WASHINGTON STATE
DEPARTMENT OF
ECOLOGY

Guidelines:
State One-Year Certification Program For Wastewater Treatment Projects

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G U I D E L I N E S

STATE

ONE-YEAR CERTIFICATION PROGRAM

FOR WASTEWATER TREATMENT PROJECTS

WASHINGTON STATE DEPARTMENT OF ECOLOGY

WATER QUALITY FINANCIAL ASSISTANCE PROGRAM

APRIL 1991

PREFACE

One-Year Certification Guidelines

The purpose of the One-Year Certification Program is to ensure that facilities built by Centennial money are working as intended. These guidelines are intended as a guide to recipients and Architectural/Engineering firms (A/E) involved in the certification of grant and loan wastewater treatment facilities. The actual One-Year Certification program requirements will be project specific and will be developed through discussions between the Department of Ecology and the respective recipients. However, when the word "must" is used in the text it indicates a regulatory requirement that must be followed.

It is strongly recommended that the recipients adopt as many of the guideline suggestions contained in Appendix II and III as possible for their One-Year Certification Program. They provide, among other things, techniques to show twenty year reliability of wastewater treatment systems whenever design year flows and loadings cannot be approximated to verify the design criteria parameters. This is important because excessive energy consumption or flow splitting imbalances to parallel units may not significantly impact the effluent at existing conditions but could have serious long term effects on effluent quality at design year flows.

STATE
ONE-YEAR CERTIFICATION PROGRAM DRAFT GUIDELINES

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ONE-YEAR CERTIFICATION PROGRAM

A. Background

- Project performance certification is required for all Centennial funded construction projects. The program applies to "full scale" treatment works projects as well as upgrades and partial capital projects.

- Project performance certification includes five basic parts:

    1. Establishing performance standards for the treatment works and incorporating them into the grant agreement.

    2. Project initiation of operation (starts One-Year Certification period). Grantee establishes initiation of operation date following concurrence by Ecology.

    3. Monitoring of treatment works during the One-Year Certification period by grantee and Architect/Engineer (A/E).

    4. Grantee certification that facility meets (or does not meet) performance standards.

    5. For negative certification (does not meet performance standards -Appendix III), a Corrective Action Report (CAR) is submitted by the grantee. A recertification is necessary. Neither the CAR nor the recertification are grant eligible. For a complete program list/schedule for One-Year Certification activities, consult the Activity schedule, Appendix I. For a program flow chart, refer to page 7.

- The intent of the program is to ensure that quality treatment works are built which are capable of operating as designed throughout their design life. It is also the intent of the program that the grantee retain the services of the A/E on board long enough to determine the project's success or failure. A positive or negative certification is an area of judgment and negotiation between the Department of Ecology and the grantee.

B. Performance Standards (See Appendix II for a detailed discussion and listing.)

- Performance standards consists of both:

    1. The enforceable requirements of the Federal and State Clean Water Act (40 CFR 35.2005 [15] WAC 173-201, 290, 221), i.e., Section 402 or 404 permits (both existing or potential); or Best Management Practices in the absence of permits. Basically, requirements relating to effluent standards.)

2. Design, contract specification, and Operational criteria, i.e., design efficiencies, detention times, loadings (start-up and, if applicable, design), sidestream loadings, equipment performance (energy efficiencies and reliability), O&M and operational assistance/training requirements, etc. for each item necessary to accomplish the objectives of the facilities plan and plans and specifications. Performance Standards are negotiated between Ecology and the grantee before approval of plans and specs or before construction grant award.

- Design, contract specification, and Operational Criteria apply to the scope of work described in the particular grant agreement. The enforceable requirements apply to the entire treatment works.

- Much of the performance testing may be beyond what is termed "normal O&M activities". Since the performance standards are meant to evaluate the treatment works at start-up and design loadings, they must be thorough. The performance of each unit process is evaluated individually as well as together with the systems or processes with which it interacts.

- Performance testing is evaluating the treatment works in an organized fashion under actual operating conditions. Setup time for development of testing schedules, bench sheets, and report formats will be needed. Close coordination between the A/E and plant personnel is also necessary.

- Construction acceptance test data should be used to verify the performance standards whenever possible. It would primarily apply to equipment and other contract/warranty items. If a problem is suspected, verification of the acceptance test results may be required during the One-Year Certification period. If the equipment cannot be operated during the normal acceptance period then the acceptance testing must be rescheduled. Initiation of Operation should not occur until the construction acceptance testing for major process units/equipment has been completed.

- Biological and chemical/physical removal processes (activated sludge, trickling filters, RBC's, lagoons, etc.) and their interdependent processes (solids thickening, incineration, etc.) will require testing throughout the One-Year Certification period to substantiate process performance.

C. Reports

- Each recipient must submit a report for Ecology review once per quarter during the One-Year Certification period. The report should briefly summarize the results of the performance testing during that quarter and include the A/E's conclusions and recommendations. (See Appendix IV for format.) The report will serve as a basis for: (1) verifying the operability of the constructed facility; (2) modifying, if necessary, previously approved performance standards; and/or (3) determining if performance standards violations are significant; and, if appropriate, (4) initiating the development of the CAR as quickly as possible.

- Every recipient must submit a One-Year Certification Report accompanying the positive or negative certification. It must be signed by an authorized representative of the grantee 365 days after the Initiation of Operation and received by Ecology within one week of signing. The report shall contain a summary of the three previous quarterly reports as well as the results from the fourth quarter testing. This will provide backup documentation for the One-Year Certification and serve as justification for the positive or negative certification by the grantee.

- The Corrective Action Report (CAR) is a concise report which must be submitted by the grantee to Ecology within 30 days following a negative certification.

  The CAR addresses the following:

  1. A statement of the problem(s).

  2. Proposed solution(s)/investigation(s).

  3. A schedule for implementing the chosen solution. The schedule must include a new target recertification date.

D. Eligible Costs

- The costs associated with the A/E services required to implement the One-Year Certification Program are grant eligible. These costs must receive approval from the Department of Ecology before they are incurred.

- All reasonable costs above normal O&M costs associated with the performance testing and evaluation are grant eligible. The costs and documentation procedures must receive approval from the Department prior to being incurred. None of the costs associated with the development and implementation of the CAR, however, are grant eligible.

- The purchase and/or rental of test equipment needed for the One-Year Certification performance testing over and above normal O&M is grant eligible, with prior approval by the Department. However, the department may require the return of funds equal to the salvage value of all purchased equipment at the conclusion of the One-Year Certification Period.

- Testing performed by private state-accredited laboratories is grant eligible. Approval from the Department of Ecology is required before costs are incurred.

- All costs incurred after the certification date are not grant eligible. Note: The certification date occurs 365 days after Initiation of Operation date. Corrective Action costs incurred before the Certification date are not grant eligible.

- Costs for extending warranties and bonds beyond the traditional one-year warranty period (but not beyond the One-Year Certification period) are grant allowable costs if the costs are reasonable and necessary for ensuring achievement of a positive certification. The costs must be approved by the Department prior to being incurred.

