ENVIRONMENTAL POLICY AND TECHNOLOGY PROJECT
Central Asian Regional Office

KAZAKSTAN ACTIVITIES
WATER SYSTEM IMPROVEMENTS PROGRAM

GENERAL DESCRIPTION

The following is a summary of a series of field investigations conducted in the Aral Sea area of Kazakstan since the summer of 1994 by CH2M-Hill field teams as part of the EPT program activities The purpose of these visits were to define the scope of work and implement the activities which are included in the Memorandum of Understanding executed on 18 March 1994 between the Government of the United States and the Government of Kazakstan The U S Aral Sea program is intended to provide technical support to improve water quality, address immediate public health needs, and develop effective regional water management

The activities included in the Memorandum of Understanding were negotiated to provide a staged program of water supply improvements Three of the elements have been implemented, i e , water quality monitoring improvements (provision of laboratory equipment), water quality improvements (provision of chlorination equipment), and health education improvements (public health training)

The field teams have made site inspections of all facilities in the water system which includes wellfields, transmission pipeline, pumping stations, and distribution systems in Aralsk, NovoKazalinsk, and some rural areas The field teams interviewed government officials at federal, oblast and rayon levels Detailed technical information was compiled for each facility which were used for the implementation program Detailed technical reviews were conducted periodically by the Kazakstani representatives and detailed recommendations were made A hands-on improvements program was initiated in the summer of 1995 beginning at the wellfields and continuing along the transmission line and pump stations This will continue in the spring of 1996 with a major implementation program

RECOMMENDATIONS

Recommendations were made to the Kazakstan State Committee on Water Resources for a series of priority projects based on the results of the field investigations, and include a detailed technical assistance program, with the following elements

1 Provision of water monitoring equipment at five locations in the cities of Aralsk and NovoKazalinsk laboratories and the Sanitary and Epidemiological Services laboratories in Aralsk, NovoKazalinsk and Kzyl Orda

2 Provision of water chlorination equipment and training at the following eight locations
    * Pump stations 1 and 2 in the two wellfields,
    * Pump station 3 near the city of Aralsk,
    * Pump stations 4, 5 and 7 near the rural settlements,

* the city of Aralsk pump station and
* the city of NovoKazalinsk water treatment plant

3 Provision of equipment and training to improve the reliability of the water supply from the wellfields that included an on-site testing program and the replacement of submersible pumps and motors in three wells The preparation of a comprehensive program of wellfield improvements is being completed to continue these activities after the winter

4 Provision of equipment and training to improve the reliability of the main transmission system by replacing equipment at six pump stations serving the main pipeline and one pump station serving the City of Aralsk, including pumps, motors, valves, selected piping, and operational controls

5 Provision of equipment and training to improve the operations and maintenance, as follows
* One backhoe loaders for each of the cities of Aralsk and NovoKazalinsk, and
* Six diesel welding units for the wellfields, transmission line, and the cities

6 Development of a public health education and training program to address the critical health issues of the population with a focus on water and sanitation activities, and the development of grass-roots demonstration projects by the local agencies for practical training

7 Recommendations for institutional improvements to ensure the sustainability of the technical assistance, including the following
* chlorine supply requirements for the continued operation of the equipment installed,
* local budgetary support for all systems for proper operation and maintenance, and
* development of interagency agreements to ensure payments and cost recovery for water

