a first come first serve basis, DDAGW will make every effort possible to accommodate project schedules. The engineer should contact DDAGW engineering staff if the design is to be substantially changed from what was presented in pre-design meetings.

All plans need to be submitted to the appropriate District Office where they will be separated into two main categories.



received plans are still tracked in the FoxPro Plan Tracking program, and reports for the DRINK Plan Tracking module are still under development, the plan review performance analyses provided for this report are limited to State Fiscal Years (SFY) 1996 through 2002. The State Fiscal Year (for 2002) runs from July 1, (2001) through June 30, (2002).

### **Conflict Resolution**

During the course of the plan review process there may be situations where DDAGW and the owner are unable to reach a mutually acceptable resolution of conflicts. When DDAGW and the engineer (or owner) are unable to resolve a conflict through the normal review process, the following framework should be used to reach a resolution:

1. Conflict between the engineer and the DDAGW reviewing engineer should be referred to the division engineering supervisor.
2. Conflicts between the engineer and the DDAGW engineering supervisor should be referred to the division engineering manager.
3. Conflicts between the engineer and the DDAGW engineering manager should be referred to the division chief.

Should the owner and division chief fail to reach agreement, a Peer Review Panel process was established. Two previous attempts to implement the peer review panel process were unsuccessful.

### **Self-Certification**

The Director may enter into an agreement with any political subdivision or investor-owned public utility that owns or operates a public water system which employs a properly licensed engineer to bypass the normal review process (for detail plans only) for distribution system projects such as water line extensions, elevated finished water storage tanks and booster pumping stations. The plans are approved without further DDAGW review upon certification by the owner's engineer (who must be an officer or employee of the owner) and payment of an administrative service fee. Requirements for self-certification are given in Ohio Revised Code Section 6109.07(A)(2), Ohio Administrative Rule 3745-95-12, and a separate self-certification guidance document.

### **Demonstration Testing**

Pilot testing (or demonstration testing) is required for treatment processes which have not been sufficiently used in the state of Ohio to demonstrate effectiveness or whose performance is site specific. Examples of processes which presently require demonstration are: membrane treatment, granular activated carbon treatment, bag or cartridge filtration, and high rate clarification or filtration technologies. Pilot or demonstration testing is also required for approval of loading rates higher than normally approved for conventional treatment processes. Demonstration studies are required for chloramination proposals.

## **Capability Assurance**

The 1996 Safe Drinking Water Act (SDWA) Amendments included a provision for capability assurance. Capability assurance provisions offer a framework within which the Ohio EPA and water systems can work together to ensure systems acquire and maintain the technical, financial, and managerial capability needed to consistently achieve public health protection objectives of the SDWA. All systems seeking loans from the Drinking Water Assistance Fund need to satisfy capability requirements as well as additional requirements detailed in the Drinking Water Assistance Fund Management Plan. All new community water systems and non-transient non-community water systems that begin operation after October 1, 1999, must also demonstrate technical, managerial and financial capability to meet all National Primary Drinking Water Regulations. A separate capability assurance guidance document is available.

## **Design-Build**

A design-build process has also been developed, although no design-build proposals have been received to date. The process recommends a pre-meeting, approval of general plans, conditional approval of detail plans containing sufficient detail to allow the Ohio EPA to ensure process units comply with Ten States Standards and any other applicable requirements, and approval of as-built detail plans. Any aspect of the as-built plans which is not in conformance with the conditionally approved detail plans will need to be satisfactorily resolved.

## **Statistical Summary**

Prior to the start of the work group meetings, the facilitator asked seventeen of the work group participants a series of questions. The answers to these questions were discussed at the first meeting. Based on this discussion, the Ohio EPA representatives on the work group felt additional information on the Ohio EPA's plan review process and actual plan review statistics should be presented to the work group members to bring everyone to a common point of reference regarding the processing of plans. Information presented regarding detail plan review included:

- Minor plans are retained in the District Offices for review and major plans are forwarded to Central Office for review. The breakdown of the number of plans approved in a given state fiscal year between the District Offices combined and Central Office was: SFY 1996 1267/51; SFY 1997 1371/64; SFY 1998 1449/68; SFY 1999 1603/48; SFY 2000 1533/52, SFY 2001 1551/40 and SFY 2002 1484/51. As such on average about 3.5% of the plans approved are reviewed in Central Office. (Appendix A.3)
- District Offices have a 21 day initial review goal and 90 day (85% of the time) total review goal.
  - The five District Offices combined met the 21 day initial review goal in 83% of the plans approved in SFY 2002. From SFY 1996 to SFY 2002, the District Offices combined met the 21 day initial review goal in an average of

- 78% of the plans approved. (Appendix A.4)
- The five District Offices combined met the 90 day (85%) total review goal in 86% of the plans approved in SFY 2002. From SFY 1996 to SFY 2002, the District Offices combined met the 90 day (85%) total review goal in an average of 85.5% of the plans approved. (Appendix A.5)
- In SFY 2002, the average time for approval of plans reviewed in the District Offices was 67 days (20 days under review, 10 days in Administration/transit and 36 days with the engineer/owner).
- Central Office has a 60 day initial review goal and 180 day (85% of the time) total review goal.
  - Central Office met the 60 day initial review goal in 16% of the plans approved in SFY 2002. From SFY 1996 to SFY 2002, Central Office met the 60 day initial review goal in an average of 76% of the plans approved. There was a noticeable shift in SFY 2001 when 55% of the Central Office plans met the goal. (Appendix A.4)
  - Central Office met the 180 day (85%) total review goal in 31% of the plans approved in SFY 2002. From SFY 1996 to SFY 2002, Central Office met the 180 day (85%) total review goal in an average of 52% of the plans approved. (Appendix A.5)
  - In SFY 2002, the average time for approval of plans reviewed in Central Office was 301 days (187 days under review, 12 days in Administration/transit and 102 days with the engineer/owner). (Appendix A.8)
- The work group asked for information on the number of plans approved vs the number of plans received. During the period SFY 1996 through SFY 2002, neither the District Offices nor the Central Office were able to approve the number of plans received during that period. The District Offices approved 237 (2.6 percent) fewer than the 9228 plans received while the Central Office approved 23 (6.6 percent) fewer than the 346 plans received during that period. (Appendix A.6).
- A separate manual analysis shows the plan review backlog for Central Office plans has remained relatively constant since January 2001 when there were 62 plans (37 less than 180 days, 25 more than 180 days) in the backlog until July 2003 when there were 55 plans (25 less than 180 days, 30 more than 180 days) in the backlog. During that period, the Central Office backlog has been as low as 49 plans and as high as 69 plans.
- A flowchart of the overall plan review process and written summaries of the Central Office and the District Offices plan review processes were provided to the work group. (Appendices A.1 and A.2)
- A list of plan review objectives was provided. These were discussed and revised and later formed the basis for the mission, goals and objectives/guiding principles of plan review. (Mission, Goals and Objectives/Guiding Principles of Plan Review)
- A list of potential improvements as identified by the Central Office Engineering Unit was also discussed. The list identified a number of items which add

- considerable delays to the review process. This list was broken down into major plant design items, backflow prevention items, chemical feed systems items and miscellaneous items. (Appendix B.1) Following discussion of these issues, a similar list was developed for District Office reviewed plans. (Appendix B.2)
- Upon discussion of the plan review statistics, additional questions regarding Central Office plan review times, plan review cycling (comments sent/response received cycles) and the issue of sequencing (new comments added after the first comment letter) were discussed. Additional information was collected and presented to the work group.
    - A breakdown of the Central Office Engineering Unit's time accounting information was analyzed for SFY 1998 to SFY 2002. The information included: total detail plan review hours, the number of plans approved, the average hours per set of plans, estimated total costs of the projects approved, general plan review hours, pilot study review hours and hours spent on other projects. The high number of hours per plan review in SFY 2001 (154 hours per plan) and SFY 2002 (124 hours per plan) compared to the 78 to 101 hours per plan review in SFY 1998 through 2000 appears related to the higher total estimated construction cost of all plans approved during each year (\$64.5 million and \$211.2 million in SFY 2001 and 2002, versus \$47 million to \$77.6 million during SFY 1998 through 2000). (Appendix A.7)
    - Of the 51 sets of plans approved in SFY 2002 by Central Office, 7 sets did not receive any comments, 15 sets received only one comment letter, 8 sets received 2 comment letters, 7 sets received 3 comment letters, 10 sets received 4 comment letters, 3 sets received 5 comment letters and 1 set received 7 comment letters. (Appendix A.9)
      - The review time (days) for each of these reviews was further evaluated and showed an average of 102 days for the initial review, 32 days for the second review, 21 days for the third review, 21 days for the fourth review, 32 days for the fifth review, 8 days for the sixth review, 8 days for the seventh review and 45 days for the final review (this final review includes the average of the last review, for all 51 sets of plans, no matter how many comment/response cycles occurred). (Appendix A.10)
      - While the average initial review time of 102 days significantly exceeded the goal of 60 days, average review times for subsequent reviews were generally within the goal of 30 days. The manual evaluation of the Central Office plan review backlog indicates the backlog is delaying the initial review of plans.
      - The cycling of plans (multiple reviews and revisions) contributes significantly to the total review time for a set of plans as shown by the increase in the average review time of 102 days for no comment letters to 223 days for one, 315 days for two, 380 days for three, 466 days for four, 391 days for five and 442 days for seven comment letters.

- Of the 1484 sets of plans approved in SFY 2002 by the District Offices combined, 764 sets (51%) did not receive any comments, 597 sets (40%) received only one comment letter, 92 sets (6%) received 2 comment letters, 21 sets received 3 comment letters and 10 sets received 4 or more comment letters. (Appendix A.9)
- The review time (days) for each of the 140 plan reviews completed in the Southeast District Office was further evaluated and showed an average of 14 days for the initial review, 21 days for the second review, 18 days for the third review, 21 days for the fourth review and 29 days for the fifth review. (Appendix A.13)
- Items which lead to plan review disagreements in SFY 2002 were identified and listed by the Central Office Engineering Unit. (Appendix A.11)
- Possible sequencing items in SFY 2002 were also identified and listed by the Central Office Engineering Unit. (Appendix A.12)

## Mission, Goals and Objectives/Guiding Principles of Plan Review

### **Mission**

Protect human health by assuring the design and construction of new or substantially modified public water system facilities will be capable of compliance with applicable Ohio drinking water regulations.

### **Goal**

Public water systems are designed, constructed and equipped consistent with generally accepted design and industry standards for such systems.