- Costs for operator time over and above normal O&M required to carry out the performance testing and activities is grant eligible. Approval from the Department is required prior to incurring the cost.

- If appropriate, updating of the O&M Manual is grant eligible. The grant eligible amount for this activity will be determined on a case-by-case basis.

E. Roles and Responsibilities

- The Recipient:

    1. submits a design or design/construct grant application package which contains the agreed upon Performance Standards and associated values negotiated with Ecology.
    2. establishes the Initiation of Operation date with concurrence from Ecology. In all projects, whether they are phased or not, the Initiation of Operation Date cannot occur until the last unit process, piece of major equipment, pipeline, pump station, structure, etc. starts up, stabilizes, and is being utilized for its intended purpose. The initiation of operation date should be selected to ensure that the one-year certification period includes the worse-case climatological and/or flow/organic loading conditions under which the facility is expected to operate.
    3. submits A/E activity list/schedule for the One-Year Certification period prior to Initiation of Operation. This would include the performance testing schedule, operational assistance/training to be provided by the A/E and, if necessary, the O&M Manual update schedule.
    4. provides three quarterly reports and a final report on the performance testing results during the One-Year Certification period.
    5. certifies the project (positively or negatively) at the end of the One-year Performance testing period.
    6. for a negative certification, submits a Corrective Action Report to Ecology no later than 30 days following a negative certification.

7. implements the CAR following a negative certification.

8. recertifies the project to Ecology following the implementation of the CAR's proposed solution.

- The Recipient's A/E:

1. develops performance standards ranges and values for inclusion into the design or design/construct grant application package. Finalizes performance standards based upon negotiations with Ecology.
2. participates in setting up and organizing the testing and other activities for the One-year Performance Period. Participates in development of an activity list/schedule for the grantee to submit to Ecology prior to Initiation of Operation.
3. monitors performance of the treatment works during the One-Year Certification period.
4. provides operational assistance/training to the operator during the One-Year Certification period.
5. updates the Operation & Maintenance Manual if operating procedures are changed or equipment is added during the One-year Performance Period.
6. develops the quarterly and Certification reports during the Performance Period. The design engineer will be required to stamp the certification and corrective action reports with his/her professional engineering stamp and sign and date them.
7. provides technical support to the grantee in implementing the CAR.
8. develops addenda to the original certification report for the grantee to submit with recertification.

   Note: If there are multiple designers (A/E's) or a separate construction management A/E firm on a project, the A/E firm who designed a particular portion of the project is responsible for the certification on that portion. It is the responsibility of the grantee to ensure all portions of the project are a part of the certification submittal. It is the responsibility of all the A/E design firms involved to coordinate their testing activities to ensure certification of the entire project at the end of the one-year period.

- Ecology:

1. develops the guidelines for the performance standards to be met during the One-year Performance Period.

2. evaluates the performance standards values and ranges being proposed by the grantee. Incorporates the approved performance standards into the grant agreement.

3. negotiates with the grantee to establish the Initiation of Operation date.

4. evaluates the A/E activity/testing schedule submitted by the grantee prior to the Initiation of operation.

5. awards construction grant.

6. approves all grant amendments.

7. provides any needed review and comment on the quarterly reports, operational assistance, and O&M Manual updates during the One-Year Certification period.

8. comments and accepts/rejects the grantees' One-Year Certification and Certification Report.

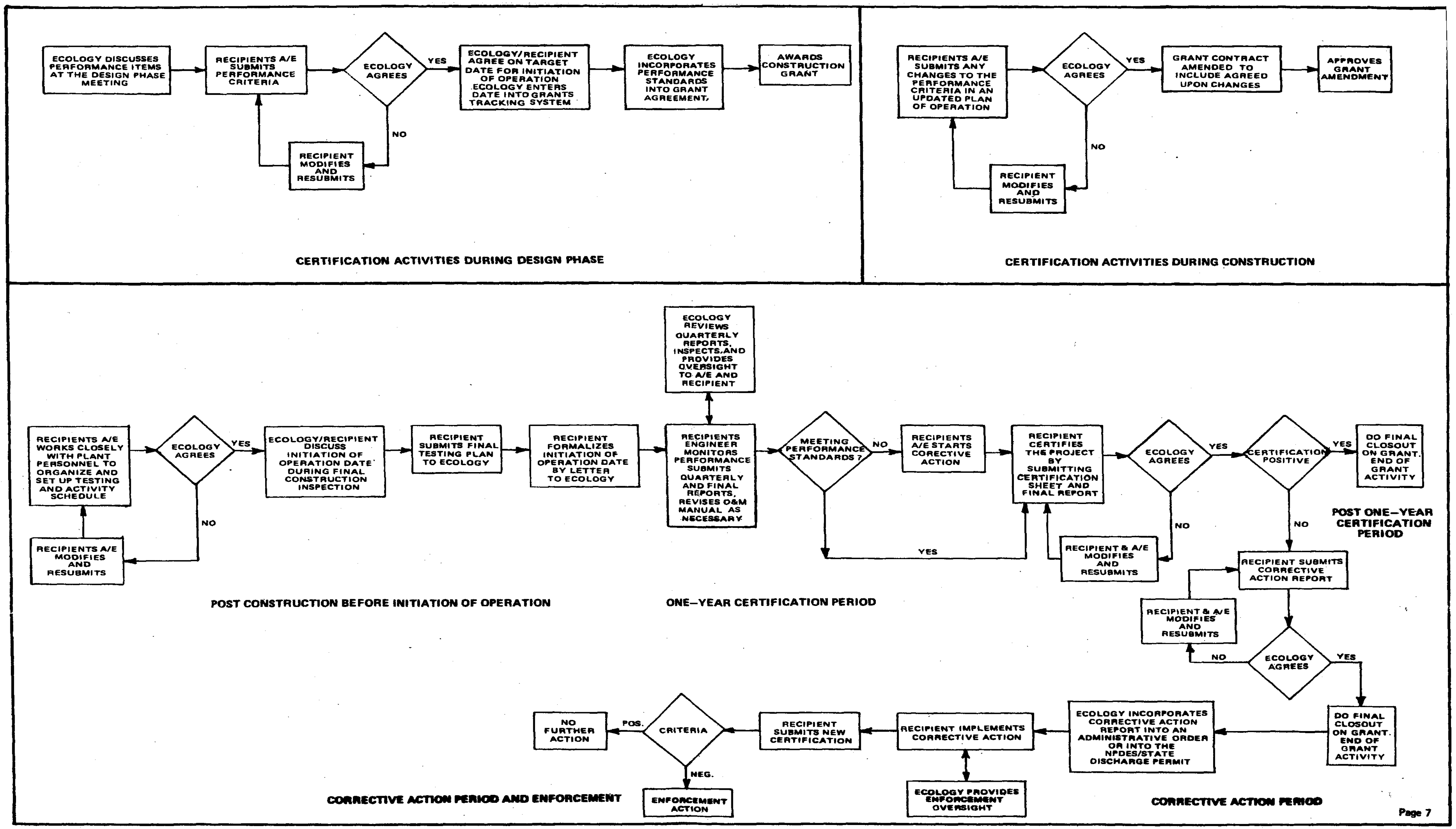
9. in the case of a negative certification reviews and accepts/rejects the CAR. If appropriate, issues administrative orders or incorporates the CAR recommendations into the NPDES Permit.

