The CPS is updated on a five-year cycle, but if special events warrant it, a "mini-plan" can be prepared between cycles.

C3C-5 The overall planning and budgeting process is well organized and adheres to very definite procedures.

The overall planning and budgeting process encompasses the CPS, a Five-Year Capital Budget Plan, and an annual investment plan. All operations and engineering components have a role in developing, supporting or reviewing these plans, which are ultimately reviewed and approved by senior management and the Board of Directors. The Budget Project (BP) Memorandum is a comprehensive document which is used to originate and track major projects. Major changes in scope, cost or schedule are identified and tracked. At the conclusion of major projects, there is a review of the project to assess what could have been done differently, what lessons were learned, and to provide feedback for future projects.

C3C-6 Demand forecasting typically assesses a base demand scenario, which is considered to be the most likely future demand scenario, as well as low and high future demand scenarios.

While the demand planning by the Company exceeds the level of planning by the water industry as a whole, the basic forecasting assumptions and methodology used are those generally accepted and used by the industry. Low scenario assumptions may include increased use of low flow plumbing devices and reduced unaccounted for water. High scenario assumptions may consider little conservation by customers. Statistical analyses are then performed at various confidence intervals for maximum day projections. Similar to demand projections, the CPS may also develop several scenarios for future sources to address various demand alternatives.

C3C-7 While there are a variety of quality assurance (QA) related activities performed by the various engineering groups, there is no formal engineering QA program.

A large number of policies and procedures are used in engineering; value engineering (VE) is practiced; there are rigorous reviews of design work; planning, engineering and construction staff (especially on large projects)

are included at key interface points; good databases on equipment are being developed; and a pre-qualification process is used to select consultants and contractors. These, as well as other activities that are practiced, should be consolidated into a designated QA program. This should include QA provisions for any consultants as well.

C3C-8 The water quality program is subject to and supported by extensive QA procedures.

There is an extensive Company QA program for water quality, including QA policies and procedures, an internal QA committee and established QA procedures to be followed with both independent laboratories and the Service Company's laboratory at Belleville. There is a high quality of staff, and there is a high level of quality equipment.

C3C-9 The Company has a dedicated research and development (R&D) program related to water quality issues of importance to the Company.

The R&D program is located in the Water Quality Control Department and is directed by the Director of Water Quality Control. The R&D activities selected tie directly to specific Company concerns, but often (see C3-17) may have application to the larger water industry. One key program in which the Company is participating is the U.S. Environmental Protection Agency's (EPA) Information Collection Rule. The Company has taken a leading role in this program, at EPA's request, and is serving as an information resource for many other water utilities.

C3C-10 The Company is very active in protection efforts for and managing of its sources of supply.

With regard to protection, the Company has very little direct control over the sources themselves. This lies, generally, in the hands of local municipalities and state or regional regulatory agencies, which are often supported by volunteer groups. However, the Company has been very aggressive in working with these various agencies to protect its sources of supply. This is exemplified by its work in wellhead protection in the Fire Road Operating Center, and its management of surface supplies for the Short Hills Operating Center.

The Company's sources have been significantly affected by NJDEP's designation of Critical Area No. 1 and 2, and there is concern over future critical area designations, particularly in Atlantic and Cape May Counties. Informal conversations with NJDEP senior staff indicate this is not likely to happen in the near future.

C3C-11 **One specific item concerning CPS planning arose during the audit. That is flooding, in particular, and overall planning concerning the future of the existing Canoe Brook plant would appear to need attention.**

This may be a situation where the Company can undertake a "mini-plan" to address these issues, if warranted. The Company should review the situation at Canoe Brook and make a decision about planning for this facility.

Recommendations
(System Reliability and Planning)

R3C-1 **Evaluate the staffing of Engineering, and add staff if necessary. (Refer to Conclusion C3C-3.)**

Verify whether the downsizing associated with centralization resulted in an adequate staff size.

R3C-2 **Consolidate existing engineering policies and procedures into a recognized quality assurance (QA) program. (Refer to Conclusion C3C-7.)**

Numerous policies and procedures and other activities are carried out by engineering that encompass many of the elements of a solid QA program. These should be consolidated and formalized as a dedicated QA program, including required QA procedures by consultants, to improve their visibility and usability, and perhaps increase their consistency and comprehensiveness.

R3C-3 **Evaluate the priority of the replacement of the Canoe Brook facility relative to the other capital projects within the Company. (Refer to Conclusion C3C-11.)**

This facility appears to be subject to periodic flooding and is one of the older facilities in the New Jersey American system. If warranted, this planning would eventually likely lead to reduced costs (*e.g.*, flood repair) and increased reliability.

3D System Construction and Bidding Practices

This section examines NJAWC's engineering and construction management programs.

Organization and Staffing

Organization, staffing, technical disciplines and similar subjects were discussed in Section 3C under the subsection "Introduction to NJAWC Planning, Engineering and Construction Organizations." Construction issues such as interface with other NJAWC groups was partially discussed in Section 3C and will be discussed further in this section, along with items such as procurement of construction services; preparation of bidding documents, and construction management.

Planning and Budgeting

These subjects were previously addressed under the same heading in Section 3C.

Project Management

The NJAWC, including System Engineering, has a very effective overall approach to management of major projects. The Company employs a strong project management approach for both major and minor construction projects. The planning aspects have been discussed earlier in this chapter. For the smaller projects undertaken directly by NJAWC Engineering, it is likely an engineer will be assigned as project manager for both the design and construction phases. For the larger projects which are typically undertaken by Systems Engineering, the project management responsibilities are more likely to be a dual responsibility. The design phase is directed by a project manager with a strong engineering design background and as

the project moves into construction, starting with the bidding phase, a project manager with construction experience assumes responsibility for the project. The key benefit of this approach is that each phase is managed by a person with solid credentials and expertise in that particular phase. Coordination is typically not a problem with the dual management approach as there is close cooperation between the two managers. First, the managers are part of the same organizational unit located in the same office. Second, there is overlapping coordination from one phase to the other. Construction engineers participate in various reviews and cost estimating in the design phase and design engineers participate in pre-bid meetings and similar activities in the construction phase.

Project managers have essentially complete authority and responsibility for managing projects from their inception via preparation of a BP memorandum through Board approval and then through implementation including design and construction. Project management responsibilities include, but are not necessarily limited to, preparation of BP memoranda (see Planning and Budgeting in 3D for details such as cost estimates, scheduling and other information to be included), updating estimates and schedules, acquiring consulting engineering or construction services, monitoring consultant or contractor performance, reviewing and approving (or recommending approval of) invoices, managing change requests, preparing progress reports for higher management, and preparing project completion reviews.

The overall project procurement process provides for integration of a variety of functional activities so that there is "automatic" involvement and coordination among key departments such as engineering, operations and finance. Some of the key points of involvement include the CPS economic model, which includes financial group input such as tax rates, depreciation rates, discount rates, inflation, etc., and the BP memorandum process when the rate impact of a particular project is considered. There are a variety of specific review and approval steps built into the systems for various levels of management. Several of these were described previously. For example 1A1-5 projects may be the result of an iterative process which passes up and down the chain of command between first level supervisors and the Vice President of Operations, or may result from the CPS. Minor engineering projects of a maintenance nature will involve NJAWC Engineering and Operations personnel. Major projects begin with the CPS which is subject to various levels of review both within Systems Engineering and within NJAWC. Eventually

all projects, beginning with the planning level and continuing through to the construction phase, must be approved by senior management. This approval occurs at the time of the approval of the annual budget that includes the projects for that year.

The Implementation Process

A variety of systems are available to manage projects. A fundamental component is the Work Order system. This is a basic project tracking system which assigns a main work order to a project and allows any number of sub-numbers or task numbers to track different components of that project, *e.g.*, design assistance, consulting services, bidding phase, etc. Budgets are established for various components of a project through the BP memorandum process, which was described earlier. BP memoranda may be written for different components of a project, but they all tie together by reference to the larger project of which a given BP memo is a part. For example, a BP memo may state that the entire project is estimated at $10 million, but this BP is for $200,000 for initial work including design, surveys, permitting, etc. with each item having its own budget.

Gantt sheets are used "religiously" in design and construction. In addition to the schedule, these charts also show the expected pace of monthly dollar requirements for this schedule. This gives the Company the ability to project its capital spending needs throughout the year. Monthly reports on project financial, as well as completion status, are prepared directly from the accounting system for review by the appropriate NJAWC management personnel. Project accounting data are now processed manually, which tends to limit the speed and frequency of reports, but by mid-1997, this function is to be automated, which will provide rapid access to project data.

The AWS "Notes" database consists of two key components, one for consultants and one for contractors. This database allows all American Water companies and engineers to report positive and negative performance information about consultants and contractors. This will allow tracking of consultant and contractor performance and be available to all AWS engineers and management personnel.

The subject of initial and continuing project approval was discussed in 3C.

The selection of construction contractors is discussed later in this section under "Procurement and Bidding." This section deals with selection of engineering consultants. As noted elsewhere, engineering consultants are used by both NJAWC and Systems Engineering. All consultants are pre-qualified before being allowed to compete for or work on a project. Administration Policy/Procedure No. 7, Selection and Contracting of Consultants outlines the pre-qualification process.

NJAWC Engineering maintains a list of pre-qualified consultants for a variety of tasks. It is estimated they receive an average of one inquiry a week from a firm wishing to be considered for NJAWC work. These requests are entered into a database for future evaluation. The pre-qualification process includes:

1. Meeting with firm's principals
2. Visit to firm's office
3. Review of their work
4. Assessment of their ability to control costs
5. Assessment of their ability to understand constructability issues
6. Contact with contractors who have built work from the firm's construction documents

Typically, a newly pre-qualified firm will first be given the opportunity to propose on a rather small project to see both how well they respond and, if selected, how well they perform.

There is a very well defined Request for Proposal (RFP) process that is followed for competition among the pre-qualified firms for a given project. The AWS Engineering Standards A-1 through A-6, and A-8 and A-10 prescribe the procedures for acquiring engineering, geotechnical, survey, inspection and related services. There is also a very detailed procedure, along with a ranking format to evaluate consultant proposals for making a recommendation as to selection.

It was noted that while consultants are becoming more aggressive on pricing, engineering has a good concept of what given project design should cost. If they see a very low price, they will attempt to determine if the consultant has "low-balled" the price or in fact has a better approach, resulting in lower cost.

As to managing a consultant, the model Agreement for Engineering Services specifically addresses a detailed scope of services, schedules, payments, consultants

status reports, changes in scope, and similar items. Other management aspects were discussed in 3C under Quality Assurance.

Feedback and Learning Process

The engineering performance of NJAWC and System Engineering and their respective contractors is essentially measured by whether their assigned projects are on schedule and on budget. As noted by the NJAWC Vice President of Engineering, some of the principal responsibilities of engineering staff are to monitor schedules and budgets and to identify and attempt to resolve early in the project any problems. A major component of engineering staff evaluations is how well they were able to manage their projects and keep them on budget and schedule.

With regard to standards and measures to assess engineering efficiency, several are used. Internally, project staff are assigned both their own budget in terms of man hours and, if used, a consultant's budget and schedule. The internal budgeting process is similar to that used in the engineering consulting profession. The external budgeting process, that is, the use of consultants is based on a competitive process with a well defined scope of work, which inherently leads to much greater efficiency from an engineering standpoint.

With regard to managing productivity of its engineering work force, the work order reports, progress reports, and year-to-date progress reports all serve as back-checks against the BP memorandum to see if a project is on track. However, both NJAWC and Systems Engineering agreed that the current accounting system is difficult to work with for projects in progress, but that the new information system scheduled for 1997 should result in significant improvement. It was noted that management methods are more institutional in nature as opposed to documented policies or procedures.

The primary factor in deciding whether to use in-house personnel or an engineering consultant is the estimated engineering budget. If a project has an engineering budget under $30,000, it will likely be done inside; if it's over $50,000, it will likely be done by a consultant; if it is between $30,000 and $50,000, it may be done by either party, the decision likely depending on current in-house workload and degree of complexity of the project.

Actual experience on projects is integrated to improve performance on new projects by several routes. These were described in the QA section.

Project Management Methods and Procedures Utilized

As noted at several other locations in this report, scheduling is a key requirement throughout the planning, design and construction process. Schedules are required as part of any BP memorandum, are used "religiously" in design (and are tied to projected cash flow); and are required in construction. The NJAWC's standard construction contract documents include an extensive, and comprehensive, section dealing with a contractor's requirements to prepare and maintain a construction schedule throughout the project. The NJAWC has been using primarily Gantt charts, but is beginning to make more extensive use of Primavera scheduling software, with the NJAWC Engineering Manager having been assigned responsibility to further implement this.

With regard to active oversight of contractor activities, including technical quality, billing, etc., one of the Company's first objectives is to use contractors who will provide a quality product, who are good to work with, are timely, meet their commitments, and are businesslike. The vehicle for attempting to do this is the pre-qualification process. Company or consultant inspectors supplemented by technical staff help ensure technical quality of the work. Scheduling throughout a project is required with the upcoming two weeks of work requiring detailed scheduling (*e.g.* outages, craft coordination, operations issues, etc.). Contractor bills are reviewed by the assigned project managers and forwarded to higher management for final approval. Distribution Policy/Procedure No. 15, for example, includes discussion on approval and invoice payment for pipeline contracts. The standard construction contract documents also address the approval and payment process.

There are well-defined procedures to handle change orders and other field problems, for example, Distribution Policy/Procedure No. 15 for pipeline projects addresses this in detail. These include construction inspection and detailed record-keeping including items such as days (and hours) worked, weather, people on the job, equipment used, problems encountered, etc. Also, the design process and pre-construction activities contribute to controlling change orders. As described earlier, these include various reviews by operations and construction personnel, value engineering (VE) analysis (if applicable); and a detailed bidding processing

involving the contractors who are bidding (described under Procurement and Bidding). Similar to scheduling, the standard construction contract documents also set out a very definite procedure for claiming a contract change. Overall, for major projects managed by Voorhees, there has been no litigation since 1987 and only one mediation since 1987. Change orders are thoroughly reviewed for both justification and cost of the change. Within the Company about half the contracts are for lump sums, with unit prices for selected items, *e.g.*, paving, and variations are usually less than 5%, which is well within industry standards. If variations exceed 5%, it's often due to a decision by the local municipality, frequently involving trench or surface restoration, which affects the final cost. To attempt to minimize these types of changes, NJAWC Engineering:

1. Meets with municipal officials early in the project.
2. Attempts to get permit conditions, *e.g.*, street re-paving, trench backfill, etc. worded as tightly as possible.
3. Videotapes streets before construction (including existing condition of building foundations, mailboxes, etc.)

It was noted that the biggest unknown and related uncontrollable item on projects (particularly pipeline projects) is paving and related changing attitudes or directives of public officials. Similarly, there are management and cost control procedures in place regarding variances of projects. These were discussed in 3C, under The Management, Control and Integrity of the Budgeting Process.

AWS has also recently instituted a VE incentive program for contractors for shared cost savings. Under this concept, a contractor may propose a cost savings measure. If engineering/construction feel it has merit, the contractor is authorized, and the cost savings are shared between the contractor and the water company.

Adequacy of Project Information Systems

As noted under the "Project Management" and "The Implementation Process" sections, project information systems are used in the management of design and construction. Part of these project information systems includes the BP memoranda process. Overall, the project information, as described earlier, provides an appropriate level of detail to all levels of management, from the project manager through the Board of Directors. The information is provided in a variety of categories for any specific project. The general indication is that the information

provided is adequate, but the timeliness could be improved for current projects. This is expected to happen with the implementation of a new software system in 1997. The cost reports, coupled with the responsibilities of the project managers, do facilitate the evaluation of overrun/underrun status and the projection of total project costs. These are incorporated in the management reports and are included in the various monthly reports and final BP memoranda. The project information systems also allow development of a three to six month backlog projection which enables evaluation of staffing and project commitment issues along with future internal assignments, as well as the need to retain consultants. One area that appears to have been weak but seems to be improving is the tracking of final construction costs back to the very original cost projection, *i.e.*, in the CPS.

Policies and Procedures Pertaining to Planning, Scheduling and Performance of Engineering and Construction Activities

The basic criteria for scheduling engineering and construction activities is that all such projects are scheduled. As noted earlier, Gantt charts are used extensively, and Primavera is being increasingly used.

Adequate lead time is provided for engineering and construction activities. There are exceptions, which are usually due to an "expected" but unschedulable situation; *e.g.*, major main break, major equipment failure, a developer project, storm damage, an NJ Department of Transportation highway project, etc. The underlying reason for adequate lead time and the basic reason engineering and construction projects are performed in a timely manner is the CPS, which was discussed at length in 3C. Coupled with this is the BP process to actually begins the implementation process.

There are numerous policies and procedures regarding the routine inspection, repair, and replacement of distribution equipment, including service lines, tanks, pipes and related appurtenances. There are 18 such items listed under Distribution Policies and Procedures as follows:

No. Subject

1. Disinfection of Tanks - New and Existing
2. Distribution System Flushing
3. Fire Hydrants - Installation, Operation, Inspection and Maintenance
4. Hydrant Flow Testing
5. Hydrostatic Testing and Leakage Testing of New Pipelines.