### **Objectives/Guiding Principles**

#### Safe drinking water

- design is capable of meeting primary drinking water standards under reasonably anticipated conditions,
- design is capable of meeting secondary standards for iron and manganese for community water systems,
- design is capable of meeting water system established goals for hardness,
- distribution system design capable of maintaining pressure under all conditions of flow other than extraordinary circumstances

#### Adequate quantities

- safe yield of source is capable of meeting system demand at design year,
- approved treatment capacity is capable of meeting system demand at design year,
- distribution system adequately sized to provide system demand at design year.

### Assure operational capability

- provide technology within reasonably expected capability of operators of that size system,
- provide for flexibility of operation

### Allow innovative technologies and high rating of conventional technologies

## Substantial Change

“Substantial change” means any change that affects isolation, capacity, flows, water quality, source, distribution or treatment.

- (1) Substantial change shall include but not be limited to the following:
  - (a) For distribution systems: new waterlines; replacement waterlines that change in size, alignment or material; new tanks; modification in storage; new booster stations; changes in pump capacity and auxiliary power;
  - (b) For water sources: any new source or alteration in source, including connection to another source or distribution system; any alteration in collection facilities or equipment; or
  - (c) For treatment facilities: new treatment processes, including facilities, equipment or chemicals; changes in chemical feed capacity, feeder type, application points or sequence; modifications to or removal of treatment processes, equipment or chemicals.
- (2) Substantial change shall not include the following:
  - (a) For distribution systems: waterline cleaning, re-lining, repairs, or like-kind replacement; service connections; and tank maintenance;
  - (b) For water sources: like-kind pump replacement; and
  - (c) For treatment facilities: like-kind replacement of components.

## Key Issues Identification

Key issues were identified by the work group members through a brainstorming exercise. Each person was given several blue dots and two orange dots to identify their priority issues. The orange dots were used to denote “hot topic” items. Following the voting, the issues were organized by common issues and categorized under a general group title. Each group was also labeled with the lead group to work on the activity (Ohio EPA or work group). The work group decided the “Not Plan Review” group of items did not relate directly to plan review and should be handled separately from the plan review issues.

The key issues identified were the basis of the proposed recommendation for plan review process enhancements and as such the basis for the proposed action plan. The following table summarizes the categories and ideas identified by the work group.

<b>TRANSPARENCY OF PROCESS AND STANDARDS</b> (Articulated, Defined Process is transparency of process and others are how to do it)			
<b>REQUIRED VS. RECOMMENDED CRITERIA FOR APPROVAL</b> Working Group	<b>DISPUTE RESOLUTION</b> Working Group	<b>ARTICULATED, DEFINED PROCESS</b> Ohio EPA draft to Working Group	<b>EMERGING TECHNOLOGIES</b> Working Group
15. Divide comment letters into two sections: requirements (must) and recommendations (nice-to-have) (5B/3O)	25. Method for resolving disagreements quickly and efficiently, to everyone's satisfaction (3B/2O)	3. Clearly defined mission/vision, goals, & objectives for plan review, widely shared (1O)	35. Adhere to agreed upon approval criteria for demo studies (4B)
11. Provide fail-safe engineering where feasible (achieve a clarified interpretation) (1O)	24. Revise conflict resolution methodology (1B/2O)	2. Updated checklist guidelines for plan review (for staff & plan-to-plan consistency) (5B/2O)	30. Agency input/involvement on preliminary plan reviews (early, 30/60% complete)
8. Don't expand review comments from first review letter (no sequencing) (2B/2O)	26. Better method for denying or cancelling plans	6. Articulated and documented review process (2B)	
7. Provide precise recommendations on specific changes needed for plan approvability (better directions) (1B)		5. Immediate review upon submission. No approval without payment of fee	
13. Establish a work group to do define required criteria for plan approval (what aspects of reference documents are required)			
12. References should have required and recommended criteria (and reduce the # of references)			
14. Put out a list of "must haves" when plans are submitted and make engineer's address them			

<b>APPROVAL/ SELF-CERTIFICATION BY RULE</b> Working Group	<b>OUTREACH/ EDUCATION</b> Ohio EPA Staff	<b>AGENCY RESOURCES AND TRAINING</b> Ohio EPA Staff	<b>NOT PLAN Review</b> Working Group
19. Bypass plan review with documented/ implemented with QA/QC procedures by owner/engineer (2B/3O)	21./22. Take list of most common review issues and make it a distributable fact sheet. Develop a method to notify and educate submitters of most common reasons for return or delay (4B/1O)	28. Additional plan review staff for major plans (1O)	33. Identify how Ohio EPA can address operational issues outside of plan review. (6B)
16. General permitting system for small projects (i.e., approval by rule) (1B/1O)	23. Identify issues that causes 3 or more comment letters - seek common root causes	29. Provide more field time, opportunities for plan review staff to network with water supply communities (2B)	31. Enforce primary DW rules through MOR review (1B)
17. Improve the self-certification program. (Increase utilization) (1B)	34. Conduct routine training on plan preparation submitted and Ohio EPA review process	1. Relook at defining major and minor plans - reallocate District and Central Office loads	9. Permit flexibility in operation of plants (1B/1O)
27. 120 days agency action or approval by default (with an effective mechanism for denials) (2B)			10. Determination or consensus of communities ability to do a phased construction vs. total upgrade
4. Establish and track goals for all reviews, not just initial review (get managers involved early in problem plans)			36. Further enhance capacity assurance program to ensure that PWS have resources for enhancements
18. Larger communities - self certify them to do their own approvals			
20. Develop rules that take all small projects out of the system, pull DO staff into CO and concentrate all review on major projects			
32. Expedited system for review of small plants (operations - measured by volume or customers)			

## Recommendations for Plan Review Process Enhancements

The Drinking Water Plan Review Work Group identified an overall need to make the Ohio EPA engineering plan review process more transparent (clear/understandable). Ohio EPA needs to clearly articulate to public water systems and their consultants what process and criteria will be used in evaluating plans. The following recommendations address the objective of making the Ohio EPA plan review process more transparent. (The number in parentheses following each item relates the enhancement to the number identifying the item in the Key Issues Identification Chart).

### Defined and Articulated Process

- a. Clearly define goals and objectives for Ohio EPA review of public drinking water engineering plans. (3) (This task was completed by the Drinking Water Plan Review Work Group)
- b. Checklist and procedures staff will use for when reviewing a set of plans. (2,6) (Utilize existing self certification checklists for waterline extensions, storage tanks, pressure reducing stations and air relief valves and pump stations.)

### Ohio EPA Comments

- a. Promote the use of pre-design meetings for certain major plans. Document outcome of meetings.
- b. When making comments provide clearly articulated comments and, when feasible, precise direction as to what changes (in design or submittal) would make plans approvable. (7)
- c. Clearly divide comments letters into required versus recommended comments and include a reference to the basis for the requirement. (15)
- d. No Sequencing. Ohio EPA will not expand comments from the first review, unless deficiencies are revealed through subsequent information. (It is noted that rare exceptions may be required in cases in which a deficiency missed in the initial review is inconsistent with the DDAGW's mandate to protect public health). (8)
- e. Establish and strive to meet turn around time goals for initial and each subsequent review. (4)

### Outreach and Education

The work group identified the need for Ohio EPA to do a better job of providing information to public water system owners and operators and their engineers describing the plan review process and the criteria that will be used for plan approval. As such, written materials and training should be provided.

- a. Distribute goals and objectives for Ohio EPA review of public drinking water engineering plans.
- b. Distribute checklist and procedures staff will use when reviewing a set of plans.

- c. Establish and distribute a fact sheet on what has to be submitted as part of a complete plan submittal (the list of “must haves”); include listing of common omissions (14)
- d. Distribute fact sheet on the most common mistakes, and issues identified in various types of plan submittals. (21, 22, 23)
- e. Conduct training for public water systems and engineers on Ohio EPA plan review process and criteria for approval. (34)

### **Agency Training**

- a. Provide routine training to staff to ensure familiarity with plan review procedures and criteria for approval.
- b. Provide more field time for staff to see the facilities for which they are reviewing engineering plans. (29)

### **Revise and promote self-certification program (17) & general permitting by rule for certain types of plans (16) (20, 32)**

There was recognition that agency resources are limited and that steps can be taken to reduce and redistribute the work load for plan review.

- a. Investigate the use of the “water data sheets” currently used as part of voluntary self-certification process for certain types of plans (i.e. those currently eligible for the self-certification program); if the use of checklists is deemed successful (more complete plans are received, reduces the review time, etc.,) then look to require the use of the “water data sheets” and/or change rules to allow the completed checklist to indicate complete plan package in accordance with requirements with no detailed review completed by Ohio EPA staff; a small percentage of plans would be audited.

### **Agency Resources**

- a. Redefine how plans are allocated between Central and District Offices (i.e. redefine ‘major’ and ‘minor’ plans). (1)
- b. Hire an additional engineer for major plans. (28) This will require a reallocation of staff but is necessary due to the significant time Ohio EPA engineering staff will be committing to policy and guidance review effort.

### **Define Required vs. Recommended Criteria for Plan Approval & Emerging Technology (11, 12, 13, 35)**

The most significant areas of the concern identified by the work group include: the degree to which the engineering plan approval is used to address potential operational error (i.e. fail safe engineering); the uncertainty of what is going to be required by Ohio EPA as a condition of plan approval; the level of subjective interpretation of the criteria used in plan review (loosely defined terms); plans being “held hostage” until conditions for plan approval are met.