10. tracks and enforces the CAR recommendation per the Correction Action Report schedule.

11. reviews and accepts/rejects the Recertification Addendum after the corrective action is complete.

12. enforces if necessary.

ONE YEAR CERTIFICATION PROGAM FLOW CHART



Appendix I

ONE-YEAR CERTIFICATION PROGRAM
ACTIVITY SCHEDULE
(Typical)*

Responsible Party	Activity	Time Frame
Ecology	Discuss One-Year Certification Program Guideline requirements	Construction pregrant meeting
Grantee's A/E	Submit performance standard ranges and values, Plans and Specifications, and Initial Plan of Operation for Ecology review with the construction grant application	Grant application
Ecology	Reviews and comments on performance standards as part of Plans and Specifications and Initial Plan of Operation	Within 30 days of construction of grant application package submittal. (Prior to grant award) Content of comments may extend grant award date
Grantee's A/E	Modifies Performance Standard values, if necessary, and resubmits to Ecology	Within 30 days of receipt of Ecology's comment letter (prior to grant award)
Ecology/ Grantee	Agree on target date for Initiation of Operation.	Prior to grant award
Ecology	Approves and incorporates performance standard values in grant agreement	Prior to grant award

*Note: This schedule assumes the Plans and Specifications and Plan of Operation are being submitted for initial Ecology review as part of a state construction grant/loan application.

Responsible Party	Activity	Time Frame
Ecology A/E	Awards grant	At end of pregrant activities
Grantee's	Modifies Performance Standards and testing schedule, if necessary, and incorporates in Plan of Operation updates. Submits grant amendment to reflect changes	During construction as needed
Ecology	Processes grant amendment	During construction as needed
Ecology	Processes grant amendment	During construction as needed
Grantee's A/E	Sets up and organizes activities, procedures and testing schedule for the One-Year Certification Period. Works closely with the plant personnel. Submits testing plan to Ecology for review	No later than 60 days prior to Initiation of Operation
Ecology	Reviews the testing plan/activity schedule comments to grantee	Within 30 days of receipt (Prior to Initiation of Operation)
Grantee/ Ecology	Agree on the Initiation of Operation date	Following Final Construction Inspection
Grantee	Submits final testing plan to Ecology for approval	30 days prior to Initiation of Operation
Grantee	Establishes Initiation of Operation date by letter to Ecology	No later than 30 days following Ecology's Final Construction Inspection

Responsible Party	Activity	Time Frame
Grantee's A/E	Oversees monitoring of performance testing. Provides operational assistance/training, submits quarterly and final reports, and revises O&M manual if appropriate	Throughout the One-Year Certification Period
Ecology	Monitors and assesses the One-Year Certification activity and test results by site visit(s), review of quarterly reports, and phone calls	Throughout the One-Year Certification Period
Grantee	Certifies the treatment works either positively or negatively. Submits certification form and accompanying certification report	365 days after Initiation of Operation date
Ecology	Reviews and accepts/ rejects Grantee's One-year Year Certification and supportive report	Within 30 days of submittal Comments may extend the approval time
Grantee	For negative certifications, develops and submits a CAR for Ecology review	Within 30 days of the certification date. If a negative certification is known prior to the end of the one-year period, the Correction Action Report and activities should start as soon as possible. A negative certification will still be required at the end of the one-year period unless the Corrective Action is successful before the end of the One-Year Certification period.

Responsible Party	Activity	Time Frame
Ecology	Approves/rejects CAR	Within 30 days of submittal of the CAR. Comments may extend the approval time.
Ecology	Performs an administrative completion of the grant	Within 60 days of certification date or CAR approval
Ecology	Incorporates CAR into Administrative Order or Discharge Permit	Within 30 days of CAR approval
Grantee	Implements CAR by modification, design, construction, and investigation	Per schedule in CAR
Grantee/ A/E	Submits proposed changes to the CAR to Ecology for Review	As new information is known through investigations during the corrective action activities.
Ecology	Approves/rejects changes to the CAR	Within 30 days of submittal
Ecology	Tracks implementation of CAR	Per CAR schedule
Grantee	Documents compliance with certification criteria	Per administrative order schedule
Ecology	Approves/rejects compliance documents	Within 30 days of receipt of recertification. Comments may extend the approval time.
Ecology	Enforces	If CAR does not result in compliance with administrative order

Appendix II

PERFORMANCE STANDARDS

Performance Standards include the following:

1. NPDES/State Waste Discharge Permit. This refers primarily to the effluent limitations. Other permit items, such as the operator certification level required, may be considered if they cause the project not to meet its performance standards. Testing in this category should follow the normal schedules and procedures found in the applicable permit.

2. Design Criteria. The design criteria includes all of the unit process criteria found on the design criteria table in the plans. The unit processes are expected to meet the values listed in the design criteria table at minimum, average, and maximum peak flows and organic solids loading in both the dry and wet seasons at start-up and, if possible, simulated design conditions. Biological and chemical/physical removal processes (activated sludge, trickling filters, clarifiers, etc.) and their interdependent processes (solids thickening, incineration, etc.) will require evaluation under actual operating conditions throughout the One-Year Certification period. Construction acceptance test data should be used whenever possible to physically test the equipment, pipes, and structures. The A/E is expected to develop the testing schedule for this category. There may be some overlap with the next category (contract specifications).

3. Contract Specifications. This would include all of the performance and energy efficiency specifications for all of the key unit process mechanical equipment (pumps, motors), sewer appurtenances and structures, pipes, and major auxiliary systems. Construction acceptance testing should be used whenever possible to verify the physical testing of the items in this category. The A/E is expected to develop the testing schedule for this category.

4. Plans. Key design features in the plans which are typically not found in the design criteria table or contract specifications (flow splitting, RAS pumping/conveyance reliability, wasting reliability, hydraulics, etc.) have been selected by Ecology. The performance standards in this category were chosen to determine process reliability when design average and peak flows, loadings, and conditions could not be practically simulated. They were also chosen to adequately test performance during dry weather start-up conditions. For example, scum production can cause operational problems and effluent violations. The scum problem is often caused by oversized units. This can be avoided by building a greater number of smaller units to obtain the flexibility needed for start-up dry weather flows and loadings. It may be cheaper to build a greater number of smaller units to deal with a severe scum problem. The standards in this category were designed to be at least as representative as design criteria standards at simulated design loadings and flows. Some of the Performance Standards in this category may be waived if the unit process in question can demonstrate that it can meet its design

criteria and permit requirements at simulated design average and peak flows and loadings. The unit would still have to perform at start-up conditions per the performance standards. They have been organized on a unit process basis. Ecology will provide the procedures and testing schedule for items in this category (See Appendix III). Other items will be added as the need arises.