6. Polyethylene Encasement for Ductile Iron Pipe
7. Water Loss Control and Leak Detection
8. Facilities to Serve Multiple Occupancy of Individual Properties, Apartments, Condominiums, Shopping Centers, etc.
9. Relocation or Repair of Company-Owned Facilities at Customers' Expense
10. Corrosion Control
11. Disinfection of Mains - New & Existing
12. Inspection of Pipe & Fittings
13. Relocation of Water Company Facilities in Connection with Highway Construction
14. Steel Tank Maintenance
15. Pipeline Bidding Procedures; Contracts Approval and Invoice Payment
16. Valves - Installation, Operation, Inspection and Maintenance
17. Distribution System Records
18. Asbestos Cement Pipe - Work Procedures

Operating Policies, Procedures, Standards and Criteria Pertaining to the Performance of Engineering and Construction Functions

The Company utilizes a standards manual (The Operations Manual), which outlines a number of procedures and practices to be followed during the design and construction of all projects. The manual's major headings are:

Volume I	Volume II
Introduction	Production
Administration	Services and Meters
Distribution	Source of Supply
Engineering	Water Quality

In addition to the Engineering section, procedures related to design and construction may be found in some of the other sections as well. There is also a separate Engineering Standards Manual, which includes numerous policies and procedures related to technical issues, as well as the administration of engineering and construction projects. There are also a number of "standard" construction contract documents for routine projects such as steel tank maintenance and pipe installation. These documents are used on project where the basic work to be done is fairly

uniform from project to project and are then customized to a specific project based on the specific needs of that project. These standard documents are prepared in the Construction Specifications Institute (CSI) format, which has been accepted virtually throughout the construction industry. The other guidelines, standards, etc. either conform with industry standards, or in fact in several cases, could be considered to be the industry leader. System Engineering has the primary responsibility for keeping up to date with industry practice, although anyone in the AWS may make recommendations for upgrading. As discussed under the QA section, there is also a process for reviewing and updating the standards on a regular basis with the results made available to all appropriate personnel, which are essentially the NJAWC engineering staff in this case.

Reporting and Documentation Requirements Associated With Engineering and Construction

With regard to effective procedures regarding the preparation, control and maintenance of engineering drawings, these procedures have been developed and are followed. Where consultants are used, the RFP guideline includes attachments which outline Design Memorandum Requirements, provision of AWS standards, and a description of drawing standards, including electronic data systems, which are to be complied with by the consultants. Professional contracts also state that documents prepared by the consultant become the property of the Company upon delivery. As discussed earlier, the BP process and other reports do a very effective job in providing for management information needs.

AutoCAD Release 13, the most current release of this widely used computer assisted design and drafting software, is used by System Engineering.

Similarly, as noted earlier, there is an effective process regarding the preparation, control and maintenance of construction progress reports.

Management Systems and Procedures to Ensure Coordination Between Engineering and Construction Functions and O&M Functions

There is a direct communications link between the various functions that play a role in systems reliability and expansion. Similarly, engineering and construction projects do derive explicitly from planning, operations and maintenance

requirements (except for those that are developer driven). First, 1A1-5 projects are derived in many cases from O&M needs in the system. Development of necessary engineering documents, procurement of consultant or construction services and overall construction management lies with NJAWC Engineering. However, the Field Services groups in Operations in turn provide the field inspection services required during construction. This system inherently requires good communication, and based on interviews throughout the Company communications generally appear to be effective.

As for major projects, these derive from the CPS process which is described in detail in 3C and which incorporates a significant amount of input from NJAWC Operations personnel (also discussed in 3C).

Developer driven projects (*e.g.*, residential subdivisions, shopping centers, etc.) are typically tied to general economic conditions and are also dependent on the local municipal approval process. As a result, the timing of work associated with developer projects is somewhat unpredictable. However, the Company will still design (or have consultants design) water systems for these projects; pre-qualify the developers' potential contractors, provide materials, conduct project bidding, and inspect the work.

The review and approval process was outlined in 3C, Planning and Budgeting section.

The decision making process for using in-house engineering vs consultants was described in the "Feedback and Learning" discussion of this section. The only construction undertaken by NJAWC is for replacement of existing services and main breaks. All other construction work is done by outside contractors

Methods and Procedures to Evaluate Construction Project Cost Effectiveness

This subject was addressed extensively throughout Section 3C, System Reliability and Planning

Methods and Procedures to Develop and Utilize Cost and Benefits Data

A number of items under this topic were discussed throughout Section 3C. However, some additional comments are included here. For most routine projects, the Company uses cost data from its own projects as a basis for construction cost estimates. Their experience with external sources (for these types of projects) such as Means handbooks (a construction industry costing handbook) is that these handbooks are far less accurate than the information NJAWC has compiled from many projects over many years. Conversely, for larger projects which the Company does on a less frequent basis and for which consultants are retained, the cost estimates are prepared by the consultants and reviewed by NJAWC and/or Systems Engineering.

Current project costs rarely have a need for significant projection into the future. A project becomes a current project, via the BP process, because it has a reasonably good chance of being constructed according to its projected schedule (barring any major unforeseen circumstance). However, current economic conditions and inflation are considered in developing project budgets and, more importantly, contingency factors are included. The further a project is from actual construction, the greater is the contingency to allow for uncertainty, inflation and the like. Once a project is bid, the contingency factor is considered to be 5% of the bid amount.

Project benefits can vary from project to project, and they are not always quantifiable; these may be qualitative and in some cases are a matter of professional judgment. The types of benefits considered may include reliability issues; safety, environmental issues; regulatory compliance; cost per million gallons to develop (and treat) a given source, etc. One example of a qualitative/professional judgment scenario that may be encountered is one of dealing with "dead-end" water lines. A situation could arise where three dead-ends exist as a result of, perhaps developer projects, and each line is not a particular problem. The Company may evaluate such a situation and decide to loop, or, tie together, all three dead-ends. This could result in adding a few homes, adding fire hydrants, improving fire flows, and improving water quality to homes on those previous dead-ends.

Management's Role in Evaluating Cost Effectiveness

This was discussed in detail throughout "The Management, Control, and Integrity of the Budgeting Process" in Section 3C.

The Effectiveness of the Capital Budgeting Process and the Integration with Planning and Operations and Maintenance

This entire subject was addressed in various topics under Section 3C, System Reliability and Planning. In particular, see "Planning and Budgeting;" "The Management, Control, and Integrity of the Budgeting Process;" "The System Planning Process From a Budgeting Perspective" and "Output of the Planning and Design Process." Also from Section 3D, System Construction and Bidding Practices, see "The Implementation Process;" and "Project Management Methods and Procedures Utilized."

Procurement and Bidding

Methods Used to Select Equipment Manufacturers and External Construction Services

Selection of engineering consultants was discussed under "The Implementation Process" earlier in this section. This discussion addresses construction contractors and equipment manufacturers.

Construction contractor selection is made on an Invitation for Bidders (IFB) process based on a list of pre-qualified bidders. It would appear that all potential, interested contractors are evaluated on a fair and equal basis. System Engineering's Procedure A-7, Pre-Qualification of Construction Contractors provides a detailed procedure to conduct the pre-qualification process. The process includes completion of a "Work Experience Questionnaire and Qualifications Statement Form" by an interested contractor; a "Telephone Interview Questionnaire Form" (see Exhibit 3-10), used by the Company to establish if the contracting firm has demonstrated itself to be reputable business with experienced and cooperative staffing; and a "Contractor Work Experience Questionnaire Follow-up Investigation Form," used by the Company to complete its inquiries. Repetitive pre-qualification is not required of contractors for pipeline construction, service and meter installation, and tank

maintenance if these contractors have worked for the Company previously and have performed well. Distribution Policy/Procedure No. 15, Pipeline Bidding Procedures, outlines pre-qualification of bidders, the bidding process bid opening, bid analysis and other activities related to perhaps one of the most common of the Company's construction areas, *i.e.*, pipeline construction.

Among the issues addressed in pre-qualification are financial status, safety record, ability to meet schedule, approach to change orders and claims, and many others. For a prospective pipeline contractor, the road superintendent in the municipality of a previous project may be contacted for his/her opinion as to quality of surface restoration and the consulting engineer for the project may be asked about the contractor's performance on activities such as the pressure testing program. It is desired to have a minimum of three bidders on a given project and 8 to 10 are preferable. From Systems Engineering perspective, there are few, if any, contractors winning repeat work on a regular basis. All contractors are required to attend a mandatory pre-bid conference for each project. Bid openings are attended by a minimum of two Company personnel, including one senior manager with authority to make decisions about bidding questions and one witness. If the low bidder has an apparent very low bid, they will review the low bidder's bid with him to make sure he understands the project and then give him two options: "walk away" from the bid or take it as is. (NJAWC will not allow an adjustment of bid prices unless there is an obvious mathematical error).

The construction contracts are structured in accordance with standard industry practice, *i.e.* unit price for pipeline projects, lump sum for a booster pump station, etc. In an unusual case, another contract type might be used, but this would be a rather rare event.

Exhibit 3-10
Telephone Interview Questionnaire

TELEPHONE INTERVIEW QUESTIONNAIRE

DATE: _____

PERSON INTERVIEWED: _____ _____ _____
(name) (company) (role in project)

PROJECT(S): _____ _____ _____
(name of project) (work involved) (contract amt. & date completed)

1. CONTRACTOR'S ATTITUDE TOWARDS SAFETY? _____
(Personal protective equipment, designated safety officer, safety plan? tailgate meetings?) _____

2. ANY PROBLEMS RELATED TO QUALITY OF WORK? _____
(Rework? Engineer's acceptance of defective work?) _____

3. ATTENTION TO SCHEDULE & COMPLETION DATES? _____
(Was a CPM Schedule used?) _____

4. APPROACH TO CHANGE ORDERS & CLAIMS _____
(Timely submittal of proposals? cooperative?) _____

5. KNOWLEDGE OF WATER/WASTEWATER FACILITIES _____
(Constructive suggestions? active during start-up?) _____

6. ATTENTION TO PUNCHLIST & WARRANTY WORK? _____

7. PROJECT MANAGEMENT CAPABILITIES? _____
(Full-time superintendent, project management, scheduler, etc.) _____
(experience of these individuals? names?) _____

8. MANAGEMENT OF SUBCONTRACTOR'S & SUPPLIERS? _____

9. COOPERATION WITH OWNER, ENGINEER, INSPECTOR? _____

10. ALLOW TO BID FUTURE WORK? _____

11. LIST ANY OTHER GENERAL COMMENTS MADE BY THE INTERVIEWEE: _____

With regard to manufacturers' equipment, major process type equipment was addressed in the QA discussion of Section 3C. Administration Policy-Procedure No. 16, Selection of Manufacturers and Awarding of Annual Materials Contracts, provides for a Materials Management Committee, which includes the Vice President of Operations of NJAWC, and establishes the procedures for acquiring a variety of materials used extensively throughout the American Water System. This list of products to be bid on an annual basis includes, but is not limited to meters, ductile iron pipe, polyethylene pipe, PVC pipe, gate valves, butterfly valves, fire hydrants and a variety of other materials. These are annual purchase contracts, and a given manufacturer may get repeat business depending on whether their materials are acceptable, they have the lowest price, and they satisfy the procurement requirements. With regard to use of affiliated companies, *i.e.*, Systems Engineering, there is no good basis for a comparison vis a vis similar non-affiliated companies. Most of the work undertaken by Systems Engineering for NJAWC involves managing larger or more complex projects for which NJAWC does not have the staff, either in numbers or expertise. Also, these larger or more complex projects tend to be of a specialized and non-recurring nature, so adding to NJAWC staff for a relative short period or for individual projects would likely not be a very effective solution. Similarly, retaining an outside firm to perform System Engineering's role would not be as effective. First, very few firms would have this capability and would likely be more expensive for the same level of service. Lastly, the intangible of being dedicated to a single organization (consultants typically have several clients to satisfy) with its interests, along with a very high level of dedication to the organization's mission, would be lost.

Vendor performance is evaluated on parameters not unlike those used in the pre-qualification process. Basically, these are designed to determine whether the vendor/contractor has provided on-budget, on-schedule, reliable service. As noted earlier in the "The Implementation Process" section, the Notes database is being developed to collect performance information on consultants and contractors.

As discussed in the QA part of Section 3C, the AWS also has: 1) a mechanism to evaluate equipment manufacturers and their products; and 2) a past project completion review process to evaluate major projects. Water Quality Policy/Procedure No. 3, Testing of Treatment Chemicals, is also a key procedure for evaluating chemical supplier performance.

Findings and Conclusions
(System Construction and Bidding Practices)

C3D-1 **The Company, including System Engineering, has a very effective overall approach to management of projects.**

The Company employs a strong project management approach for both major and minor construction projects. For smaller projects, it is likely an engineer will be assigned as project manager (PM) for both the engineering and construction phases. For larger projects, staff with either strong design or construction backgrounds will serve as PM for these respective phases of the work, with overlapping coordination among the phases. PMs have essentially complete responsibility for managing these projects from inception through Board approval and then through implementation, including design and construction. PM responsibilities include but are not necessarily limited to preparation of BP memoranda, budgeting, scheduling, acquiring engineering or construction services and monetary performance, reviewing work, managing change requests and preparing project completion reports.

C3D-2 **The Company maintains a list of pre-qualified consultants for a variety of potential engineering assignments.**

The pre-qualification process includes: meeting with a firm's principals; visit to firm's office; review of their work; ability to control costs; ability to understand constructability issues; and contact with contractors who have built from the firm's construction documents.

There is a very well defined Request for Proposal (RFP) process that is followed for competition among pre-qualified firms for a given project. In particular, there are very good engineering standards for acquiring engineering, geotechnical, survey, inspection and related services, as well as for a procedure to evaluate consultant proposals for making a recommendation as to selection.

C3D-3 Construction Contractor selection is made on an Invitation for Bidders (IFB) process based on a list of pre-qualified bidders.

It appears that all potential, interested contractors are evaluated on a fair and equal basis, System Engineering's Procedure A-7, Pre-qualification of Construction Contractor provides a very detailed procedure to conduct the pre-qualification process. Bid openings are attended by a minimum of two Company personnel, including one senior manager with the authority to make decisions and one witness. The Company will not allow adjustment of bid prices unless there is an obvious mathematical error. Once a contract is underway, there are well-defined procedures to handle change orders and other field problems. Within the Company, about half the contracts are for lump sum, with unit prices for selected items, *e.g.*, paving and variations are usually less than 5%, which is well within industry standards.

C3D-4 Project information systems are generally adequate and provide an appropriate level of detail to all levels of management, except with respect to the tracking of final construction costs back to the original projections.

The feedback mechanism for tracking of final construction costs back to the very original cost projection, *i.e.*, in the CPS, is an area that needs to be strengthened.

C3D-5 The use of the Service Company's System Engineering Department appears to be a good solution to acquiring engineering and construction services for major projects.

With regard to use of Systems Engineering, there is no good basis for a comparison vis a vis similar non-affiliated companies. Most of the work undertaken by Systems Engineering for NJAWC involves managing larger or more complex projects for which NJAWC does not have the staff, either in numbers or expertise. Also, these larger or more complex projects tend to be of a specialized and non-recurring nature, so adding to NJAWC staff for a relative short period or for individual projects would likely not be a very effective solution. Similarly, retaining an outside firm to perform System Engineering's role would not be as effective. First, very few firms would have this capability and would likely be more expensive for the

same level of service. Lastly, the intangible of being dedicated to a single organization (consultants typically have several clients to satisfy) with its interests, along with a very high level of dedication to the organization's mission, would be lost.

Recommendations
(System Construction and Bidding Practices)

R3D-1 Improve the feedback mechanism for tracking and comparing final construction costs back to the original conceptual costs in the CPS and other original documents. (Refer to Conclusion C3D-4.)

Generally, it appears this is done to some extent, but it does not seem to be done on all projects. This process should be strengthened and conducted on all projects as they evolve and are completed. This will provide a stronger costing database for use on future projects.

3E Unaccounted-For Usage

NJAWC has implemented a program to address unaccounted-for water (UFW) usage. The AWS has established a policy, with general procedures, to deal with UFW. This is Distribution Policy/Procedure No. 7, Water Loss Control and Leak Detection. "A standard objective of this activity . . . . is to minimize water losses to no more than 10%, which shall be the maximum difference that cannot be otherwise accountable through water sales and measured known non-revenue usage and total system delivery. . ."

Prior to implementation of a dedicated water loss control program, it was estimated that UFW was in the 18 to 20% range in the various NJAWC systems. Interviewees from different operating centers reported that with ongoing loss control, the UFW is now consistently 8 to 12%, with the overall average in the order of 9% Company-wide. This indicates there has been a significant degree of success in reducing and maintaining a low UFW ratio. It should be noted that a general rule of thumb for the industry is if a system's UFW is 15% or less, it has a good water loss control program.

Generally, a union person is supplied with listening equipment and conducts the routine activity of listening for leak sounds in the territory of each operating center. If a leak is suspected, a supervisor who has been trained to use a leak correlator will go to the site and pinpoint the leak. A correlator is a computer-based device that can accurately pinpoint leaks from two known reference points, such as valves or fire hydrants, and can be used to estimate the amount of flow from the leak. Once a leak is discovered and pinpointed, its repair can be prioritized based upon the estimated flow and public health and welfare considerations. These repairs are then integrated with the overall distribution maintenance program. Depending on the type of leak, *e.g.*, main line or service, either a contractor (with an annual contract for this type of work) or company personnel will repair the leak.

In addition to leak surveys, company personnel are also directed to look for leaks or other UFW problems in the course of their day-to-day activities, *e.g.*, meter readers

where they have occasion to actually see the meter itself; exposed piping over bridges, etc.