- a. Ohio EPA will review each policy, guidance and reference document used when reviewing engineering plans to determine their appropriateness as policy and/or rule in accordance with agency guidelines (this is a current project underway within DDAGW).
- b. Establish a prioritized schedule for reviewing each document to determine agreement with required versus recommended criteria. (This task will be completed in conjunction with DWAC work group).
- c. Establish prioritized schedule to formally adopt each document either as policy or rule;
  - i. this will include formal public notice and opportunity for public comment including interested party review and formal public comment period.
- d. Better define key definitions such as “system demand” and “reasonably anticipated conditions”. Define the level of redundancy to be required.
- e. Continue working with Ohio Section AWWA Technology Committee in establishing required versus recommended criteria for demonstration studies and use of new technology. (35)

#### **Revised Conflict Resolution Process (24, 25, 26)**

- a. Fixed triggers for moving comments up the chain of command.
  - i. Supervisor reviews all comments
  - ii. Manager concurrence on second comment letter
  - iii. Assistant Chief/Chief review and concurrence on third comment letter
  - iv. Fixed trigger to propose approval or denial of fourth submittal (Proposed denial requires legal and Director’s office concurrence that proposed denial is based on legally required criteria). A meeting among engineering staff, public water system representatives and DDAGW senior management should occur before denial is proposed.
  - v. Use of pre-design meetings may identify areas of substantial disagreement that may require an elevated level of review by senior management and/or legal prior to plan submittal.
  - vi. Public water system can request Ohio EPA deny the plans

[Formally adopting the required versus recommended criteria and organizing review letters accordingly as described above, will help focus Ohio EPA review on identifying those areas that would warrant denial of plans. Those items will be identified under the required comments]

# Action Plan

## 1. Defined and Articulated Drinking Water Plan Review Process

Action Items/Substeps	Who is Responsible?	Time Frame	Expected Outcomes/Measure
a. Clearly define goals and objectives for Ohio EPA review of public drinking water engineering plans.	Plan Review Process Enhancement Work Group	Completed	Mission, Goals and Objectives/Guiding Principles of Plan Review document
b. Develop step by step checklist and procedures for Ohio EPA staff to use when reviewing a set of detail plans.	Ohio EPA/DWAC	Ohio EPA will utilize checklists developed by a work group within 60 days of the work group finalizing a checklist	Checklist and procedures. Ohio EPA will report on status of development of checklists and procedures at bi-monthly DWAC meetings

## 2. Ohio EPA Plan Review Comment Letters

Action Items/Substeps	Who is Responsible?	Time Frame	Expected Outcomes
a. Ohio EPA will promote the use of pre-design meetings for certain major plans. Ohio EPA will document outcome of meetings including required versus recommended items and provide references for required items. In general, pre-design meetings should be considered essential for projects with a high degree of complexity, non-standard technologies, unusual features and/or deviations from standards and guidelines used by Ohio EPA. Ohio EPA will develop a standard agenda for use during the pre-design meetings.	Ohio EPA	Ohio EPA will continue to promote pre-design meetings when appropriate	Increased number of pre-design meetings. Better documentation of meeting outcomes. Standard agenda for pre-design meetings. The standard agenda should include expected outcomes of the pre-design meeting and discussion of other compliance issues Ohio EPA has identified at the public water system. Ohio EPA to track and report on the number of pre-design meetings held.
b. When making comments provide clearly articulated comments and, when feasible, precise direction as to what changes (in design or submittal) would make plans approvable.	Ohio EPA	Immediately	Fewer comment letters from Ohio EPA. Shorter review times. Ohio EPA will track and report on the length of initial reviews, subsequent reviews and total review times quarterly.

<p>c. Clearly divide comments letters into required versus recommended comments and include a reference, such as 10-States to the basis for the requirement.</p>	<p>Ohio EPA</p>	<p>Central Office - October 31, 2003 District Offices - February 28, 2004</p>	<p>Clearer comments from Ohio EPA. Shorter review times. Comment letters will be reviewed by managers and supervisors to ensure comment letters are divided into required versus recommended comments.</p>
<p>d. No Sequencing. Ohio EPA will not expand comments from the first review, unless significant deficiencies are revealed through subsequent information. (It is noted that rare exceptions may be required in cases in which a deficiency missed in the initial review is inconsistent with the DDAGW mandate to protect public health).</p>	<p>Ohio EPA</p>	<p>Immediately</p>	<p>Shorter review times. Staff will notify supervisors and/or managers when they believe that a comment is sequencing. Comment letters will be reviewed by managers and supervisors to ensure sequencing is not occurring.</p>
<p>e. Meet performance goals for initial, subsequent reviews and total review times. Ohio EPA has the following goals for plan review activities: <u>District Offices</u> -Initial and subsequent reviews - 21 days -Total review time - 90 days, 85% of the time <u>Central Office</u> -Initial reviews - 60 days -Subsequent reviews - 30 days -Total review time - 180 days, 85% of the time</p>	<p>Ohio EPA</p>	<p>Immediately</p>	<p>Ohio EPA meeting initial, subsequent and total review time performance goals. Shorter review times. Ohio EPA will track and report on the length of initial reviews, subsequent reviews and total review times quarterly.</p>

### 3. Define Required vs. Recommended Criteria for Plan Approval & Emerging Technology

Action Items/Substeps	Who is Responsible?	Time Frame	Expected Outcomes
<p>a. Establish a DWAC subgroup to define required versus recommended criteria for approval of each source and treatment processes:</p> <ul style="list-style-type: none"> <li>i. Review Ten States Standards to establish Ohio specific standards (this includes concurrence on required versus recommended criteria and necessary clarifications)</li> <li>ii. Review each policy, guidance and reference document used when reviewing engineering plans to determine whether they should be required or recommended criteria and their appropriateness as policy and/or rule</li> <li>iii. Establish prioritized schedule to formally adopt each document either as policy or rule. This will include formal public notice and opportunity for public comment including interested party review and formal public comment period.</li> <li>iv. Develop fact sheets and checklists that present required versus recommended criteria in simplified format.</li> </ul>	Ohio EPA/DWAC subgroup	First meeting by October 30, 2003	Checklists developed by the subgroup must be reviewed by Ohio EPA Legal staff to determine if document is rule or guidance
<p>b. Ohio EPA will review each policy, guidance and reference document used when reviewing engineering plans to determine their appropriateness as policy and/or rule in accordance with Ohio EPA guidelines.</p>	Ohio EPA	Completed	Development of policy and/or rule in accordance with Ohio EPA guidelines
<p>c. Establish a prioritized schedule for reviewing each document to determine agreement with required versus recommended criteria.</p>	Ohio EPA/DWAC	December 31, 2003	A prioritized schedule for reviewing each document to determine agreement with required versus recommended criteria.
<p>d. Establish prioritized schedule to formally adopt each document either as policy or rule;</p> <ul style="list-style-type: none"> <li>i. This will include formal public notice and opportunity for public comment including interested party review and formal public comment period.</li> </ul>	Ohio EPA/DWAC	To be developed once the review of the documents is completed	A prioritized schedule to formally adopt each document either as policy or rule

e. Better define key definitions such as "system demand" and "reasonably anticipated conditions". Define the level of redundancy to be required.	Ohio EPA and Ohio Section AWWA Technology Committee	Ohio EPA and Ohio Section AWWA Technology Committee to determine time frame for completing activity	Definitions for "system demand", "reasonably anticipated conditions" and level of redundancy required
f. Continue working with Ohio Section AWWA Technology Committee in establishing required versus recommended criteria for demonstration studies and use of new technology.	Ohio EPA and Ohio Section AWWA Technology Committee	On-going	Guidance documents

#### 4. Revised Conflict Resolution Process

Action Items/Substeps	Who is Responsible?	Time Frame	Expected Outcomes
a. Fixed triggers for moving comments up the chain of command. i. Supervisor reviews all comments ii. Manager concurrence on second comment letter iii. Asst. Chief/Chief review and concurrence on third comment letter iv. Fixed trigger to propose approval or denial of fourth submittal (Proposed denial requires legal and Director's office concurrence that proposed denial is based on legally required criteria). A meeting among engineering staff, public water system representatives and DDAGW senior management should occur before denial is proposed.	Ohio EPA	Training completed by January 31, 2004  Implement beginning February 1, 2004	Shorter review time for detailed plans.
b. Use of pre-design meetings may identify areas of substantial disagreement that may require an elevated level of review by senior management and/or legal prior to plan submittal.	Ohio EPA	On-going	Identification of areas of disagreement.
c. Public water system can request Ohio EPA deny the plans	Public Water Systems	Immediate	Denial of plans.

## 5. Outreach and Education

Action Items/Substeps	Who is Responsible?	Time Frame	Expected Outcomes
a. Distribute Mission, Goals and Objectives/Guiding Principles of Plan Review document for Ohio EPA review of public drinking water engineering plans.	Ohio EPA	Internet-Immediately Mail out - November 30, 2003	Better understanding of Ohio EPA goals and objectives as it relates to DDAGW plan review.
b. Distribute checklist and procedures staff will use when reviewing a set of plans for source and treatment processes.	Ohio EPA/DWAC	As checklists and procedures become available	Fewer comment letters from Ohio EPA. Shorter review times.
c. Distribute checklist and procedures for self-certification staff will use when reviewing a set of plans.	Ohio EPA/DWAC	December 31, 2003	Fewer comment letters from Ohio EPA. Shorter review times.
d. Develop and distribute list or fact sheet on what has to be submitted as part of a complete plan submittal (the list of "must haves")	Ohio EPA	Develop by December 31, 2003 Distribute by March 30, 2003	More complete plan submittals. Fewer comment letters from Ohio EPA. Shorter review times. Ohio EPA will track number of plans approved with no comment letter.
e. Develop and distribute fact sheet on the most common mistakes, and issues identified in various types of plan submittals.	Ohio EPA	Development - Completed Distribution - November 30, 2003	More complete plan submittals. Fewer comment letters from Ohio EPA. Shorter review times.
f. Conduct training for public water systems and engineers on Ohio EPA plan review process and criteria for approval.	Ohio EPA	Conduct presentation at state 2003 meeting, spring 2004 AWWA district meetings, OTCO Water Workshop (3/04) and a Consulting Engineers Council meeting. Conduct other presentations as requested.	Conduct presentations by June 30, 2004. Ohio EPA will report on presentations given.
g. Develop list of emerging technologies and high rating projects implemented in Ohio as of 8/1/03	Ohio EPA	December 31, 2003  Ohio EPA will update the list annually	Development of list. List posted on DDAGW web page. Distribute list to Ohio EPA District Offices
h. Revise/update and distribute <i>Ohio EPA Plan Review Procedures For Drinking Water Facilities May 24, 1999</i> based on changes from the DWAC - Plan Review Workgroup	Ohio EPA	February 28, 2004	Revised and distribute document

i.	Ohio EPA will conduct outreach and education to interested parties as requested.	Ohio EPA	N/A	Better understanding of DDAGW Drinking Water plan review process
j.	Ohio EPA will report on the implementation of the DWAC Plan Review Workgroup Action Plan.	Ohio EPA	Report to DWAC at the September 2003 meeting and semi-annually thereafter.  Report annually to AWWA, Ohio Consulting Engineers Council, etc.	Inform drinking water community on the status of the implementation of the Action Plan.
k.	Ohio EPA sponsored meetings to inform drinking water community of revisions to the drinking water plan review process	Ohio EPA		Better informed regulated community. More complete submittals. Shorter review times

## 6. Ohio EPA Staff Training

	<b>Action Items/Substeps</b>	<b>Who is Responsible?</b>	<b>Time Frame</b>	<b>Expected Outcomes</b>
a.	Provide routine training to staff to ensure familiarity with plan review procedures and criteria for approval. Have consultant or public water system participate in the training so Ohio EPA obtains feedback about their expectations	Ohio EPA	Ohio EPA will conduct routine plan review meetings with engineering staff. The first meeting will be held in January 2004 at the DDAGW quarterly training.	Better trained staff. Consistent plan reviews.
b.	Provide more field time for staff to see the facilities for which they are reviewing engineering plans.	Ohio EPA	Immediately	Better trained staff. Better communication with the regulated community.