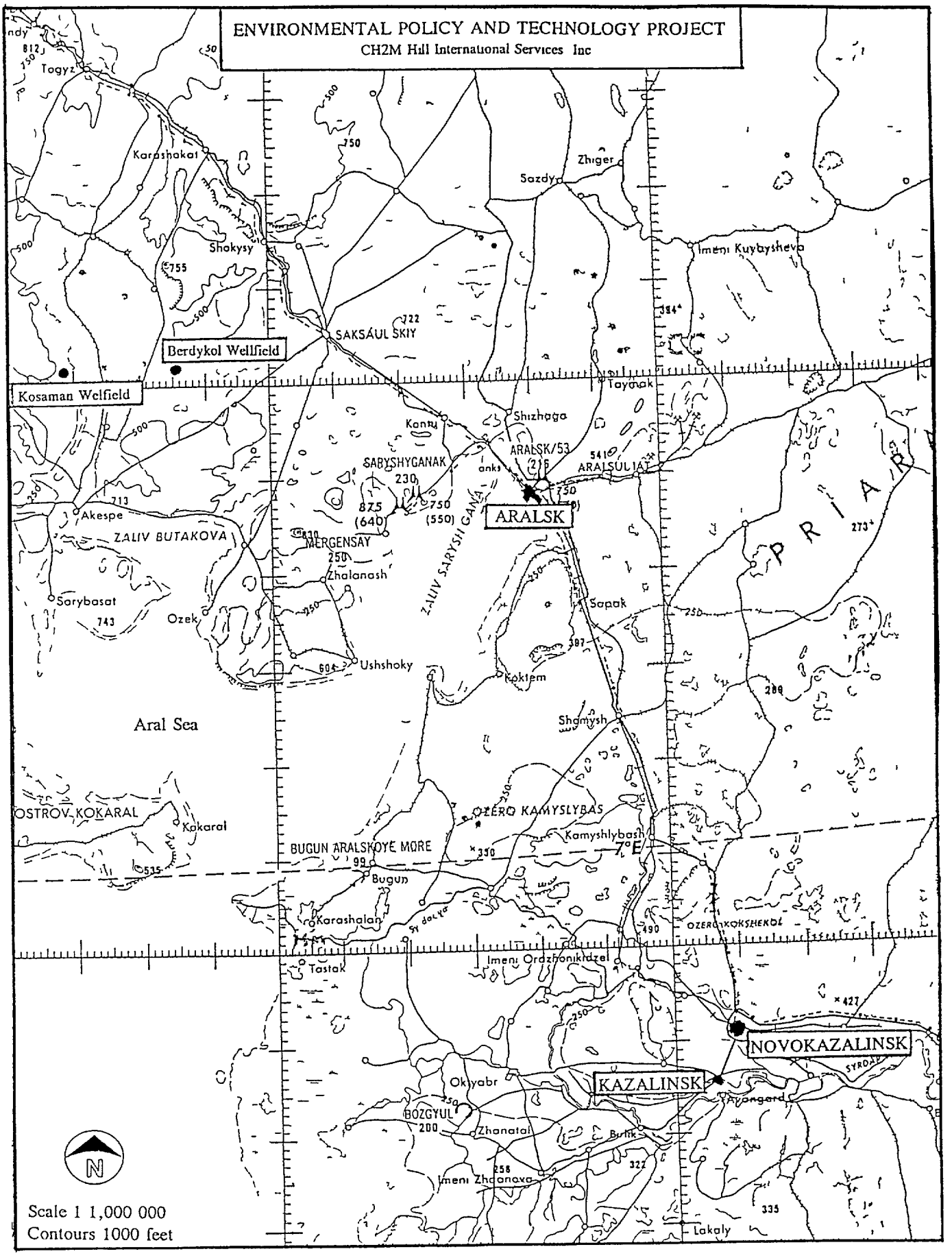
8 Provision of materials and equipment for the replacement of selected distribution piping in the cities of Aralsk and NovoKazalinsk to reduce leakage and improve service in the urban areas The replacement of piping will be implemented on a phased construction basis by the local authority, and includes 1000 meters of plastic pipe and fittings for each city

Additional priority projects will be implemented as funding is available from the USAID, the World Bank, or other sources, and may include the following

9 Replacement of a portion of the main transmission line between the wellfields and Aralsk, with the possibility of a second stage between Aralsk and NovoKazalinsk, as necessary

10 Construction of a new pump station for the city of NovoKazalinsk which will provide for the phase-out of the water treatment plant using contaminated water from the SyrDayra as a water source

December 1995



WELLFIELD AND TRANSMISSION SYSTEM LOCATIONS

Republic of Kazakstan

ENVIRONMENTAL POLICY AND TECHNOLOGY PROJECT
Central Asian Regional Office

KAZAKSTAN ACTIVITIES
WATER QUALITY MONITORING PROGRAM

This is a summary of the water quality monitoring activities conducted in Kazakstan as part of the EPT project which are included in the Memorandum of Understanding executed between the Government of the United States and the Government of Kazakstan on 18 March 1994