Sewer System Infiltration/Inflow

The equivalent problem to UFW in sewer systems is infiltration/inflow (I/I), which is a continuing problem in all gravity sewer systems. Inflow results from direct connection to sanitary sewers, such as from roof leaders, sump pumps, leaky manholes, and storm sewer connections. Infiltration results from groundwater entering through broken pipes, failed joints and tree root intrusion. NJAWC main sewer systems are located in Lakewood and Ocean City. Inflow can only begin to be controlled by ordinances adopted by local municipalities. According to company personnel, the municipalities have cooperated by adopting appropriate ordinances. The Company appears to have an aggressive program to deal with I/I problems including ongoing videotaping of the sewer lines, placing inserts in manholes in flood prone areas (to keep water from entering through the pick holes/air holes in the lids), rehabilitating manholes, and replacing problem sewer lines. Generally, the sewer pipe is reported to be in good condition with most problems being leaks at the pipe joints in Ocean City. The Ocean City system was constructed in the World War II era when leadite was substituted for lead for jointing material. Leadite is not as reliable as lead, and coupled with unstable ground conditions, leaks are virtually inevitable; but as noted, are being corrected on a continuous basis.

Findings and Conclusions
(Unaccounted-For Usage)

C3E-1 **The Company has implemented an ongoing and successful program to address unaccounted for water (UFW) usage.**

Prior to implementation of a dedicated water loss control program, it was estimated that UFW was in the 18 to 20% range in the various NJAWC systems. Interviewees from different operating centers reported that with ongoing loss control, the UFW is now consistently 8 to 12%. This indicates there has been a significant degree of success in reducing and maintaining a low UFW ratio. It should be noted that a general rule of thumb for the

industry is if a system's UFW is 15% or less, it has a good water loss control program.

The equivalent problem to UFW in sewer systems is infiltration/inflow (I/I), which is a continuing problem in all gravity sewer systems. The Company appears to have an aggressive program to deal with I/I problems including ongoing videotaping of the sewer lines, placing inserts in manholes in flood prone areas (to keep water from entering through the pick holes/air holes in the lids), rehabilitating manholes, and replacing problem sewer lines.

Recommendations
(Unaccounted-For Usage)

There are no recommendations for Unaccounted-For Usage.

3F Work Force Management

Within the past several years, NJAWC has implemented a very effective workforce management program, the Work Management System. This has been described throughout the previous sections. Specifically, with regard to the main headings of this section:

Maintenance Scheduling and Staffing and Preventive Maintenance Programs - see same title in Section 3A.

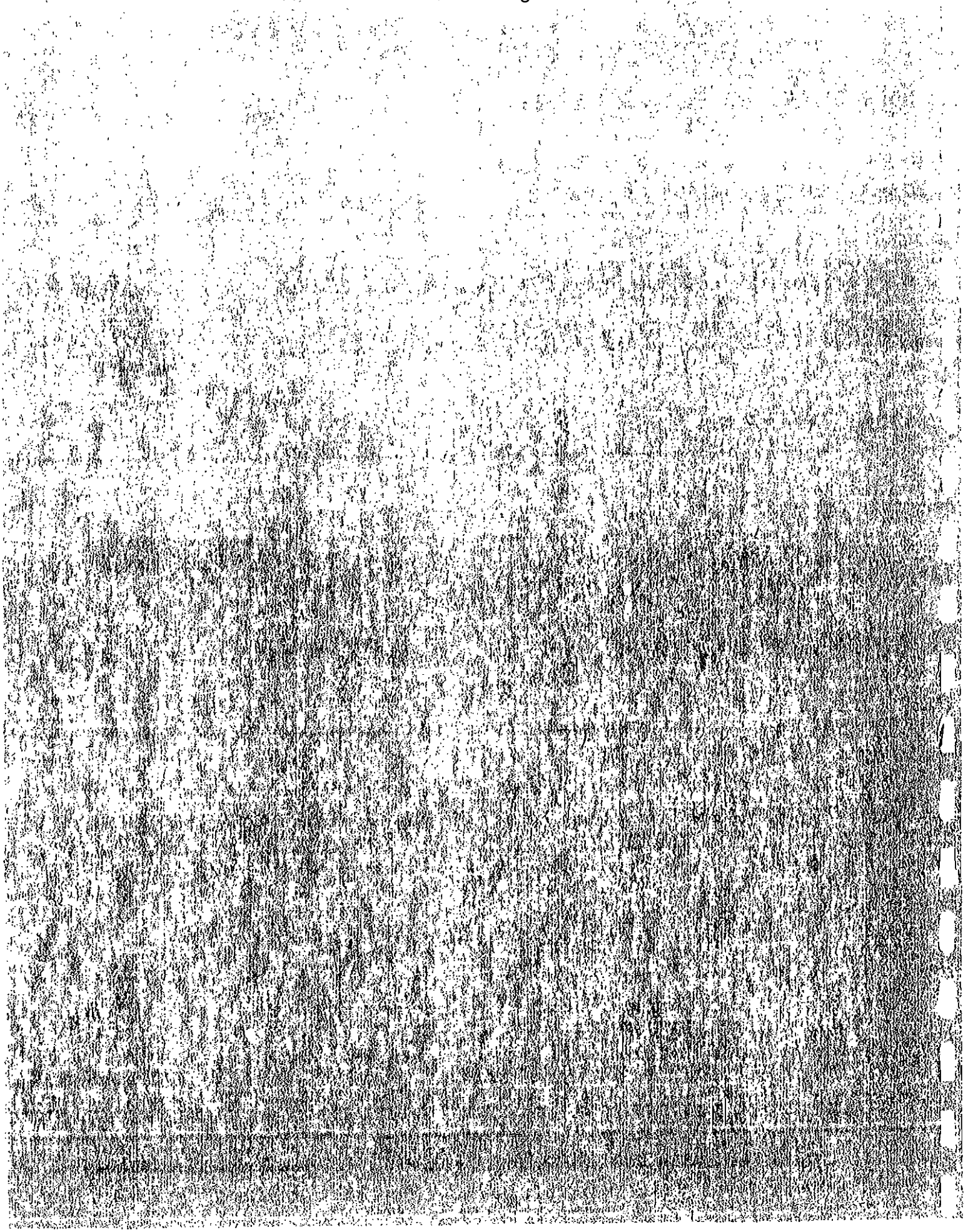
Maintenance Management - see same title in Section 3A

Determine how effectively the utility manages the productivity of its engineering workforce - see Feedback and Learning, Section 3D.

Project Management Methods and Procedures Utilized - see same title in Section 3D.

Chapter 4

Finance



Chapter 4
Finance

This chapter presents the results of the analysis of the Finance and Accounting functions. The eight functions are:

A. Cash Management
B. Accounting
C. Taxes
D. Budgeting
E. Internal Auditing
F. Corporate Financing
G. Rate Structure and Design.

The Finance and Accounting functions are organizationally separated at New Jersey-American. The Vice President-Treasurer is responsible for the cash management, budgeting, corporate financing, rate structure and design, and business development functions. The business development function is discussed under corporate planning in the Executive Management chapter.

The Vice President-Comptroller is responsible for the accounting, tax, purchasing, and information systems functions. The information systems function is discussed under computer systems and services in the Support Services chapter. The purchasing function is discussed in the Materials Management section of the Support Services chapter.

The Finance group does not have a written mission statement. However, the mission was defined in interviews as:

- To insure that adequate funds are available to finance the Company's capital requirements,
- To provide each department with the financial tools necessary to meet its objectives.

The Accounting group has a written mission statement as follows:

- Accurately prepare monthly, quarterly, and annual financial statements that conform to generally accepted accounting principles.
- Maintain internal control system to enable the accounting department to fulfill the obligation for responsible financial reporting.
- Provide support to the business units in a fashion that fosters cooperation and teamwork.

The following sections discuss how the various Finance and Accounting functions are performed and how effectively and efficiently they are performed.

Exhibits 4-1 and 4-2 are organizational charts of the New Jersey-American Finance group and Accounting group respectively. The Company was in the process of reorganizing these areas prior to and during our management audit field work. As a result of this restructuring a number of positions were eliminated, and the resulting turnover led to many positions being staffed by individuals new to the position.

Exhibit 4-1
Organization Structure - Finance

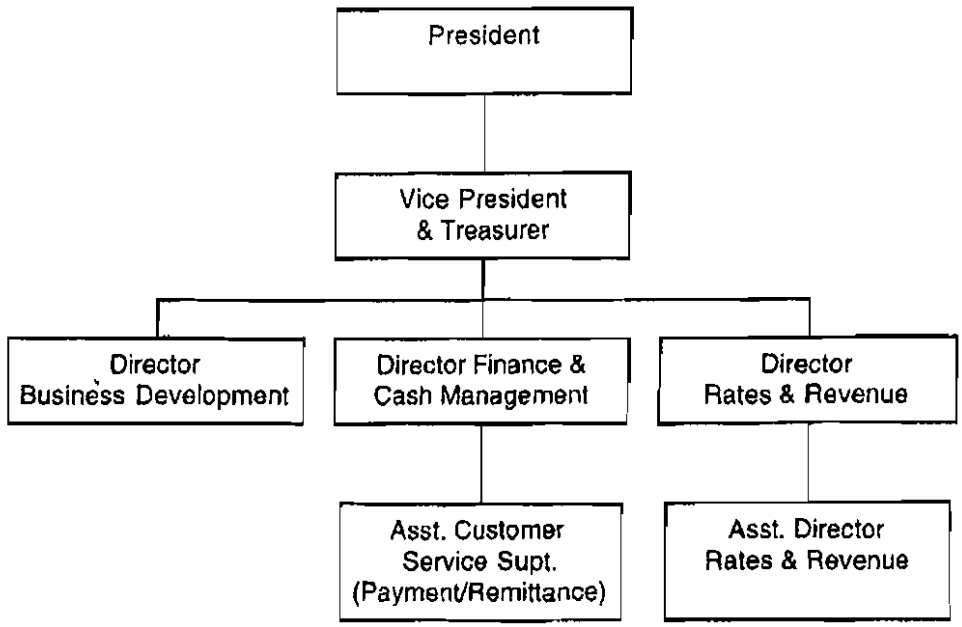
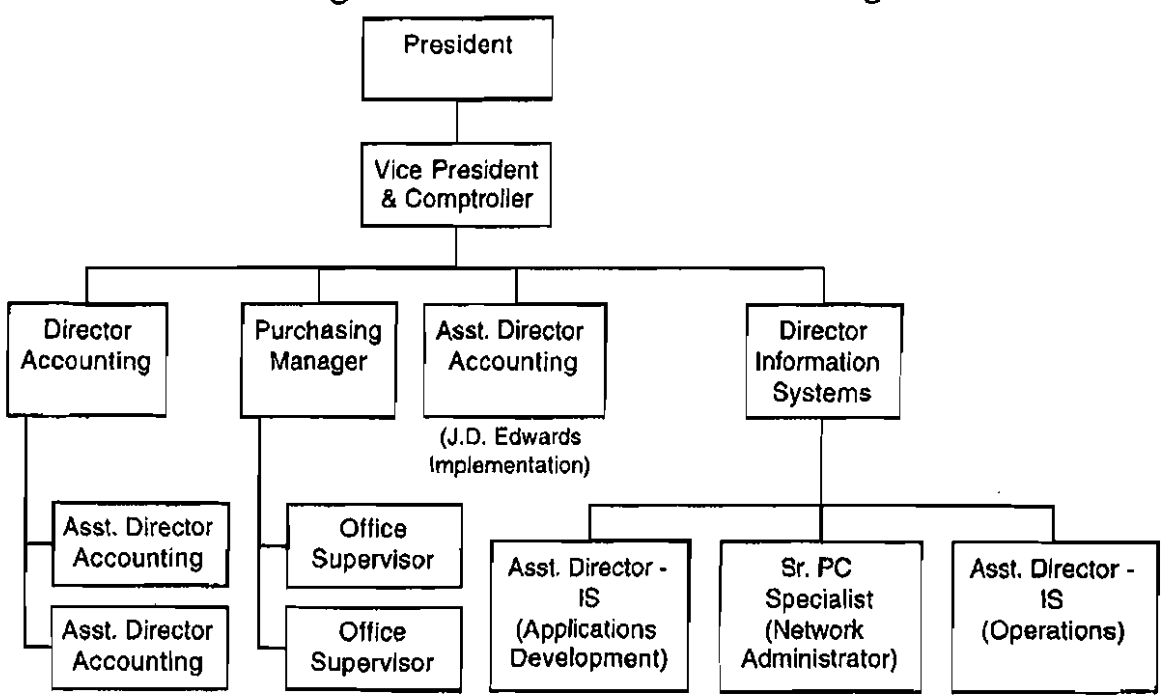


Exhibit 4-2
Organization Structure - Accounting



4A Cash Management

This section evaluates how adequately Cash Management:

- Forecasts cash needs so that only the necessary funds are borrowed or withdrawn from interest-bearing accounts or instruments
- Manages receivables so as to minimize the need for funds
- Balances return and liquidity in investment decisions.

To make this evaluation the investigation includes the following topics and issues:

- Management of receipts
- Management of cash disbursements
- Cash forecasting
- Short-term investment policies
- Cost of short-term financing.

The mission of Cash Management is to ensure liquidity and the effective use of Company funds. This mission is accomplished by minimizing interest charges on short-term financing, maximizing returns on invested funds, and efficient processing of receipts and disbursements.

Cash Management is a function of the Finance group. This assignment provides for the segregation of the custodial responsibilities of the Company's financial assets from the recording of the financial transactions that is the responsibility of the Accounting group. This segregation of duties is an important element of an organization's internal control structure.

Management of Receipts

Collection of customer payments has been handled through the following four methods:

- Collection by Company cashiers at six locations throughout the service area,
- Collection through a service called Buypay contracted though Travelers,

- Collection through the mail at an in-house processing center at the Haddon Heights office,
- Direct debit from the customer's bank account.

As of January, 1997 the Company discontinued collecting payments over-the-counter by cashiers at Company locations. This method of collection was the most expensive of all the collection options offered to customers and was utilized by only 4.5% of the customers.

The "Buypay" option allows customers to pay at various retail stores, primarily convenience stores. Each day the Information Systems Department electronically retrieves a file from Travelers which details all the payments received at Buypay locations that day. The file is processed on the Company's computer system and posted to the customers' accounts. The payments are entered in the cash book and the actual deposit is wired to the New Jersey-American bank account.

The most popular option is payment by mail. Over 90% of payments are received through the mail. The payments are processed at the New Jersey-American corporate office at Haddon Heights. The checks are removed from the envelope and the check amount and customer number are entered into a machine that makes a magnetic tape of all payments entered and a paper tape of the check amounts. The magnetic tape goes to the Information Systems Department for processing and posting to the customer information system. Deposit slips are prepared in triplicate: one goes to the bank, one goes to the cash manager, and one is retained in remittance processing. The checks are banded up in file boxes and picked up along with the bank deposit slip, with the paper tape attached, by armored car daily. The payment stubs are filed by the remittance processing department. New Jersey-American also provides payment collection service by contract for other water systems. These payments are handled in the same way as payments from New Jersey-American customers except that the payments go to a different post office box and the checks are deposited directly in the bank accounts of the water system owners. An Information Systems employee loads the magnetic tape on the AS400 and notifies a Finance Department employee that the tape is loaded. The Finance Department employee logs on the AS400 and runs some routines to set the payments up to be posted. The individual customer file is updated at night by computer operations. The same individual enters the daily cash deposit in the

computerized cash book. At the end of the month the Accounting Department is provided a cash book printout for posting to the general ledger.

Payments are also received by Zip Check, which are direct debits out of the customer's bank account. Every morning Finance receives a report from Information Systems of customers due to be paid by Zip Check; these accounts are ready to be debited. This information is electronically transferred to PNC Bank in Pittsburgh. The following day Finance will go on the AS400, create a batch for these payments and post them to the customer information system. These receipts are then posted to the cash book. Zip Check is the most inexpensive method of cash collection, but less than 2% of customer payments are received through the Zip Check option.

The American Water Works system has acquired a new customer information system which all the American operating companies will be converting to in the future. An affiliate AWS operating company will do the initial conversion beginning in 1997 with New Jersey to follow. This new system is called Orcom and should allow for a more efficient processing and posting of customer payments.

Management of Cash Disbursements

All payroll and invoice processing has been centralized at the New Jersey-American corporate office. Previously, this function had been performed at the division offices. All invoices are paid from a controlled disbursements bank account and payroll is paid out of a separate payroll account. Cash Management receives daily reports from the bank listing checks that have been presented. There is also a collection account and a concentration account as well as a short-term line of credit. Excess funds are automatically swept into the concentration account nightly. The funds are automatically transferred by the bank to an account that requires funds. If there are no funds available the bank will automatically borrow funds from the credit line and conversely if there are excess funds available over and above the Company's immediate cash needs then the bank will pay down the credit line.

Cash Management is currently evaluating Treasury Workstation software which would automatically call up each bank in the morning and get information on bank balances and cash requirements. The software will also schedule bond payments and automatically remind the cash manager when bond payments are due. Finance delayed the acquisition of this software because the Company and the entire

American Water Works system have selected a new accounting software package, J.D. Edwards OneWorld. The J. D. Edwards software does not have a Treasury Workstation module, however, and a separate software package will be required to perform this function.

The majority of payments are by check after accounts payable has compared the purchase order, receiving report, and invoice and authorized payment. Cash Management releases the funds for payment. The Company has started to use the automated clearing house (ACH) to make some payments.