5. Federal/State Laws and Regulations. This category includes all applicable federal/state requirements regarding safety, air pollution, sludge disposal, and odor problems and complaints. One area of special concern would be regulations regarding hazardous conditions in confined spaces (explosive and toxic gases, lack of oxygen). The A/E is expected to ensure that all of the appropriate state, local, and federal regulatory bodies governing the above issues inspect the treatment works to make certain that it is in compliance with their regulations.

In addition to the above five categories of performance standards, the following items shall be addressed as part of the One-Year Performance Certification:

- Summary of Maintenance Logs. The A/E is expected to summarize and evaluate the information contained in the operator's equipment maintenance logs for all major pieces of equipment. The summary should indicate how reliable the equipment is operating throughout the One-Year Certification period. The hauling records for sludge, ash, grit, rags, etc. should be included in the summary. The summary should identify and provide any maintenance training needs which plant personnel may need.
- Operational Assistance. If a performance standard is not being met because of a training issue, the A/E is expected to provide operational assistance and training to correct the problem.
- Financial Management. The grantee will be required to submit with the certification report an operating budget for the treatment plant showing all costs and sources of revenue for the One-Year Certification period.
- Operation and Maintenance Manual Update. The Operation and Maintenance Manual shall be updated if new operating procedures or equipment have been added.

The Performance Standards flow and loading conditions are listed and defined as follows:

1. Start-up flows are the flows which the treatment works experiences during the One-Year Certification period. They would include minimum, average, and peak dry and wet weather flow.
2. Design flows are the flows which the treatment works was designed to treat at its design life (e.g., 20 year design life). They include minimum, average, and peak dry and wet weather flow.
3. Simulated design flows are design flow loading rates artificially induced on each unit process by taking one or more duplicate units off line. For example, if the influent flow is split to two different process or two different treatment works, it may be possible to simulate design flow conditions by varying the flow split or taking one flow train off line

completely. If at all possible, the waste stream shall have the same character and organic strength as one would expect under actual design loading conditions.

4. Start-up organic loadings are the Biochemical Oxygen Demand (BOD), Chemical Oxygen Demand (COD), Total and Volatile Suspended Solids (TSS and TVSS), and nutrient loading (NH3 and P04) levels, etc. experienced by the treatment works during the One-Year Certification period. If CODs are substituted for BODs, a correlation between them has to be established prior to or during the One-Year Certification period.

5. Design organic loadings are the BOD, COD, TSS, TVSS, NH3, P04 levels, etc. that the treatment works was designed to treat at its design life (e.g., 20-year design life). They would include minimum, average, and peak dry and wet weather loadings.

6. Simulated design organic loadings are the BOD, COD, TSS, TVSS, NH3, P04 levels, etc. are artificially induced treatment works design organic loading levels produced by taking duplicate units off line. For example, if the influent flow is split to two or more different processes or treatment plants, it may be possible to simulate design conditions by varying the flow split or taking one flow train off line completely. The flow quantity shall be the same as one would expect under actual design loading conditions.

APPENDIX III

ACTIVATED SLUDGE

1. Flow Splitting. Verify an equal distribution of solids and flows among parallel aerators and clarifiers at design dry, wet, peak hourly, and start-up flows. Sludge blanket thicknesses must be measured in each clarifier using a device such as a coretaker or equivalent. The high and low levels should be within one foot of each other while maintaining equal sludge withdrawal rates. The mixed liquor and return activated sludge suspended solids should not vary between units more than 10 percent. The flow split must be automatic or "self regulating" and require no operator attention.
2. RAS PUMPING. The total return activated sludge pumping should be uniformly adjustable in a range from approximately 30 percent of start-up present dry weather influent flow to 50 percent of design hourly peak. The RAS pumping system must be capable of separate flow independent withdrawal of sludge from each clarifier sludge hopper or sludge collection mechanism. The pumping system shall be energy efficient without sacrificing operability. The RAS pump(s) should not plug or rag up at any pumping rate within the required ranges.
3. FEED FLEXIBILITY. If step feed or contact stabilization is provided, it must not backmix appreciably. It must be shown that a stairstep mixed liquor concentration profile exists from one pass to the next. Making each pass a separate compartment ensures this. A good concentration gradient must exist down the pass if feedpoints internal to the pass are present. This will ensure that plug flow is occurring within each pass and some benefit is being realized by the additional feed points.
4. SVI. 50-150 is the typical range without chlorination or chemical addition. If design flows and loadings can be simulated and the activated sludge process meets its other performance standards, then this performance standard can be waived. (It will not satisfy the standard to build excess capacity, selector, or chemical/chlorine addition facilities to handle a chronic or anticipated SVI outside the range unless it was demonstrated that it was the most cost effective solution over the life of the project.) The SVI range chosen represents a normal SVI range that A/E firms typically design to for cost effective sizing of aerators and secondary clarifiers. The range is a test condition only and in no way reflects an operational philosophy.
5. DISSOLVED OXYGEN CONTROL. Demonstrate that the dissolved oxygen level (D.O. level) in all aeration basins can be varied from 0.5 mg/l to 3.0 mg/l at minimum, average and maximum flows and organic loadings at start-up. This performance standard is not meant to relax design criteria requirements of 2.0 mg/l at average design loading and 0.5 mg/l at maximum organic loading.
6. HYDRAULICS. Measure the liquid surface elevations of all open channels and tanks in the liquid and sludge stream of the plant at peak hourly flows and simulated peak hourly design flows. Simulate maximum recycle flows rates during the performance testing. Ensure that no hydraulic bottlenecks exist in the plant which would cause overtopping structure walls with liquid or sludge or make bypassing necessary.

7. SOLIDS BALANCE. Develop a solids balance diagram for the plant using actual data from the upgraded/new plant. Compare the values obtained with those predicted for start-up. Also simulate design loadings if possible. Compare the results with predicted values. Include all recycle flows. Use BOD, TSS, TVSS, COD, and other tests if applicable. Verify that none of the processes are overloaded.

8. EXCESSIVE SCUM PRODUCED BY SECONDARY SYSTEM. The secondary system shall not produce excessive scum which causes the following problems:

   a. Scum removal systems are not able to keep up with scum production.
   b. Scum interferes with unit processes in the plant.
   c. Scum recirculates and becomes a problem sidestream.

9. SLUDGE WASTING. The sludge wasting system should be able to waste the biomass inventory divided by the sludge age continuously or incrementally over a 24-hour period. The wasting system should be able to draw off a fairly constant average waste sludge concentration. The sludge wasting system should also have the ability to accurately measure and totalize the waste flow. The above criteria are important for two reasons: (1) Uniform wasting over an extended period of time assures wasting from "all parts" of the solids inventory which promotes a more stable sludge. (2) The operator needs a reliable waste sludge concentration value to calculate how much he/she has already or will waste for the day.

10. HYDRAULIC WASHOUT OF BIOMASS. The sludge blanket in any of the secondary clarifiers shall not rise any higher than 80 percent of the sidewater depth at peak hourly and simulated peak hourly design flow at an SVI of 150 ml/g or greater. Bypassing the secondary process is not allowed during the performance test.

