IOWA DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL SERVICES DIVISION

FIVE-YEAR STRATEGIC PLAN UPDATE

FOR THE

WATER AND WASTEWATER OPERATOR CERTIFICATION PROGRAM

July 2005

2005 STRATEGIC PLAN UPDATE
INTRODUCTION AND SCOPE

In 1998, the Iowa Department of National Resources (IDNR) awarded a contract jointly to the Iowa Section American Water Works Association and the Iowa Water Pollution Control Association to develop a Five-Year Strategic Plan for the Water and Wastewater Operator Certification Program. That Plan was approved and published under the date of February 1999.

In 2005, the IDNR again awarded a contract to the two associations to review the progress made under the 1999 Plan and upgrade it to reflect the current status and future direction and needs of operator certification in Iowa. The two associations invited participation from other organizations, and the Work Group began meeting in March.

This document is in two parts:

Part I - The 2005 Strategic Plan Update
Part II - The complete 1999 Plan with itemized notes on progress made on its objectives and goals in "Report Card" format

Here is an example of the "Report Card" format; Goal No. 4 on page 2 of the 1999 Plan: "Develop Need-to-Know (NTK) matrix specifically for the Grade A facility classification. **Completed**"

The 2005 Update is organized with ten Strategic Issues in the following order of priority.

I - Refine the Need-to-Know (NTK)
II - Operation by Affidavit
III - Water Distribution (WD) Certification
IV - Training Scope and Delivery
V - Wastewater Collection System Certification
VI - Remote Control of Operation
VII - Facilities Classification
VIII - Industrial Wastewater Treatment Classifications
IX - Laboratory Analyst Certification
X - Capacity Development

For each Strategic Issue, objectives and specific goals are presented, supported by a brief rationale and discussion. The overall perspective of the Work Group has been to propose objectives and goals that fit into a long-term horizon. The member organizations of the Joint Committee appreciate this opportunity to be of service. Iowa's operator certification program has made significant advances in the last six years, and we feel that the prospects for further improvement are bright. Appreciation is expressed to Steve Hopkins, Water Supply Operations Section Supervisor, and Laurie Sharp, Operator Certification Staff, for their interest and support of this project.

This Five-Year Strategic Plan Update was developed with funds from the operator certification program administered by the IDNR.

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PART I – 2005 STRATEGIC PLAN UPDATE

EXECUTIVE SUMMARY

In the past several years, operator certification in Iowa has made great strides on the road back toward its former ranking as one of the premier programs in the U.S. Much credit is due new, highly motivated and enthusiastic staff and increased administrative support for certification. The strategic improvements outlined below will further strengthen the program.

Need-to-Know (NTK). Operators who want to advance to a higher grade are constantly calling the IDNR and organizations offering training asking "What do I need to study?" and "Where can I get study materials?" Iowa's current NTK is not user-friendly. A refined NTK matrix will be developed, supported by reference lists offering guidance on subjects covered.

Operation by Affidavit. Iowa has hundreds of water and wastewater facilities which are too small to justify a full-time certified operator. One solution to this problem has been operation by affidavit in which a nearby certified operator contracts to serve and accepts direct responsibility for the operation of the small facility. This can be a good arrangement for both the owner and the nearby operator, but there is great need for guidelines on tasks, time, and frequency of visits to curb the abuses which can occur without such guidelines.

Water Distribution. The major thrust of the 1996 Safe Drinking Water Act (SDWA) re-authorization was to recognize that the distribution system is just as important as the treatment plant in actually delivering safe drinking water to consumers. Experienced field staff report that water quality incidents are more often the result of problems in the distribution system than in treatment. The resulting EPA guidelines required that operator certification for water distribution be elevated to a level equal with that for water treatment.

Iowa has not yet done this.

The 2001 Ch. 81 rules changes provided for issuance of hybrid PWS certificates covering both treatment and distribution. One result was that renewal of distribution certification requires only token training and no fee. Another result was that treatment certification was downgraded by requiring less training for renewal than before—a definite step backward. Iowa must

- establish distribution and treatment as fully separate but equal certifications, and
- raise training and renewal requirements for both to the same level in effect for all classifications prior to 2001.

Training Scope and Delivery. As required by the SDWA re-authorization, Iowa established a new Grade A classification specifically for operators of small water systems. This effort is off to a very successful start with over 200 individuals already trained and certified. For renewal, Grade A operators must take 10 hours of training every two years. Guidance is needed to help them find training appropriate to their own systems to earn the required 1 CEU.

To keep pace with technical advances, there is a need for development of training modules for specific, timely topics as determined by exam diagnostics, field office needs assessments, and reports of Issuing Agencies and other contract training providers. Special emphasis should be placed on developing distance-learning alternatives (i.e. on-line, CD based, etc.) which can be tailored to specific needs, are self-paced and require less time away from the job.

Wastewater Collection System Certification. Wastewater collection is a separate and important service and discipline, just as water distribution is separate from water treatment. The physical condition and quality of maintenance of a collection system influence treatment results. The collection system typically represents the largest single capital investment by a community, and the costs of rehabilitation/replacement can be just as high. With increasing regulatory attention, the technical requirements of this discipline are increasing rapidly.

According to ABC, 41 states already have certification programs for wastewater collection system personnel, 21 of them mandatory. Iowa has had a voluntary program since 1995 under the joint auspices of the IWPCA and ABC. Over 200 operators are now certified. A smooth transition could be made to mandatory certification. Certification also provides an opportunity for motivation, promotion, and recognition which may otherwise be lacking.

Remote Control of Operation. Economic pressures and advances in technology are accelerating the trend toward minimizing or even eliminating on-site personnel in favor of SCADA systems linked to off-site locations. Typically, SCADA can monitor, provide control/adjustment, and trigger response to alarms. Since this control may be miles or hours distant, there are both facility performance and operator certification concerns. What would be acceptable response time for remote operation? Which personnel need to be certified? For what level of facility is remote control acceptable? A guidance document is needed.

Facilities Classification. Iowa's facility classification system has been basically the same for decades. ABC program standards include a system of assigning points for size, quality characteristics, and treatment functions. Approximately half of the programs in the U.S. use the ABC points system which reflects the complexity of unit processes and overall treatment facilities better than Iowa's present, simpler mgd/process system. A review and evaluation would be timely to determine if changes in the present system are appropriate and practical.

Industrial Wastewater Treatment Classifications. Iowa's current operator certification program is silent with respect to industrial wastes. These wastes can be high in quantity and complex in quality. A number of industrial facility operators are already voluntarily certified. Both industrial wastewater treatment and pretreatment plants should be classified. If an industry has an NPDES permit to discharge to a water body, it should be required to have a certified operator.

Laboratory Analyst Certification. Analytical data are vital to any water or wastewater operation. With increasingly more stringent regulations and standards and with higher and higher public expectations, the importance of laboratories and those who staff them is increasing as well. Approximately 15 states, not including Iowa, already have certification programs for laboratory analysts, some for water, some for wastewater. Most are voluntary. In Iowa, laboratory analysts may apply their laboratory experience to meet the operating experience requirement for operator certification which is a contradiction on its face. The Laboratory Practices Committee of IWPCA has begun the development of a voluntary certification program.

Capacity Development. The water/wastewater industry is facing the serious challenges of replacing experienced operators as they retire, and the aging infrastructure of Iowa utilities. Capacity development has been defined as encompassing the technical, financial, and managerial skills needed to achieve and remain in compliance. Major initiatives are needed to bring young people into this field, train, retain, and reward them and to convince the holders of the purse strings to provide the financial support needed to not only support their operational staff but also to replace aging capital assets. Utility personnel and their governing body must work together in planning, budgeting, and communicating utility needs to the public.

WHY CERTIFICATION?

[From 1999 Plan]

In the water and wastewater field, certification represents authorization to hold a position and perform a service dedicated to the protection of:

- public health, safety, and welfare
- the environment
- significant capital investments for infrastructure.

Inspired research and development, competent design, proper equipment, quality construction, appropriate and well-written laws and rules, skilled laboratory practice, regular monitoring and reporting--all these combined will not produce the desired result without trained, competent operators.

The operator is the key member of this team. Certification provides both a means of demonstrating that competence and a means of screening out the unqualified and incompetent.

> *"Certification is not an end in itself; rather, it is a powerful tool toward more training and better operation." -- Martin Lang, 1979**

"Certification is the glue that holds the rest of the system together." -- EPA Region VIII Training Workshop, Salt Lake City, Utah, 1978

* Martin Lang was Commissioner of Water Pollution Control for New York City and 1978-79 national President of the Water Environment Federation.

A LOOK BACK

[Adapted from the 1999 Plan]

1952 Iowa Water Pollution Control Association (IWPCA) adopted a voluntary certification program for wastewater treatment plant operators. Iowa Section American Water Works Association (IAWWA) followed with a voluntary certification program for water treatment plant operators in 1958.

1954 First Basic Training Course for operators. This was an excellent demonstration of the law of unintended consequences. Many operators were eager to become certified but were reluctant or unwilling to take the required written exam without training.