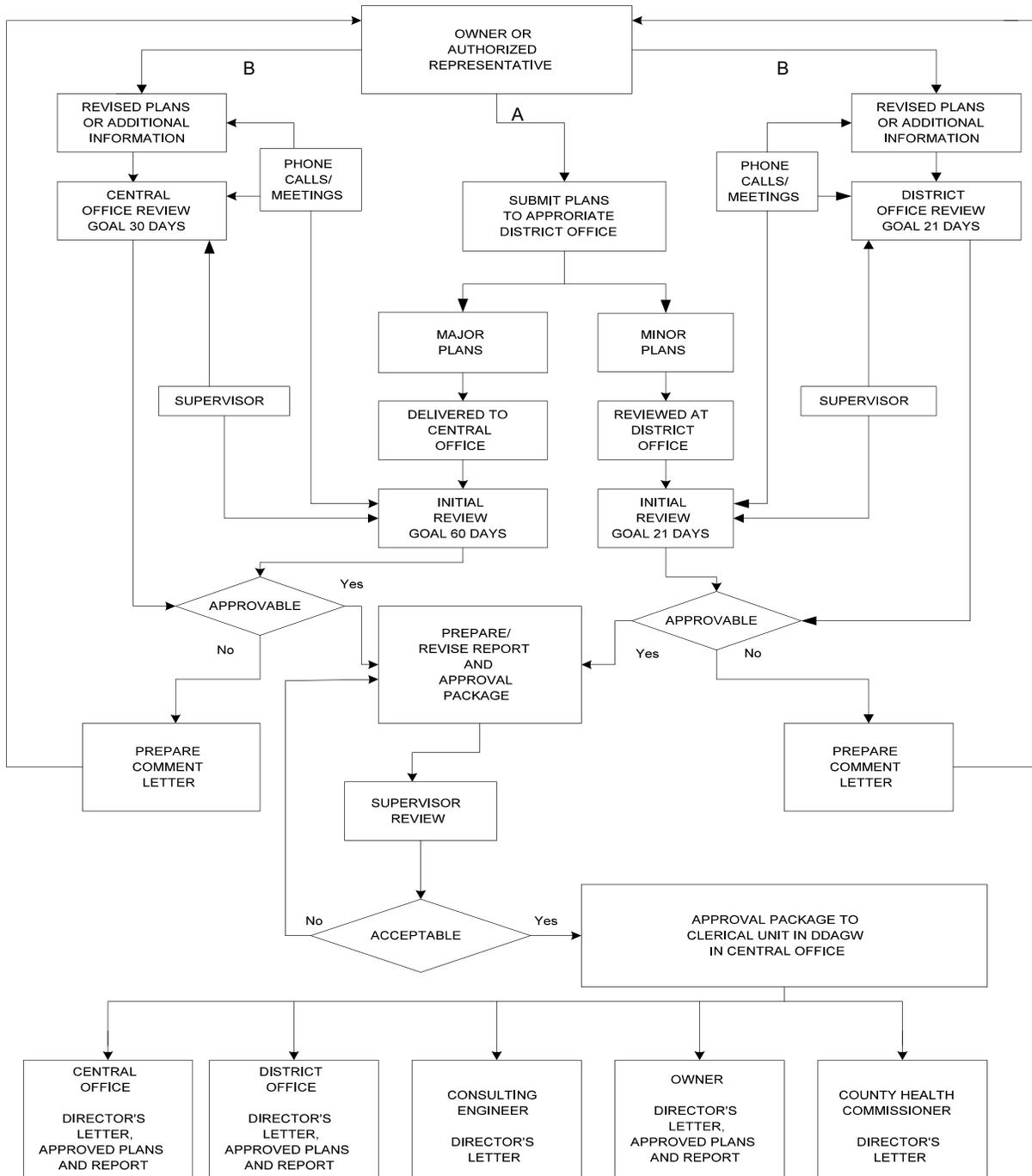
**7. Revise and promote self-certification program & general permitting by rule for certain types of plans**

Action Items/Substeps	Who is Responsible?	Time Frame	Expected Outcomes
a. Ohio EPA will promote the use of the existing self-certification program to eligible public water systems.	Ohio EPA	On-going	Greater use of self-certification program. Shorter total review times of detail plans.
b. Develop a pilot program to promote the use of the "checklists" currently used in the existing Ohio EPA self-certification program to extend the distribution facilities of a system, increase the number of service connections to its system, add distribution pump stations or add storage tank(s) in its distribution system.	Ohio EPA	Initiate the pilot program by March 31, 2004	A pilot project to gather information concerning the use of the self-certification checklists as a tool to shorten plan review times. During the pilot project detail plans will be verified against the self-certification checklists. Ohio EPA Legal will conduct a review to determine if regulatory or statutory changes are necessary to require the use of existing self-certification checklists.
c. Ohio EPA will evaluate the pilot project	Ohio EPA	Evaluation completed by September 30, 2004	Determine the effectiveness of the use of the self-certification checklists
d. Based on the evaluation of the pilot program Ohio EPA will implement a program to require the use of the "checklists" currently used in the existing its self-certification program to extend the distribution facilities of a system, increase the number of service connections to its system, add distribution pump station(s) or add storage tank(s) in its distribution system.	Ohio EPA	If no regulatory or statutory changes are needed to require the submittal of the self-certification checklists - October 31, 2004  If regulatory or statutory changes are needed to require the submittal of the self-certification checklists - March 31, 2005	More complete plan submittals. Fewer comment letters from Ohio EPA.
e. Promote the use of the source and treatment process checklists as they are developed	Ohio EPA	Immediately following the development of the checklists.	More complete detail plan submittals. Shorter Ohio EPA approval times.

**8. Ohio EPA Resources**

Action Items/Substeps	Who is Responsible?	Time Frame	Expected Outcomes
a. Review how plans are allocated between Central and District Offices (i.e. redefine 'major' and 'minor' plans).	Ohio EPA	April 30, 2004	Make changes In Ohio EPA plan review process as appropriate
b. Hire an additional engineer for major plans. This will require a reallocation of staff but is necessary due to the significant time Ohio EPA engineering staff will be committing to policy and guidance review effort.	Ohio EPA	November 3, 2003	Shorter Ohio EPA approval times.

# Appendix A.1 DDAGW-DW Plan Review Flowchart



July 1, 2003

## Appendix A.2 Plan Review Process District Office and Central Office Plans

### **District Office Plans**

(Based on the process currently in place in the Southeast District Office)

1. Plan package received in District Office. Documents are date stamped by receptionist and the check is logged in a paper log and in revenue log. Plan package is given to the District Office Administrative Assistant (DO-AA) who determines if the fees are correct and if the package is administratively complete. If not, the DO-AA holds the package and contacts the engineer/owner to request additional information. Once the package is complete, the DO-AA will log the project, stamp plans with payment information, process the check, complete multimedia input forms and give the plan package to the DDAGW-AA. The DDAGW-AA enters the plans into DRINK plan tracking module to establish plan number and revenue ID. The DDAGW-AA returns a copy of the application sheet to the DO-AA with the new information and gives the plan package to the DDAGW Supervisor.
  
2. The supervisor decides if the plans are to be reviewed in the District or Central Office.

If plans are to be reviewed in the District Office, they assign plans to a plan review engineer through the DRINK plan tracking module, update the plan tracking database as needed and deliver the plans to the plan review engineer.

If plans are to be reviewed in Central Office, the District Office supervisor coordinates with the staff member assigned to oversee the facility to see if we want to provide general comments on the project. The supervisor then prepares a cover memo with or without comments and sends the plan package to Central Office.

3. Plan review engineer:
  - Reviews plan sheets.
  - Reviews specifications.
  - Identify relevant reference documents.
  - Talk to staff member assigned to oversee the facility or review the water system files to identify any documented unresolved water system deficiencies, if applicable for the project.
  - Make notes of plan features and possible issues; (some plan review engineers may draft the plan approval report at this stage and others may draft the report after the plans are approvable).
  - Discuss any unusual features or issues with the supervisor.

Appendix A.2  
Plan Review Process  
District Office and Central Office Plans  
(continued)

- Draft comment letter if required.
  - Supervisor and/or manager review of draft comment letter.
  - Send comment letter.
  - Enter into DRINK plan tracking module.
4. Response received from owner or engineer; enter into DRINK plan tracking module.
  5. Review response against comment letter, plans and any revised plan sheets. Check off items adequately addressed.
  6. Prepare an additional comment letter if necessary. Supervisor and/or manager review draft comment letter and enter into DRINK plan tracking module.
  7. Response received from owner; enter into DRINK plan tracking module.
  8. Repeat steps 5 through 8 as necessary.
  9. Once all issues are resolved and approvable plans are received, prepare the plan approval package.
    - Two sets of plans. (One set is held in the District Office)
    - Plan approval report if appropriate.
    - Plan review work sheet.
    - Draft Director's Letter
  10. Final engineering supervisor review and sign off; enter into DRINK plan tracking module. Final manager review and sign off.
  11. Forward plan approval package to the Clerical Unit in DDAGW.
    - Prepare plan approval letter, apply Director's signature as delegated.
    - Stamp approved plans.
    - Mail out approval letters, approved plans and plan approval reports.
    - Issue public notice.
  12. Receive a copy of the final Director's letter; enter into DRINK plan tracking module. Close out DRINK tracking.