Cash Forecasting

Cash forecasting is done as part of the budget process. A monthly forecast with an annual total is prepared for the upcoming year and is updated monthly. There is an automatic link with the accounts payable system to a cash forecasting model that is maintained on a current basis. With adequate short-term lines of credit established each Spring with three separate banks, forecasts of daily cash needs are not critical. The annual forecast by month is used to plan the Company's short and long-term financing.

Cost of Short-Term Financing

New Jersey-American has a short-term line of credit with three banks: Mellon, PNC, and First Union. Currently the total approved credit line with the three banks is $85 million. Each year the Company makes a presentation to each bank as part of the process of getting a line of credit for the upcoming year approved. As explained previously the Company has four bank accounts with Mellon in addition to the line of credit with the bank automatically transferring funds out of the line of credit when cash is needed and paying down the line of credit when excess funds are available. The cash manager phones each bank daily to request the current interest rates the bank is offering on short-term borrowings. Each bank has a line of credit rate for overnight, one week, two week, and three week loans. Based on the quoted rate the cash manager will move money among banks to take advantage of the most favorable rate. Once a year when permanent financing is obtained the short-term lines of credit are repaid. For the remainder of the year the Company is almost always a net borrower of short-term financing. The Company can generally borrow at 20 basis points over A prime commercial paper.

Short-Term Investment Policies

New Jersey-American almost always has a balance of short-term debt and therefore has very little excess cash to invest. The only cash investments are what is done automatically by the bank through a sweep account. Excess balances in the Company's bank accounts are swept out, invested overnight in money market funds, and then liquidated as the cash is required. Pension and OPEB funds are managed by a trustee for the entire system and are the responsibility of the American Water Works Service Company.

Findings and Conclusions
(Cash Management)

C4A-1 The decision to discontinue accepting customer payments at local office cashier windows was cost effective.

Based on the relatively small amount of total receipts collected at the local offices—fewer than five percent of total receipts—and the high cost of staffing these collection centers, the decision to stop accepting payments at these offices will produce cost savings that will benefit all New Jersey-American customers. While a small number of customers may feel inconvenienced by closing the collection windows, the Company can readily offer these customers three other convenient payment options that are much less expensive.

C4A-2 The current process of inputting customer payments to the customer information system is cumbersome, time consuming, and inefficient.

At the present time customer payments are inputted onto magnetic tape. When all payments received for the day have been entered on the payment processing workstations the magnetic tape is taken to the Information Systems Department. Information Systems will then load the tape on the AS400 and send a notice to the appropriate Finance Department employee. The Finance Department employee then gets on the AS400 computer and runs some routines to process the payments, set them up for posting and finally post the payments. That night the individual customer files are updated by Information Systems to

minimize the outage of the system. By contrast, current customer information systems allow for the immediate posting of payments to customer records when payments are inputted in the system.

C4A-3 New Jersey-American's utilization of concentration banking linked with a short term line of credit minimizes short term interest costs and maximizes investment income.

By automatically sweeping the collection, disbursements, and payroll accounts, funds are invested overnight, generating interest income. Any excess funds over the Company's normal operating requirements are automatically paid against the short term line of credit, thus minimizing the use of short term financing.

C4A-4 The Company's use of electronic banking for cash receipts and disbursements is minimal.

New Jersey-American pays most of their vendors by paper check as opposed to using electronic bank services such as the automated clearing house. Generating paper checks is more expensive due to the cost of printing and mailing the checks as well as higher bank charges to process the checks. A very small percentage of the Company's customers take advantage of the Zip Check option of paying their monthly water bill. Zip Check allows New Jersey-American to automatically debit the customers account for the amount of their water bill. This is the most inexpensive method of collecting customer payments.

C4A-5 New Jersey-American's short term lines of credit are adequate to provide for the Company's short term financing at competitive interest rates.

The use of lines of credit from three separate banks provides New Jersey-American with a safe cushion of short term financing. The Company is able to shop among the three banks for the most competitive interest rate, which allows the Company to minimize its interest costs on short term debt by moving funds among the three to the bank offering the lowest interest rate.

Recommendations
(Cash Management)

R4A-1 Update and streamline the processing and posting of customer payments to improve efficiency in the remittance processing area as well as in the computer operations area. (Refer to Conclusion C4A-2.)

The implementation of the new customer information system, Orcom, will provide the ideal opportunity to improve this process. The Orcom system will allow real time processing of customer payments as opposed to the current batch system. This will eliminate the need for transferring magnetic tape from the payment processing workstations as well as save the time required by Finance Department personnel to perform processing operations on the computer. Finally, the immediate posting of payments to the customer accounts will eliminate the need for computer outages to update customer files. Customer payments will be inputted directly into the customer information system when the payment is processed in the payment remittance section.

R4A-2 Study and review the feasibility of increasing utilization of electronic banking features through the use of the automated clearing house for payment of vendors and Zip Check for receipt of customer payments. (Refer to Conclusion C4A-4.)

Vendors should be encouraged to accept payment for their products and services through ACH. This may result in cost savings by not having to prepare, print and mail a paper check. The ACH process can be implemented by having the vendors fill out a form that will allow the Company to direct deposit the payment into the vendor's bank account. New Jersey-American should increase its marketing efforts to encourage more customers to pay their monthly water bill by Zip Check. The Company should consider requesting approval of a budget billing plan in its tariffs filed in the next rate application for customers who chose to pay by Zip Check. This should encourage more customers to choose this payment option since it will allow the customer to know in advance how much they will need to budget for water for the next twelve months. Customers may also be more inclined to agree to an automatic withdrawal

from their bank account if they know well in advance the amount of the withdrawal. New Jersey-American will benefit from the cost savings of more customers opting for the least expensive automatic withdrawal payment method and a steadier stream of cash flow.

4B Accounting

This section evaluates how adequately Accounting:

- Standardizes procedures to ensure maximum efficiency
- Documents transactions fully and clearly
- Conforms to accepted accounting practice
- Provides adequate controls against fraud and error
- Facilitates the use of meaningful cost categories.

To make this evaluation the investigation includes the following topics and issues:

- Timeliness of closing the books
- Payroll processing procedures
- Payables management
- Plant and depreciation accounting
- Integration of accounting and financial functions.

The mission of Accounting is to capture, organize, maintain, process, and protect all records of revenues, expenses, assets and liabilities in accordance with legal and regulatory requirements, and to make the information available to management in timely and cost effective formats useful for analysis and decision support.

Since the last management audit the accounting function has been consolidated from five offices to one. Previously each operating division had its own clerical staff. The consolidation was implemented over a two year period and resulted in a reduction of accounting staff from 46 to the present level of 22. In addition, there was a reduction in the number of layers of management in the Accounting Department. The Accounting Department organization chart was flattened. Networking the Company's computers allows employees at division offices to access the accounting system and employees at remote locations and the Haddon Heights corporate office can communicate by e-mail.

At the present time Accounting uses accounting software that was developed in-house. Continuing property records had been maintained in manual ledgers until

recently when new additions have been maintained on a database program. There is no computerized purchase order system. In 1997 New Jersey-American will convert to the J. D. Edwards accounting software package. The J. D. Edwards software is a high-end off-the-shelf integrated accounting package. All the American Water Works system companies will be converting to this software, with New Jersey-American making the initial conversion.

New Jersey-American maintains its books and records in accordance with the National Association of Regulatory Commissioners 1976 Uniform System of Accounts for Class A and B Water Utilities as required by the BPU. This chart of accounts provides for the accumulation of plant costs and operating and maintenance expenses by functional categories such as supply, pumping, treatment, transmission and distribution, customer accounts, and administrative and general. Costs are accumulated in detailed operation and maintenance expense categories within each function.

Timeliness of Closing the Books

An important function of the Accounting Department is to produce accurate, timely financial statements to meet all of the Company's external and internal reporting requirements. As part of a holding company New Jersey-American must provide financial statements to Corporate on the tenth day following the end of the month. In addition to this obvious reporting deadline it is also important to provide the financial reports to New Jersey-American management. The financial statements measure historical results which can then be compared to prior year results and current year expectations as outlined in the budget. This provides management with the information necessary to make decisions on appropriate corrective actions if actual results are below expectations.

In order to meet the ten day closing deadline New Jersey-American uses seven days to close with an additional two days of review. Accounts payable and payroll close on the second working day. Property accounting closes by the fourth working day and all tax calculations are made on the sixth day. After the Vice President and Comptroller reviews and approves the financial statements, variance report, tax calculation, and investment budget control report the financial statements are provided to the appropriate managers of New Jersey-American and to the parent

company. Based on our interviews Accounting has consistently met the monthly deadline for financial reporting.

A further enhancement resulting from the conversion to the J. D. Edwards software is the ability to inquire into the balance of a particular account at any time during the month. Managers will have real time access to any account balance and will also be able to do on-line budget comparisons before approving expenditures or deferring nonessential projects. Management personnel won't have to wait until ten days after the end of the month to find out that a particular account is over budget and what caused the variance. All transactions processed during the month including open maintenance work orders will be reflected in the account balance once the J.D. Edwards software is in use.

Payroll Processing Procedures

The payroll processing function begins with the process of time reporting. Currently time reporting is done in many cases on paper time sheets, although individuals with access to the AS400 input their own time into the system. Time is recorded for each task by account number, budget code, department code, activity code, and location code. Once the time sheet is approved by the department supervisor, the time records are entered into the payroll system. Detail reports are generated that summarize the payroll information and are reviewed for errors. The reports are approved by the department head and then mailed to the payroll department in Haddon Heights.

An on-line review of the payroll entries is done by the payroll department and a clerk will combine all transactions posted into one file. This process will generate two reports, a verification report and the payroll time register. The verification report lists the number of checks and direct deposits, which are the source document for printing the payroll checks. After the verification report is reviewed and approved by the Assistant Director of Accounting, blank checks are released to the Treasury Department who prints the checks. The checks are locked in a safe by payment remittance until distribution to the employees. Any unclaimed payroll checks are returned to the safe. Each month an automatic payroll journal entry is done by Accounting to distribute the gross payroll to the various general ledger accounts that should be charged based on the payroll coding. Payroll deductions are recorded through a manual journal entry. Disbursement authorizations are prepared

to pay the various payroll tax liabilities and to record the net of the pay checks and direct deposits.

Employee sick time, accrued vacation, and floating holidays are currently kept on computerized attendance cards. This and all other payroll reports are kept confidential in the payroll office.

The implementation to the J. D. Edwards payroll module is scheduled to take place in late 1997 in order for the conversion to the new system to be effective at the beginning of 1998. This will avoid using two different systems during the year which would require entering year-to-date payroll information for payroll reporting purposes.

Payables Management

Prior to processing any invoice over $300 the accounts payable department is required to match the purchase order, receiving document, and invoice. If the invoice is billed under a written agreement or contract then the invoice is to be compared to the terms of the contract which are required to be sent to accounts payable. Items under $300 require only the matching of the receiving document and the invoice. Payables then verifies that the purchase was properly approved, the terms, the sales tax if applicable, contract prices to the contract if applicable, the coding for entering the payment in the accounting system, the math is correct, and that all supporting documentation is attached.

Once the voucher package is complete the invoice should be entered into the accounts payable system within five working days of approval. After all the invoices have been entered for the day, the Accounts Payable Edit report is compared to a tape of the total invoices entered. The tape and edit run are reconciled and adjusted to the correct amounts. The listing of accounts payable transactions is reviewed daily against the actual vouchers to insure that the information entered agrees with the invoice and that the proper amounts, approvals, account coding, due date, and invoice number have been entered.

The Treasury department runs and distributes the checks. Accounts payable is provided a check register for filing and all vouchers are marked paid prior to filing.

Plant and Depreciation Accounting

Plant accounting involves the accumulation of plant additions and retirements in work orders. The work orders flow into the construction work in progress account. Once the work order is completed the work order is closed out and the balance in construction work in progress is transferred to plant in service. The details of the final cost and location of the plant is recorded and maintained in continuing property records (CPRs). At the present time most of the CPRs are recorded in manual ledgers. New Jersey-American is now recording the CPRs in a data base software program until the fixed asset module of the J. D. Edwards software is implemented. The J. D. Edwards fixed asset module has the capability to maintain continuing property records.

Once the construction is complete and the assets are transferred to plant in service then the utility is allowed to begin depreciating the cost over its estimated useful life for book purposes. In addition, the cost basis of the asset for tax purposes is depreciated over the tax life allowed by the Internal Revenue Service. At the present time New Jersey-American uses an in-house depreciation software package for book depreciation and a tax depreciation software package from Price Waterhouse. When the Company converts to the J. D. Edwards software, book depreciation will be maintained on the J. D. Edwards fixed asset module.

Integration of Accounting and Financial Functions

The accounting and financial functions must be sufficiently integrated to allow both functions to operate smoothly and effectively, while maintaining a proper segregation of the duties involved in the two distinct functions. Accounting is responsible for recording, processing and classifying the Company's financial transactions and reporting the results to management, external investors and the financial community. Finance is responsible for obtaining the Company's financing, developing budgets and long term financial forecasts, collecting customer payments, disbursing payments to vendors, employees and investors. This segregation of responsibilities is a key element to the Company's internal control structure. While the accounting and financial functions must maintain an adequate segregation, they must also be integrated and be coordinated to allow each function to be performed effectively. For example, finance is responsible for issuing checks to vendors. However, the check can only be issued after accounting has matched a purchase

order with an invoice and a receiving report, coded the payment to the proper account and authorized finance to release the payment. Accounting records the payment on the Company's general ledger and finance records the payment in the Company's cash book (checkbook). Each month a bank reconciliation is done by accounting to verify that the bank balance maintained by finance agrees with the cash balance on the general ledger maintained by accounting.

The implementation of the J. D. Edwards software should improve the integration of the accounting and financial functions. The J. D. Edwards software is fully integrated with automatic posting and on-line budget-to-actual comparisons. For the first time, New Jersey-American will have an automated purchase order system with on-line approval. Before authorizing a purchase, managers will be able to make budget-to-actual comparisons of the particular account or work order to which the purchase will be charged in order to insure adherence to the budget. The J. D. Edwards software will interface with the Company's new customer information system software package, Orcom.

Findings and Conclusions
(Accounting)

C4B-1 **Centralization of the accounting function has resulted in a significant reduction in accounting staff and a corresponding reduction in costs while maintaining the quality and timeliness in performing the various accounting processes.**

By centralizing the accounting functions previously performed at the various division offices, New Jersey-American has been able to take advantage of economies of scale resulting from maintaining a staff at one location as opposed to five. Now all of the accounting clerical work is performed at the Haddon Heights corporate office. The clerical staff can be supervised by one manager as compared to the five managers required under the division accounting office structure. With the computers networked, the accounting clerks can effectively communicate with the division personnel by e-mail, and division personnel can access accounting information on-line subject to appropriate security procedures.

C4B-2 The implementation of the J.D. Edwards software will, among other benefits, significantly improve the integration of the accounting and financial functions.

Recommendations
(Accounting)

There are no recommendations in the accounting function.

4C Taxes

This section evaluates how adequately the Tax function:

- Minimizes taxes through tax planning as well as tax preparation
- Defends tax policies and practices during audits
- Streamlines and controls the quality of the tax preparation process
- Provides up-to-date documentation of policies and procedures to which employees adhere.

To make this evaluation the investigation includes the following topics and issues:

- Degree of automation and use of information
- Tax compliance policies and procedures
- Strategies to minimize taxes.

The mission of the tax function is to calculate tax liabilities, prepare tax returns, and provide consulting on methods of minimizing tax obligations. New Jersey-American prepares its Federal income tax return on a stand-alone basis and pays its share of the American Water Works consolidated tax liability based on that return. The preparation of the consolidated return is done by the Service Company. In addition to Federal income taxes the Company is responsible for gross receipts and franchise taxes and property taxes. Public utilities are not required to pay state income taxes in the state of New Jersey. Sales tax payment is not required on the purchase of assets used in the public utility function but is payable on general plant and office supplies. The Company is responsible for payroll taxes including Social Security and Unemployment.

Automation and Use of Information

New Jersey-American as well as the entire American system use tax preparation software by Price Waterhouse called the Tax Management System (TMS). Fixed assets and tax depreciation is maintained on another Price Waterhouse software product called the Fixed Asset Management System (FAMS).

Book and tax timing differences are maintained on a spreadsheet and are reflected on the tax return as Schedule M adjustments.

New Jersey-American has two full time tax accountants responsible for tax accounting and tax preparation. They had previously reported directly to the Vice President and Comptroller. Recently the Company hired a new Director of Accounting who has a Masters Degree in Taxation. The tax accountants now report to the new Director of Accounting. In addition to tax preparation the tax accountants compute deferred tax provisions in accordance with Statement of Financial Accounting Standards No. 109, Accounting for Income Taxes (FAS 109).

Tax Compliance Policies and Procedures

The Internal Revenue Service is in the process of auditing AWWC for the year 1991. The IRS completed the audit of the 1992 and 1993 tax years in January of 1997. The only adjustment made in the 1992 audit was a small adjustment to the research and development credit. For 1993 the IRS capitalized some repairs that the Company had expensed on the return. Neither adjustment was material to a company the size of New Jersey-American. There had been no IRS audits for the years 1987, 1988, 1989, and 1990. Prior to 1988 AWWC had been audited for every year since 1974. In the later years the adjustments made by the IRS were primarily related to Investment Tax Credits which may explain the four year hiatus in audits. Investment Tax Credits were repealed in the Tax Reform Act of 1986 which would have eliminated this as a potential issue in an IRS audit.