An Environmental Policy and Technology (EPT) field investigation was conducted in October 1994 Recommendations were made to provide a variety of new laboratory to upgrade and improve selected laboratories to monitor water quality which has been potentially linked to health concerns in the Aral Sea region Analytical instruments, reagents, and training were provided by EPT in February 1995 at the following facilities

* Kzyl Orda Sanitary and Epidemiological Services (SES) Laboratory,
* Aralsk SES Laboratory,
* Aralsk Administration for Water and Sewerage System (AWSS) Laboratory,
* NovoKazalinsk SES Laboratory, and
* NovoKazalinsk (AWSS) Water Treatment Plant Laboratory

The following recommendations were made for these laboratories

1 Compile comparative analytical data between the new and existing methodologies, and consider the revision of the current GOST standards to incorporate the World Health Organization guidelines for drinking water quality,

2 Provide the Aralsk AWSS and NovoKazalinsk AWSS laboratories with extended support to conduct basic water quality analyses (e g , pH, turbidity, free chlorine, TDS, and coliform bacteria) for monitoring the water distribution system,

3 Provide Aralsk, Kzyl Orda, and NovoKazalinsk SES laboratories with extended support to conduct more advanced water quality analyses (e g , arsenic, lead, pesticides and herbicides) for regional water quality monitoring,

4 Develop a reagent replacement system for the laboratories which utilizes conventional chemicals, and assist in the certification of the instruments and methodologies, and

5 Implement a computerized program for the compilation of the analytical data generated by each laboratory, and provide additional training of laboratory personnel

The Kzyl Orda SES Laboratory has been identified as the regional laboratory and will be assessed and provided with additional instruments for an expanded regional role A water quality data management program will be implemented to compile data, and a quality control/quality assurance program will be developed

January 1996

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ENVIRONMENTAL POLICY AND TECHNOLOGY PROJECT
Central Asian Regional Office

KAZAKSTAN ACTIVITIES
WATER AND SANITATION HEALTH EDUCATION PROGRAM

This is a summary of the water and sanitation health education activities conducted in Kazakstan as part of the EPT project which are included in the Memorandum of Understanding executed between the Government of the United States and the Government of Kazakstan on 18 March 1994 "to help meet critical water, sanitation and health education needs" in Kzyl Orda Oblast

A field assessment was conducted in November 1994 and detailed recommendations were made in December 1994 An Inter-agency Planning Seminar was developed and implemented in April 1995 and follow-up field evaluations were conducted in October As a result of the training provided at this seminar, eight grass-roots projects were developed and are being implemented by the local participants

A team of specialists are completing a health plan of interventions to continue the implementation of the public health and sanitation program, which will include the following activities

* develop the local monitoring criteria for the evaluation of the EPT interventions,
* evaluate the impacts, status and additional support necessary for the locally developed projects resulting from the EPT seminar,
* define the engineering commodities to be provided in support of the local projects,
* define the production equipment required for development of health campaign materials,
* determine the implementation activities for the effective application of the health education approaches developed at the EPT seminar, and
* establish training criteria for health education personnel

The Health Education Planning Seminar conducted in Aralsk and NovoKazalinsk was attended by 25 representatives from several government agencies, UNDP and other agencies The results were discussed with NGO's and Counterpart Consortium for the development of organizational support and sustainability

The health and sanitation program has had significant impact to date The chief doctor from the Oblast Health Center was provided additional training at the EPT/Almaty office and to assist in the integration of approaches for future activities The rayon activities have already been expanded to the oblast level by the local participants and are being considered at the national level for health education in January 1996 by the Ministry of Health

The Ministry of Health has requested the assistance of EPT/Almaty for the implementation of in-service training for public health personnel Assistance was provided for a seminar on Management of Primary Health Care in December 1995 This relatively small activity by USAID is providing leverage which will have very significant and sustainable results at both the local and national levels in Kazakstan