Appendix A.2  
Plan Review Process  
District Office and Central Office Plans  
(continued)

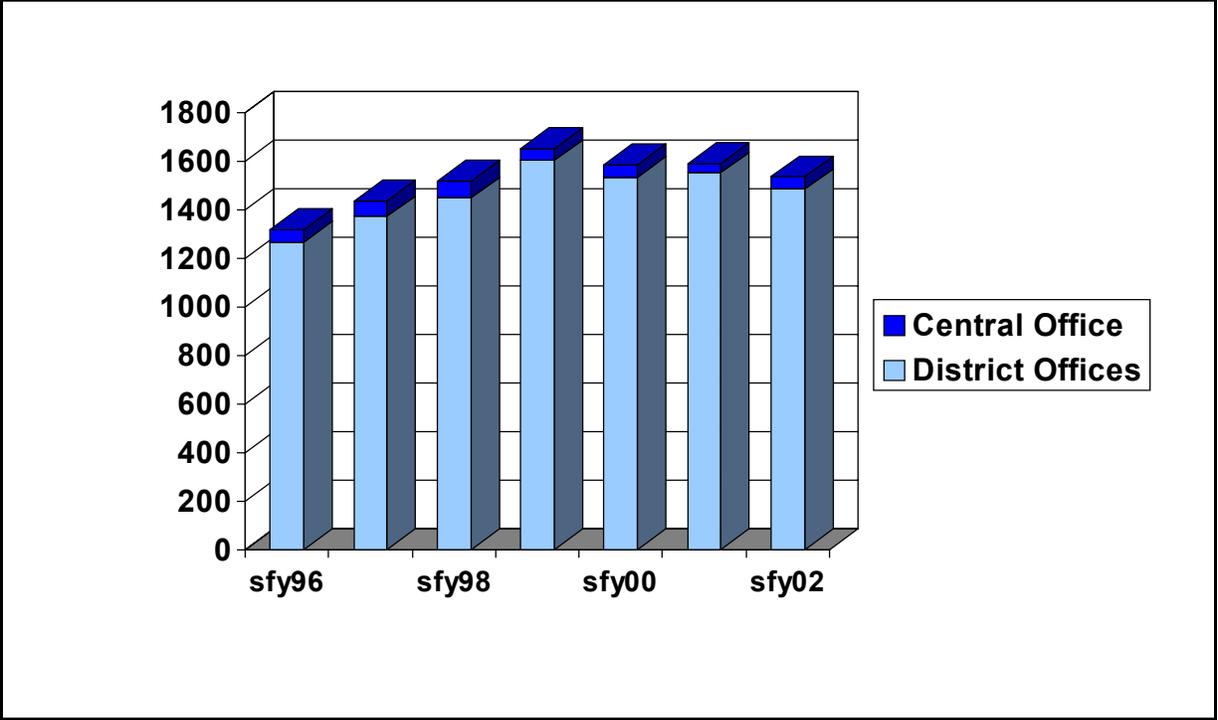
**Central Office Plans**

1. Plans received in Central Office from a District Office.
2. Supervisor logs plans into DRINK plans tracking module and in manual log book.
3. Supervisor assigns plans to a plan review engineer; enter into DRINK plan tracking module.
4. Plan review engineer:
  - Reviews plan sheets.
  - Reviews specifications.
  - Identify relevant reference documents.
  - Reviews water system files and contacts District Office to identify any documented unresolved water system deficiencies.
  - Make notes of plan features and possible issues; some plan review engineers may draft the plan approval report at this stage and others may draft the report after the plans are approvable).
  - Discuss plans and notes with supervisor; discuss any unusual features or issues with the section manager.
  - Draft comment letter if required.
  - Supervisor review of draft comment letter.
  - Send comment letter.
  - Enter into DRINK plan tracking module.
5. Response received from owner or engineer; enter into DRINK plan tracking module.
6. Review response against comment letter, plans and any revised plan sheets. Check off items adequately addressed.
7. Discuss any outstanding issues with supervisor, discuss disagreements with manager, prepare an additional comment letter if necessary, enter into DRINK plan tracking module; recommend meeting to resolve outstanding disagreements before submitting a written response.
8. Meet with owner and/or engineer if requested; enter into DRINK plan tracking module.

Appendix A.2  
Plan Review Process  
District Office and Central Office Plans  
(continued)

9. Response received from owner; enter into DRINK plan tracking module.
10. Repeat steps 6 through 9 as necessary.
11. Once all issues are resolved and approvable plans are received, prepare the plan approval package.
  - Three sets of plans.
  - Plan approval report (three copies).
  - Plan review work sheet.
12. Final engineering supervisor review and sign off; enter into DRINK plan tracking module.
13. Final section manager review and sign off; enter into DRINK plan tracking module.
14. Forward plan approval package to the Clerical Unit in DDAGW.
  - Prepare plan approval letter, apply Director's signature as delegated.
  - Stamp approved plans.
  - Mail out approval letters, approved plans and plan approval reports.
  - Issue public notice.
  - Close out DRINK tracking.

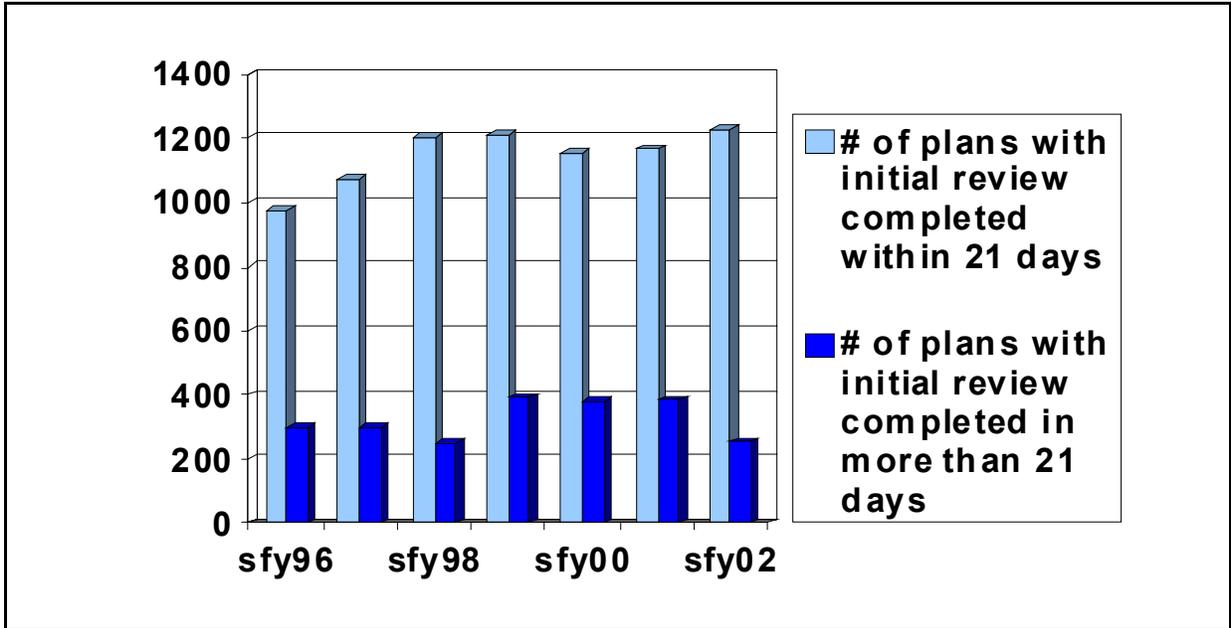
### Appendix A.3 Plan Review Distribution



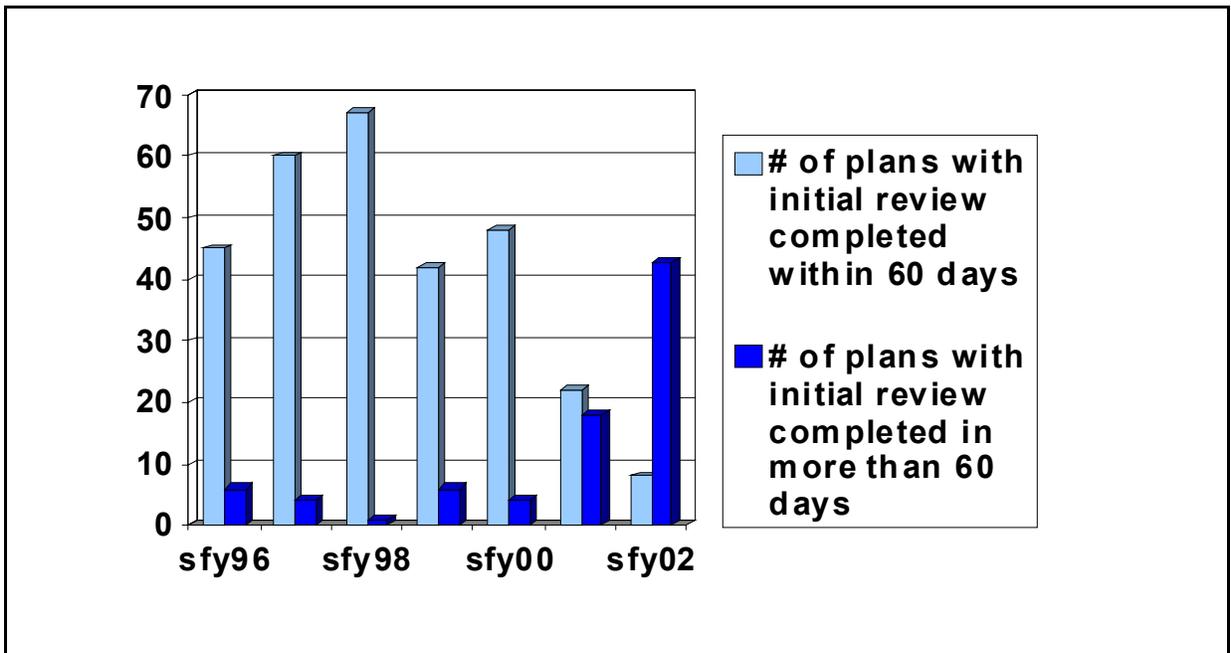
Number of Plans Approved (DO/CO):	SFY96:	1267/51
	SFY97:	1371/64
	SFY98:	1449/68
	SFY99:	1603/48
	SFY00:	1533/52
	SFY01:	1551/40
	SFY02:	1484/51