1965 Mandatory certification enacted by the Iowa Legislature. At that time, there were a total of 833 active certificates in the two voluntary programs. Recognizing that some operators were certified in both water and wastewater, this represented less than 800 operators.

1977 Legislation was passed mandating continuing education as a requirement for renewal for all licensing programs in Iowa. The first cycle of earning training credit for renewal was the 1979-81 biennium. Active certificates fell from over 3,600 in September 1980 to 2,860 in September 1981.

1986 State government reorganization abolished the Board of Operator Certification and moved the functions of operator certification to the Licensing Bureau of the Fish and Wildlife Division of DNR.

1991 Through the initiative of IAWWA, a Joint Certification Committee was formed to review certification rules and procedures and advise DNR staff upon request.

1994 The Legislature approved the one-sentence amendment: All fees collected shall be retained by the department for administration of the certification program.

1996 The Safe Drinking Water Act (SDWA) re-authorization required EPA to establish minimum guidelines/standards for state water certification programs that states must then meet or lose a portion of federal funding.

1999 In February, EPA issued Final Guidelines for certification of operators of public water systems, placing equal emphasis on treatment and distribution systems.

2001 Amended Ch. 81 Rules provided that operators qualifying in both water treatment and water distribution would receive PWS certificates valid for both; renewal fees and CEU requirements would be applied as for only one certification.

Number of Certified Operators	**Aug. 1997**	**Sept. 2002**	**Sept. 2004**	**July 2005**
Water Treatment	1,828	1,929	1,952	2,073*
Water Distribution	291	2,101	2,084	2,190*
Grade A (small systems)	--	--	163	236
Wastewater Treatment	1,483	1,504	1,618	1,655
Wastewater Lagoons	386	309	289	292

* 1,819 operators hold both WT and WD certification

MISSION AND VISION

[From 1999 Plan]

Mission Statement

The mission of the Iowa operator certification program is to assure consistent water quality, protect the public health of Iowa citizens, and preserve Iowa's water resources through the competent management, operation, and maintenance of water and wastewater systems.

Vision Statement

Iowa will be a national leader in operator certification through innovation, accountability, and consistently high standards.

ABBREVIATIONS

[From 1999 Plan]

ABC	Association of Boards of Certification
CEU	Continuing Education Unit
CWA	Clean Water Act
CWS	Community water system
DNR	Department of Natural Resources
DRC	Direct responsible charge; an experience requirement
EPA	Environmental Protection Agency (U.S.)
IAC	Iowa Administrative Code
IAMU	Iowa Association of Municipal Utilities
IAWWA	Iowa Section American Water Works Association
IR	Grade I Restricted; WDS serving no more than 250 persons (current rules)
IWPCA	Iowa Water Pollution Control Association
IWWTP	Industrial Wastewater Treatment Plant (proposed)
NTK	Need-To-Know
NTNC	Non-transient non-community (water system)
OIC	Operator in charge; "person or persons on-site directly responsible . . ."
PHS	Post-high school (education or training)
RWD	Rural Water District
SDWA	Safe Drinking Water Act
WC	Water Combined; optional personnel certification classification for small water systems, covering both WT and WD (proposed)
WD, WDS	Water distribution, Water distribution system
WR	Water Restricted; facilities classification for community water systems serving no more than 250 persons and most NTNC (proposed)
WT, WTP	Water treatment, Water treatment plant
WWC, WWCS	Wastewater collection, Wastewater collection system (proposed)
WWT, WWTP	Wastewater treatment, Wastewater treatment plant

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STRATEGIC ISSUES IN ORDER OF PRIORITY

	Topic	Statement
I	Refine the Need-to-Know (NTK)	Develop a Need-to-Know (NTK) Matrix for Iowa
II	Operation by Affidavit	Develop an orderly framework and guidelines for operation by affidavit
III	Water Distribution (WD) Certification	Recognize and establish Water Distribution (WD) as a significant separate certification classification
IV	Training Scope and Delivery	Expand scope of training and methods of delivery
V	Wastewater Collection System Certification	Pursue mandatory Wastewater Collection System (WWCS) certification
VI	Remote Control of Operation	Respond to the rapid increase in remote control of operation by SCADA and similar systems
VII	Facilities Classification	Evaluate Iowa's facilities classification system
VIII	Industrial Wastewater Treatment Classifications	Establish classifications for industrial wastewater treatment facilities
IX	Laboratory Analyst Certification	Review the development of Laboratory Analyst certification
X	Capacity Development	Promote the principles of capacity development

Update Strategic Issue I: Develop a Need-To-Know (NTK) Matrix for Iowa.

Objective A: Refine the Need-To-Know (NTK) to better fit Iowa practices and needs.

Rationale: NTK is the foundation on which training is (or should be) built. NTK responds to the basic question: What does the operator need to know and do to perform his job properly?

Goal: With input from interested individuals and organizations, a refined NTK topic matrix will be produced for each certification classification which will incorporate a ranking of the level of competence (for example: basic, intermediate, advanced) expected at each grade.

Discussion: The most recent NTK is not user-friendly. The matrix produced by the Joint Committee after many hours of work in 1994-95 provides a model which could be used as the basis for a refined NTK.

Action Plan:
- By Whom – Work groups comprised of subcommittees of the Joint Committee supplemented by subject matter experts (SMEs), including IDNR central office and field office staff
- Time Target – Draft NTK matrix will be completed 12 months after authorization to proceed; final product in 18 months
- Funds Needed – Not to exceed $1,000
- Other Resources – None anticipated

Objective B: Prepare Reference Lists to support the refined NTK.

Rationale: Operators are constantly calling the IDNR and organizations offering training, asking "What do I need to study?" and "Where can I get study materials?" There is a need for Reference Lists with some guidance on subjects covered and level of the material.

Goal: With input from interested individuals and organizations, Reference Lists will be produced, made available on the IDNR web site, and kept reasonably current.

Discussion: The focus throughout this task must be on training for competence, not preparation to pass an exam.

Action Plan:
- By Whom – Work groups comprised of subcommittees of the Joint Committee and staff of training organizations and the IDNR
- Time Target – Six months after the refined NTK matrix is available in draft form
- Funds Needed – Not to exceed $500
- Other Resources – Reference Lists and study guides already available to Iowa trainers and operators supplemented by similar materials produced by and for other certification programs and by ABC

Update Strategic Issue II: Develop an orderly framework and guidelines for operation by affidavit.

Objective A: Bring consistency and improved operational performance to this practice.

Rationale: There are hundreds of water and wastewater systems now being operated under the affidavit system. According to Ch. 81.16(2), "(The) affidavit will verify that the certified operator is the operator-in-charge and has direct responsibility for a plant or distribution system that does not have first rights on the services of that operator." This arrangement is limited to Grades A, I, IL, II, and IIL.

As regulations and requirements become more stringent, with the new Grade A classification, and with retirement, this number will grow. There is currently an extreme variation in the number of systems served by affidavit by a single operator and in the time and frequency on-site.

Goals:

1. Time, task, frequency, and/or other guidelines will be established for the performance expected of the operator by affidavit.

2. A one-page guidance document will be developed, outlining for both the owner and the operator what is expected.

Discussion: Quoting from the affidavit form: "Completion of this affidavit places the certified operator in direct responsibility for the daily operation of the facilities. Therefore, the certified operator must have authority to direct the operator of the facility, including direction of the work efforts of other employees. This includes completion of the operation reports, assuring all sampling takes place as required, and that the plant is maintained in good condition and operated to produce the best quality water possible in accordance with requirements of Chpater 455B, Code of Iowa and 567 IAC."

There is anecdotal evidence that some operators enter into far more affidavit agreements and spend far less time on-site than is reasonable by any measure. IDNR field offices vary in their approach to these situations; some do stipulate number of visits, hours, etc. The only statement currently in the rules relating to this issue is "The director may specify additional operational and maintenance requirements based on the complexity and size of the plant or distribution system."

Guidelines could define ranges or at least minimums of number of visits, time spent, key tasks for categories of systems. Such guidelines should be of benefit both to the operator in meeting responsibilities and to the owner in knowing what to expect.

Action Plan:

- By Whom – A work group including IDNR field staff and stakeholders (affidavit operators and owners)
- Time Target – June 2006
- Funds Needed – Not to exceed $200
- Other Resources – Information which can be provided from the IDNR database on number of affidavit agreements, facilities, types, operators, and number of agreements by each operator

Update Strategic Issue III: Recognize and establish Water Distribution (WD) as a significant separate certification classification

Objective A: Increase the requirements for Iowa's WD certification to meet SDWA/EPA intent and to match the other classifications.

Rationale: Operator certification has traditionally focused on assuring competent water treatment performance. The February 1999 SDWA/EPA guidelines are based on the recognition that the distribution system is just as important as the treatment plant in actually delivering safe drinking water to consumers. Experienced field staff report that water quality incidents are more often the result of problems in the distribution system than in treatment.

According to the February 1999 EPA Guidelines, "A State . . . must require owners . . . to place the direct supervision of their water system, including each treatment facility and/or distribution system, under the responsible charge of an operator(s) holding a valid certification equal to or greater than the classification of the treatment facility and/or distribution system."