December 1995

ENVIRONMENTAL POLICY AND TECHNOLOGY PROJECT
Central Asian Regional Office

REGIONAL COOPERATION IN WATER MANAGEMENT PROGRAM OVERVIEW

The activities included in the Regional Cooperation in Water Management program are part of the U S Aral Sea program supported by the U S Agency for International Development (USAID) in the Central Asia The Environmental Policy and Technology (EPT) project is being implemented in the newly independent states by CH2M-Hill International Inc which is the prime contractor for a team of fourteen subcontractors

This program is designed to enhance the institutional capacity of the representatives of the five Central Asian Republics in issues related to the analyses, prioritization, and decision-making of water resource management and policy Many of the environmental and public health problems were caused by inappropriate water resources planning and management under the former Soviet Union With the collapse of the latter, the CAR were confronted with the immediate need to develop legal, policy and institutional arrangements for the operation and maintenance of a complex international water resource with serious environmental problems

Previous experience has demonstrated that regional cooperation can effectively be promoted by including the policy experts, water managers, and environmental economists whose technical expertise provide a factual basis for assessing alternative courses of action This program provides a technical basis for these professionals from the CAR to work together in generating solutions to mutual problems in the region

The EPT activities in this program include a series of inter-related workshops, partnerships and programs This activities began with an EPT Study Tour in the United States in April 1994 for 22 delegates from the five countries in Central Asia in an intensive program of two weeks The Study Tour centered around a series of workshops with extensive involvement of the representatives on issues such as water law, policy and pricing, and basin compacts and treaties The priorities for subsequent workshops and implementation activities were defined by the participants

EPT coordinated the development of an Environmental Action Plan (EAP) for the Central Asian Republics in August 1994 An interdisciplinary team was selected to focus assistance on two issues sustainable water management and reduced industrial contamination The EAP contained elements to promote inter-regional accords on water use and the control of transnational industrial contamination The funding for this activity was not secured and the EAP was not implementated by the EPT project

An EPT Information Management Workshop was conducted in Tashkent, Uzbekistan in December 1994 attended by 73 representatives The participation was highly interactive with a mix of scientists and operating managers Facilitated sessions provided opportunities to describe the technologies in the collection and application of information for water resources management, and promote the sharing of information and interregional cooperation As part of the efforts in capacity building, criteria were established for the evaluation of proposals for partnerships and applied demonstration projects for related activities A total of 32 proposals were received and evaluated

PROGRAM OVERVIEW
(Continued)

An EPT Water Management and Policy Workshop was conducted in Ashgabat, Turkmenistan in April 1995 attended by 50 representatives The participation was again very interactive and included policy makers and authorities for implementing programs Six main topics were discussed in detail ranging from water compacts and treaties to water pricing issues An additional 24 applied demonstration project proposals were received and evaluated

A significant amount of regional cooperation has begun based on these activities, and in April 1995 the water management ministers from all five republics in Central Asia executed a water sharing agreement in Chimkent, Kazakstan A subsequent agreement was executed in Buhara, Uzbekistan in June 1995

Recently, other international donor organizations such as the World Bank, The European Union Water Resources Management and Agricultural Production Program (EU WARMAP), the World Health Organization (WHO), and the United Nations Development Program (UNDP) have begun addressing issues of water quality in the region In an order to collaborate with these efforts, USAID and the respective donor and regional organizations are coordinating activities on water quality issues The "Monitoring, Standards, and Criteria for Water Quality" seminar, held in Chimgan, Uzbekistan in August 1995 is an example of a successful joint effort by these organizations A total of 50 participants from the Central Asian Republics and many others from international organizations attended the seminar

A broad range of issues were addressed at the seminar that are both very pertinent, and priorities were identified in three main areas water quality standards, water quality monitoring, and water quality management The water quality seminar clearly showed the benefits of collaboration among the various international donor and regional organizations addressing the water management problems in the Aral Sea Basin