TESTING SCHEDULE

Process Sludge	Performance Standard	Type of Test	Frequency	Sampling Point
Activated Sludge	Flow Splitting No human adjustment	Sludge blanket thickness (coretaker or equal)	Once every two hours for eight hours at start-up and simulated design dry, wet, and peak hourly flows	Secondary clarifier(s)
Activated Sludge	Flow Splitting No human adjustment	Mixed Liquor Suspended Solids (MLSS) concentrations in mg/l or clinical centrifuge spin (ATC) in % sediment	Once every two hours for eight hours at start-up and simulated design dry, wet, and peak hourly flows	Effluent from each aerator prior to remix
Activated Sludge	Flow Splitting No human adjustment	Return activated sludge (RAS) concentration in mg/l or clinical centrifuge spin (RSC) in % sediment by volume	Once every two hours for eight hours at start-up and simulated design dry, wet, and peak hourly flows	Return activated sludge line from each secondary clarifier sludge hopper
Activated Sludge	RAS Pumping 30% of dry weather flow	Minimum sustainable RAS pumping rate without plugging or ragging	Maintain for one month at start-up dry weather flow	Flow meter(s) on each RAS line from each secondary clarifier sludge hopper
Activated Sludge	50% of peak design flow	Maximum possible RAS pumping rate during peak hourly wet start-up and simulated design flow	Maintain during peak hourly start-up flow as long as the flow lasts. Simulate design peak hourly flow, if possible	Flow meter(s) on each RAS line from each secondary clarifier sludge hopper
Activated Sludge	Feed flexibility	TSS or clinical centrifuge spin (ATC in % sediment	Twice per week	Aeration basin feed points and passes
Activated Sludge	SVI_{30} (50-150) ml/g	Can use one liter graduate cylinder, Mallory Settlemeter, or 21 beaker. Record settled sludge inter face height at 30 min. Calculate SVI_{30} for each aerator	Twice per week	Effluent from each aeration basin before remix

TESTING SCHEDULE

Process	Performance Standard	Type of Test	Frequency	Sampling Point
Activated Sludge	Dissolved oxygen control 0.5 - 3.0 mg/1	Use portable dissolved oxygen meter	Take at least three readings per basin. Do two sets at minimum start-up organic loadings, one set while attempting to hold a 0.5 mg/1 dissolved oxygen level and one set while attempting to hold 3.0 mg/l	Each quadrant or section of each aeration basin
Activated Sludge	Hydraulics	Measurement of liquid surface elevations using tape, yardstick, or staff gage relative to the top of the flow channel	Three start-up storm events with maximum recycle flow. Three simulated peak hourly design flows with simulated design maximum recycle flows (e.g., draining $C1_2$ contact chamber)	All open channels both solid and liquid streams
Activated Sludge	Excessive scum	Visual observation, Microscopic examination	Daily	Throughout treatment plant
Activated Sludge	Solids balance	BOD, TSS, TVSS, COD, etc.	Twice per quarter	All major liquid and solid flow streams in the plant
Activated Sludge	Sludge wasting	Flow measurement, waste activated sludge (WAS) flow concentration in mg/l or clinical centrifuge spin in % sediment (WSC)	Once at start-up and simulated design dry, wet, and peak hourly flow	Waste activated sludge line
Activated Sludge	Hydraulic washout of biomass at SVI - 150 ml/g	Sludge blanket level using coretaker or equal	During all high flow events and simulated design and hourly flow. Must maintain blanket at least 24 hours	All secondary clarifiers

APPENDIX III
TRICKLING FILTER

1. FLOW SPLITTING. Verify an equal flow split to all parallel trickling filters and secondary clarifiers at design dry, wet, peak hourly, and start-up conditions. Check the distributor arms to see that all are turning at the same rpm and that visually it appears they are receiving an equal amount of flow. Check the growth on the media of the filters for equal thickness and color. Measure the sludge blanket thicknesses in the secondary clarifiers at equal sludge withdrawal rates. Verify that the maximum and minimum blanket thickness for all clarifiers measured are within one foot of each other at equal sludge withdrawal rates. The waste sludge concentrations from each secondary clarifier shall be within 10% of each other.

2. RECIRCULATION. If recirculation was designed to maintain adequate filter effluent dissolved oxygen, verify that recirculation can maintain at least a 2.0 mg/1 dissolved oxygen level in the filter effluent at start-up dry weather flow.

3. DISSOLVED OXYGEN OF FILTER EFFLUENT. Measure the dissolved oxygen of the trickling filter effluent to ensure it contains at least 2 mg/l of dissolved oxygen at simulated maximum design organic load or the maximum load attainable.

4. PONDING AND PLUGGING OF THE FILTER. Visually check all filters to verify that plugging and ponding is not occurring at start-up and simulated maximum design organic loadings.

7. GROWTH ON MEDIA. Visually verify the health of the slime growth on the filter media. Is it bright green or is it gray, whitish, black or absent?

8. ODORS FROM THE FILTER. Have you had any odor complaints from the neighbors? Is there a strong hydrogen sulfide smell or other odor coming from the filter(s)?

9. EXCESSIVE SCUM PRODUCED BY THE SECONDARY SYSTEM. The secondary system shall not produce excessive scum which causes the following problems:

   a. Scum removal systems are not able to keep up with scum production.
   b. Scum interferes with unit processes in the plant.
   C. Scum recirculates and becomes a problem sidestream.

10. SOLIDS BALANCE. Develop a solids balance diagram for the plant using actual data from the upgraded/new plant. Compare the values obtained with those predicted for start-up. Also simulate design loadings if possible. Compare the results with predicted values. Include all recycle flows. Use BOD, TSS, TVSS, COD, and other tests if applicable.

11. FLOW DISTRIBUTION ON TOP OF FILTER MEDIA. Perform pan testing radially on filter media. Ensure an equal wetting rate across the media surface.

TESTING SCHEDULE

Process	Performance Standard	Type of Test	Frequency	Sampling Point
Trickling Filters	Flow Splitting No human adjustment	Visual observation	Every two hours for eight hours at start-up and simu-lated design dry and wet minimum, average, and maximum flows	Trickling filter
Trickling Filter	Flow Splitting No human adjustment	Sludge blanket thicknesses	Every two hours for eight hours at start-up and simu lated design dry and wet minimum, average, and maximum flows	Secondary clarifiers
Trickling Filter	Flow Splitting No human adjustment	Waste or recycle sludge flow	Every two hours for eight hours at start-up and simu-lated design dry and wet minimum, average, and maximum flows	Flow meter(s) on each sludge with-drawal line from each secondary clarifier sludge hopper. Can use pump strokes if flow meter not present
Trickling Filter	Flow Splitting No human adjustment	Waste or recycle sludge concentration in mg/l or clinical centrifuge spin in % sediment	Every two hours for eight hours at start-up and simu-lated design dry and wet minimum, average, and maximum flows	Waste or recycle sludge line from each secondary clarifier sludge hopper
Trickling Filter	Recirculation to maintain at least 2.0 mg/1 dissolved	Dissolved oxygen meter reading	Weekly during dry weather flow	Trickling filter effluent
Trickling Filter	Dissolved oxygen of filter effluent 2.0 mg/l	Dissolved oxygen meter reading	Weekly	Filter effluent
Trickling Filter	Ponding and plugging of filter	Visual observation	Daily	Trickling filter media
Trickling Filter	Growth on media color texture	Visual observation	Daily	Trickling filter media