Goal:

1. Continuing education required for renewal of WD certification will conform with current Ch. 81.14(1) (1.0 CEU for Grades I and II, 2.0 CEUs for Grades III and IV).

<u>Discussion</u>: Prior to 2001, the WD classification received very little attention in Iowa. August 1997 IDNR statistics show a total of 291 WD certified operators. The reason was that Ch. 81.5(3) then stated: "A water treatment certificate of the same or higher grade will satisfy the certification requirements for a distribution system."

The SDWA re-authorization of 1996 required Water Distribution certification to be taken seriously, and Iowa responded. At the time, it was considered expedient to grant WD certification to all WT certificate holders who asked for it. Few declined. By September 2002, Iowa had 2,101 operators with WD certification, more than WT. The IDNR had issued over 1,800 gift certificates.

This was done by issuing Public Water Systems (PWS) certificates valid for both WT and WD classifications. The amended Rules Ch. 81.2(6) now state: "For purposes of renewal (of PWS certificates), all renewal fees and CEU requirements shall be applied as one certification."

Two for one.

As a token nod to WD, the provision was added that "no less than 25 percent of the required CEUs may be earned in any one area." One result was that only 0.5 CEU is now needed to renew the WD classification of a Grade III PWS certificate.

Objective B: Restore the renewal requirements for Iowa's water treatment (WT) certification to previously established standards.

Rationale: From 1979 to 2001, renewal requirements for WT certification were unchanged. The introduction of the PWS certificate in 2001 and the accompanying "two for one" plan resulted in a substantial downgrading or cheapening of the WT certificate. The result was that a Grade III or IV water plant superintendent with a PWS certificate can now satisfy WT renewal requirements with anywhere from 0.5 to 1.5 CEUs—clearly a step backward.

Goal: 2. Continuing education required for renewal of WT certification will conform with current Ch. 81.14(1) (1.0 CEU for Grades I and II, 2.0 CEUs for Grades III and IV).

Discussion: The thrust of this Strategic Issue is "separate but equal." Scrap the 25:75 rule. The importance of water distribution needs to be recognized by establishing training and renewal requirements equal to those in place for water treatment in Iowa for over 20 years. Then, training and renewal requirements for water treatment need to be restored to their former standards also.

Comment: The important issue of fees has not been overlooked. If the IDNR feels constrained to continue with a single fee for both WT and WD certification, the PWS certificate offers a mechanism for that as long as all other elements are maintained separate but equal. The preferred approach would be to treat WT and WD as separate stand-alone certifications just as WT and WWT have been since 1965.

Action Plan:
- By Whom – Appropriate rules changes will be drafted by IDNR staff.
- Time Target – To be included in January 2007 rules package; effective for the 2009-11 renewal cycle
- Funds Needed – None
- Other Resources – None

Update Strategic Issue IV: Expand scope of training and methods of delivery

Objective A: Assist Grade A operators to identify training relevant to their systems

Rationale: Pursuant to SDWA/EPA requirements, the IDNR established a new Grade A for very small water systems and required that each have a certified operator. Funded by grants from the IDNR, an NTK matrix and a six-hour training program were designed for Grade A operators. Over 200 individuals have received the training and are now in their first renewal cycle, 2005-07.

Goal: A one-page guidance/policy document will be developed outlining where and how Grade A operators can find training appropriate for their systems.

Discussion: The Grade A classification (somewhat simplified from Ch. 81.6(1)) includes community water systems serving 250 population or fewer and non-transient non-community water systems serving 500 population or fewer and which provide no treatment other than hypochlorination or treatment which does not require any "operation." Renewal requirements for Grade A are the same as for Grade I, 10 hours or 1.0 CEU every two years. Without guidelines or a policy, Grade A operators are free to earn CEUs by attending training in anything, distribution or treatment, at any level. Guidance is needed to direct them to a blend of training which will best fit the elements of their own systems.

Objective B: Develop specific training modules and research alternative training methods

Rationale: To keep pace with technical advances, there is a need for training which is more focused and also available in non-traditional ways.

Goals:

1. Training modules will be developed for specific, timely topics in water and wastewater disciplines.

Discussion: Technical advances are accelerating in treatment, and there is growing awareness of water quality issues in water distribution and performance issues in wastewater collection. Exam diagnostics, field office needs assessments, and information collected from CEU Issuing Agencies and other training providers could provide valuable guidance in developing training modules which would be used in stand-alone workshops or in multi-session/multi-day training events. Emphasis should be placed on the higher certification grades.

2. Special emphasis will be placed on developing distance-learning alternatives (i.e. on-line, CD-based, etc.).

Discussion: Distance-learning methods represent a sea change in how training is delivered. Such training can be tailored to specific needs; learning can be self-paced; there is less time away from the job; and costs can be less.

Action Plan:

- By Whom – Work groups involving stake-holders, IDNR field and office staff, SMEs, and consultants with distance learning expertise
- Time Target – Year-end 2007
- Funds Needed – Not Known
- Other Resources –

Update Strategic Issue V: Pursue mandatory Wastewater Collection System (WWCS) certification.

Objective A: Enactment of legislation requiring certification for personnel in responsible charge of wastewater collection systems.

Rationale: Wastewater collection is a separate and important service and discipline, just as water distribution is separate from water treatment. The physical condition and quality of maintenance of a collection system influence treatment results. The collection system typically represents the largest single capital investment by a community, and the costs of rehabilitation/replacement can be just as high. With increasing regulatory attention to safety, sanitary sewer bypassing, and combined sewer overflows, the technical requirements of this discipline are increasing rapidly. Certification also provides an opportunity for motivation, promotion, and recognition which may otherwise be lacking.

Goal: The Joint Committee will support efforts by the IWPCA and others toward mandatory certification of wastewater collection system personnel.

Discussion: According to ABC, 41 states already have certification programs for wastewater collection system personnel, 21 of them mandatory. Iowa has had a voluntary program since 1995 under the joint auspices of the IWPCA and ABC. Over 200 operators are now certified. Annual training workshops have been an important part of this program. A smooth transition could be made to mandatory certification.

Action Plan:

- By Whom – IWPCA, as the leader of a coalition including Joint Committee members, with support from the IDNR, League of Cities, and others
- Time Target – Draft legislation and secure legislative sponsors by June 2006; be ready to introduce legislation in the 2007 session
- Funds Needed – Not known
- Other Resources – Arrange for lobbying services

Update Strategic Issue VI: Respond to the rapid increase in remote control of operation by SCADA and similar systems.

Objective A: Develop guidance and limitations on remote control of plant and system operation.

Rationale: Economic pressures and technical advances are accelerating the trend toward minimizing or even eliminating on-site personnel in favor of SCADA systems linked to off-site locations. While this is basically an operational performance concern, there is need for consideration of the impact on operator certification.

Goal: A Program Implementation Guidance (PIG) document will be developed on the level of certification needed for remote operation of facilities with SCADA systems.

Discussion: Assumptions made for this discussion include the following:

- No or minimal planned regular on-site attendance
- Normal operation occurs automatically
- Routine maintenance visits
- SCADA and appropriate linkage provides
  - monitoring,
  - control/adjustment, and
  - response to problems/alarms.

Many facilities with on-site operation and management now incorporate SCADA. This discussion attempts to deal with sites where operation and management are remote; off-site; often miles or hours distant.

In Chapter 81 Rules, the definition of Direct responsible charge (DRC) states in part ". . . accountability for and performance of active, daily on-site operation. . . ." Further, the definition of Operator-in-charge states in part "On-site operation may not necessarily mean full-time attendance. . . ." It appears that neither of these address operation by remote control.

In normal practice where a facility is not manned around the clock, 20 to 30 minutes is considered acceptable response time by on-call personnel to an alarm. What would be acceptable for remote operation? Should the individual monitoring the remote operation be a certified operator and, if so, at what grade? Should the individual responding be a certified operator and, if so, at what grade? For what level(s) of facility is remote control acceptable? These and other questions deserve consideration because the trend toward remote control is accelerating.

Action Plan:
- By Whom – A team led by IDNR staff and including owners, consulting engineers, contract operators, and ABC staff.
- Time Target – December 2006
- Funds Needed – Not to exceed $500
- Other Resources – ABC's knowledge and access to practice and experiences on a national scale will be particularly valuable.

Update Strategic Issue VII: Evaluate Iowa's facility classification system.

Objective A: Review Iowa's current facility classification system to determine if changes are appropriate and practical.

Rationale: The Association of Boards of Certification (ABC) is the recognized national leader in water and wastewater certification. Over 90 U.S. certification programs are members of ABC. ABC program standards include a system of assigning points for size, quality characteristics, and treatment functions. The point calculation is then used to assign the treatment plant to one of four grades from I (lowest) to IV (highest).

Goals:

1. If considered to be justified, water treatment plants (WTP) will be classified according to the ABC points system or a modification thereof.

2. If considered to be justified, wastewater treatment plants (WWTP) will be classified according to the ABC points system or a modification thereof.