Another activity is the EPT Water Pricing Seminar conducted in Bishkek, Kyrgyzstan in November 1995 which was attended by 50 representatives This was the first pricing seminar in Central Asia and created significant interest in all five countries The participants included representatives of the Ministries of Economics, Health, Nature Protection, and Water Management, and others from International organizations such as the European Union Water Resources Management and Agricultural Production (EU WARMAP) program, the Harvard Institute of International Development (HIID), the Interstate Council on the Problems of the Aral Sea Basin (ICAS), Utah State University, and USAID The seminar defined a series of continuing activities on pricing issues and focused seminars addressing issues such as water quality and allocation

The regional cooperation in water management activities encourages proposals for applied demonstration projects to be conducted by local individuals and for partnerships between regional organizations and US organizations Guidelines for proposals were prepared and more than 50 proposals were received and evaluated based on a set of criteria including program relevance and scientific merit A total of ten applied demonstration projects from the five republics were recommended to USAID for funding In addition, two partnerships from US organizations and four of the republics were recommended The results of the applied demonstration projects and the partnerships will be presented at regional seminars in late 1996

ENVIRONMENTAL POLICY AND TECHNOLOGY PROJECT
Central Asian Regional Office

REGIONAL COOPERATION IN WATER MANAGEMENT
WATER QUALITY STANDARDS SEMINAR

The activities included in the Regional Cooperation in Water Management program is part of the U S Aral Sea activities supported by the U S Agency for International Development (USAID) in the Central Asia Republics by the Environmental Policy and Technology (EPT) project

In August 1994, EPT recommended the local water quality standards for drinking water be evaluated and revised to meet International guidelines The current GOST standards were promulgated in 1973 and 1984 in the former Soviet Union and have not been revised since that time EPT on-site testing at water treatment plants in the region indicated some serious revisions were needed For example, the current standard for turbidity is almost 18 times higher than the WHO guideline for equivalent turbidity units High turbidity levels interfere with the disinfection process at the treatment plants and present an immediate health risk to the population served

Recently, other international donor organizations such as the World Bank, the European Union Water Resources Management and Agricultural Production (EU WARMAP) program, the World Health Organization (WHO), and the United Nations Development Program (UNDP) have begun addressing similar issues and activities in the region In an order to collaborate with these efforts, USAID and the respective donor and regional organizations are coordinating activities on water quality issues The "Monitoring, Standards, and Criteria for Water Quality" seminar held in Chimgan, Uzbekistan in August 1995 is an example of a successful joint effort by these organizations

Representatives of the Executive Committee of the Interstate Council on the problems of the Aral Sea Basin (ICAS) and the Central Asian Scientific-Research Institute of Irrigation and Reclamation cooperated in the organizational and administrative work for the seminar A total of 50 participants from the Central Asian Republics and from international organizations attended the seminar

The original intention of the seminar was to focus primarily on drinking water quality issues, however, the scope was widened at the request of the local agencies to include water quality for agricultural use The updating of water quality standards is of great concern to the representatives of the Central Asian Republics A broad range of issues were addressed at the seminar and priorities were identified in three main areas water quality standards, water quality monitoring, and water quality management

The results of the water quality seminar clearly indicated the benefits of collaboration among the various international donor and regional organizations addressing the water management problems of the Aral Sea Basin

December 1995

ENVIRONMENTAL POLICY AND TECHNOLOGY PROJECT
Central Asian Regional Office

REGIONAL COOPERATION IN WATER MANAGEMENT
WATER PRICING SEMINAR

The activities in this program are part of the U S Aral Sea Program supported by the U S Agency for International Development (USAID) in the Central Asian Republics and implemented by the Environmental Policy and Technology (EPT) project The regional cooperation program began with a study tour to the United States in the spring of 1994 which recommended the priorities for the subsequent workshops which were information management, water resources management and agricultural management The Water Pricing Seminar is the fourth step in the Regional Cooperation in Water Management program The following is a summary of the workshop conducted in Bishkek, Kyrgyzstan in November 1995

The water pricing issue was recommended at the Water Management Workshop and this seminar was conceived to be a highly-focused discussion of water pricing issues Water pricing is a controversal subject due to the current trends toward market reforms in Central Asia and since each republic approaches this issue from a different perspective This seminar was the first opportunity for the representatives to assemble with this specific subject as their agenda The main objectives of the seminar was to begin a process of understanding these issues and establish a framework for resolving sources of conflict among the republics The seminar provided a forum for airing the individual concerns and approaches of each republic and offered the means for future discourse of these issues The seminar addressed the problems as well as the mechanisms by which they can be resolved