New Jersey-American has compliance procedures and filing schedules in place that allow it to meet its tax filing and tax payment requirements by the applicable due dates. Since New Jersey-American is a member of a consolidated tax filing group and pays its share of the tax liability on a stand-alone basis, any underpayment of Federal income taxes would be the responsibility of AWWC. The following schedule of tax penalties for the past five years indicates the Company has complied with most tax filing requirements.

- 1991 total penalties: $0
- 1992 total penalties: $0
- 1993 total penalties: $0
- 1994 total penalties: $6,888
- 1995 total penalties: $59,979.

The two penalties were related to failure to pay payroll withholding deposits by the due date. Both penalties occurred during the consolidation of the accounting function, and payroll tax procedures were changed to correct this problem. No other penalties have been incurred since the procedures were changed. New Jersey-American incurred no other tax penalties during this time period.

The Company receives information from the Service Company tax department on changes in tax law that may have an impact on the determination of New Jersey-American's tax liability. Technical advice on tax issues is available from the Service Company and if necessary Price Waterhouse can be consulted. Tax policies and procedures are revised as necessary to comply with tax law changes and communicated to employees.

Strategies to Minimize Taxes

Most tax savings are generated from accelerating the recognition of a deduction or delaying the recognition of income for tax purposes. Therefore most tax benefits arise from timing differences and not whether the item is a deductible expense or taxable income. Ultimately the majority of all financial transactions are deducted as an expense or included as income on the tax return. Differences between the recognition of transactions for book and tax purposes create deferred tax liabilities and deferred tax assets and the change in these deferred tax liabilities and assets that occur during the year are recognized as a deferred tax expense. Since the BPU allows normalization of tax differences for rate purposes the deferred tax expense is collected from customers in rates, however ratepayers do not have to provide the utility a return on plant funded by the net balance of deferred tax liabilities. Therefore there is very little benefit to ratepayers in minimizing taxes through timing differences between recognition for book and tax purposes. The collection of deferred tax expense in rates does provide the Company with cash flow and reduces its need for external financing.

The most significant event to minimize taxes for water and sewer utilities occurred as a result of tax legislation passed in 1996. This legislation repealed the provisions of the Tax Reform Act of 1986 which taxed contributions in aid of construction (CIAC) as income. In order to be excluded from income, cash contributions must be spent on property used in providing utility service by the end of the second tax year after receipt of the contribution. For a utility the size of New Jersey-American this

restriction should not be difficult to meet but it will impose new record keeping requirements for contributions and the subsequent expenditures. A further restriction to treating CIAC as a tax-free contribution to capital is that the contribution must be excluded from rate base for rate making purposes. The BPU currently excludes CIAC from rate base.

Most acquisitions over the past several years have been small municipal systems where the assets of the municipals water or sewer system were acquired. For potential acquisitions of privately owned systems the tax department is consulted as to whether, for tax purposes, the acquisition should be treated as an asset purchase or a stock purchase. Creative tax planning can be useful in structuring a potential sale that will be most advantageous to both the potential seller and the Company and possibly reduce the sales price through a sharing of the taxes avoided on the transaction.

Findings and Conclusions
(Taxes)

C4C-1 Tax policies and procedures have resulted in effective compliance with tax laws and regulations.

Historically tax policies and practices have been successfully defended during audits.

Up until 1987 the Internal Revenue Service had audited AWWC every year and for the most part found the Company's tax policies acceptable. In fact no audits were conducted at all for the years 1988 through 1990. It can be inferred that this lack of interest on the part of the IRS audit division was the result of the Company's achieving favorable results in prior audits. In addition, New Jersey-American consistently meets all tax filing and payment deadlines as evidenced by the minor incidence of tax penalties that have been assessed over the past five years.

C4C-2 **The addition of accounting supervision with tax experience and education should improve the tax planning, preparation, and accounting process. The Company may not be minimizing taxes due to the lack of attention being provided to the tax process as a result of reorganization and other staff changes.**

While the Vice President and Comptroller of New Jersey-American has prior tax experience the other demands of the position simply don't allow adequate time for direct supervision of accountants dealing with complicated tax issues. The staffing of a Director of Accounting experienced in tax matters will result in better supervision of the tax accountants and in more attention to tax planning opportunities. In addition, more attention can be directed to insuring that all tax related items are accounted for in accordance with generally accepted accounting standards.

Upon completion of the audit, the Company has hired an accountant who specializes in taxes.

C4C-3 **Taxes streamlines and controls the quality of the tax preparation process with tax software.**

The utilization of the Price Waterhouse tax preparation and tax depreciation software allows for the efficient computation of the Company's tax liability and preparation of the tax return. Electronic spreadsheets maintain all temporary differences in book and tax recognition. Tax information is submitted to the Service Company in a timely fashion.

Recommendations
(Taxes)

There are no recommendations in this section.

4D Budgeting and Cost Control

This section evaluates how adequately the budgeting and cost control function:

- Uses the budget as a planning tool that is the final, detailed step in the planning process and that follows directly and logically from prior planning steps.
- Provides accurate current-year financial forecasts for purposes of corporate financing.
- Applies the budget as a vehicle for exercising management control of expenditures and operations throughout the year, with deliberate allowances for mid-year changes when justified.
- Warns of emerging discrepancies between reality and plans.

To make this evaluation the investigation includes the following topics and issues:

- Relationship of the budget process to the planning process,
- Quality of the budget preparation process,
- Information content in departmental budgets and variance reports,
- Involvement and accountability of middle and lower management,
- Degree of involvement by senior management,
- Effectiveness in monitoring and controlling costs.

The mission of the budgeting and cost control function is to assist management to:

- Develop a budget that identifies and commits the resources necessary to implement the strategic and operational plans
- Use the budget as a tool for controlling costs and for detecting deviations from plan.

The preparation of the operating budget is the responsibility of the Director of Rates and Revenues, who reports to the Vice President and Treasurer. The preparation of the capital budget is the responsibility of the Vice President of Engineering and the Vice President of Operations. Both budgets are approved by the New Jersey-American Board of Directors.

Relationship of the Budget Process to the Planning Process

The planning process begins with the fifteen year engineering plan, the Comprehensive Planning Study (CPS), which is prepared by the Engineering Department at the Service Company. A separate study is prepared for each of the American Water System companies. These studies evaluate the long term needs for source of supply, treatment, transmission and distribution of water, based on projected customer growth, regulatory requirements, and needed replacements.

The preparation of the annual capital budget is managed by the Vice President of Engineering. The capital budget consists of two parts. One part is recurring items which consist of items considered to be routine replacements, services to new customers, extensions of service to new developments, and office equipment. The second part of the capital budget consists of projects planned in the CPS.

The capital projects are prioritized on a three tier system as follows:

- Projects that have to be done to comply with a particular law or regulation,
- Projects that potentially would affect the ability of the Company to provide water quality and quantity,
- Projects that are of a discretionary nature that have the potential to save costs through the implementation of new technology.

The final decision on which projects are included in the current year capital budget is made by the Vice President of Engineering and the Vice President of Operations. If they cannot agree on particular projects then the President and Vice President-Treasurer are consulted and the final decision is made by the President. The current year's capital budget is the detailed capital investment plan in the five-year financial plan.

A five-year financial plan is prepared based on the capital investment requirements reflected in the CPS, projected revenues and projected expenses including rate increases and customer growth. Each year a new plan is prepared for the upcoming five year period. The first year of the five-year plan is the current year operating budget.

Each department is responsible for preparing its own budget with the overall budget preparation coordinated by a financial analyst reporting to the Director of

Rates and Revenues. The position previously reported to the Director of Business Development but was realigned during the recent reorganization. The function was moved because budgeting was considered to be a better fit in the Rate Department as opposed to Business Development. Both Budgeting and the Rate Department are involved with projecting future costs; the Rate Department to justify future rates in rate proceeding and the Budget Department to develop an operating budget to guide and measure operating performance.

Both the operating and capital budgets are approved by the Board of Directors and form the basis for managing the Company. The budgets project the operation of each division and of the total Company on a monthly schedule. They also provide the authority for officers and managers to use funds, materials, equipment, and employees. The Board of Directors normally approves this plan in the fourth quarter of each year for the following year.

Quality of the Budget Preparation Process

The Company uses zero-based budgeting and requires each department to determine its needs for the upcoming year. The cash management section of the Finance Department is responsible for budgeting interest income and interest expense. The Accounting Department prepares the budget for depreciation and property taxes, and calculates income taxes based on budgeted revenues and expenses. Dividends are budgeted at 75% of the prior quarter's net income. New acquisitions are budgeted separately and remain separate for budget and accounting purposes until the rates in the newly acquired area are equalized with the rest of the New Jersey-American system. A five year average of sales volume adjusted for customer growth is used to budget revenues. The process begins in mid-summer and the final budget is approved at the December meeting of the Board of Directors.

The J. D. Edwards software package has a budgeting module which will be implemented in 1997. This will provide the Company with budget comparisons at the same level of detail as the general ledger. Managers will be able to develop their budgets and then upload their budget on the system for consolidation into a total Company budget.

As discussed in the previous section, capital projects are ranked in three tiers. In essence, the first tier consists of projects that legally have to be done, the second tier

is projects that are important to do for service quality reasons, and the lowest tier is projects that should be done for cost or business reasons. The selection of particular projects among the various discretionary projects is made based on an informal analysis. No formal analytical process is used to evaluate and rank the various competing projects.

Cost savings related to doing a particular project now as opposed to the time frame reflected in the CPS are considered in evaluating capital projects. For example, if the Company will be required to relocate a main as a result of road construction and the CPS has that main scheduled to be increased in size several years from now then the main would be increased in size at the same time the relocation is done to take advantage of the cost savings of doing both at the same time.

Information Content in Budgets and Variance Reports

Each of the operating center managers receive monthly operating statements which detail revenues and expenses comparing actual results to the budget for the month with a variance column. The financial analyst responsible for budgets prepares a variance analysis each month and prepares a variance letter explaining the cause of the variance. A substantial variance requires the department head to determine the cause of the variance. The monthly variance letter is provided to the Vice President and Treasurer.

An adjusted operating budget is prepared monthly to reflect changes that have occurred during the year or expected to occur prior to the end of the year that would effect the budget. This monthly revision keeps management with a relevant and attainable budget to guide performance the remainder of the year.

The implementation of the J. D. Edwards budgeting module should improve the informational content in the budget. The Company will be able to make budget comparisons at the same level of detail as the general ledger is maintained. This will allow for a variance not only by operating center and account but also by specific activities or production units.

Involvement and Accountability of Middle and Lower Management

Making each department responsible for developing that department's budget involves the entire management team in the budget process. For example, in the

Finance Department each director is responsible for his or her budget, which is submitted to the Vice President of Finance for approval prior to inclusion in the total Company budget. The same process is used for all departments of New Jersey-American. Because the department managers are responsible for their own budgets, they are directly involved in establishing goals and performance objectives for their department and implementing a plan to achieve those goals and objectives.

Involvement by Senior Management

A monthly variance letter explaining all material variances is prepared and provided to the Vice President and Treasurer. Department managers are required to explain significant budget variances that occurred in their department. Total Company budget variances along with explanations and plans for corrective action in areas that are controllable by management are reviewed by senior management.

Effectiveness in Monitoring and Controlling Costs

For the most part the budget and variance review process at New Jersey-American is effective in monitoring and controlling costs. The American Water System has implemented a performance incentive award program to compensate management personnel based on certain standards of performance. One of these performance standards is meeting budgetary objectives. The standard requires that actual performance be within five percent of operating and investment budgets. Management is required to develop contingency plans if first quarter income is below budgeted income by five percent or greater.

The budgeting process recognizes and compensates for the impact of sales volume on budgeted revenues and costs. Water sales vary according to weather patterns. A cool, wet summer will result in lower water sales than a hot, dry summer. Certain operating costs are variable and fluctuate with sales volume. The Company's budget review process recognizes that certain costs vary with sales and that variances from budget caused by increased sales volume is outside of management's control. Therefore budget reports are able to measure variances that are within management's control.

Findings and Conclusions
(Budgeting and Cost Control)

C4D-1 **New Jersey-American uses the budget as a planning tool that is the final detailed step in the planning process, following directly and logically from prior longer term planning steps.**

The annual operating and capital budget follows directly from the fifteen-year Comprehensive Planning Study and a five-year forecast and goal setting process. Approved goals from upper management and the Board of Directors set the direction for the plan and provide the authority for work activity.

C4D-2 **The capital budgeting process needs to utilize a more formal analytical process to evaluate and select between competing capital projects.**

Discretionary capital projects are selected based on informal analysis and lack documentation as to how the selection was made. The Company does not employ any type of analytical techniques to ration its capital investments within each of the three tiers.

Recommendations
(Budgeting and Cost Control)

R4D-1 **Develop and implement a more formal analytical process to evaluate capital projects. (Refer to Conclusion C4D-2.)**

The utilization of analytical methods as part of the capital budgeting process offers the Company two distinct advantage over the current methodology. First, all competing projects are compared using the same objective investment criteria. Second, the Company has documentation supporting its capital investment decisions.

Possible analytical methods might include cost/benefit analysis, pay back, internal rate of return, average rate of return and present values. Another technique is an analysis of the various projects' impact on the Company's revenue requirement.

For Tier 2 projects, relating to adequacy and quality of service, measures of value might include estimated impact on the frequency of major leaks, service outages, etc.

4E Internal Auditing

This section evaluates how adequately Internal Auditing:

- Remains alert to apparent problems throughout the Company.
- Concentrates its audit activities in areas where they are most needed.
- Accurately identifies the key problems and improvement opportunities in each area examined, proposing realistic recommendations for change.
- Causes prompt change to correct identified problems.

To make this evaluation the investigation includes the following topics and issues:

- Quantity, scope and quality of audits performed
- Procedures for the development of audit agenda and priorities
- Management attention and compliance
- Adequacy of staffing
- Appropriateness of internal auditors to reduce external audit costs.

The mission of Internal Audit is to protect the Company against financial losses or legal liabilities due to accounting errors or fraud. In many companies it also includes the detection and elimination of inefficient or ineffective business practices. The latter is not considered a part of the mission of this Internal Audit function, however, nor is it an assigned responsibility of any other organizational component.

The Internal Audit function is located at the Headquarters office in Voorhees, and is managed by a Director of the Service Company. The Director reports administratively to the Vice President of Accounting at the Service Company and reports functionally to the President of the Service Company, who is also President of the American Water Works Company.

Quantity, Scope, and Quality of Audits Performed

The internal audit staff uses a standard audit program for each of the operating companies. The audit program is detailed by balance sheet categories with a section for work orders, a section for expense reports, and a section for personal computer

and microcomputer security. All aspects of the audit program are completed for each company's audit.

Internal Audit visits an operating company without warning, but with a letter of introduction. They follow a prescribed agenda, looking at the personnel file, stock, work orders, customer accounts, employee water accounts, expense statements, petty cash, inventory at the plants, and computer software licenses.

Typically Internal Audit's concerns are with accounting procedures. They verify that local offices follow documented procedures. Internal Audit also checks for fraud, which is rare, by looking for:

- Service theft;
  - Get a read-out of employee water usage. If the usage is too low, Internal Audit will investigate further. They will look for evidence, for example, that the meter or remote meter reading device might have been disconnected for periods of time.
  - Compare meter readings to see if the reading is different from the remote reading.
- Materials diversion.
  - Check work orders for the use of materials on the job that were checked out to the job.
  - Do a physical inventory of high value materials.
  - Evaluate the type of materials purchased, because some materials have a greater tendency to disappear.
- Cash diversion and collusion:
  - Verify cash balance calculations to check for errors or fraud.
  - Scrutinize the bidding procedure to make sure collusion does not exist. The procedures require a minimum of three sealed bids, and more than one person is to be present upon bid open. The relationship of bids received over time are examined to ensure that no pattern exists that may indicate bid rigging.

At the end of each week as the audit progresses a list of comments, concerns and deficiencies are provided to the department heads. At the conclusion of the audit an exit interview is held to discuss the results of the audit. A list of audit findings are presented to the appropriate Company officials at that time. After the fieldwork is completed a written report of the audit finding is prepared and sent to the operating company's President. The President and appropriate staff will prepare a response to

the internal audit report and detail their resolution of each of the audit findings in an Action Reply Report. Unless it is a particularly serious deficiency, Internal Audit will not perform any follow up procedures to verify that corrective actions have been taken.

The previous two internal audits of New Jersey-American have been conducted by five internal auditors. The audit fieldwork has taken approximately eight weeks with a report issued five to six weeks after the conclusion of the fieldwork. After the President's Action Reply Report is received by Internal Audit the audit report and reply are sent to the President of American Water Works Company.

The Internal Audit Reports document all findings observed during the audit regardless of materiality. It is difficult in reading the report to discern the seriousness of a particular finding. Items with imbalances of $200 appear to have the same degree of emphasis as an imbalance of $20,000. There is no indication of whether the finding is a result of a deficiency in the Company's internal control structure, noncompliance with the internal control structure, or a performance related problem.

Procedures for Development of Audit Agenda and Priorities

Internal Audit has a policy of auditing each operating company every three years. With many of the Companies consolidating similar to New Jersey-American the audits are getting closer to a two year rotation. If they find an area with a particular need for improvement then follow-up audit work will be conducted. The two to three-year rotation schedule may allow companies to anticipate the audit in advance.