Discussion: There would be four grades as there are now. Changes in classification are expected to be minimal. EPA guidelines suggest that water systems be classified according to complexity and size. This change should be considered because the ABC system reflects the complexity of unit processes and overall treatment facilities with more precision than the present, simpler mgd/process system. Since ABC is considering changes in its point system, it would be prudent to wait for the outcome of ABC's review before making any changes in Iowa's classification system.

Action Plan:

- By Whom – Work groups (one for water, one for wastewater) comprised of subcommittees of the Joint Committee and staff of training organizations and the IDNR.
- Time Target – Work could begin after ABC has completed review and adjustment of its points system. Draft proposals could be available within 12 months.
- Funds Needed – Not to exceed $1,000.
- Other Resources – Points systems and similar facility classifications which have a history of acceptance by other certification programs.

Update Strategic Issue No. VIII. Establish classifications for industrial wastewater treatment facilities.

Objective A: Establish facilities and personnel classifications for industrial wastewater producers.

Rationale: Iowa's current operator certification program is silent with respect to industrial wastes. These wastes can be high in quantity and complex in quality. A number of industrial facility operators are already voluntarily certified. The certification program should be expanded to cover all sources, not just municipal wastewater.

Goals:

1. An industrial wastewater treatment plant (IWWTP) classification will be developed for those industries with treatment facilities and discharge permits. If an industry has an NPDES permit to discharge to a water body, it should be required to have a certified operator.

2. An industrial wastewater pretreatment plant (IWWPRE) classification will be developed for pretreatment facilities discharging to publicly owned treatment works.

Discussion: Both industrial wastewater treatment and pretreatment plants would be classified in four grades. Certification for operators of industrial wastewater pretreatment facilities that do not have discharge permits could be voluntary.

Action Plan:

- By Whom – Work group comprised of Subject Matter Expects (SMEs) including industrial waste operators.
- Time Target – December 2007
- Funds Needed – Not to exceed $500
- Other Resources – Input from ABC files and information on successful programs in other states

Update Strategic Issue No. IX. Review the development of Laboratory Analyst certification.

Objective A: Review and keep informed on the self-directed effort by laboratory personnel to develop a voluntary certification program.

Rationale: Analytical data are vital to any water or wastewater operation. With increasingly more stringent regulations and standards and with higher and higher public expectations, the importance of laboratories and those who staff them is increasing as well. For water, laboratory personnel provide answers on water quality from source through treatment to delivery as drinking water. For wastewater, laboratory personnel monitor influent, step-by-step treatment performance, effluent quality, and often the effect on the receiving stream. Industrial waste pretreatment programs represent an additional major responsibility, both in terms of analytical skills and legal and financial considerations. Beyond technical knowledge and skills, laboratory analysts need to keep current on standard methods, chain-of-custody procedures, and maintain the highest integrity in their work. They may only report results to management or may have considerable influence in management of their facilities. Their motivation toward certification is the same as for any other discipline: professional growth, motivation for training, and recognition of competence in what they do.

Goal: The Joint Committee will observe and keep informed on the progress of the proposed voluntary laboratory analyst certification program.

Discussion: Approximately 15 states, not including Iowa, already have certification programs for laboratory analysts, some for water, some for wastewater. Most are voluntary. In Iowa, laboratory analysts may apply their laboratory experience to meet the operating experience requirement for operator certification which is a contradiction on its face. The IWPCA Laboratory Practices Committee is in the preliminary stages of developing a voluntary laboratory analyst certification program. The IAWWA also has a Laboratory Practices Committee. Laboratory training has routinely been a part of the Fall Joint Short Course.

Action Plan: - None at this time.

Update Strategic Issue No. X. Promote the principles of capacity development.

Objective A: Equip and support operators and utility management in their efforts toward increased professionalism and improved performance.

Rationale: Operator certification is a powerful force; but in today's world, it is not enough by itself.

The water/wastewater industry is facing a serious and growing problem of replacing experienced operators of the baby-boomer generation as they retire and the reality/problem of the aging and deteriorating infrastructure of these utilities.

Goal: A broad cooperative outreach and education/training effort will be undertaken to turn the corner in these areas.

Discussion: In broad terms, capacity development has been defined as encompassing the technical, financial, and managerial skills needed to comply with appropriate performance guidelines and standards. This not only involves a campaign to bring a utility out of violation and then exerting the effort to keep it in compliance, but also involves proper planning to ensure that a utility never falls out of compliance in the first place.

A major initiative is needed in the area of personnel; to persuade young people that this is a field of real service and satisfaction; to provide relevant training; to ensure the competitive salaries and benefits necessary to retain them.

An equal effort is needed to build the financial support required to operate and maintain existing facilities AND to support a steady, consistent, long-term program of rehabilitating and replacing aging capital assets.

However, these initiatives will bring optimum results only if both utility personnel and utility personnel, and municipal and utility officials hold the purse strings see themselves as partners in developing and sharing needed skills such as planning, budgeting, and communicating utility needs to the public.

Action Plan: TBA

PART II

IOWA DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL SERVICES DIVISION

FIVE-YEAR STRATEGIC PLAN

FOR THE

WATER AND WASTEWATER OPERATOR CERTIFICATION PROGRAM

February 1999

We are pleased to submit this Five-Year Strategic Plan for Operator Certification.

We salute the staff of the Iowa Department of Natural Resources (DNR) for recognizing the importance of operator certification and the need for such a plan. We are grateful to DNR staff for offering this planning assignment to the two Associations that represent those most affected and most interested in the result.

Iowa was once a national leader in certification. In recent years, the program appears to have drifted without direction and adequate support. However, it is not broke in the sense that it needs a serious fix. Rather, it is a mature program, which needs re-evaluation, redirection, and a generous infusion of new attention and support.

There are several reasons why changes are imperative.

- Increasing recognition and current emphasis on the problems and deficiencies of small water systems and their need for better-trained and certified operators.

- Belated recognition and current emphasis on the water distribution system as being equal in importance with water treatment in delivering safe drinking water to consumers.

- Safe Drinking Water Act (SDWA) re-authorization which recognized these needs and is requiring the states to implement changes.

- Re-authorization of the Clean Water Act (CWA) can be expected to have similar impact on small wastewater treatment plants and wastewater collection systems.

- The need to move Iowa's operator certification program closer to national program standards established by the Association of Boards of Certification (ABC).

The time is right for our Iowa operator certification program to step up to the next level, not just to meet or exceed requirements and guidelines of SDWA and ABC but to fulfill its responsibilities to Iowa's people and environment as we enter the 21st century.

The Work Group expresses appreciation to Dennis Alt and DNR management for support and to Mike Klinefeldt, Environmental Specialist, for his contributions throughout the planning process.

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EXECUTIVE SUMMARY

The 1996 Re-authorization of the Safe Drinking Water Act required EPA to publish guidelines specifying minimum standards for certification of operators. Draft guidelines were issued in the *Federal Register* of March 27, 1998, and final guidelines are to be published by February 1999. A state will then have two years to adopt and implement an operator certification program that meets the guidelines or lose 20 percent of federal grants for its Drinking Water State Revolving Fund.

Iowa already meets many of the draft guidelines but will have to expand and upgrade its operator certification program to meet two significant new initiatives dealing with small water systems and water distribution systems.

Small Water Systems. All municipal water systems in Iowa have long been required to have certified operators. The new guidelines will require all community water systems and all non-transient non-community water systems to be under the responsible charge of a certified operator. Iowa has over 400 of these systems. A substantial effort will be required to locate and classify these systems; inform their owners of this new requirement; develop a model for training, exams, and certification which is specifically tailored for these small water systems.

Water Distribution Systems. Iowa has long had certification for water distribution personnel but not to the degree which will be required. In many Iowa water utilities, a water treatment certificate now covers the distribution system also. This may no longer be acceptable. EPA draft guidelines state that each water distribution system must be under the responsible charge of an operator certified in an appropriate classification and grade. This new requirement is based on the recognition that the distribution system is just as important as the treatment plant in actually delivering safe drinking water to consumers.

To minimize the burden on owners and operators of small water systems, an optional personnel classification of Water Combined (WC) is proposed. This new classification would cover both treatment and distribution where the owner designates the same operator to be in charge of both.

Certification Classifications. Changes in facilities and personnel classifications will be needed to accommodate the initiatives described above. Other changes should be made to bring the Iowa program closer to national program standards developed by the Association of Boards of Certification (ABC). As one example, key elements of the ABC facilities classification system should be incorporated into our present facilities classification system. It reflects the complexity of unit processes and overall treatment facilities with more precision than the present simpler mgd/process classification system.

As another example, current Iowa rules give credit toward certification for any and all post-high school education and training and give double credit for training directly related to the operator's classification. These inducements were designed to encourage operators to seek out and take relevant training after the 1977 legislature mandated continuing education as a requirement for renewal. It is time to upgrade to the ABC standard of allowing credit only for relevant training and only for actual hours or CEUs earned.