The seminar was conducted over three days and the agenda was organized in a systemic manner and included six topics (1) overview of water pricing strategies, (2) presentations of water pricing issues by each republic, (3) presentation of water pricing issues by usage, (4) comparative evaluation of key water pricing issues, (5) prioritization of water pricing issues, and (6) development of an action plan for addressing these issues

Many of the issues discussed during the seminar have both legal and economic implications Some of the concepts discussed include institutional oversight of water basin activities, legal framework for managing resources, allocation of resources among individual republics and the requirement to maintain a certain level of quantity and quality of water downstream

The workshop was conducted with open discussions by all participants, who included water ministers, policy makers and local authorities The main orgainzers of the workshop were the Institute of Water Problems and Hydroelectric Power of the Republic of Kyrgyzstan and the EPT project The 40 participants at the workshop were provided an opportunity for the representatives from the five republics to discuss their issues of water pricing in a framework of regional cooperation related to water policy Specialists in economics and water policy from Utah State University made technical presentations and assisted the process as facilitators

The participants enthusiastically endorsed the process and are collaborating on developing a partnership to address the specific issues raised during the seminar

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Central Asian Regional Office

KAZAKSTAN ACTIVITIES
SUMMARY OF EQUIPMENT INSTALLED IN 1995

I SANITARY AND EPIDEMOLOGICAL SERVICES

A Kzyl Orda Laboratory Equipment (February 1995)
- 1 spectrophotometer,
- 2 reagents and training, and
- 3 draft laboratory operations manual

B Kzyl Orda Health Center (April 1995)
- 1 desk copier, cartridge, and paper, and
- 2 health education materials

C Aralsk Laboratory Equipment (February 1995)
- 1 basic water quality laboratory,
- 2 Spectrophotometer, turbidimeter, pH meter,
- 3 reagents and training, and
- 4 draft laboratory operations manual

D Aralsk Health Center (April 1995)
- 1 desk copier, cartridge, and paper, and
- 2 health education materials

E NovoKazalinsk Laboratory Equipment (February 1995)
- 1 basic water quality laboratory,
- 2 spectrophotometer, turbidimeter, pH meter,
- 3 reagents and training, and
- 4 draft laboratory operations manual

F NovoKazalimsk Health Center (October 1995)
- 1 desk copier, cartridge, and paper, and
- 2 health education materials

II ARALSK ADMINISTRATION FOR WATER AND SEWERAGE

A Aralsk Laboratory Equipment (February 1995)
- 1 portable pH meter, turbidimeter, and colorimeter,
- 2 conductivity meter, MEL/MF laboratory, and
- 3 draft laboratory operations manual

SUMMARY OF EQUIPMENT INSTALLED IN 1995
(Continued)

B Aralsk Pump Station Chlorination Equipment (November 1995)
1 chlorination system (45 kg/day),
2 ventilation system and gas detection system,
3 breathing apparatus and emergency kit, and
4 training and draft operations manual

III NOVOKAZALINSK ADMINISTRATION FOR WATER AND SEWERAGE

A Laboratory Equipment (February 1995)
1 portable pH meter, turbidimeter, and colorimeter,
2 conductivity meter, MEL/MF laboratory, and
3 training and draft laboratory operations manual

B Novokazalinsk Water Treatment Plant Chlorination Equipment (October 1995)
1 chlorination sysytem (45 kg/day),
2 ventilation system and gas detection system,
3 breathing apparatus and emergency kit, and
4 training and draft operations manual

IV WELLFIELDS AT THE ARALSK-SORBULACK FEDERAL PIPELINE

A Chlorination Equipment at Pump Stations Nos 1 and 2 (September 1995)
1 chlorination system (45 kg/day),
2 ventilation system and gas detection system,
3 breathing apparatus and emergency kit, and
4 training and draft operations manual