Appendix A.4  
Initial Plan Review Performance

District Office Plan Reviews - 21 Day Initial Review Goal

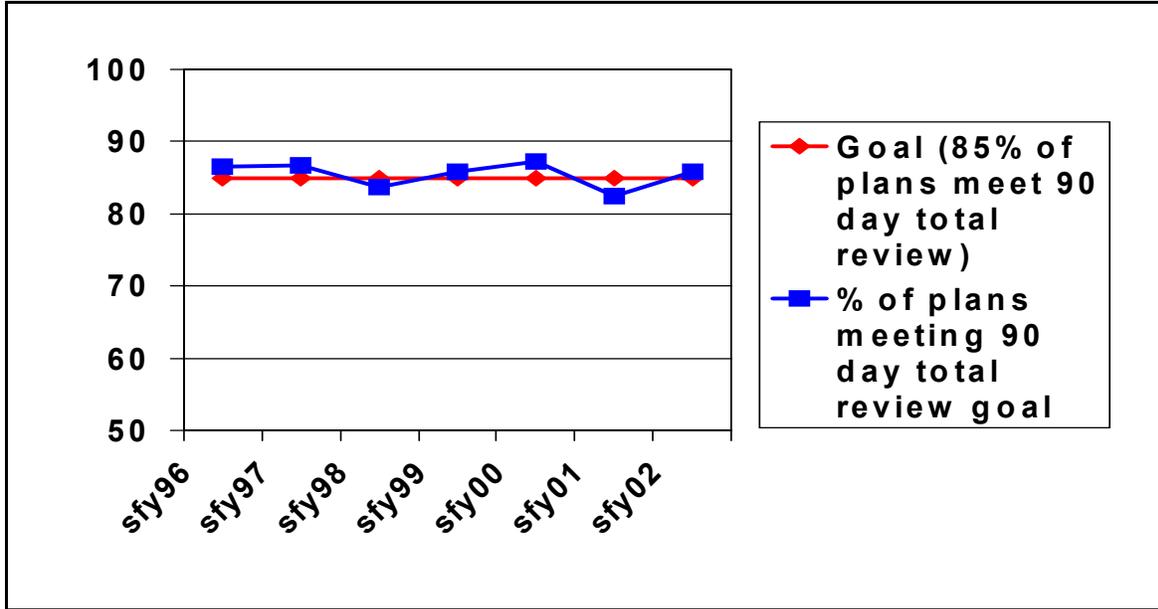


Central Office Plan Reviews - 60 Day Initial Review Goal

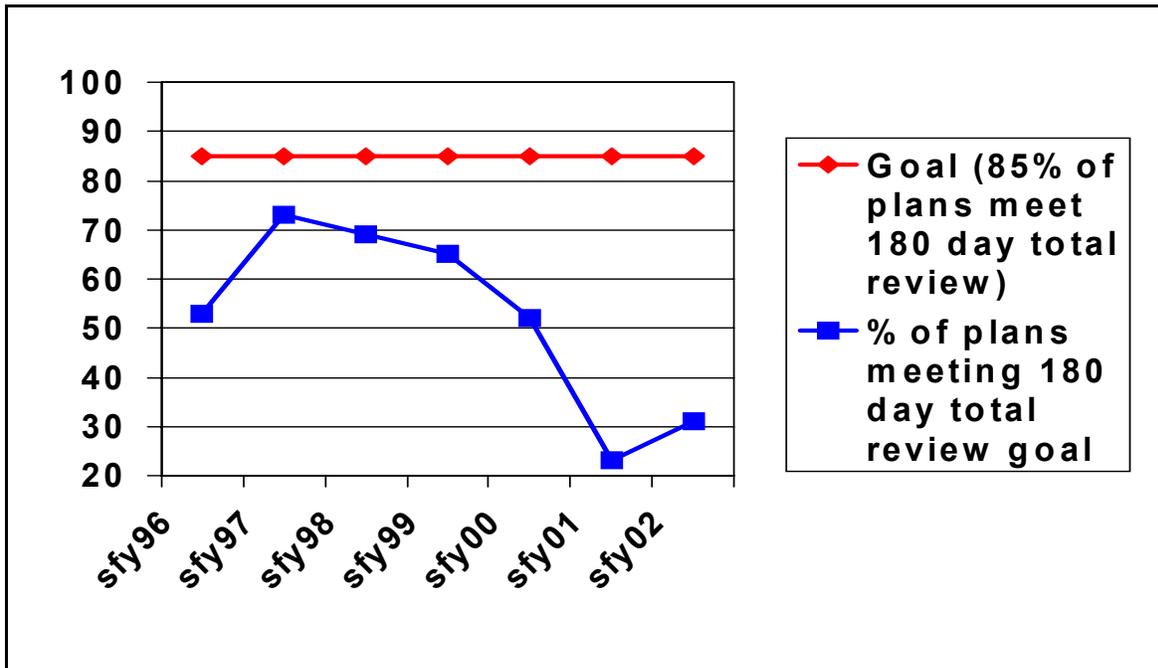


Appendix A.5  
Total Plan Review Performance

District Office Plan Reviews - Percent Meeting 90 Day Total Review Goal

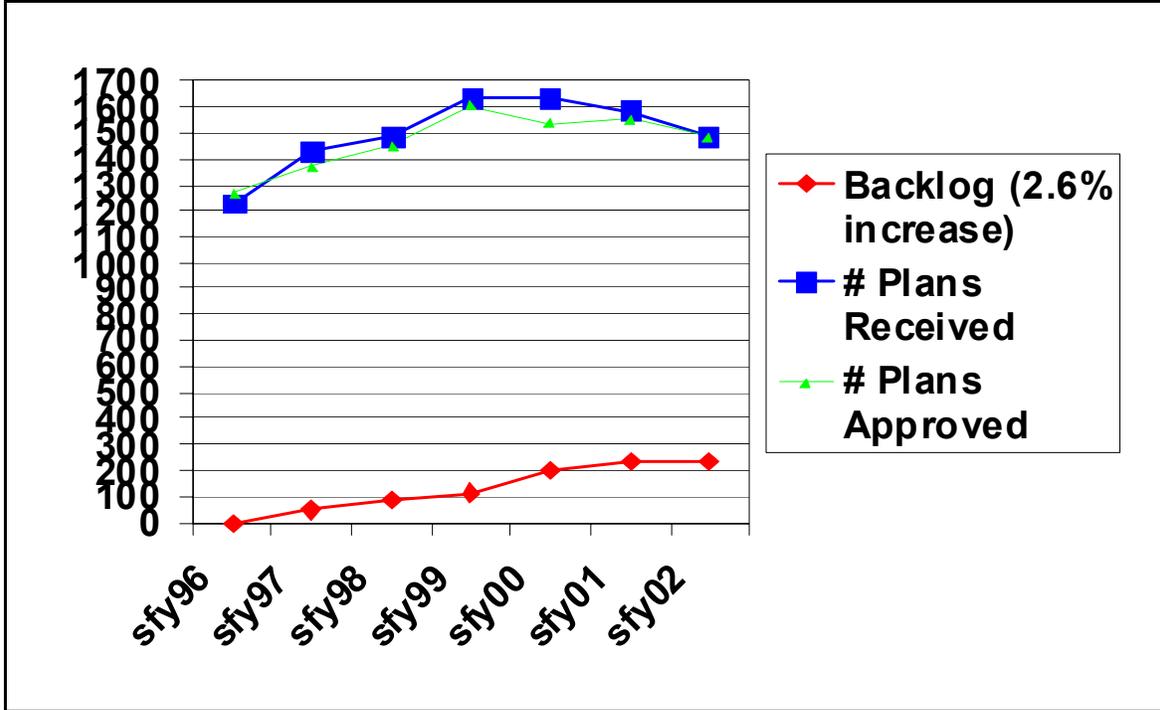


Central Office Plan Reviews - Percent Meeting 180 Day Total Review Goal

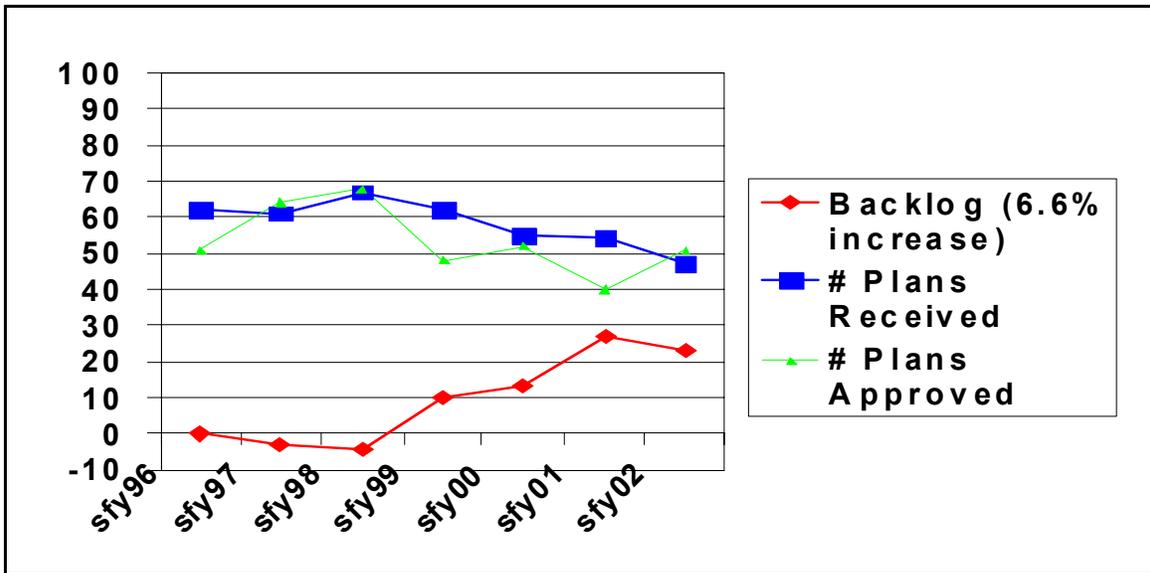


## Appendix A.6 Plans Backlog

### District Office - Plans Received vs. Plans Reviewed



### Central Office - Plans Received vs. Plans Reviewed



**Appendix A.7**  
**TAS Analysis for Central Office Engineering Group**  
**SFY 1998 to SFY 2002**

Records from the Ohio EPA Time Accounting System (TAS) were analyzed for the Central Office engineering group for state fiscal years 1998 through 2002. Results are summarized below. All figures are in hours, unless otherwise noted.

<b>Category</b>	<b>SFY 1998</b>	<b>SFY 1999</b>	<b>SFY 2000</b>	<b>SFY 2001</b>	<b>SFY 2002</b>
Detail plan review	5,249 <sup>1</sup>	4,494	5,059	5,989	6,321
No. of plans approved	67	47	52	39	51
Hours per plan	78	96	101	154	124
Total estimated construction cost for all plans approved	\$77.6M	\$45.4M	\$37.3M	\$64.5M	\$211.2M
General plan review	216	133	114	266	598
Pilot Studies	414	651	700	272	754
Rules & Policies	216	97	499	785	459
Needs survey	0	624	0	0	0
General Administration	1,197	1,455	1,928	1,188	875
Other *	2,388	2,443	2,226	1,801	1,669
<b>Totals</b>	<b>9,680<sup>1</sup></b>	<b>9,897<sup>2</sup></b>	<b>10,526</b>	<b>10,301<sup>3</sup></b>	<b>10,676</b>

\* Includes leave, and miscellaneous activities

<sup>1</sup> FY 1998 reports do not capture the first 520 hours for the group due to late implementation of TAS; down one engineer from April 26, 1998 to June 30, 1998

<sup>2</sup> Down one engineer from July 1, 1998 to Oct. 13, 1998

<sup>3</sup> Down one engineer from Oct. 14, 2000 to Nov. 18, 2000

**Engineering Group Staffing History:**

Fall of 1994	J. Hamill, S. Prakash, S. Bansal, H. Kaake
April 25, 1998	H. Kaake left
Oct. 13, 1998	Pat Fassnacht started
Oct. 13, 2000	Pat Fassnacht left
Nov. 19, 2000	Maria Lucente started

Appendix A.8  
Central Office  
Plan Review Time Distribution

Location	Average Number of Days/Percent of Time						
	SFY96	SFY97	SFY98	SFY99	SFY00	SFY01	SFY02
In Review Office	57.6 d	59.4 d	73.8 d	89.5 d	114.0 d	159.5 d	186.7 d
	50%	36%	35%	55%	48%	54%	62%
In Administration/ Transit	6.5 d	12.4 d	12.1 d	8.9 d	9.9 d	13.0 d	11.5 d
	6%	7%	6%	6%	4%	4%	4%
With Owner/ Engineer	50.5 d	94.2 d	125.3 d	63.1 d	115.9 d	125.2 d	102.3 d
	44%	57%	59%	39%	48%	42%	34%
Total	114.6 d	166.0 d	211.2 d	161.5 d	239.8 d	297.7 d	300.5 d
	100%	100%	100%	100%	100%	100%	100%

	SFY96	SFY97	SFY98	SFY99	SFY00	SFY01	SFY02
Number of plans	50	64	67	47	52	39	51
Total Estimated Construction Cost	\$55.2M	\$157.5M	\$77.6M	\$45.4M	\$37.3M	\$64.5M	\$211.2M

## Appendix A.9 Number of Comment Letters

Central Office, SFY 1996 - SFY2003

Number of Comment Letters	Number of Plans							
	SFY96	SFY97	SFY98	SFY99	SFY00	SFY01	SFY02	Total SFY 96-02
0	3	4	2	10	6	4	7	36
1	15	25	20	14	17	8	15	114
2	20	23	23	13	12	12	8	111
3	8	9	14	5	7	8	7	58
4	2	2	6	1	7	2	10	30
5	1	0	1	3	1	2	3	11
6	0	1	0	1	0	2	0	4
7	1	0	1	0	2	1	1	6
Total	50	64	67	47	52	39	51	370

There is one more review (the final review) than there are comment letters.