Two new classifications are proposed, one for wastewater collection systems and one for industrial wastewater treatment plants for those industries with treatment facilities and discharge permits. This would require certified operators for these two new classifications. It is also proposed that operating experience in one classification be given partial credit when an operator transfers to another classification. For example, a water treatment plant operator transferring to a new position in water distribution or wastewater treatment would receive partial credit for his previous experience in water treatment.

Training and Exams. Improvements and upgrading are needed in the training and exam track. The foundation for both is a set of valid performance objectives, more commonly referred to as the Need-To-Know (NTK). NTK responds to the basic question: What does the operator need to know and do to perform his/her job properly? With the NTK in place, training can then be designed to match. In turn, exams can then be designed, refined, and validated based on the same NTK. It is proposed that DNR explore the development of current technology to make exams more accessible and convenient for the operators.

Stakeholder Involvement. Stakeholders in the protection of public health and water quality include owners, operators, consumers, regulators, environmentalists, and others. Competent operation of our water and wastewater facilities is generally taken for granted. This "silent service" needs to be better publicized, and stakeholders need to be more involved.

Implementation. Without DNR support, little will happen. Collective effort is required. Volunteers, individually or in committees, can plan, suggest, encourage, and advocate; but it will take the sustained effort of knowledgeable professionals to organize and implement the changes and improvements described in this plan.

If this plan is to have any impact or result, DNR senior management must

- endorse the mission and vision statements,
- provide sufficient staffing and budget resources, and
- include appropriate support for operator certification in their legislative agenda.

INTRODUCTION AND SCOPE

On September 19, 1997, DNR issued a Request for Proposals on a list of projects designed to improve Iowa's certification program. One of the projects listed was

Development of a Five-Year Strategic Plan for the Operator Certification Program.

The Iowa Section American Water Works Association (IAWWA) and the Iowa Water Pollution Control Association (IWPCA) submitted a joint proposal and were awarded this project. The two associations invited advisors from other organizations, and the resulting Work Group began meeting in January and continued to meet regularly into May.

The main body of this report is organized under seven Strategic Issues in order of priority as follows:

I. Small Water Systems
II. Water Distribution Systems
III. Facilities Classification
IV. Personnel Classification
V. Need-To-Know and Training
VI. Exams
VII. Stakeholder Involvement

For each Strategic Issue, medium-term (two to five years) objectives are presented, supported by a brief rationale and a group or sequence of short-term goals needed to meet each objective. The overall perspective of the Work Group has been to propose objectives and goals that fit into a longer-term horizon for the continuing improvement of operator certification in Iowa.

Iowa is fortunate in having a joint water and wastewater certification program. Many of the actions mandated or motivated by the SDWA re-authorization will likely soon be matched by re-authorization of the CWA. The Work Group has kept this in mind throughout its development of this five-year plan.

This Five-Year Strategic Plan was developed using funds from the Operator Certification Program administered by the Iowa Department of Natural Resources.

WHY CERTIFICATION?

In the water and wastewater field, certification represents authorization to hold a position and perform a service dedicated to the protection of:

- public health, safety, and welfare
- the environment
- significant capital investments for infrastructure.

Inspired research and development, competent design, proper equipment, quality construction, appropriate and well-written laws and rules, skilled laboratory practice, regular monitoring and reporting--all these combined will not produce the desired result without trained, competent operators.

The operator is the key member of this team. Certification provides both a means of demonstrating that competence and a means of screening out the unqualified and incompetent.

*"Certification is not an end in itself; rather, it is a powerful tool toward more training and better operation." -- Martin Lang, 1979**

"Certification is the glue that holds the rest of the system together." -- EPA Region VIII Training Workshop, Salt Lake City, Utah, 1978

* Martin Lang was Commissioner of Water Pollution Control for New York City and 1978-79 national President of the Water Environment Federation.

A LOOK BACK

1952 Iowa Water Pollution Control Association (IWPCA) adopted a voluntary certification program for wastewater treatment plant operators. Iowa Section American Water Works Association (IAWWA) followed with a voluntary certification program for water treatment plant operators in 1958.

1954 First Basic Training Course for operators. This was an excellent demonstration of the law of unintended consequences. Many operators were eager to become certified but were reluctant or unwilling to take the required written exam until they had received training of some kind.

1965 Mandatory certification enacted by the Iowa Legislature. At that time, there were a total of 833 active certificates in the two voluntary programs. Recognizing that some operators were certified in both water and wastewater, this represented less than 800 operators.

1975 Kirkwood Community College received the first funding in the nation for construction of an environmental training facility.

1977 Legislation was passed mandating continuing education as a requirement for renewal for all licensing programs in Iowa. The first cycle of earning training credit for renewal was the 1979-81 biennium. Active certificates fell from over 3,600 in September 1980 to 2,860 in September 1981.

1986 State government reorganization abolished the Board of Operator Certification and moved the functions of operator certification to the Licensing Bureau of the Fish and Wildlife Division of DNR.

1991 Through the initiative of IAWWA, a Joint Certification Committee was formed to review certification rules and procedures and provide advisory service to DNR staff upon request.

1994 The Legislature approved the one-sentence amendment: "All fees collected shall be retained by the department for administration of the certification program."

1996 The Safe Drinking Water Act (SDWA) re-authorization requires EPA to establish minimum guidelines/standards for state water certification programs that states must then meet or lose a portion of federal funding.

1997 From DNR sources dated as shown:

August 21, 1997	No. of active certificates:	3,988
	(some individuals hold more than one certificate)	
August 15, 1997	No. of community water systems	1,166
	No. of non-transient, non-community water systems	133
October 1997	No. of publicly owned wastewater treatment works requiring certified operators	700

MISSION AND VISION

Mission Statement

The mission of the Iowa operator certification program is to assure consistent water quality, protect the public health of Iowa citizens, and preserve Iowa's water resources through the competent management, operation, and maintenance of water and wastewater systems.

Vision Statement

Iowa will be a national leader in operator certification through innovation, accountability, and consistently high standards.

ABBREVIATIONS

ABC	Association of Boards of Certification
CEU	Continuing Education Unit
CWA	Clean Water Act
CWS	Community water system
DNR	Department of Natural Resources
DRC	Direct responsible charge; an experience requirement
EPA	Environmental Protection Agency (U.S.)
IAC	Iowa Administrative Code
IAMU	Iowa Association of Municipal Utilities
IAWWA	Iowa Section American Water Works Association
IR	Grade I Restricted; WDS serving no more than 250 persons (current rules)
IWPCA	Iowa Water Pollution Control Association
IWWTP	Industrial Wastewater Treatment Plant (proposed)
NTK	Need-To-Know
NTNC	Non-transient non-community (water system)
OIC	Operator in charge; "person or persons on-site directly responsible . . ."
PHS	Post-high school (education or training)
RWD	Rural Water District
SDWA	Safe Drinking Water Act
WC	Water Combined; optional personnel certification classification for small water systems, covering both WT and WD (proposed)
WD, WDS	Water distribution, Water distribution system
WR	Water Restricted; facilities classification for community water systems serving no more than 250 persons and most NTNC (proposed)
WT, WTP	Water treatment, Water treatment plant
WWC, WWCS	Wastewater collection, Wastewater collection system (proposed)
WWT, WWTP	Wastewater treatment, Wastewater treatment plant

STRATEGIC ISSUES IN ORDER OF PRIORITY

	Topic	Statement
I.	Small Water Systems	Meet the SDWA/EPA requirement of a certified operator in responsible charge of each community water system (CWS) and each non-transient, non-community (NTNC) water system.
II.	Water Distribution Systems	Meet the SDWA/EPA requirement of a certified operator in responsible charge of each water distribution system (WDS).
III.	Facilities Classification	Modify Iowa's facilities classification system closer to national (ABC) operator certification program standards.
IV.	Personnel Classification	Modify Iowa's personnel classification system closer to national (ABC) certification program standards.
V.	Need-To-Know (NTK) and Training	Refine Iowa's Need-To-Know (NTK); modernize and refocus Iowa′s operator training programs.
VI.	Exams	Modify and improve Iowa's certification exam quality and procedures.
VII.	Stakeholder Involvement	Increase stakeholder awareness and involvement in operator certification.

Strategic Issue I: **Meet the SDWA/EPA requirement of a certified operator in responsible charge of each community water system (CWS) and each non-transient, non-community (NTNC) water system**.

Objective A: Bring each CWS and NTNC system under the responsible charge of a properly trained and certified operator(s).

Rationale: Currently, all Iowa municipal water systems are required to be under the responsible charge of certified operators. However, more than 300 CWS and approximately 150 NTNC systems are not. Under the SDWA/EPA requirements, states must "adopt and implement an operator certification program that meets the requirements by February 2001". New training programs and exams tailored to these small systems will also be needed to support this expanded program.

Goals:

1. Locate and inventory/classify/rank all CWS and NTNC systems. **Completed**

2. Design a facility classification(s) for these small systems. **Completed**

   Discussion: The Work Group proposes that the present IR (Grade I Restricted) classification be eliminated. It would be replaced by a new, broader classification named Grade A. The Grade A classification would be defined as:

   Any community public water supply (serving a population of 250 persons or less) or a non-transient non-community public water supply and has no treatment other than disinfection or has only treatment which does not require any chemical treatment, process adjustment, backwashing or media regeneration by an operator (e.g. calcium carbonate filters, granular activated carbon filters, cartridge filters, ion exchangers.