TESTING SCHEDULE

Process	Performance Standard	Type of Test	Frequency	Sampling Point
Trickling Filter	Odors from the filter	Received odor complaints	Daily	Neighbors
Trickling Filter	Odors from the filter	Hydrogen Sulfide meter	Twice a month	Adjacent to the filter
Trickling Filter	Excessive scum in plant	Visual observation, microscopic examination	Daily	Treatment plant
Trickling Filter	Solids balance	BOD, TSS, TVSS, COD, etc.	Twice a quarter	All major liquid and solid flow streams in the plant
Trickling Filter	Flow distribution on media	Pan testing radially	Once @ minimum average, and maximum flows for start-up and simulated design flows	Each trickling filter

APPENDIX III

ROTATING BIOLOGICAL CONTACTOR.

1. FLOW SPLITTING. Verify an equal flow split to all parallel RBC trains and secondary clarifiers. Check the growth on the media of the RBCs. Is there an equal distribution of biota thickness amongst RBC media in the same stage but different trains? Is the color of the biota on the media the same? Measure the sludge blanket thicknesses in the secondary clarifiers at equal sludge withdrawal rates. Verify that the maximum and minimum blanket thicknesses for all clarifiers are within one foot of each other. The waste sludge concentrations from each secondary clarifier shall be within 10% of each other.

2. DISSOLVED OXYGEN OF RBC EFFLUENT. Measure the dissolved oxygen of each RBC train effluent to ensure it contains at least 2 mg/l of dissolved oxygen at simulated maximum design organic load or the maximum load attainable.

3. GROWTH ON MEDIA. Does the biota appear dark with white patches? Check for Beggiatoa, a whitish growth, to ensure overloading of the RBCs is not occurring. Check for excessive thickness of biota on the media to ensure the weight is not too great that it would cause shaft breakage and/or damage to the media. Record shaft weights and correlate with media growth. Does the media growth appear gray brown, gray, black, dark brown, or reddish? Record the visual observations of the media and correlate with plant performance.

4. ODORS FROM THE RBCs. Is sulfide or a sulfide odor present? This would be an indication of anaerobic conditions and a possible shaft overload problem.

5. SOLIDS ACCUMULATION IN RBC BASINS. Check the sludge depth in the bottom of each shaft basin for excessive solids accumulation. Use a coretaker for the test.

6. UNBALANCED MEDIA GROWTH CAUSING LOPING. Observe and record rotation and rpm of each RBC shaft to insure the media growth is balanced and not causing loping.

7. EXCESSIVE SCUM PRODUCED BY THE SECONDARY SYSTEM. The secondary system shall not produce excessive scum which causes the following problems:

   a. Scum removal systems are not able to keep up with scum production.
   b. Scum interferes with unit processes in the plant.
   c. Scum recirculates and becomes a problem sidestream.

8. SOLIDS BALANCE. Develop a solids balance diagram for the plant using actual data from the upgraded/new plant. Compare the values obtained with those predicted for start-up. Also simulate design loadings if possible. Compare the results with predicted values. Include all recycle flows. Use BOD, TSS, TVSS, COD, and other tests if applicable.

TESTING SCHEDULE

Process	Performance Standard	Type of Test	Frequency	Sampling Point
RBC	Flow splitting	Visual observation of media	Weekly	RBC media
RBC	Dissolved oxygen of RBC trains > 2 mg/l	Dissolved oxygen meter reading	Weekly	RBC train effluent
RBC	Growth in media	Visual observation shaft load cell recordings	Weekly	At media and at load cells for each shaft
RBC	Odors from RBCs sulfide and sulfide odor	Sulfide test kit or meter H2 S meter	Weekly	Effluent from each RBC train and vapors around RBCs
RBC	Solids accumulation in RBC basins	Coretaker reading	Monthly	RBC basins, center and corners
RBC	Loping of RBC shafts Unbalanced biota growth on media	Visual observation	Weekly	RBC shafts and media
RBC	Excessive scum	Visual observation, Microscopic examination	Weekly	Throughout plant
RBC	Solids balance	BOD, COD, TSS, TVSS, etc., and flow measurements	Once per quarter	All major liquid and solid streams in plant

APPENDIX III

SOLIDS HANDLING

1. Sludge Thickening/Dewatering/Drying. At minimum, average, and maximum flows for both dry and wet weather, and initial start-up conditions provide the following:

   a. Loading rates, pounds/day per square foot.
   b. Pounds of chemicals used per ton dry solids.
   c. Percent solids capture.
   d. Drying time
   e. Dewatering facilities shall meet design objectives for the percent solids (or the percent moisture) in the dewatered sludge.

2. Sludge Digestion. At minimum, average, and maximum flow rates for both dry and wet weather and initial start-up conditions provide the following:

   a. Aerobic and anaerobic digesters shall produce sludges which are well stabilized and which are not highly malodorous.
   b. The combined secondary system and digestion shall accomplish 38 percent or greater reduction in volatile solids.
   c. It shall be demonstrated that the gas from anaerobic digesters designed to produce burnable gas is readily burnable and that its C02 content is less than 40%.
   d. Hydraulic and solids detention times
   e. Operating temperatures.
   f. The pH of the sludge in anaerobic digesters shall fall between 6.4 and 7.5. If values outside this range can be justified, they will be allowed.
   g. The volatile acids/alkalinity ratio of the anaerobically digesting sludge shall not exceed 0.25 and should remain below 0.15.
   h. Supernatant or other side-streams returned from the digesters to the treatment process shall not upset the plant, impair effluent quality or violate any design characteristics established for its quality.
   i. Demonstrate that the primary digesters are completely mixed. Verify that solids stratification and temperature gradients do not exist to any great degree.

3. Composting.

   a. Projects designed to "significantly reduce pathogens" as set forth in 40 CFR Part 257 shall maintain the solid waste at the minimum operations conditions of 40 degrees centigrade for 5 days. For four hours during this period the temperature shall exceed 55 degrees centigrade.

b. Within a vessel or static aerated pile projects designed to "further reduce pathogens" as set forth in 40 CFR Part 257 shall maintain the solid waste at 55 degrees centigrade or greater for three days. Using the windrow - composting method, the solid waste shall attain a temperature of 55 degrees centigrade for at least 15 days and a minimum of five turnings of the windrow during the composting period.

c. Temperature records shall be maintained for composting operations.

4. Reuse of Sludges on Agricultural/Forest Land. Properly operated facilities shall not result in any nuisance, health hazard or malodorous situation.