Internal Audit does not use a risk assessment methodology as a means to prioritize audit focus. The Institute of Internal Auditors developed a risk assessment method that uses nineteen factors of risk. Internal Audit considers all the companies in the system to be fairly homogenous and plans audits based on the assumption that all the system companies are of equal risk. However, no risk assessment is done to confirm this assumption. While the American Water System companies are similar in many respects, there are also differences in size, organizational structure, and procedures, with some companies provided accounting services through a regional

office and some doing the accounting in house. At the present time different companies are using different accounting and customer information software.

Nor is any risk assessment done of particular audit areas; all the audit steps in the audit program are completed.

In addition to auditing the operating companies the Service Company is also audited. In addition to the standard internal audit procedures the Service Company billings to the other AWWC system companies are audited. Internal Audit verifies that the Service Company has billed for its services at cost.

All Internal Audit Reports along with the Action Reply Reports are sent to the President of AWWC. In addition the Director of Internal Audit is free to communicate directly with the audit committee of the AWWC Board of Directors at any time it is considered necessary. There are no limitations on the scope of the audits conducted by Internal Audit or on the content of the audit reports.

Management Attention and Compliance

Annually the Internal Audit Department prepares a report for the audit committee of AWWC. This report summarizes the past year's activities of the internal audit staff and their plans for the upcoming year. Individual company audit reports require a response from the Company's President detailing corrective action taken or planned for all finding noted in the report. All the audit reports and Company replies are sent to the President of AWWC.

Internal Audit does not get involved with operational issues or management effectiveness. The internal audit reports contain recommendations for clearing specific findings but no recommendations are made regarding how a process can be improved or a task done better.

Adequacy of Staffing

The Service Company employs eight people in the Internal Audit function at the present time. The Director of Internal Audits is a Certified Public Accountant and of the seven accountants on the staff, three have passed the CPA exam and one is certified. Entry level accountants must have a degree in accounting and a grade point average of 3.0 or higher. Generally the auditors stay in the Internal Audit

Department three to five years, after which time the Director attempts to place them in other positions in the Company.

A senior internal auditor is working full time on the J. D. Edwards implementation team to insure that the accounting system has adequate security and protection against fraud. This will provide the Internal Audit Department with a staff person knowledgeable of the new accounting system who can assist others in the department in learning the new system.

Internal Audit is in the process of auditing each of the operating companies' compliance with Statement of Financial Accounting Standard 109, Accounting for Income Taxes. This will be conducted outside the scope of the routine internal audits.

The Use of Internal Auditors to Reduce External Audit Costs

The Internal Audit Department assists extensively in coordinating the external audit. Each of the Internal Audit staff members spends approximately four to six weeks assisting on the audit, working directly for Price Waterhouse. The staff spends two to three weeks working on the interim audit in November and an additional two to three weeks assisting on the final field work.

The purpose of providing internal audit staff to assist Price Waterhouse is both to reduce the time required by the external auditors and to learn from them. Because internal auditors cost less than external auditors, they try to perform as much work as possible. Price Waterhouse reviews the internal staff work papers and copies of all internal audit reports. This helps avoid any duplication of effort on the part of the external auditors and also alert them to problem areas that may need additional audit attention.

Utilizing the Internal Audit staff to assist in the external audit results in reducing the number of hours that would be charged by the external auditors by at least 1000 hours. This results in a significant cost savings without adversely affecting the quality of the external audit.

Findings and Conclusions
(Internal Auditing)

C4E-1 Internal audit does a thorough job of performing its audit procedures on each Company on a three year rotation.

The rotation program provides Internal Audit the opportunity to remain in touch with apparent and emerging problems throughout the Company. If Internal Audit finds a particularly troubling problem, it returns for a follow-up audit to insure that the problem has been corrected or improvements initiated. The previous two audits of New Jersey-American did not indicate the need for any follow-up procedures.

C4E-2 Utilization of Internal Audit staff to assist in the external audit is both cost effective and an excellent learning opportunity for the staff.

The use of Internal Audit staff reduces external auditors' audit time by at least 1000 hours. Since the use of their own Internal Audit staff is less expensive than paying Price Waterhouse for their staff time, a significant cost saving results. In addition the Internal Audit staff benefits from working closely with and learning from the external auditors, and is alerted to problems discovered during the external audit.

C4E-3 Internal Audit does not schedule audits and plan audit procedures based on a risk assessment. The audits are planned based on a three-year rotation of all the American system companies and a standard audit program for each audit.

Internal Audit concentrates its audit activities according to the past history of problems uncovered but not by estimated risk. The three year rotation program as a means to direct its audit priorities puts the same amount of emphasis on each company. Internal audit uses the same audit program in conducting each audit. This approach allows the operating companies to know in advance what Internal Audit will be examining and to have a reasonable idea of when the next audit will be conducted. It cannot be concluded from this analysis that Internal Audit necessarily provides services where they are most needed.

C4E-4 **Internal Audit conducts a thorough audit in accordance with the standard audit program and reports its findings in detail to management. The report is confined to a description of the finding and a recommendation to correct the problem, however, with no analysis of cause or materiality.**

In those areas that Internal Audit examines, they have an established and thorough procedure for finding problems. The audit reports detail the findings noted in the audit but do not adequately address the cause, effect, and recommended solution to the problem. All findings regardless of materiality appear to receive the same emphasis in the reports. The reports generally recommend that the result of the problem be fixed but do not address the nature of the cause of the problem.

C4E-5 **Internal Audit causes prompt change to correct identified deficiencies.**

Through the follow up process Internal Audit ensures prompt change. The higher level managers of the problem organization receive a write-up of the problem and must respond to the issue. Internal Audit requires the manager to formally verify the correction of the matter. As a further check, repeat audits of the problem organization verifies the correction.

C4E-6 **Internal Audit verifies that the Service Company bills at cost and reviews the allocation of these costs on a three year rotation. Comparisons of the cost of the services provided by the Service Company to the cost of acquiring these services from non-affiliated vendors is not done, however.**

At the time of this management audit it had been approximately three years since the Service Company billing had been audited by Internal Audit. This is not frequent enough to detect and to correct problems with the billing. Also no procedures are performed to insure that the Service Company charges are competitive with other suppliers of the same services.

Recommendations
(Internal Auditing)

R4E-1 **Study assigning internal audit engagements based on risk assessment rather than a standard rotation to provide more thorough audit coverage of areas where the risk of errors, omissions, fraud and theft are greater. (Refer to Conclusion C4E-3.)**

The current three year rotation cycle does not provide for adequate audit coverage for some companies. The formation of a new AWWC subsidiary increases the need for greater audit coverage at New Jersey-American. This new subsidiary, New Jersey-American Resources (Resources) is operated totally by New Jersey-American employees, which will require a review of the allocation of costs and monthly billings by Internal Audit.

R4E-2 **More fully document the audit findings, including a determination of the causes, and classify the findings in categories in relation to their severity. (Refer to Conclusion C4E-4.)**

The audit reports currently lists a finding and recommends that it be corrected. The audit report should detail not only the problem but the cause of the problem, whether the problem is due to a lack of controls and procedures, a noncompliance with an existing control or procedure, or a deficiency in performance. The effect of the problem should be disclosed in the report along with any long term consequences of not correcting the source of the problem. The Company should be provided with a recommended solution to the cause of the problem, not just a recommendation to correct a result of the problem.

There is no indication in the report as to the relative severity of the findings, whether a particular finding represents a serious breach of the Company's accounting and administrative control procedures or an immaterial clerical oversight.

R4E-3 Continue to monitor Service Company billings to ensure that they are reasonable. (Refer to Conclusion C4E-6.)

Affiliated charges are often an issue in rate proceeding and the utility is frequently called upon to justify the amount and reasonableness of the charges. An annual audit of the Service Company billings can identify problems with affiliated charges before the problem becomes an issue in a rate case. An analysis of the reasonableness of affiliated charges will provide all the companies with a data base that can be used to justify the benefits of the affiliated arrangements and the cost savings that result from being a part of the American Water system.

4F Corporate Financing

This section evaluates how adequately the corporate financing function:

- Manages to keep the cost of capital at or below the average of similar water utilities, with adjustments for inherent company strengths and weaknesses beyond the control of the corporate financing function.
- Balances innovation and prudence in financing decisions.

To make this evaluation the investigation includes the following topics and issues:

- Review of capital structure and goals
- Evaluation of options and efforts to reduce financing costs
- Assessment of the impact of financing decisions on cost of capital
- Review of financial planning.

The mission of the corporate financing function is to maintain the financial health of the Company in order to obtain, economically, the capital resources necessary to accomplish the Company's mission. New Jersey-American currently has a long-term debt rating of "A" by Standard and Poor's Rating Service but the rating was recently downgraded to "A–" for a short period of time.

The corporate financing function is coordinated between the Vice President and Treasurer of New Jersey-American and the Senior Vice President of Financial Services of the American Water Works Service Company. Long-term debt is issued directly by New Jersey-American and common stock is issued by the parent company and invested as needed in the individual subsidiaries.

The Finance Department at New Jersey-American handles the day-to-day corporate financing activities of the Company. Finance recommends financings, conducts the analysis, defends the recommendation and prepares offering memoranda for New Jersey-American. The Finance Department also manages the offering, regulatory filings, due diligence meetings and closing.

The corporate financing function receives guidance from the Vice President of Finance at the Service Company who keeps up with pricing and rate for the analysis

and reviews the offering memorandum to make sure there are no gross inconsistencies with the rest of the American Water System. The Vice President schedules securities offerings for the entire American Water System to make sure operating companies are not competing for funds at the same time.

Capital Structure and Goals

Capital structure policy is set for the entire American Water System. The goal of New Jersey-American is for a 40%-45% equity ratio and a corresponding 55%-60% debt ratio. New Jersey-American's financial and capital structure goals are driven by an overall goal to maintain an "A" bonding rating by Standard and Poor's. Currently the financial benchmarks needed to achieve an "A" rating by a water utility and New Jersey-American ratios at June 30, 1996, are as follows:

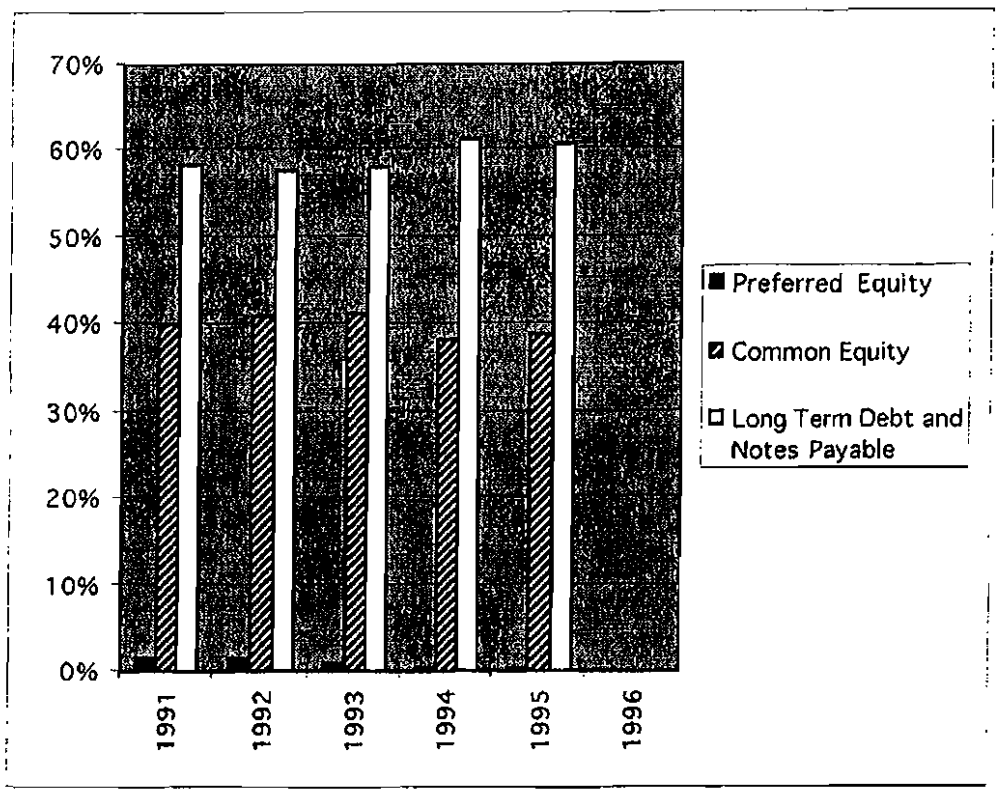
	S&P Benchmark	NJAWC
• Total Debt/Total Capital (%)	48-56	58
• Pretax Interest Coverage (x)	2.25-3.75	1.93
• Funds-Operations Coverage (x)	2.50-4.00	2.07
• Funds-Operations/Total Debt (%)	15-27	9
• Net Cash Flow/Capital Spending (%)	60-90	20

Generally New Jersey-American has been able to maintain an "A" rating despite financial ratios outside the range of standard S&P benchmarks because of the Company's affiliation with the American Water System. The rating agency is aware that New Jersey-American's parent, AWWC, can provide an infusion of equity capital to the Company if necessary and is aware of the financial strength and earnings reputation of the entire American Water System.

The Company's ratios in relation to the S&P benchmarks can be attributed in large part to the large capital spending activities associated with the Tri-County project and lower than expected additional sales from the Tri-County project. With the completion of that project, the implementation of a $39.5 million annual rate increase and an increase in sales from the Tri-County project, the Company's financial ratios should improve.

For the five year period ended December 31, 1995, New Jersey-American maintained an average pretax interest coverage of 2.54 times. Exhibit 4-3 shows the capitalization ratios of New Jersey-American for the years 1991 through 1996.

Exhibit 4-3
Capitalization Ratios for NJAWC



All of New Jersey-American's common shares are owned directly by AWWC or indirectly through another wholly owned subsidiary of AWWC. New Jersey-American issues all new common shares directly to AWWC. The Company is also able to increase equity capital by retaining 25% of earnings with the remaining 75% paid to AWWC in dividends.

Historically the Company has done most of its debt financing through private placements. The primary purchasers in a private placement are insurance companies, money market funds, and pension funds. The private placements are done by filing a 144A with the mechanics of the private placement being very similar to a public offering. The most recent financings have been public issues of tax-exempt debt.

Options and Efforts to Reduce Financing Costs

In recent years New Jersey-American has used tax-exempt financing from the State of New Jersey Economic Development Authority (EDA). This tax-exempt financing is approximately 180 basis points lower than the prevailing interest rate on taxable debt. The Company intends to utilize this lower cost financing as long as it is available and it receives an allocation of financing. The EDA financing has a higher issuance cost, but the lower interest rate more than offsets the higher issuance cost. The Company's most recent debt financing in May of 1996 was at a coupon rate of 6.0% and a true interest cost of 6.07%.

According to the transaction summary from its latest debt issue, New Jersey-American received bids from four underwriting syndicates representing a total of 48 participating underwriters. The winning bid was submitted by a syndicate headed by Merrill Lynch. Initially the Company had done a direct mailing to 70 firms and of those 70 there were 37 represented in the bidding.

Generally, permanent financing is done once a year with both debt and equity issued at the same time. Recently the permanent financing has taken place in May or June. At that time the short term lines of credit are repaid prior to new lines of credit becoming effective on June 1 of each year. New Jersey-American maintains sufficient lines of credit to allow a delay in permanent financing if it is not an opportune time to issue permanent financing.

Most of the debt issues outstanding at present are not callable. Of those issues that are callable, they are not callable until 5 to 8 years from now. All the issues are subject to some form of redemption premium should they be called and one issue has a make whole premium. This severely restricts the Company's ability to reduce its debt costs through refinancing of high cost debt but results in obtaining current financing on very favorable terms.

The Company finances with permanent capital in arrears, using its short-term lines of credit to fund capital requirements throughout the year. Financing in this manner is done because:

- Short-term debt is usually less expensive than long-term debt.
- The credit lines make borrowing easier and more flexible than permanent financing.

At the present time New Jersey-American can borrow short-term at rates of approximately 5.5% to 6%. This slightly below the rate paid on the most recent long-term debt issued with EDA tax-exempt financing. The Company arranged its 1997 financing with EDA with a projected closing in March when the 1996 financing was done. This was done to insure that tax-exempt financing would be available to New Jersey-American in 1997.

Impact of Financing Decisions on Cost of Capital

New Jersey-American and Pennsylvania-American are the only companies in the system with bond ratings by a major rating company. New Jersey-American has an "A" bond rating by Standard and Poor's Investment Service. The Company receives favorable interest rates because of its relatively large size and because of the bond rating. In fact, the 1996 debt issue was rated "AAA" by Standard and Poor's.

We compared New Jersey-American's cost of senior capital with that of five similar water companies. The results, according to the National Association of Water Companies' 1993, 1994, and 1995 Financial and Operating Data Report, are shown in Exhibit 4-4. While the results are not adjusted for age of securities or other influencing factors to assure full comparability, New Jersey-American's weighted cost of long-term debt compares favorably with the other five companies. The Company had the lowest weighted cost of debt of all the companies in 1994 and 1995. New Jersey-American's weighted yield on preferred stock was the second lowest of all the companies each year.

Exhibit 4-4
Comparison of Cost of Capital

	NJAWC	Elizabeth-town	United NJ Hackensack	Southern California	Philadelph. Suburban	St. Louis County
Weighted Cost of Debt (%)						
1993	8.16	8.25	7.55	8.22	8.40	7.73
1994	7.42	8.16	7.53	8.27	8.50	7.76
1995	7.52	7.57	6.29	8.20	8.00	7.24
Weighted Yield on Preferred Stock (%)						
1993	6.82	8.81	6.46	N.A.	8.66	N.A.
1994	4.78	7.37	5.49	4.40	8.66	N.A.
1995	4.78	7.37	6.27	4.38	8.00	N.A.