   *More complex systems, serving a population of 250 or less would not be included in the Grade A classification.

3. Design a personnel classification for operators of these small systems. **Completed – The IR classification has been eliminated by a rule change and replaced by the Grade A Water Supply classification, Chapter 81.6(1).**

   Discussion: The Work Group proposes specialized requirements for Grade A as follows:

   - Education/training; high school or GED (same as for Grade I) plus specialized training on operation of small water systems
   - Experience; none required prior to the above training
   - Exam; specialized exam (see below)
   - Renewal; every two years, with CEU requirement same as for Grade I

4. Develop Need-To-Know (NTK) matrix specifically for the Grade A facility classification. **Completed**

5. Based on the NTK matrix, develop a training program specifically for Grade A operators. **Completed**

Discussion: Because virtually all these people have other occupations and responsibilities, it will be important to bring some creativity to the content, delivery method, and time when this training is made available. Normal weekday 8:00 a.m. to 5:00 p.m. may be the least acceptable time.

6. Based on the NTK matrix, develop exam specifications specifically for the Grade A classification. **Completed**

7. Based on NTK and training, develop test items and complete exams specifically for the Grade A classification. **Completed**

As of April 15, 2005, there have been 18 six-hour training courses held and 218 exams administered. A total of 215 licenses have been issued for Grade A. Exam passage rate is very high. The training course and exams should be reviewed on a regular basis. The IDNR is providing continued funding for the Grade A training course.

Discussion: The Work Group proposes that the exam for Grade I-A certification be given as soon as practical after conclusion of the training. Grade I-A certification would be granted after successful passage of the exam without further experience being required.

Strategic Issue II: Meet the SDWA/EPA guideline of a certified operator in responsible charge of each water distribution system (WDS).

Objective A: Bring each water distribution system (WDS) under the responsible charge of a properly trained and certified operator(s).

Rationale: Operator certification has traditionally focused on assuring competent water treatment performance. The new SDWA/EPA guideline is based on the recognition that the distribution system is just as important as the treatment plant in actually delivering safe drinking water to consumers. Currently in Iowa, many water distribution systems are under the responsible charge of an operator certified in water treatment. Chapter 567-81.5(3) IAC provides that "A water treatment certificate of the same or higher grade will satisfy the certification requirements for a distribution system." This may no longer be acceptable.

Rule changes have established the separation between treatment and distribution certification. A grandfathering clause allowed for a smoother transition.

Goals:

1. Identify and classify all water distribution systems. **Completed**

2. The owner of each water system must designate the operator in charge (OIC) of the WDS. **Completed ??**

3. The operator in charge (OIC) of the WDS shall become certified as a WDS operator at a level equal to or greater than the classification level of the WDS. **Completed**

Discussion: This requirement will apply to all water systems regardless of size or organizational structure. Normally, this will be the highest ranking person spending 50 percent or more of their water system or water utility time on water distribution. The owner of a system may designate the same person as OIC of both the treatment plant and distribution system if properly certified.

4. Develop an optional personnel classification of Water Combined (WC) covering both water treatment and distribution in small systems, such as the Grade I and II systems. **A Public Water Supply (PWS) Certificate was issued to operators who hold both a water treatment and water distribution license.**

Discussion: One reason for this new personnel classification is to accommodate operators of small systems who normally have responsibility for both treatment and distribution. Another reason is to relieve small system operators and owners of the burden of qualifying for and renewing two certificates--one in WT and one in WD. An operator with WC certification could be designated by the owner as OIC of both treatment and distribution.

5. Develop modified exam specifications specifically for the WC classification. **This goal is no longer applicable. It was determined that separate tests for water treatment and water distribution be used rather than creating a combined test.**

6. Develop modified exams specifically for the WC classification. **This goal is no longer applicable.**

Discussion: One approach would be to require operators to pass complete exams in both WT and WD for WC certification. An alternate approach would be to require passing of one modified exam covering WT and WD. A grandparenting provision would be provided for currently certified operators who are presently operating both types of systems under a water treatment certificate.

Strategic Issue III: Modify Iowa's facilities classification system closer to national (ABC) operator certification program standards.

Objective A: Review Iowa's FACILITIES classification system and make modifications to the current format, as needed, to incorporate key elements of ABC's program standards.

Rationale: The Association of Boards of Certification (ABC) is the recognized national leader in water and wastewater certification. Over 90 U.S. certification programs are members of ABC. EPA cites ABC program standards in its February 1998 operator certification guidelines. Moving closer to ABC program standards will facilitate reciprocity for operators moving into or out of Iowa.

Goals:

1. Water treatment plants (WTP) will be classified according to the revised facilities classification system. **Not Completed** **IDNR is reluctant to change the classification system. (Elaborate.)**

   Discussion: There will be four grades as there are now. Changes in classification are expected to be minimal. EPA guidelines suggest that water systems be classified according to complexity and size. The change is strongly recommended because the ABC system reflects the complexity of unit processes and overall treatment facilities with more precision than the present, simpler mgd/process system.

2. Water distribution systems (WDS) will be classified according to the revised facilities classification system. **Same comment as for No. 1 above.**

   Discussion: There will be four grades of WDS instead of three as there are now. The current classification system only uses size (gpd) to determine grades. SDWA/EPA guidelines suggest that systems be classified according to complexity and size. The current system needs to be reviewed and modified to meet this standard.

3. Rural water districts (RWD) will be incorporated into WT and WD classifications along with all other water utilities. **Rural water systems were classified by miles of pipe, not by average daily pumpage.**

4. Wastewater treatment plants (WWTP) will be classified according to the revised facilities classification system. **Same comment as for No. 1 above.**

   Discussion: Same as for Goal 1 above.

5. Municipal wastewater treatment lagoons (IL and IIL). No change is recommended.

6. Determine the need for classifying and requiring a certified operator for semi-public wastewater systems. **Not addressed.**

Objective B: Establish an industrial wastewater treatment plant (IWWTP) classification.

Goals: 1. An industrial wastewater treatment plant (IWWTP) classification will be developed for those industries with treatment facilities and discharge permits. **If an industry has an NPDES permit to discharge to a water body, it should be required to have a certified operator.**

Discussion: IWWTP would be classified in four grades according to a system established for that classification. Note that certification for operators of industrial wastewater treatment facilities with discharge permits would be mandatory.

2. Determine the need for an industrial wastewater pretreatment plant (IWWPRE) classification for pretreatment facilities discharging to publicly owned treatment works. **This issue was discussed, but no recommendation was made.**

Discussion: IWWPRE would be classified in four grades according to a system established for this classification. Note that certification for operators of industrial wastewater pretreatment facilities that do not have discharge permits would be voluntary.

Objective C: Establish a wastewater collection system (WWCS) classification.

Rationale: Wastewater collection is a separate and important service and discipline, just as water distribution is separate from water treatment. The physical condition and quality of maintenance of a collection system influence treatment results. Investment in a collection system and the costs of rehabilitation/replacement are substantial. With increasing regulatory attention to safety, sanitary sewer bypassing, and combined sewer overflows, the technical requirements of this discipline are increasing rapidly. Certification provides an opportunity for motivation, promotion, and recognition which may otherwise be lacking.

According to ABC, 26 states already have certification programs for wastewater collection system personnel, most of them voluntary. Iowa has had a voluntary program since 1995 under the joint auspices of IWPCA and ABC, with over 100 operators already certified. Annual training workshops have been an important part of this program. A smooth transition could be made to mandatory certification.

Goals:

1. A wastewater collection system (WWCS) classification will be added as a part of the mandatory certification program. **Not completed**. **There are now over 200 WWCS operators certified under IWPCA's voluntary program. IWPCA remains committed to mandatory certification. One legislative attempt has been made without success. Passage will require strong support from IDNR , the operators and League of Cities.**

2. Wastewater collection systems (WWCS) will be classified according to a system to be designed. **Not addressed**

3. Develop an optional classification of Wastewater Combined (WWCOM) covering both wastewater collection and treatment for small systems, such as Grade I and II systems. **Not addressed**

Discussion: This would correspond to Water Combined (WWCOM) for wastewater treatment and distribution. The reasons are the same: to accommodate the operators of small systems who normally have responsibility for both and to relieve small system owners and operators of the burden of qualifying for and renewing two certificates – one in WWCS and one in WWT. An operator with WWCOM certification could be designated by the owner as OIC of both collection and treatment. A grandparenting provision would be provided for currently certified operators who are presently operating both types of systems under a wastewater treatment certificate.

Strategic Issue IV: Modify Iowa's personnel classification system closer to national (ABC) certification program standards.

Objective A: Adjust Iowa's PERSONNEL classification system to approach ABC program standards.

Rationale: Iowa is equal to ABC in the basic years of education/training required for each certification grade. However, there are important differences in what type of education/training is required and how it can be used in substitution for experience. An accompanying table provides details. Iowa's education and experience requirements should be raised to approach ABC standards.