TESTING SCHEDULE

Process	Performance	Type of Standard	Frequency Test	Sampling Point
Solids Handling (thickening, dewatering, and drying)	Loading rates lb/day/ft2	Calculation based on operating data	Three times at minimum, average, and maximum organic loadings for both dry and wet weather at start-up and simulated design organic loadings	Sludge feed to unit
Solids Handling (thickening, dewatering, and drying)	Lbs of chemi-cals used per dry ton of solids	Calculation based on operating data	Three times at minimum, average, and maximum organic loadings for both dry and wet weather at start-up and simulated design organic loadings	Chemical feed unit
Solids Handling (thickening, dewatering, and drying)	Percent solids capture	TSS and flow measurement or mass balance using % solids of cake	Three times at minimum, average, and maximum organic loadings for both and wet weather at start-up and simulated organic loadings	All liquid and sludge streams in and out of unit
Solids Handling (thickening, dewatering, and drying)	Drying time	Visual observation and % moisture or solids. Total solids test	Once per month	Sludge in drying bed
Solids Handling (thickening, dewatering, and drying)	% solids/ moisture of thickened sludge	Calculation based on wt. of wet solids to wt. of dry solids	Once per month	Thickened sludge
Solids Handling (digestion)	Odor	Odor complaints	Any time	Neighbors
Solids Handling (digestion)	Odor	VA/Alkalinity ratio	Weekly	Sludge recirc. line of anaerobic digester

TESTING SCHEDULE

Process	Performance Standard	Type of Test	Frequency	Sampling Point
Solids Handling (digestion)	Volatile solids reduction	TSS and TVSS calculation	Once at minimum, average, and maximum organic loading rates for both dry and wet weather at start-up and simulated design organic loadings	Raw sludge and digested sludge lines
Solids Handling (digestion)	CO_2 content of gas	CO_2	Once at minimum, average, and maximum organic loading rates for both dry and wet weather at start-up and simulated design organic loadings	Digester gas
Solids Handling (digestion)	Hydraulic and solids detention times	Operating data and calculation	Once at minimum, average, and maximum organic loading rates for both dry and wet weather at start-up and simulated design organic loadings	Digester feed and/or with-drawal lines, contents of digester
Solids Handling (digestion)	Operating temperatures	Temperature Gage	Once at minimum, average, and maximum flow rates for both dry and wet weather at start-up and simulated design loadings	Recirculation line of anae-robic digester upstream of heat exchanger or digester contents
Solids Handling (digestion)	PH	PH meter	Once at minimum, average, and ' maximum flow rates for both dry and wet weather at start-up and simulated design loadings	Recirculation line of anae-robic digester upstream of heat exchanger or digester contents

TESTING SCHEDULE

Process	Performance Standard	Type of Test	Frequency	Sampling Point
Solids Handling (digestion)	Supernatant or sidestream quality, impact on plant	BODS, TSS, or COD	Once at minimum, average, and maximum organic loading for both dry and wet weather at start-up and simulated design organic loadings	Digester supernatant, decant or other side streams which go back to the plant
Solids Handling (digestion)	Digester mixing	Temperature and TSS at various locations in digester	Weekly	At various depths and locations in primary digester
Composting (All Methods)	Temperature and time 40 CFR Part 257. Maintain records	Self explanatory	Twice per week	Contents of composter or compost piles
Sludge Reuse	State and federal guidelines No nuisance health hazard or odor	Operating data Observation Odor complaints	Any time	Neighbors to sludge site. Sludge and sludge site

APPENDIX III

LAGOONS

1. Check removals across lagoons (BOD, Suspended Solids, nutrients, total and fecal coliform) at simulated design dry, wet, peak hourly, and start-up flows and loadings. Compare the results with the predicted values.

2. Check the sludge depth in each lagoon. Take a middle reading and four quadrants (can use coretaker or equal). Perform this test near the end of the certification period. Verify that excessive solids accumulation is not taking place since initiation of operation and that the solids are distributed evenly in the first stage.

3. Check for odor in the vicinity of the lagoons (any odor complaints). The odor can be an indication of an overloaded condition or a need for more aeration.

4. Check the dike integrity.
   a) Rip-rap holding - visual observation
   b) Any leakage - construction testing, visual observation
   c) Dike elevations - no breaching, no low areas, and adequate capacity - use construction data if available.

5. Verify the integrity of the liners with construction/leakage testing data and summary.

6. Groundwater pollution of any drinking water source shall be prevented. Significant groundwater pollution shall be controlled and, if required by the State, monitored by an appropriate groundwater monitoring program.

7. For controlled-discharge lagoons, no surface discharge shall occur during storage periods.

8. Discharging lagoons which do not discharge during the one-year period.

   a. Check that the constructed facility is the size that was called for and was constructed as planned.

   b. Check the influent flow and organic loading to the facility as to its' reasonableness and conformance with design objectives.

   c. Determine whether the facility is structurally sound. Ensure that when it eventually fills, there will be neither excessive erosion of the dikes due to wind and wave action nor structural failure.

   d. Determine that there are no unusual problems such as excessive seepage loss, sheltering from normal wind action by trees or terrain, or unusual industrial or other wastes that might lead to future problems.

TESTING SCHEDULE

Process	Performance Standard	Type of Test	Frequency	Sampling Point
Lagoons (Controlled Discharge)	No surface dis- charge during storage periods	Visual observation	During storage periods	Periphery of cell(s)
Lagoons which don't fill during one-year certification	Check size of constructed facility against plans and specs	Inspection measurement	During construction inspection	Lagoon cell(s)
Lagoons which don't fill during one-year certification	Influent flow and strength	Plow measurement, BODS, suspended solids	Once per quarter	Influent to plant after preliminary treatment
Lagoons which don't fill during one-year certification	Structural integrity	Construction inspections	During construction	Lagoon cell(s)
Lagoons which don't fill during one-year certifica- tion	No unusual conditions, l. seepage loss 2.sheltering from normal wind action by trees, vegetation, or terrain 3. industrial or problem waste	Visual inspection interview city staff	Before construction	Proposed plant site
Lagoons	Removals for BODS, suspended solids, nutrients, total coliform if ahead of sprayfield), and fecal coliform	Self-explanatory	Twice at simulated design dry, wet, peak-hourly, and start-up flows	Influent and effluent of each cell
Lagoons	Sludge depths	Sludge blanket thickness (coretaker or equal)	Once per quarter	Middle and four quadrants of each cell

TESTING SCHEDULE

Process	Performance Standard'	Type of Test	Frequency	Sampling Point
Lagoons	Odor	Odor complaints	Anytime for complaints	Vicinity of lagoon site
Lagoons	Dike integrity 1. rip-rap okay 2.1eaks 3.dike elevations 4.1iners okay	Construction testing and inspections unless problem suspected	During construction as part of construction inspection	Each cell
Lagoons	Groundwater pollution of drinking water source	Groundwater monitoring	Once per month	Monitoring wells around site

APPENDIX III

LAND TREATMENT SYSTEMS

1. Check the sprayfield hydraulics. Check the spray pattern to ensure a good distribution of effluent on the spray site. Perform pan testing to verify that each sprinkler is putting out an equal volume and an even distribution in a set time period. Test for total and fecal coliforms in pans.