Financial Planning

The corporate financing function ties into the New Jersey-American planning process to determine financing needs (see Section 4D, Budgeting, for a discussion of the planning process). Most of the financing requirements are a direct result of the construction budget. Once the construction projects are approved, the Company begins the planning process to arrange the financing to fund the project. The annual operating and capital budget and the five-year plans are the principal tools that the corporate financing function uses to manage the financing schedule. Financing is planned to maintain a financing package that matches the life of the assets that are being financed. Applications for rate increases are coordinated into the financial planning model to insure that increased capital costs are recovered in rates.

Findings and Conclusions
(Corporate Financing)

C4F-1 **New Jersey-American's cost of senior debt is comparable to the cost of other water utilities of its size. Recent use of tax-exempt financing has reduced the Company's weighted cost of debt.**

The Company has been able to raise capital at costs generally below or equal to that of other water utilities of similar size and operating characteristics. The use of EDA tax-exempt financing at interest rates incrementally lower than the embedded cost of debt has lowered New Jersey-American's weighted cost of debt. The EDA issues have been well received in the financial markets.

C4F-2 **Current financial ratios for New Jersey-American are below the standard benchmarks used by the rating agency to set credit ratings. Despite not meeting the standard financial benchmarks the Company has an "A" bond rating from Standard & Poor's.**

Generally New Jersey-American is able to maintain an "A" bond rating with financial ratios that do not meet standard benchmarks due to its affiliation with the American Water System. The overall financial strength and earnings history of AWWC assures the rating agencies that New Jersey-American will have access to equity capital from its parent.

Recommendations
(Corporate Financing)

There are no recommendations in this section.

4G Rate Structure and Design

This section evaluates how adequately Rate Structure and Design:

- Proposes rate structures that are responsive to conservation needs, customer equity, and the practicalities of metering and customer billing.
- Prepares rate structure proposals and rate filings that are innovative, but supported by tight reasoning and solid analysis.

To make this evaluation the investigation includes the following topics and issues:

- The process for developing rate cases and designing rates
- Use of innovative and market-based rate design.

(The Company's compliance with regulatory orders and policies is covered in Chapter 1, Section H, Regulatory Compliance, and is therefore not dealt with here.)

The mission of Rate Structure and Design is to design rate structures that are fair to all classes of customers while allowing the Company to recover its costs of service, and to prepare and support rate filings.

The Director of Rates and Revenue is responsible for the Rates and Revenue function. The Director reports to the Vice President and Treasurer of New Jersey-American. In addition to the Director, there is an Assistant Director of Rates and Revenue with two revenue requirement specialists reporting to him.

Prior to its last rate case the Company had three separate water tariff groups within the state. These three tariffs were consolidated into one in that proceeding. Water rates for several systems recently acquired by New Jersey-American are being equalized over the next several years. Separate sewer rates are in effect for the two sewer systems served by the Company. New Jersey-American plans to maintain separate rates for its latest acquisition, the Howell Township water system.

The Company has one of the highest water rates in the state. While an analysis of the basis for rates is not a part of the scope of this study, it can be noted that there are several contributing factors to the high rates:

- The customer base is mostly residential, with a relatively small industrial component for a company of New Jersey-American's size.
- The capital investments for compliance with the Safe Drinking Water Act have been made.
- The service area is not contiguous, and in fact is widely dispersed over the state.
- The Company has just brought on line a new water treatment plant and the load is still "growing into" that new capacity.

The Process for Developing Rate Cases and Designing Rates

Rate cases are initiated as a result of the Company's five year financial plan. The five year operating and capital budgets along with the financing plan are prepared under the existing rates. From that analysis a determination is made of when the Company will need to file for rate increases. The five year plan is reviewed periodically to ensure that no major changes have occurred, and is updated annually.

Rate filings are prepared based on five months of actual historical data and seven months of projected data. An analysis is done to adjust for known changes that will occur in the next twelve months. Once the application is ready to be filed, the rate group will prepare a report that goes to the Board of Directors and the Officers of the Company for their review and approval. Once the case is filed a similar report that summarizes the filing is sent to all senior management of the Service Company, the president, vice presidents, and director of rates of all the other system operating companies.

Once the case is filed rates could become effective in 30 days. However, the Board of Public Utilities routinely extends this for four months to allow time for the discovery and hearing process. Generally the process will require an additional four month extension up to the full nine months allowed by statute. Most cases are settled, although the Company must go through the discovery process and support its application at a hearing. Upon completion of the hearing, settlement conferences take place with all of the participants in the case in an attempt to avoid the briefing

stage. Briefs are due about 12 days after the hearing with reply briefs due 5 days later. About 3 weeks after all briefs have been filed the administrative law judge who heard the case will issue a report. The final order will be issued by the BPU about 3 to 4 weeks later.

During the settlement discussions all participants discuss the various issues in disagreement and reach a consensus on the total amount of rate increase the Company should be granted. The stipulations provide the return on equity and overall cost of capital agreed to along with the rate base and an amount of the rate increase agreed upon by the parties. The agreement does not discuss individual rate issues settled in arriving at the rate increase.

Participants in the New Jersey-American rate proceeding in addition to the BPU staff include the Ratepayer Advocates Office, several wholesale customers and several municipalities who intervene on behalf of their residents. While most of the Company's rate cases have been stipulated, the most recent case was stipulated to all revenue requirement issues except the Tri-County project. In fact that issue was not only fully litigated but the final decision of the BPU has been appealed.

Most of the application and testimony is prepared in-house by the rate group. Outside consultants are used to perform a class cost of service study and to determine the Company's cost of equity capital. In the most recent case a consultant was retained to develop the rate for the Tri-County project. The Company indicated that the use of outside consultants for class cost of service and return on equity is both cost justified and more effective than having these studies done in-house. The issues are so specialized that the Company cannot justify hiring an expert full time to handle at most one rate case a year.

A summary of rate increases requested and granted in the last five rate cases is shown in Exhibit 4-5. This exhibit indicates that the Company received 62% of the requested increase.

Exhibit 4-5
Rate Increases Granted vs. Requested

Case Number	Rate Increases		
	Requested	Granted	% Granted
90090950	$21,490,918	$12,000,000	55.84%
91081399	$14,597,607	$6,950,000	47.61%
92090908	$21,717,946	$10,000,000	46.04%
94030059	$16,945,623	$10,000,000	60.19%
95040165	$52,934,273	$39,500,000	74.62%
Total	$127,686,367	$78,650,000	61.60%

The $39,500,000 increase in Case 95040165 includes $13,500,000 in estimated additional revenue from sales to new wholesale customers of the Tri-County project. The Company is permitted to defer one-half of the revenue shortfall below the estimated level due to delays in realizing this level of sales.

There are a number of factors that affect the outcome of a rate filing besides the quality of the filing. A major component of a utility's revenue requirement is the return on equity requested. The utility as an advocate for its stockholders generally requests a higher return on equity than the regulatory commission ultimately approves. Often issues are deferred for consideration at a future date and not considered in granting an increase in the current case. An example of this are deferred costs associated with implementing new accounting standards for Post Retirement Benefits Other than Pensions and Other Post Employment Benefits. The settlement process can also affect the amount of rate increase realized. A utility may agree to settle for less than the amount of increase that it could possibly receive by fully litigating the case. By reaching a timely settlement the utility is able to implement the rate increase without the additional delay required for litigation and may therefore begin collecting the higher rates as well as avoid additional rate case expense. The utility may also be willing to settle for a smaller percentage of the rate increase if it plans to file for another rate increase in the near future that will allow it the opportunity to recover any shortfall caused by settling the current case.

Use of Innovative and Market-Based Rate Designs

The existing rate design for general metered service applies to all customers other than wholesale customers and public and private fire protection. There are no distinctions between a residential, commercial, or industrial customer other than the monthly fixed service charge which is based on meter size. In addition to the monthly fixed charge all customers pay a usage rate on all water used. This usage rate is the same for all customers regardless of how much water is used or when they use it.

While peak demand issues are not as significant for a water company as they are for an electric utility because of the capability of storage that a water utility has, it is still a large problem. Water treatment plants, transmission and distribution lines, pumping stations and storage facilities must be designed to meet peak demands. Peak loads occur in the summer months due to lawn and garden watering. Seasonal rates or increasing rate blocks can be beneficial in decreasing peak demand by residential customers. However commercial and industrial customers with fairly steady consumption patterns would be penalized if they are required to pay that same usage rate. The Company has an excess winter water rate available to municipalities and other water companies that entered into take-or-pay excess winter water sales contracts with New Jersey-American. This rate is a seasonal rate with the water charge during the months of February through April at a much lower rate than the remainder of the year.

All sales are subject to the Company's approved rates contained in the tariff. This restricts the Company's ability to make "off-system" sales at spot prices that may be less than the tariff rates but sufficient to cover the variable costs of providing the water and contribute to covering the fixed costs. Conversely New Jersey-American cannot extract a premium on sales to municipalities and other water companies who purchase water only when a shortage exists in their system. These customers have contributed nothing to the fixed cost of having this capacity available other than when they make an occasional purchase and the relatively small fixed monthly charge.

New Jersey-American provides cost of service studies to support the proposed rates and rate design in its rate filings. These studies are typically done by a consultant. The studies allocate costs to the various rate districts and service classifications.

Most customers are now provided service under a uniform tariff, but acquisitions are often maintained on separate rates until the rates can be gradually equalized. The Company also has two sewer service territories that require cost allocation and separate rate design. The studies do not apportion cost of service by residential, commercial, and industrial customer classes and do not give any consideration of peak load pricing.

While conservation is always beneficial environmentally, it offers no economic benefit to the Company unless customers conserve during peak times. Since plant capacity must be designed and built to meet peak demands conservation during peak usage can delay the need for additional capital investment. Conservation at other times merely reduces the amount of revenue generated and results in a need for an increase in rates to recover this shortfall.

Findings and Conclusions
(Rate Structure and Design)

C4G-1 **Because the existing rate structure applies to all customers regardless of usage patterns and cost responsibility, it allows little flexibility to negotiate spot sales to wholesale customers at times when there is excess capacity.**

The existing rates are applied uniformly to all customer classes regardless of the relative costs of providing the service. A customer with a summer home whose usage is almost exclusively during the peak summer months pays the same rate as a large industrial customer with uniform usage throughout the year. While the existing rates are easy to administer and simple to understand, they are being applied to a non-homogeneous group of customers with different demand responsibilities.

C4G-2 **The Company as well as other system companies have always retained outside consultants to prepare cost of service and return on equity studies in rate filings. While individually the system companies cannot justify retaining the expertise to perform this function in-house, collectively the operating companies might justify the Service Company staffing these experts.**

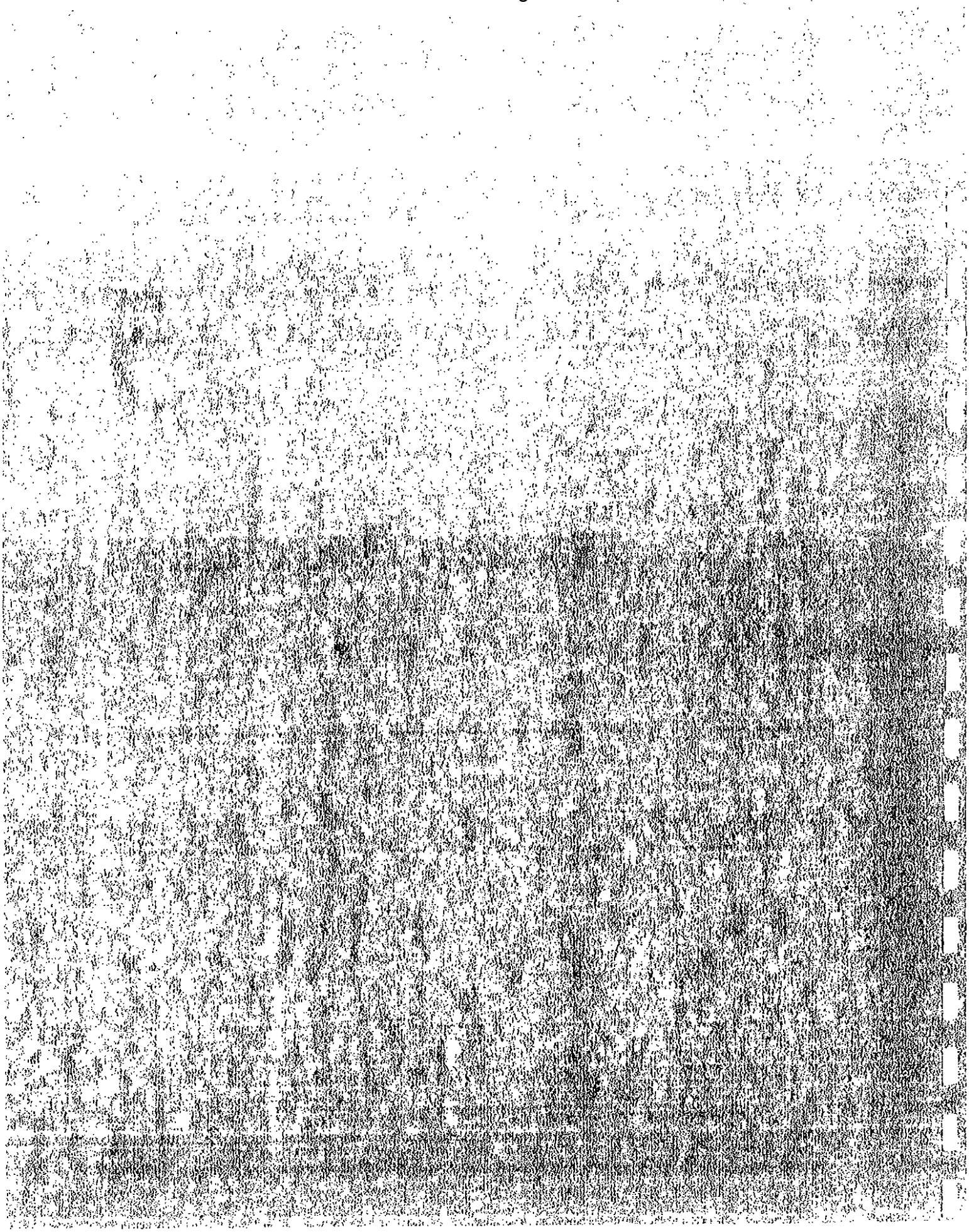
Once a cost of service or return on equity model has been developed, successive rate filings can often be made by updating that existing model with current information. Return on equity is determined based on the parent, American Water Works, which results in a consistent analysis that can be used with slight modifications in various states.

Recommendations
(Rate Structure and Design)

There are no recommendations in this section.

Chapter 5

Human Resources



Chapter 5
Human Resources

Effective human resource management is necessary for profitable operations and must be viewed in the context of the utility, the public utility industry, and the human resources field itself. Human resources plans and systems must support the mission, goals, values, and purposes of the utility, as well as comply with federal, state and local legal requirements.

The entire human resources profession, like American industry in general, is undergoing rapid change, and must serve the needs of both short term expediency and long term viability. In other words, we must consider not only how well the human resources function in the Company is tending to immediate needs but how well it is preparing for the needs of the future.

Dynamic change is currently the norm in the business. The human resources function is required to be a critical player in the change process—anticipating it, advising management on courses of action and, in general, guiding the change management process. The quality of treatment employees receive from their employer determines in large measure the quality of service they deliver to the customer. It is unrealistic to expect employees to deliver superior service to the cash-paying customer when they feel misused, taken advantage of, or mistreated.

Our overall view of New Jersey-American's Human Resources Department is that it is performing many of its functions in an outstanding manner, others acceptably, but

a few require immediate attention. Recognizing this need, NJAWC's Human Resources Department has taken action, and continues to take action, to improve in those areas where attention is required.

Specifically, the Department is doing an exceptional job in labor relations and employee relations areas. The lack of union strife, the low turnover rate, and the minimal number of complaints under EEO, Affirmative Action and other employment laws, suggests that employees are generally satisfied with the actions of the employer in these areas. Administration of compensation and benefits is being handled in a satisfactory fashion, and most of the needed improvements in these areas must come from the Service Company. The Service company has begun to address the need for improvements, such as in training and salary administration.

Improvements are needed at New Jersey-American, also, in training and development, performance management, productivity measurement and improvement, and strategic human resources planning. In order to do work in these areas, the Human Resources Department must get to full staffing levels, with particular attention being paid to the training and development area. This is being done by the Vice President of Human Resources as this report is being written.

The process of centralizing the Human Resources Department began in September, 1993, and was completed in June, 1996. The primary effect was to bring local Employee Relations Managers to the Haddon Heights office, leaving no human resources professionals at the Operating Center locations. With this centralization, steps must be taken to ensure that adequate human resources service levels are provided in those local offices that no longer have the presence of a resident human resources professional. This point is addressed further on the following pages.

Only one employee relations manager relocated to Haddon Heights. One Employee Relations Manager resigned, and another has been on medical leave of absence for most of 1996. This has the effect of leaving the Human Resources Department 50% understaffed at the professional level, and technically weak outside the employee relations area. Since the Department has taken steps since the commencement of our audit to correct this situation, a recommendation in this area is not needed.