District Offices, SFY 2002

Number of Comment Letters	Number of Plans (Percent of Plans)					
	CDO	NEDO	NWDO	SEDO	SWDO	All Districts
0	53 (33%)	210 (43%)	227 (71%)	57 (41%)	217 (58%)	764 (51%)
1	92 (57%)	230 (47%)	77 (24%)	62 (44%)	136 (36%)	597 (40%)
2	14 (9%)	35 (7%)	12 (4%)	15 (11%)	16 (4%)	92 (6%)
3	1 (<1%)	10 (2%)	1 (<1%)	4 (3%)	5 (2%)	21 (2%)
4	1 (<1%)	6 (1%)	1 (<1%)	2 (1%)	0	10 (1%)
Total	161	491	318	140	374	1484

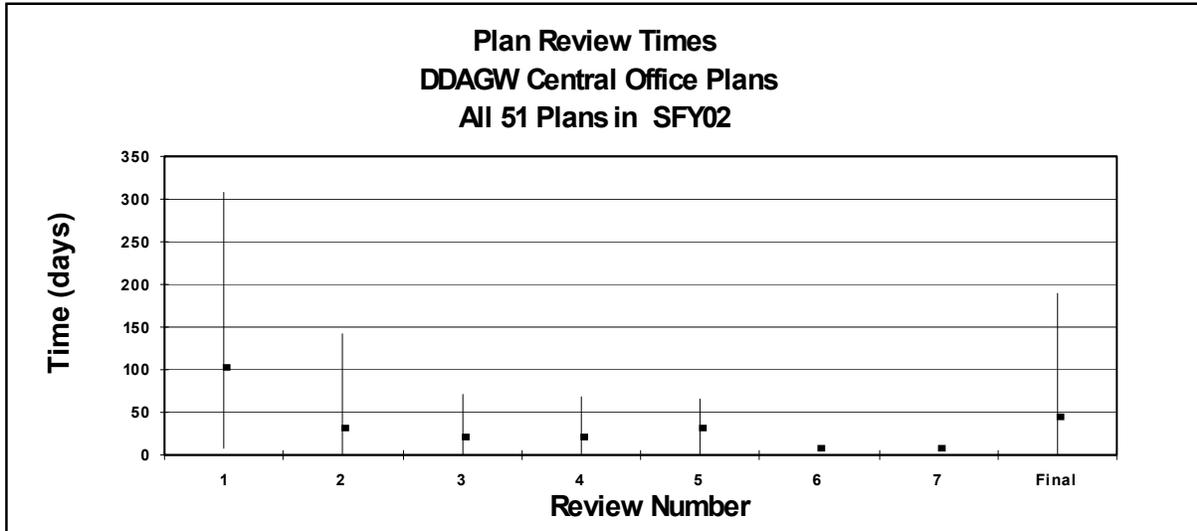
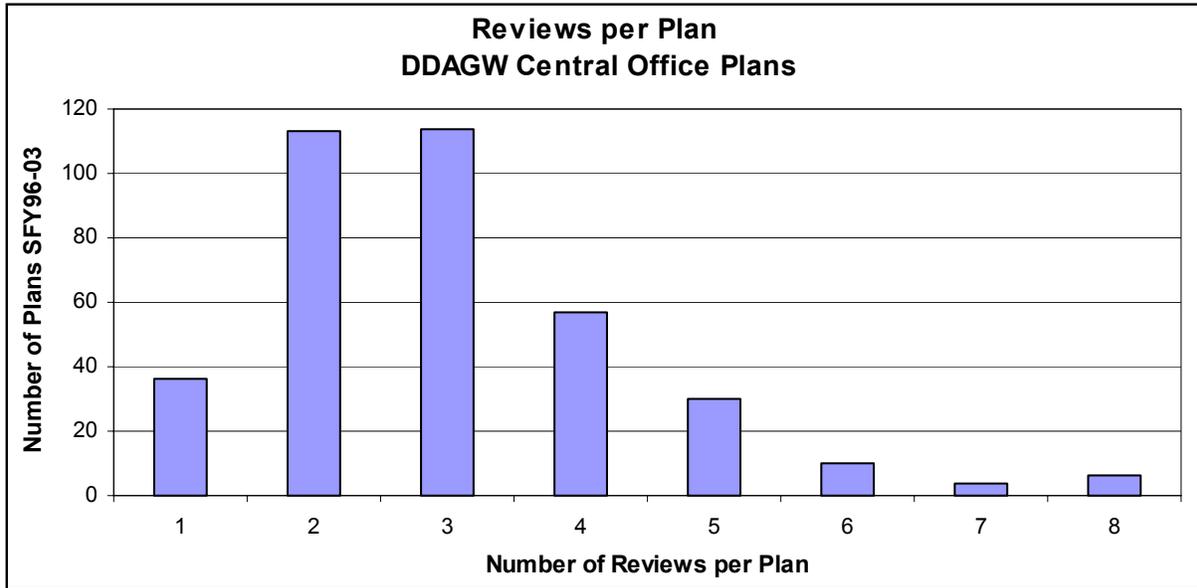
## Appendix A.10 Central Office Plan Review Turn-Around Times SFY 2002

Ohio Environmental Protection Agency  
Division of Drinking and Ground Waters  
Plan Review Analysis May 13, 2003  
Central Office in SFY 2002

Number of Comment Letters	Range	# of Plans	Number of Days in Reviewing Office per Review								Total Days with Ohio EPA	Total # of Days for Approval	
			1st Review	2nd Review	3rd Review	4th Review	5th Review	6th Review	7th Review	Final Review			
0	Range Average	7									28 to 151 84.1	42 to 172 101.7	42 to 172 101.7
1	Range Average	15	8 to 217 102.7								2 to 190 64.2	65 to 408 180.8	84 to 455 222.8
2	Range Average	8	80 to 137 110.1	0 to 75 25.9							17 to 105 40.8	134 to 286 204.6	169 to 426 315.5
3	Range Average	7	50 to 307 118.1	0 to 84 26.6	0 to 33 11.1						4 to 93 25.6	91 to 330 237.4	140 to 440 380
4	Range Average	10	37-177 88	3-143 37.5	0-59 22.9	0 to 36 13.8					1 to 35 17.3	77 to 305 190.3	274 to 1128 466.2
5	Range Average	3	63 to 85 76.7	13 to 107 55.3	0-71 26.7	3 to 46 29.3	1 to 47 21.3				7 to 28 14.3	114 to 337 237.4	182 to 529 390.7
6	Range Average	0											
7	Range Average	1	124 124	4 4	48 48	69 65	65 65	8 8	8 8		18 18	363 363	442 442
<b>Weighted Average</b>													
<b>Total</b>	<b>Range Average</b>	51	8 to 307 101.9	0 to 143 32.3	0-71 20.7	0-69 21.1	1 to 65 32.3	1 to 190 8	8 8		18 44.9	42 to 408 186.7	42 to 1128 300.5

There is one more review (the final review) than there are comment letters for each set of plans.  
Goal for initial review is 60 days.  
Goal for subsequent reviews is 30 days.

Appendix A.10  
 Central Office Plan Review Turn-Around Times  
 SFY 2002  
 (continued)



## Appendix A.11 Central Office Plan Review Disagreements in SFY 2002

- Air gap in sludge discharge line.
- Air gap between backwash waste pipe and backwash waste tank.
- Reservoir expansion separated into two phases. First phase plans did not have inlet and outlet on opposite ends of reservoir and two reservoirs could not operate independently.
- Provision of elevated storage. Not provided due to limited funding but accepted providing at some future date.
- Provision of a backup backwash supply pump. Asked us to reconsider three times and on third response finally stated will supply a backup pump to be stored on shelf until needed if one pump goes down.
- Separate feed systems for pre and post chlorination.
- Overflow and vent combined into one pipe for bulk sodium hypochlorite tank. Response indicated not enough room for two pipes and did not make this change. We allowed it to be combined.
- Requirement that proposed and existing bypass piping of filters be removed at a ground water treatment plant. Response removed proposed bypass for new filters, but maintained existing bypass for existing filters on premise it was never used. We allowed it to remain.
- Filter media depth.
- Use of used cooling tower for aerator.
- Disagreement on redundancy for arsenic removal.
- Need to submit plans for previously relocated pac feed system.
- Diesel tank within 300 feet of wells; Well field Capacity; 100 year flood elevation; well casing three feet above 100 year flood; flow meters on each well; restroom and sanitary sewer within 300 feet of wells; Arsenic removal capability; barrier to the passage of vehicle through plant; bypass of the filtration units; overloading of filters during backwash; chemical day tank sizes; under and over sizing of chemical metering pumps; sanitary sewage in backwash holding tank; Airgaps on filter and softener waste; bypass to the backwash holding tank.
- Need for water treatment plant expansion; population growth estimates; air gaps on filter to waste, filter to waste drain lines and recycling pipes; cross connection in pre and post chlorination; flow splitting and pump sizing.
- Plant expansion; additional clear well; Flow measurement; Flow splitting of chemicals; Pumps capacity; Bypass to clear well; G value; high  $\text{KmnO}_4$  dosages; oversized metering pumps and feeders; day tank capacity; day tank bypass; airgaps.
- Valves, air release valve and drain spacing;

Appendix A.11  
Central Office Plan Review Disagreements in SFY 2002  
(continued)

- Capacity of WTP; Size of the waste tank; metering pump size; high service pumps efficiency; chlorine contact tank capacity; bypass to chlorine contact tank.
- GAC pilot demonstration of goals; GAC replacement criteria; GAC Backwash with chlorinated water.
- Well capacity; Air gaps to lagoons; Backwash holding tank capacity; chlorine feed cross connection; fluoride feed design; Phosphate feed cross connection.
- Well field capacity; Liquid vs dry KMnO<sub>4</sub> supply; KMnO<sub>4</sub> feed pump capacity and day tank size; chlorine dosage; backwash tank capacity.