2. Check the lysimeters for pollutants. Compare with state groundwater standards.

3. Verify visually the condition and effectiveness of the cover crop. An aerial photograph of the coverage during the growing season should be provided. Check with the county extension agency for an evaluation.

4. Aerosols from spray irrigation systems shall not create a health hazard or nuisance for any inhabited area.

5. The rate of application shall be tested at design rates if possible during the one-year period to evaluate the adequacy of the facilities to handle the design flow.

6. No runoff from the site shall occur.

7. Ground water levels at land application sites shall be monitored if there are indications that site conditions are not as expected, or that problems are occurring or may occur due to high ground water conditions.

8. Ponding will not create nuisances due to odors or the propagation of insects or rodents.

9. For projects which are placed into operation but which do not result in any wastewater being applied to the land during the first year of operation, soil tests shall be conducted on the completed project to verify that design flows and loads can be handled.

TESTING SCHEDULE

Process	Performance Standard	Type of Test	Frequency	Sampling Point
Land Treatment	Sprayfield hydraulics	Measure spray radius, perform pan tests throughout the nozzle spray pattern	Once at full range of operating flows	A representative number of spray heads throughout the sprayfield, e.g., each quad rant and middle; farthest and near est sprayheads; highest and low est sprayheads
Land Treatment	Groundwater testing	Lysimeters	Once per month	Each lysimeter
Land Treatment	Condition of cover crop	Visual observa- tion with county extension agent. Aerial photograph	Once two-thirds way through irrigation season	Application site
Land Treatment	Aerosols	Visual observation, proximity of houses, businesses, schools, and public access. Wind velocity and direction	Once during irrigation season	Application site
Land Treatment	Aerosols	Total and fecal coliform test	Once per week	Influent or effluent of irrigation pump
Land Treatment	Application rate - compare with design	Flow measurement	Once 2/3 of way through irrigation season	Irrigation pump flow meter or hour meter, pressure taps
Land Treatment	Runoff	Visual observation	Any time during irrigation season	Application site
Land Treatment	Groundwater levels	Piezometer/ monitoring wells	Once per month	Application site
Land Treatment	Ponding	Visual observation	Any time during irrigation season	Application site
Land Treatment	Soil testing (no wastewater applied)	Soil tests from qualified testing lab	Once for site which will not have waste- water applied in a "reasonable" time frame	Application site

APPENDIX III
PUMP STATIONS

1. Verify that the pumps can pump peak design flow. Perform a draw down test. Verify the pump performance curves if possible at three flow levels. Factory testing may be substituted if the pump installation does not allow capacity testing.

2. Take hourmeter readings weekly on the pumps to verify that they are cycling and pumping properly.

3. Take one amperage draw reading to ensure the pumps are working properly and are energy efficient.

4. Observe and verify weekly the mechanical integrity of the pump station. Check the valve operation. Check the pumps, sump pump, and ventilation system for proper operation.

5. Test the pump controls and alarms monthly for proper operation.

6. If applicable, test the auxiliary generator and switch gear quarterly.

7. Summarize and evaluate the results of the maintenance logs for the one-year period to determine the equipment reliability.

8. Verify that all spaces which will be occupied conform to state and federal safety laws regarding explosive and toxic gases as well as oxygen levels. This will require the appropriate meters to monitor gas levels during operation of the pump station.

9. Verify that the pump station does not impose a hydraulic transient on any subsequent treatment processes. This condition can be avoided with selection of proper pump controls.

TESTING SCHEDULE

Process	Performance Standard	Type of Test	Frequency	Sampling Point
Pump Stations	Capacity check	Draw down test or flow meter	Once at construction acceptance testing	Wet well or flow meter of pump(s)
Pump Stations	Check pump alternation and pumping reliability	Hour meter readings	Daily	Hour meters on pump electrical control panels
Pump Stations	Energy efficiency and reliability	Amperage draw with ammeter or power factor meter	Once at construction acceptance testing	Lines going to pump motors
Pump Stations	Mechanical integrity of pump station	Visual observations inspection	Weekly	Pump station
Pump Stations	Test pump controls and alarms	Level controls and alarms, lead, lag cycle	Quarterly	Pump control vault
Pump Stations	Auxiliary generator and switch gear	Kill power, observe start-up and operation of auxiliary generator. Does it handle load?	Quarterly	Generator room
Pump Stations	Maintenance log summary	Records of maintenance performed	Quarterly	Files
Pump Stations	Explosive and toxic gases	Gas meters	Quarterly	Confined spaces in pump station
Pump Stations	Hydraulic transients	Visual observation	Any time	Downstream processes

APPENDIX III

INTERCEPTORS AND OTHER SEWER LINES

1. Sanitary sewers shall meet limits set in the specifications for infiltration or otherwise established as design objectives for the facilities constructed. Flow or pressure measurements shall be made to insure compliance if there is any question as to compliance. Such evaluations and measurements shall cover high infiltration/inflow periods.

2. Inflow from the constructed facilities shall not occur and shall not cause bypassing of the treatment works.

3. All cases of bypassing of the treatment works during the one-year period should be documented and an evaluation made that insures that such occurrences are not due to excess I/I from the constructed facilities and that EPA guidelines for excess I/I are not exceeded.

4. All interceptors and sanitary sewers may be inspected before completion of the performance period to ensure conformance with plans/specifications if there is any question as to compliance.

5. Solids deposition shall not be a significant problem in the completed facility.

TESTING SCHEDULE

Process	Performance Standard	Type of Test	Frequency	Sampling Point
Interceptors and sewer lines	Infiltration limits	Flow measurements only if problem suspected. Can use flow meters, "flow poke devices", or hour meters on pumps	During three storm events or during high groundwater.	Key points in system, each subbasin or pump station
	Pressure testing	Self-explanatory	During construction. More will be required if a problem is suspected with construction appurtenances and pipe	Each section of pipe
	Bypassing of treatment work's caused by inflow from constructed facilities	Check structures built for direct inflow. Observe plant operation	Three storm events	At treatment plant and at constructed facilities
	Bypassing treatment works caused by I/I in excess of EPA guidelines	Document occurrences and evaluate whether constructed facilities contributed to the problem	When it occurs	At treatment works
	Conformance with plans and specifications	Inspection visual, flow measurement, pressure testing, etc.	As soon as a problem is suspected or during construction testing	Problem area(s) in pipe section
	Solids deposition in constructed facilities	Visual observation, soundings with staff gage or sludge judge	once per month	Pipe and appurtenances

APPENDIX IV

ONE-YEAR CERTIFICATION PERFORMANCE STANDARDS TESTING AND REPORTING SCHEDULE

PROCESS	PERFORMANCE STANDARDS	TYPE OF TEST	FREQUENCY	SAMPLING POINT	DATE	FLOW/LOADING RANGE	START-UP TARGET	ACTUAL	MET(Y/N)	DESIGN TARGET	ACTUAL	MET(Y/N)