Goals:

1. The PHS education/training requirement will be amended so that at least one-half must be directly related. **A rule change provides that one-half must be directly related to qualify for initial certification. (For renewal, all CEU credit must be directly related; this is unchanged.)**

2. The PHS education/training requirement will be amended so that directly related education/training receives credit only for actual hours or CEUs. **A rule change eliminates the double credit for directly related training, effective January 1, 2006. A Joint Operator Certification Subcommittee is currently working on alternative proposals for requirements for Grade IV certification.**

3. The Grade III direct responsible charge (DRC) experience requirement would not change.

4. The Grade IV DRC experience requirement will be amended to two years with substitution allowed for one year by directly related PHS education/training. **This has been completed through a rule change.**

5. Substitution of directly related education/training for experience will be amended to allow credit only for actual hours or CEUs. **A rule change eliminates double credit for directly related training, effective January 1, 2006.**

6. Substitution of experience for education/training would not change.

Discussion: Current Iowa rules on education/training requirements stem from the 1977 legislative mandate for continuing education as a renewal requirement. Allowing double credit for directly related training was intended to ease the transition to this new requirement and to encourage operators to seek out and take relevant training. These rules have remained unchanged since the first renewal cycle of 1979-81.

The above goals aim at making approximately half the needed adjustment at this time. The remaining adjustment to match the ABC program standards can be made at a later time.

PERSONNEL CLASSIFICATION
Education and Experience Requirements and Substitutions

Comparison of ABC Program Standards, Current Iowa Program, and Changes Recommended
All changes recommended have been made.

Criterion	ABC Program Standard	Current Iowa Program	Changes Recommended
Post-high school (PHS) education and training	Must be directly related	Can be in anything	At least half must be directly related **Completed**
Directly related education/training	Receives only actual hours or CEUs	Receives double credit	Would receive only actual hours or CEUs **Completed**
DRC experience requirement for Grade III	Two years, which can be reduced to one year by substitution	None	No change
DRC experience requirement for Grade IV	Two years, which can be reduced to one year by substitution	One year, which cannot be reduced by substitution	Two years, which could be reduced to one year by substitution **Completed**
Substitution of education/training for experience	Up to half; directly related education/training receives only actual hours or CEUs credit toward substitution	Up to half; directly related education/training receives double credit toward substitution	Up to half; directly related education/training would receive only actual hours or CEUs credit toward substitution **Completed**
Substitution of experience for education/training	Up to half; must be DRC experience	Up to half; experience must be at an appropriate level	No change

Note: The current Iowa program provides a special allowance for substitution of three CEUs for half the experience requirement for Grades I and IL. Special allowance is also made for on-the-job (OJT) training program by Kirkwood Community College. No changes are recommended in these allowances.

Objective B: Allow credit for related experience between additional classifications.

Rationale: Current Iowa rules (Chapter 567-81.6 IAC) allow partial credit for laboratory experience, maintenance experience, and on-site operation review and evaluation toward operator certification but are silent in the following situations.

Goals:

1. Relevant experience in WT operation will be given up to one-half credit toward the experience requirement in WWT operation and vice versa. **Completed**

2. Relevant experience in WD operation will be given up to one-half credit toward the experience requirement in WT operation and vice versa. **Completed**

3. Experience in wastewater lagoon operation will be given up to one-half credit toward the experience requirement in WWT operation. **IDNR indicates that full credit is allowed, although it is not specifically written in the rules.**

4. Experience in WWT operation will be given full credit toward the experience requirement in wastewater lagoon operation. **IDNR indicates that full credit is allowed, although it is not specifically written in the rules.**

5. Experience in IWWTP with biological treatment and IWWPRE operation will be given full credit toward the experience requirement in WWT operation and vice versa. **IDNR indicates that full credit is allowed toward Grades I and II certification only, although it is not specifically written in the rules.**

6. Experience in WWT operation will be given up to one-half credit toward the experience requirement in IWWTP and IWWPRE operation and visa versa. **Not addressed**

7. Experience in water laboratory practice will be given full credit toward the wastewater laboratory practice experience requirement and visa versa in meeting the experience requirements for operator certification. **No credit is given. No change is recommended.**

8. Relevant maintenance experience in a water facility will be given full credit toward the wastewater facility maintenance requirement and vice versa in meeting experience requirements for operator certification. **Only 50 percent credit is given. No change is recommended.**

Objective C: Establish new personnel classifications as needed.

Rationale: If WWCS and IWWTP facility classifications are added, appropriate personnel classifications will also be required.

Goals:

1. Adopt WWCS as an operator classification with consistent education and experience requirements. **Not addressed**

2. Adopt IWWTP as an operator classification with consistent education and

experience requirements. **Not addressed**

3. Develop an optional personnel classification for wastewater combined (WWCOM) covering both wastewater collection and treatment for smaller systems. **Not addressed**

Discussion: This would correspond to the Water Combined (WC) for water treatment and distribution. The reasons are the same: to accommodate the operators of small systems who normally have responsibility for both and to relieve small system owners and operators of the burden of qualifying for and renewing two certificates – one in WWCS and one in WWT. An operator with WWCOM certification could be designated by the owner as OIC of both collection and treatment.

Strategic Issue V: Refine Iowa's Need-To-Know (NTK): modernize and refocus Iowa's operator training programs.

Objective A: The Need-To-Know (NTK) matrices for each classification and process will be tailored to Iowa practice and will be kept current.

Rationale: NTK is the foundation on which training is (or should be) built. NTK responds to the basic question: What does the operator need to know and do to perform his/her job properly?

Goals:

1. NTK materials already available will be reviewed to make sure they are state-of-the-art and tailored to Iowa. **NTK was updated two years ago through a contract with ABC. NTK should be reviewed on a regular basis—suggest every five years.**

2. NTK matrices will be developed for new certification classifications being adopted. **NTK was developed for the new Grade A classification.**

3. Input on current NTK will be sought from interested organizations and individuals, including DNR regional field staff based on their day-to-day contact with operators. **NTK was developed by ABC without input from the Joint Op Cert Committee.**

4. NTK matrices will be revised every five years to reflect the current state of the art. **Updating is necessary due to regulatory and industry changes. It is proposed that the current NTK matrix be replaced by a Study Guide Outline supported by references. For details, see Part II of this Strategic Plan.**

Objective B: Develop evaluation and communication procedures to achieve best practical match between training being offered and current NTK.

Rationale: Training is costly, both in time and money. If it is to fulfill its objective, there must be good correlation with NTK.

Goals:

1. Training offered statewide in the operator certification classifications will be reviewed every two years. **Not completed. Classifying training may improve tracking of compliance with the new policies on repeats and safety.**

2. The results of this review will be reported to training providers pointing out topics which are being over- or under-addressed. **Not completed**

Objective C: Training providers will agree to and will comply with CEU content guidelines and Issuing Agency procedures.

Rationale: There is wide variation in what is presented (and counted) as training eligible for CEU credit for certification. Some is clearly questionable, perhaps due to lack of understanding of content guidelines. There is a need for guidelines with examples of what is and is not eligible. There is a need for improved monitoring of CEUs submitted for credit for operator certification.

The overall purpose here is to better define CEU content and the procedures expected of training providers; to try to make sure they understand and agree to both; that they follow through as agreed; and finally that DNR monitors their performance to assure compliance. In simplest terms, validity and integrity of the training process and providers.

Goals:

1. A CEU content guidelines handbook will be prepared based on criteria and standards published by the International Association for Continuing Education and Training (IACET). **Completed. A CEU Policy and Procedures Guide was developed in 2003 by the Joint Op Cert Committee in conjunction with IDNR.**

2. The Procedures for CEU Accreditation manual for Issuing Agencies, educational institutions, and other training providers will be reviewed and updated. **Completed. A CEU Policy and Procedures Guide was developed in 2003 by the Joint Op Cert Committee in conjunction with the IDNR.**

3. Each training provider will receive the CEU content guidelines and procedures manual and on-site consultation if appropriate. **A CEU provider class was held by IDNR to educate CEU providers on the new database and CEU guidance document. This course should be held annually.**

4. Each training provider will be asked to acknowledge understanding and adherence to the above documents. **This will be done in new Issuing Agency Agreements.**

5. Training providers will follow procedures as agreed (CEU content, verification of attendance, program evaluation).

6. Training providers will either maintain or contract with an organization which maintains permanent individual CEU records. **(How do we know if they do?)**

7. Training providers will timely transmit a record of CEUs earned to DNR by electronic means. **This issue is addressed in the new Issuing Agency Agreements. IDNR has also coordinated with recording agencies to ensure timely submittal and compatibility with the new IDNR operator certification database.**

8. DNR staff will provide a monitoring and advisory service to training providers to assist them in reaching and maintaining acceptable standards of service/performance/compliance. **Through a rule change, IDNR staff can audit any training course at no charge. IDNR should audit courses to hold Issuing Agencies more responsible for course content and increase accountability for training providers.**

Objective D: Training provided will be tailored to the revised classification systems to ensure adequate training in all disciplines.