## Appendix A.12

### Central Office Plan Review Possible Sequencing in SFY 2002

- Original comment letter by another plan review engineer. I reviewed the response to those comments and sent a letter saying the last issues were resolved. When writing the report I found a couple new issues (bypasses of disinfection) and wrote a comment letter. They fixed the bypasses in a final response.
- Flow control between reaction basin: We asked for flow control in the first comment letter, they provided it then they removed it from the plans. We asked for flow control again, they provided it in a final response.
- NSF approval for hypalon baffle curtain.
- Liquid versus dry  $\text{KmnO}_4$  supply drums (liquid not available).

Appendix A.13  
Southeast District Office Plan Review Turn-Around Times  
SFY02

Ohio Environmental Protection Agency  
Division of Drinking and Ground Waters  
Plan Review Analysis  
SEDO in SFY 2002

Number of Comment Letters		# of Plans	Number of Days in Reviewing Office per Review								Total Avg. Days with Ohio EPA	Total # of Days for Approval
			1st Review	2nd Review	3rd Review	4th Review	5th Review	6th Review	7th Review	8th Review		
0	Range Average	57	9 - 35* 20								20	9 - 35 20
1	Range Average	62	0 - 33 10	8 - 71* 21							31	11 - 726 67
2	Range Average	15	0 - 21 10	1 - 42 19	8 - 39* 21						50	33 - 2540 293
3	Range Average	4	0 - 18 10	7 - 42 18	1 - 17 9	14 - 45* 24					61	73 - 375 154
4	Range Average	2	11 - 20 16	9 - 31 20	14 - 22 18	12 - 18 15	28 - 30* 29				98	129 - 639 384
5	Range Average											
6	Range Average											
7	Range Average											
<b>Weighted Average</b>												
<b>Total</b>	<b>Range Average</b>	140	0 - 35 14.2	1 - 71 20.5	1 - 39 18.4	12 - 45 21.0	28 - 30 29.0					

\* These values include both the review time and administrative time (to send the plans to Central Office for final processing). For sfy02, the average administrative time for SEDO plans was 9.93 days.

## Appendix B.1 Potential Central Office Plan Submission Improvements

The Engineering Unit recently met to discuss changes in plan submissions which could significantly reduce the time for completion of review. The following is a summary of specific items which add a considerable amount of time to the review process. None of the items listed below are rare, they are common in a significant portion of the plans reviewed in Central Office. Although we did not invest the (considerable amount of) time that would be required to enumerate specific occurrences, or to estimate the amount of additional review time required in these situations, the engineering group was in unanimous agreement that the items detailed below add considerable delays to the review process.

### **Major Plant Design Items**

- Inadequate or missing project description, design basis, plant operating scheme, flow schematics, yard piping, site plans
- Lack of future use projections for new plants or major expansions of existing plants
- Inadequate or missing flow measurement and/or controls
- Unnecessary bypasses of required treatment processes
- Engineers unfamiliar with equipment, apparently relying on the manufacturer or supplier for design (unable to answer questions)
- Engineers unfamiliar with the “big picture” in expansion or rehabilitation projects, and effects of modifications on existing processes.
- Insufficient volume of raw water reservoirs for surface water treatment plants
- Desire to expand plant capacity without necessary upgrades to all supporting systems (e.g. chemical feed systems, raw water pumps, etc.)
- Deviations from standards without justification

### **Backflow Prevention**

The most common issue in the area of backflow prevention is that there seems to be a widespread lack of awareness of the basic principles, of applicable rules, and types of available devices and their working principles. Common problem areas are:

- Filter to waste
- Tank drains
- Process water connections
- Chlorination piping

Appendix B.1  
Potential Central Office Plan Submission Improvements  
(continued)

**Chemical Feed Systems**

The common cause of delay in review of chemical feed systems is the lack of design information for feed systems and improper sizing of components. Common problem areas are:

- Lack of information on specific chemicals, dilution ratios, and target dosages
- Oversized day tanks and feed pumps
- Inadequate inventory of chemical
- Missing or inadequate venting
- Missing or inadequate safety measures for gaseous chlorine systems
- Lack of secondary containment

**Miscellaneous Items**

The following items are quality control issues in the process which add to the time required to review a set of plans:

- Inconsistencies in views and references
- Missing specifications or inconsistencies between specifications and plans
- Responses to comments which are incomplete, or lack sufficient detail

## Appendix B.2 Potential District Office Plan Submission Improvements

Common District Office plan review issues that require comment/response letters. Please note that the list doesn't rank the individual issues in any order of frequency or priority:

### **General Issues**

1. Incomplete, inaccurate or missing Water Supply Data Sheet.
2. PWS ID number missing or wrong.
3. No agreement by PWS to accept water lines/booster station/storage tank.
4. Failure to include review fee.
5. Plans not signed and sealed by a Professional Engineer.
6. Items missing or erroneous (checklist type items from the Greenbook or 10 States Standards):

### **Water lines**

- pipe is AWWA or NSF with completed waiver form
- pipe specification is inadequate for pressure range
- pressure testing and disinfection per AWWA standards specified
- depth of cover specified and adequate
- sewer/septic tank isolation distance specified and adequate
- flush hydrant shown on dead end lines
- minimum 35 psi for service connections specified
- failure to specify AWWA-compliant fire hydrants
- missing requirement of 'no pump which takes suction from the main line'/ 'no individual booster pumps allowed' (we can ask for but not always get since under specific conditions they are allowed by OAC 3745-95-07)

### **Booster Stations**

- leaving off pressure gauges
- station bypasses
- emergency generator connection omitted

### **Storage Tanks**

- detail drawings omitted
- do not show tank elevations
- notation that construction and coatings are as per AWWA specifications not provided
- drain hydrant, access hatches, overflow, ladder and vent details omitted.

Appendix B.2  
Potential District Office Plan Submission Improvements  
(continued)

**Wells**

- analysis missing or incomplete
- well log missing or incomplete
- well diagram or cross-sectional drawings showing depths and construction details missing or incomplete
- casing specifications not provided
- grouting not specified
- height of casing above 100 year flood not specified or not adequate
- pump test omitted
- pump information incomplete or omitted

Appendix C  
Plan Review Work Group Members

**Mike Baker**, Ohio EPA - DDAGW  
**Janet Barth**, Ohio EPA - DDAGW (Southeast District)  
**Dan Binder**, Ohio Environmental Council  
**Ashley Bird**, Ohio EPA -DDAGW  
**Jim Brueggeman**, Ohio Chapter, American Water Works Association  
**Garry Cole**, Ohio Campground Owners Association  
**Sue Daly**, Public Utilities Commission of Ohio  
**Ken Davis**, Ohio Chapter, American Water Works Association  
**Marvin Gnagy**, Ohio Chapter, American Water Works Association  
**Steve Grossman**, Ohio Water Development Authority  
**Mary Jakeway**, Whirlpool Corporation  
**Kirk Leifheit**, Ohio EPA - DDAGW  
**Ken Ricker**, Association of Consulting Engineers Council  
**Rick Schantz**, Ohio Chapter of American Water Works Association  
**Rob Schmidt**, Ohio Chamber of Commerce  
**Dave Thalman**, Ohio Manufactured Homes Association  
**Tim Wolfe**, Ohio Chapter, American Water Works Association  
**Sara Hendricker**, Ohio Municipal League  
**Kevin Strang**, Ohio Rural Water Association

Appendix D  
Pre-Meeting Interviews Summary  
February 2003

Total Interviews = 17

1. What is going well with the Engineering Plan Review Process?

<b>% of all 17</b>	<b>Response</b>	<b>Number of all 17</b>
18%	Source of information, technical knowledge	3
18%	Thorough/protective of public health	3
12%	Consistency	2
12%	Open to discussing user issues	2
12%	Turn-around on some applications	2
12%	Review of "standard" plans	2
12%	Nothing, very little	2
6%	Initial meetings with District	2
6%	Some self-permitting	2
18%	Don't know	2

2. What is not going well with the Engineering Plan Review Process?

<b>% of all 17</b>	<b>Response</b>	<b>Number of all 17</b>
88%	Long timeframe for review	15
41%	Overly detailed review	7
29%	Lack of written guidelines/standards/policies	5
29%	Reviewer competence/motivation/agendas	5
12%	Inconsistency	2

3. What are the best opportunities to improve the Engineering Plan Review Process?

<b>% of all 17</b>	<b>Response</b>	<b>Number of all 17</b>
53%	Re-engineer the process	9
29%	Limit attention to major issues (e.g. checklist, spot check)	5
29%	Set/meet goals for timely review	5
29%	Improve staff consistency/performance	5
6%	Additional staff resources	1
6%	Pre-assess innovative systems used elsewhere	1
6%	Training for consulting engineers	1
6%	Clarify purpose for review	1

Appendix D  
Pre-Meeting Interviews Summary  
February 2003  
(continued)

4. What are the obstacles to each of those opportunities?

<b>% of all 17</b>	<b>Response</b>	<b>Number of all 17</b>
53%	Agency resource constraints	9
47%	Resistance/agendas/agency culture	8
41%	Staff competence turnover	7
29%	Uniqueness of applications, need for subjectivity	5
29%	Time to get to it, agency priorities	5
18%	Legal mandates	3
18%	Inefficiencies, duplication	3
12%	Fees from plan review	2
12%	Difficulty achieving consensus/consistency	2

5. What suggestions do you have for how the working group can achieve the greatest impact?

<b>% of all 17</b>	<b>Response</b>	<b>Number of all 17</b>
53%	Keep it professional	9
35%	Be open to new possibilities	5
24%	Address fears of retribution	4
24%	Ensure follow-through	4
24%	I have low expectations	4
24%	Look for common ground	4
18%	Hear each other out	3
12%	Focus on solutions	2
12%	Comments on issues	2
12%	Common understanding of purpose, problem	2
12%	Communicate with constituents	2
6%	Involve the District Offices	1
6%	Facilitation	1
6%	Use small groups to develop options	1
6%	Maintain confidentiality	1
6%	Set meetings in advance	1
6%	Goals for each meeting and homework between meetings	1