B Wellfield Equipment (September 1995)
1 three submersible pumps, motors, and control panels, and
2 related accessories and materials

V ARALSK-SORBULACK PIPELINE EXPLOITATION

A Chlorination Equipment at Pump Stations Nos 3, 4, 5, and 7 (October 1995)
1 chlorination system (45 kg/day),
2 ventilation system and gas detection system,
3 breathing apparatus and emergency kit, and
4 training and draft operations manual

Note All materials identified were provided by USAID through the EPT project

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ENVIRONMENTAL POLICY AND TECHNOLOGY PROJECT
Central Asian Regional Office

KAZAKSTAN ACTIVITIES
PROPOSED EQUIPMENT INSTALLATION IN 1996

I SANITARY AND EPIDEMOLOGICAL SERVICES

A Kzyl Orda Laboratory Equipment (First Quarter 1996)
- 1 additional reagents and training, and
- 2 revised laboratory operations manual

B Aralsk and NovoKazalinsk Laboratory Equipment (First Quarter 1996)
- 1 additional reagents and training, and
- 2 revised laboratory operations manual

II ARALSK ADMINISTRATION FOR WATER AND SEWERAGE

A Aralsk Laboratory Equipment (First Quarter 1996)
- 1 additional reagents and training, and
- 2 revised laboratory operations manuaal

B Aralsk Pump Station Pumping Equipment (Second Quarter 1996)
- 1 one 95 lps and two 57 lps pump systems, electrical equipment,
- 2 flow meters, miscellaneous pipe, fittings, and couplings,
- 3 spare parts, tools, training and operations manual

C Water Treatment Chemicals (Third Quarter 1996)
- 1 limited supply of disinfection chemicals (chlorine)

D Aralsk Distribution System Improvements (Third Quarter 1996)
- 1 limited supply of pipe (1000 m) and fittings, and related materials

III NOVOKAZALINSK ADMINISTRATION FOR WATER AND SEWERAGE

A Laboratory Equipment (First Quarter 1996)
- 1 additional reagents and training, and
- 2 revised laboratory operations manual

B Water Treatment Chemicals (Third Quarter 1996)
- 1 limited supply of disinfection chemicals (chlorine)

C NovoKazalinsk Distribution System Improvements (Third Quarter 1996)
- 1 limited supply of pipe (1000 m) and fittings, and related materials

IV WELLFIELDS OF THE ARALSK-SORBULACK FEDERAL PIPELINE

A Pumping Equipment at Pump Stations Nos 1 and 2 (Second Quarter 1996)
1 three 210 lps and three 310 lps pumping systems, electrical equipment,
2 flow meters, miscellaneous pipe, fittings, and couplings,
3 spare parts, tools, training, and operations manuals

B Pumping Equipment at Settlement Areas (Third Quarter 1996)
1 five 25 lps, two 32 lps, and four 44 lps pumping systems,
2 electrical equipment,
3 flow meters, miscellaneous pipe, fittings and couplings,
4 spare parts, tools, training, and operations manuals

C Wellfield Equipment (Second and Third Quarter 1996)
1 29 submersible pumping systems, accessories and materials,
2 15 sand seperators, pump column and wellhead fittings,
3 chemicals and chemical injection unit, and
4 spare parts, tools, training, and operations manuals

V ARALSK-SORBULACK FEDERAL PIPELINE EXPLOITATION

A Pumping Equipment at Pump Stations Nos 3, 4, 5, and 7 (Third Quarter 1996)
1 nine 132 lps and three 63 lps pump systems, electrical equipment,
2 flow meters, miscellaneous pipe, fittings, and couplings,
3 spare parts, tools, training and operations manual

VI ARALSK AND NOVOKAZALINSK HEALTH DEMONSTRATION PROJECTS

A Water System Materials (Second Quarter 1996)
1 limited supply of pipe and fittings, and related materials

B Health Education Materials (Second Quarter 1996)
1 Miscellaneous materials

VII PARTNERSHPS AND APPLIED DEMONSTRATION PROJECTS

A Office Equipment (First Quarter 1996)
1 computers, printers, software, and accessories for projects

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