Rationale: The intent here is to more closely match training content to the types and

numbers of facilities across the state. The number and frequency of process-specific workshops/short courses designed for a specific audience of operators should be expanded. Training for operators of very small water systems should be specifically tailored to the systems they are operating.

Training modules should be developed for specific water and wastewater disciplines (treatment, distribution, collection, etc.). These modules could then be used to develop separate stand-alone workshops or could be used in tandem or in sequence during multiple-session/multiple-day training events. High priority should be given to water distribution and wastewater collection.

Goals:

1. A series of training modules will be developed for specific water and wastewater disciplines. **Not Completed**

2. Scheduling and content of training offered throughout the state will be coordinated by a Joint Training Coordinating Committee. **Scheduling is somewhat coordinated; however, content of training is not well coordinated. This continues to be a work in progress.**

3. Each topic/subject in each training module will be coded with an alphanumeric identifier to facilitate recording and monitoring of CEU records. **Not addressed**

Objective E: There will be steady improvement in the match between operators' training needs and training taken.

Rationale: There are serious flaws (in some case, abuses) in what education/training some individual operators choose to attend and/or what their employers permit them to attend. There are anecdotal case histories of operators simply repeating math or safety courses year after year for certification renewal.

The overall purpose here is to establish procedures which will not only help prevent such abuses but, on the positive side, provide guidance to operators in training selection and build a personal training history. In simplest terms, relevance and integrity of training taken by the individual operator.

Goals:

1. Each training provider will assign an ID number (course number, year) to each course or meeting session. **Not Completed**

2. The use of bar code equipment for individual operator identification and attendance verification will be explored. **Not Completed**

Discussion: In this system, a bar-coded wallet card is issued to each operator. The card is scanned at each approved training course, and the continuing education credit earned is uploaded directly into the operator's master certification database. At renewal time, the database is reviewed; and if the required training credit has been earned, a sticker will be mailed to the operator to be placed on the wallet card. The Kentucky certification program began bar-coding in 1995 and has increased the validity of its training and renewal records while sharply reducing clerical time needed.

3. The CEU records submitted to DNR will include the course ID, alphanumeric topic(s) coding, and the operator's personal identification. **Not addressed**

4. DNR will maintain operators' personal training records including the above information. **IDNR maintains records of courses taken by individual operators for multiple renewal periods.**

5. DNR staff will establish and publicize guidelines on eligibility of training for certification and for renewal. **The 2003 CEU Policy and Procedures Guide includes Guidance Lists of topics Approved and Not Approved for each classification. The foreword to the Guidance Lists includes the following policy statement: "D. The Iowa Department of Natural Resources (IDNR) expects all operators to take balanced CEU training that is directly related to improving their knowledge, skills, and abilities, including training on new or innovative technology. The Department will not accept CEU credit for repeating any course in the same two-year certification period (renewal cycle)."**

   An additional policy statement dated October 4, 2004 states that "CEU credit for Safety Training is limited to 20 percent of the CEU requirement."

Strategic Issue VI: Modify and improve Iowa's certification exam quality and procedures.

Objective A: Exams and exam procedures will match current NTK matrices and will be properly validated.

Rationale: Quoting from SDWA/EPA guidelines, an exam must demonstrate " that the applicant has the necessary skills, knowledge, ability, and judgment, as appropriate, for the classification. All exam questions must be State validated to ensure no illegal bias, and they must be based on a job analysis and related to the classification of the system or facility."

Goals:

1. A valid NTK matrix will be developed and will be kept current. **It is proposed that the current NTK matrix be replaced by a Study Guide Outline supported by references. For details, see Part II of this Strategic Plan.**

2. Certification exams at all grades of all classifications will be provided through a contract testing service when the Department cannot provide the same services more economically. **IDNR contracts with ABC for testing.**

3. Exam specifications for each certification classification will be developed and refined in cooperation with a contract testing service, if such a service is provided. **IDNR has developed exam specifications. ABC provides exam questions in each area. The intent is to continue with the ABC contract.**

4. Test items which best fit the exam specifications will be selected in cooperation with the contract testing service, if such a service is provided. **Completed**

5. Technical/content validity evaluation will be made by arranging for review of the test items by subject matter experts. **Certified operators, as well as IDNR staff, reviewed the exams. IDNR is working toward reviewing exams on a regular basis.**

6. Multiple exams in each category will be available for the purpose of rotation. **Completed**

7. The Department or the contract testing service will provide relevant statistical reports. **ABC provides diagnostic (statistical) reports to IDNR annually.**

Objective B: Develop methodology/software/linkages for offering certification exams in ways which make them more accessible and convenient for the operators.

Rationale: Pencil and paper exams are costly and time-consuming. The technology for giving exams electronically is rapidly developing. Although it appears to be more costly at this time, it is certainly the wave of the near future.

Goals:

1. One or more frequently used exams will be formatted to be offered electronically. **In process through a pilot project with ABC.**

2. The feasibility of offering exams electronically at DNR regional offices or

through other non-traditional methods will be explored. **Under consideration. IDNR does offer an electronic exam by appointment at the Water Supply Offices. IDNR should continue to look into electronic exams and equipment needs to offer the exams electronically.**

3. DNR will administer specified certification exams electronically at least on a pilot basis by January 2, 2000. **Currently under way.**

Strategic Issue VII: Increase stakeholder awareness and involvement in operator certification. <u>This is an on-going task.</u>

Objective A: Increase public awareness of the significant role of certified operators in protection of public health and water quality.

Rationale: Competent operation of our water and wastewater facilities is generally taken for granted. In fact, the better the operation, the less public attention and appreciation for a job well done. This "silent service" needs to be better publicized.

Goals:

1. News releases on operator certification will be provided to organizations and decision-makers interested in public health and the environment. **<u>Organizations write their own newsletter articles for their memberships.</u>**

2. Speakers on operator certification will be provided for programs of the above organizations. **<u>IDNR provides speakers on a regular basis to discuss operator certification.</u>**

Objective B: Create a better understanding on the part of stakeholders of the importance of competent operation by certified operators.

Rationale: Environmental and public health concerns are receiving more attention. Utility owners and operators need to be more active in setting the public agenda in these areas rather than simply defending against attacks.

Goal:

1. Stakeholders will be identified and certification authorities will offer to work with them on determining shared goals and developing joint action programs. **<u>Not completed</u>**

2. The role of policy-makers in understanding and supporting certification more realistically needs to be strengthened. **<u>There are on-going efforts to educate policy makers on operator certification; however, more needs to be done in this area.</u>**

Objective C: Initiate networking with ABC and other state operator certification authorities.

Rationale: ABC is a national organization with headquarters in Ames. In addition, other state programs have problems similar to ours and are more than willing to share their experiences and solutions.

Goals:

1. Participate actively in ABC activities and attend national ABC conferences. **<u>IDNR sends a staff person each year to attend the ABC national conference. It may be beneficial for the Department to send more than one staff to this conference.</u>**

2. Increase communication with other certification programs. **<u>This is done on a limited basis and should be improved so Iowa can keep up with nation-wide trends.</u>**

3. Develop or contract with another organization to develop an effective Iowa operator certification Web Page. **IDNR contracts with IAMU to maintain a calendar of up-coming water and wastewater training courses. IDNR also provides operator certification information on the IDNR Web site.**

IMPLEMENTATION FROM PLANNING TO REALITY

Without DNR support, little will happen. Collective effort is required. Volunteers, individually or in committees, can plan, suggest, encourage, and advocate; but it will take the sustained effort of knowledgeable professionals to organize and execute the changes and improvements described in this plan. If this plan is to have any impact or result, here are the steps DNR should take toward implementation.

Step 1: DNR should commit sufficient enthusiasm and resources to raise the operator certification program up to the promise of its vision by:

- endorsing the mission and vision statements
- providing sufficient staffing and budget resources to fulfill the mission and vision
- including appropriate support for the operator certification program in its legislative agenda

Discussion: ABC program standards state: "For certification duties alone, there should be at least one staff member per 1,000 active certificates." Currently, the Iowa program is not staffed at this level.
IDNR has increased staffing for operator certification from one to nearly three FTEs.

Step 2: DNR should establish an advisory committee on operator certification.

Discussion: Quoting the SDWA/EPA Draft Guidelines, "To avoid DWSRF withholding, States must include on-going stakeholder involvement in the revision and operations of State operator certification programs."
IDNR relies on input from the Joint Op Cert Committee and day to day interactions with operators.

Step 3: DNR should conduct periodic reviews of the operator certification program.

Discussion: Quoting the SDWA/EPA Draft Guidelines, "States must perform reviews of their operator certification programs. EPA recommends that States perform periodic internal reviews and occasional external/peer reviews." Examples include regulations, exams, budget and staffing, training relevancy, etc. States must also make annual submittals to EPA documenting on-going program implementation.
IDNR submits two annual reports to EPA on the water operator certification program; one general report that covers all the elements mentioned in the SDWA/EPA Draft Guidelines and one specific to the program elements that Iowa funds from an EPA grant for small systems (serving a population of <3300.