There does not appear to be a human resources strategic plan that goes into any more detail than the company's "Strategic Business Plan" (which is the new name

for the "Five Year Plan," or more completely the "New Jersey American Water Company Five Year Plan: 1996-2000"). On Page 3 of the plan, there are three bullets referencing the mission of Human Resources. They are:

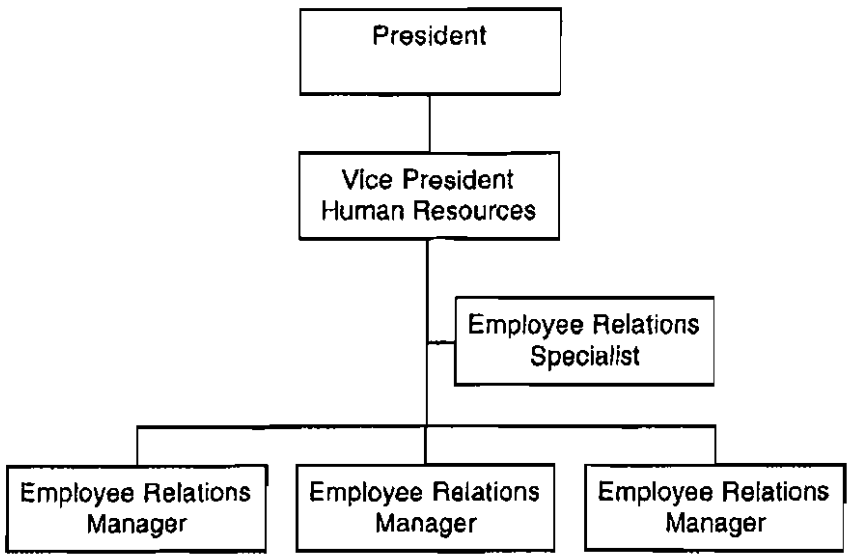
1. Attract and retain highly qualified people with knowledge and vision capable of successfully attaining the Company's objectives.
2. Develop talent capable of succeeding the current senior level management.
3. Provide training and develop customer focused employees who are responsive to new opportunities and challenges and committed to service excellence.

Our audit used the above three strategic guidelines as a standard against which the Department was measured. Our impression is that the second and third items are being neglected. The second item is not being done either by the Company or by the Service Company. The Company may assume in some cases that the third item is being handled by individual departments within the Company, but this is a hazardous assumption. Our observation is that, if it is being handled, it is a hit-and-miss process with very little guidance, interdepartmental consistency, or assistance and motivation from the Human Resources Department. The results are uneven. There has been no recent formal human resources needs analysis, and the strategic vision of the Department is inadequate. The Department's energy is focused on putting out brush fires. It is reactive, has a fuzzy vision of the future of Human Resources in the Company, and is making few preparations for that future.

Of the seven human resources functions listed below, this department has focused on employee and labor relations, compensation administration, benefits administration, and employment. Most of the other functions are handled wholly or in part by the human resources department at the Service Company, or by individual departments. Although the safety function does not fall under Human Resources in this Company, it is covered in this chapter.

Exhibit 5-1 shows the organization structure of the Human Resources Department.

Exhibit 5-1
Organization Structure
Human Resources Department



Human Resources includes a wide range of functions related to the employees of the Company. These functions include:

A. Wage and Salary Practices
B. Compensations and Benefits
C. Development, Training and Evaluation
D. Productivity and Utilization
E. Employee and Labor Relations
F. Safety
G. Employment and EEO/AA.

These functions are covered in this chapter.

Findings and Conclusions
(Human Resources, Overall)

C5-1 **The Company's Strategic Business Plan is, in our judgment, inadequate for use as a planning driver for the human resources function.**

There is no information in the Strategic Business Plan (formerly known as the "Five Year Plan") that would serve to guide employee performance or motivate employees to achieve Company goals and objectives.

Recommendations
(Human Resources, Overall)

R5-1 **Develop a human resources plan that is rooted in the projections of the Company's Strategic Business Plan, and that addresses the implications of staff increases and resultant compensation planning (Refer to Conclusion C5-1).**

If workers are to participate actively in efforts to improve productivity, they must be made aware of the strategic directions and needs of the Company and how their work unit fits into the bigger picture.

The items listed in the Strategic Business Plan pertaining to Human Resources are more accurately an ongoing departmental objective, not a goal for the coming five years. The growth projections for the Company have significant impact on the work activities of the department and should be reflected clearly, in quantitative terms, in the plan.

5A Wage and Salary Practices

This section addresses the policies and practices relating to the administration of wages and salaries. It includes the relationship between compensation adjustments and employee performance and the effectiveness of wage and salary administration. It excludes assessment of the reasonableness of the levels of compensation, which is the topic of Section 5B, and employee evaluations, which is covered in Section 5C.

A "Salary Adjustment Guide" has been prepared by the Service Company and distributed to the operating companies, dated March 6, 1996. It shows a graduated scale of salary adjustments based on performance on a 5-point scale. It also scales downward the size of an available increase as an employee moves toward the top of a pay band. This is a standard compensation practice in American industry, and, if properly administered, should reward workers according to their performance.

Exhibit 5-2 suggests that the Company is doing rather well when compared to the corporation as a whole in distributing performance ratings across the ranges. If anything, the company is doing a slightly better job of completing the forms with integrity than the AWS as a whole, as indicated by the slightly broader distribution with less peaking at a rating of three. The fact that the president of the Company reviews all written performance evaluations undoubtedly contributes to this outcome.

Findings and Conclusions
(Wage and Salary Practices)

C5A-1 **Current position descriptions for all salaried positions do exist and are revised every 2-3 years as needed.**

They are currently undergoing a general review and update. They were last updated in May, 1991. The position descriptions are standard for the AWS, and unique positions required by the Company must be approved by the Service Company.

C5A-2 **We conclude that the Company is doing a very satisfactory job of administering the wage and salary programs developed for it by the Service Company.**

Recommendations
(Wage and Salary Practices)

There are no recommendations in this section.

Exhibit 5-2
Rating Distribution—Last Three Years

Entity & Year	RATING						
	ONE	TWO	THREE	FOUR	FIVE	N/R	Total
NJ--1994	2	9	165	33	2	5	216
% of Total	0.93	4.17	76.39	15.28	0.93	2.31	100.0
AWS--1994	3	22	963	235	11	49	1283
% of Total	0.23	1.71	75.06	18.32	0.86	3.82	100.0
NJ--1995	2	25	133	39	2	2	203
% of Total	0.99	12.32	65.52	19.21	0.99	0.99	100.0
AWS--1995	3	42	907	263	20	31	1266
% of Total	0.24	3.32	71.64	20.77	1.58	2.45	100.0
NJ--1996	6	15	133	32	0	10	197
% of Total	3.05	7.61	67.51	16.24	0.00	5.08	100.0
AWS--1996	6	24	883	302	17	51	1290
% of Total	0.47	1.86	68.45	23.41	1.32	3.95	100.0

5B Compensation and Benefits

Compensation and benefits offered by the Company should be sufficient to enable the Company to recruit and retain the caliber of talent needed to effectively carry out the mission, while being cost effective and competitive relative to the surrounding market.

Compensation and benefits programs are designed and implemented by the Service Company. They are administered by New Jersey-American and the other operating companies.

Compensation

An in-depth study of the full spectrum of wage and salary programs and their administration at the Company was performed to assess their effectiveness and efficiency. We found that salary program development is not done at the Company level, but at the Service Company level, including wage and salary studies, development of policies and procedures, and determination of salary bands for the entire corporation. Handled at the Company level are such things as performance evaluation, determination of salary increases based on performance, the preparation and updating of position descriptions, and the negotiation of wages with bargaining units.

A document entitled "Salary Administration," distributed on October 6, 1988, requires a market-competitive salary grade to be assigned to each position. It also stipulates that salary grades and salary levels will be based on a market study performed by an independent consultant and updated periodically. It finally requires a fifty percent spread between the minimum and maximum salary for each grade, with the midpoint representing the market level. The spread between grades is to be ten percent from the midpoints of the grades.

This document resulted in a salary study for non-executive/nonbargaining employees in 1989. The Director of Compensation and Benefits at the Service Company informed us that the data generated by that study is now obsolete. The "Salary Administration" policy was revised in May, 1993, but no new salary study

was performed until the fall of 1996. At that time, the consulting firm of Towers-Perrin, which specializes in salary studies, commenced a comprehensive system-wide salary study of the American Water System (AWS). That study was completed in February, 1997, after the completion of our audit interviews. The Company has made a copy of that study available to us, and the results are summarized in the tables below.

The Towers-Perrin Report

The study covered approximately 1,400 non-union employees categorized by 14 major departments summarized over the various AWC companies:

- Accounting
- Administration
- Audit
- Customer Service
- Distribution
- Engineering
- Finance
- Human Resources
- Information Systems
- Laboratory
- Operations
- Production
- Rates
- Water Quality

The general conclusion of the report from Towers-Perrin is that, overall, AWWC's staff compensation program, including *base salaries, salary range midpoints,* and *total cash compensation* (which is the same as base salaries in this corporation due to the relative lack of bonuses and incentive pay at this level) is competitive at the 50th percentile (median salary levels).

Towers-Perrin consultants define salaries as "competitive" if they fall between 90 percent and 110 percent of market salary levels. *Salary range midpoints* within AWS fall at 96 percent of competitive median base salary levels. Actual *base salary levels,* which are the same as total cash compensation within AWS, fall at 96 percent of competitive median total cash compensation levels. Both of these measures fall within the competitive range.

In addition, the report continues, AWS overall competitiveness is consistent across its major employee groups and levels, defined as:

- Managers and senior professionals/technical employees (grades 12 through 15)
- Professional/technical employees (grades 7 through 11)
- Para-professional/support employees (grades 2 through 6). There is presently only one employee at grade 1.

The report reveals that, while the AWS as a whole has salaries that are competitive with the industry, those employees on the technical side, such as engineering or operations, tend to receive compensation that is somewhat higher than competitive rates, while those employees on the support side, such as audit or information systems, receive lower than competitive compensation.

Base Salary And Compa-Ratio Analysis

The Towers-Perrin report stipulates that aggregate base salary levels falling between 90 percent and 110 percent of market salary levels are competitive. The base salary level for AWS is 99 percent. Exhibit 5-3, based on data from the Towers-Perrin report, gives a breakout, by major employee groups and levels, of (1) salaries as a percent of market and (2) average compa-ratio. (Compa-ratio is defined as an individual's actual salary as a percent of the mid-point of his/her range.)

Exhibit 5-3
Salary Levels by Employee Group

Employee Group/Level	Salary Grade	AWS Salaries as % of Market	Average Compa-ratio
Managerial/Senior Professional	12-15	101%	105%
Professional	7-11	96%	103%
Para-professional/Support	2-6	103%	98%

There is little variation between employee groups, but there is greater variation when the data is broken out by base salary grade level and by department. Exhibits 5-4 and 5-5 are also based on data from the Towers-Perrin report:

Exhibit 5-4
Salary Levels by Salary Grade

Salary Grade	AWS Salaries as % of Market	Average Compa-ratio	Salary Grade	AWS Salaries as % of Market	Average Compa-ratio
16	114%	105%	8	97%	105%
15	107%	107%	7	91%	100%
14	100%	105%	6	105%	98%
13	101%	103%	5	100%	97%
12	97%	106%	4	112%	96%
11	99%	101%	3	98%	104%
10	89%	104%	2	108%	101%
9	104%	104%	1	—	

Most grades, on average, are paid within the competitive range. In those cases that fall out of the 90-110% range, it can often be observed that the number of incumbents is small and/or the incumbents are long-tenured individuals whose compensation reflects their longevity. For senior managers, Towers-Perrin defines salaries as competitive if they are within 15% above and below the market rates, rather than 10%. The base salary average for the entire group, as noted above, is 99%, and the average compa-ratio is 103%. For all salary grades, the average compa-ratio falls between 90% and 110%.

Exhibit 5-5, reproduced from the Towers-Perrin report, compares salary competitiveness by type of department:

Exhibit 5-5
Salary Levels by Department

Department	AWS Salaries as % of Market	Department	AWS Salaries as % of Market
Accounting	101% *	Human Resources	105%
Administration	99%	Info. Systems	89%
Audit	82%	Laboratory	100%
Customer Service	95%	Operations	99%
Distribution	98%	Production	94%
Engineering	116%	Rates	101%
Finance	88%	Water Quality	95%

* There were three long-tenured Accounting positions that were paid well above the average. When these three positions are removed, the Accounting average falls to 91%.

Exhibit 5-6, developed from Towers-Perrin data, illustrates the overall competitiveness of salaries and salary midpoints throughout the AWS:

Exhibit 5-6
Salary and Midpoint Competitiveness

AWS Salary Competitiveness	Percent of Total	AWS Midpoint Competitiveness	Number of Grades	Percent of Total
Above 110%	21%	Above 110%	1	7%
90% to 110%	51%	90% to 110%	11	79%
Below 90%	28%	Below 90%	2	14%
Total	100%	Total	14	100%

Our examination of salary schedules at New Jersey-American shows a careful application of salary policies and guidelines developed by the Service Company. There were no significant variations from salary guidelines established by the Service Company.

Compensation is related to merit and longevity, as is typical of the industry. There is little in the way of incentive pay for superior performance, and this was pointed out in the Towers-Perrin study. This is also typical of the industry. It would be a worthwhile effort to consider a pay system that put greater emphasis on performance, objectively measured, rather than longevity or merit. Merit usually implies subjectivity. The establishment of a performance management process would improve the likelihood of measurable performance improvements, which could then be rewarded by the more flexible pay system recommended by Towers-Perrin.

Total Cash Compensation Analysis

Since the AWS does not offer annual bonuses or variable pay to staff positions below grade 16, total cash compensation is the same as base salary. In most cases, this reduces the overall competitiveness of AWS salaries, since they are being compared with companies outside the industry that offer such incentives. The exhibits below, developed from Towers-Perrin data, illustrate this—first, by employee/group level in Exhibit 5-7:

Exhibit 5-7
Compensation Competitiveness by Employee Group

Employee Group/Level	Salary Grade	AWS Salaries as % of Market	Total Cash Compensation as % of Market
Managerial/Senior Professional	12-15	101%	97%
Professional	7-11	96%	95%
Paraprofessional/Support	2-6	103%	103%

An analysis by salary grade in Exhibit 5-8 shows that it is primarily grades 10–15 that are less competitive on the basis of total cash compensation than on the basis of salary alone.

Exhibit 5-8
Compensation Competitiveness by Salary Grade

Salary Grade	AWS Salaries as % of Market	Total Cash Compensation as % of Market	Salary Grade	AWS Salaries as % of Market	Total Cash Compensation as % of Market
16	114%	116%	8	97%	96%
15	107%	103%	7	91%	91%
14	100%	93%	6	105%	105%
13	101%	98%	5	100%	100%
12	97%	94%	4	112%	112%
11	99%	98%	3	98%	98%
10	89%	87%	2	108%	108%
9	104%	104%	1	—	

By department, it is Operations and Administration that are most affected by the lack of bonuses or variable pay.

Exhibit 5-9
Compensation Competitiveness by Department

Department	AWS Salaries as % of Market	AWS Salaries as % of Market Total Cash	Department	AWS Salaries as % of Market	AWS Salaries as % of Market Total Cash
Accounting	101% *	99% *	Human Resources	105%	103%
Administration	99%	96%	Information Systems	89%	88%
Audit	82%	80%	Laboratory	100%	100%
Customer Service	95%	93%	Operations	99%	94%
Distribution	98%	98%	Production	94%	93%
Engineering	116%	116%	Rates	101%	99%
Finance	88%	86%	Water Quality	95%	95%

* Includes the three long-tenured employees referred to in the footnote to Exhibit 5-5.

Towers-Perrin also notes that approximately half of AWS employees fall either above or below the competitive range defined as 90% to 110% of market, as shown in Exhibit 5-10.

Exhibit 5-10
Percent Above/Within/Below Competitive Range

AWS Salary Competitiveness	Percent of Total Employees	AWS Total Cash Compensation Competitiveness	Percent of Total Employees
Above 110%	21%	Above 110%	19%
90% to 110%	51%	90% to 110%	48%
Below 90%	28%	Below 90%	33%
Total	100%	Total	100%

Towers-Perrin concludes that the current salary structure and salary grade assignments may no longer be aligned with the going market rates, and should be realigned. They recommend a new, more flexible salary structure for staff positions. It becomes the responsibility of the Service Company to develop a new salary structure. The operating companies, including the New Jersey-American Water

Company, are responsible for implementation of the new salary structure once it is designed by the Service Company.

Benefits

The Company provides, through programs developed by the Service Company, comprehensive benefits coverage for all employees, including:

- Health coverage with three plans to choose from
- Group life insurance
- A pension plan
- A 401k plan
- Dental coverage
- Short and long term disability
- Tuition assistance
- An employee assistance program.

All these coverages are standard for the industry and reasonably competitive. The employees we interviewed seemed uniformly satisfied with the benefits coverages and with the administration of the benefits programs.

The Employee Assistance Program (EAP), implemented last year, enables an employee to see a professional counselor for personal or domestic problems that do not fall under medical coverages but that can negatively impact employee productivity, such as drug and alcohol abuse by either the employee or a member of the family, emotional stress or trauma, or physical or emotional abuse. Such situations call for assistance from a licensed professional therapist or counselor, and are handled with complete confidentiality. In addition to an employee using the service on a self-initiated basis, a manager who supervises an employee who appears to need counseling due to work-related behavior problems can direct that employee to seek assistance under this plan. The manager is not informed of the nature of the counseling—only whether or not the employee kept the appointment. The EAP is too new to evaluate. As of our visits to the Company, many managers were aware only that the program had been initiated, and had not yet had a chance to apply it in their work areas.