DANUBE POLLUTION REDUCTION PROGRAMME

NATIONAL REVIEWS 1998
CZECH REPUBLIC

PROJECT FILES

MINISTRY OF ENVIRONMENT

in cooperation with the

Programme Coordination Unit
UNDP/GEF Assistance

DANUBE POLLUTION REDUCTION PROGRAMME

NATIONAL REVIEWS 1998
CZECH REPUBLIC

PROJECT FILES

MINISTRY OF ENVIRONMENT

in cooperation with the

Programme Coordination Unit

UNDP/GEF Assistance

Preface

The National Reviews were designed to produce basic data and information for the elaboration of the Pollution Reduction Programme (PRP), the Transboundary Analysis and the revision of the Strategic Action Plan of the International Commission for the Protection of the Danube River (ICPDR). Particular attention was also given to collect data and information for specific purposes concerning the development of the Danube Water Quality Model, the identification and evaluation of hot spots, the analysis of social and economic factors, the preparation of an investment portfolio and the development of financing mechanisms for the implementation of the ICPDR Action Plan.

For the elaboration of the National Reviews, a team of national experts was recruited in each of the participating countries for a period of one to four months covering the following positions:

- Socio-economist with knowledge in population studies,
- Financial expert (preferably from the Ministry of Finance),
- Water Quality Data expert/information specialist,
- Water Engineering expert with knowledge in project development.

Each of the experts had to organize his or her work under the supervision of the respective Country Programme Coordinator and with the guidance of a team of International Consultants. The tasks were laid out in specific Terms of Reference.

At a Regional Workshop in Budapest from 27 to 29 January 1998, the national teams and the group of international consultants discussed in detail the methodological approach and the content of the National Reviews to assure coherence of results. Practical work at the national level started in March/April 1998 and results where submitted between May and October 1998. After revision by the international expert team, the different reports have been finalized and are now presented in the following volumes:

Volume 1:	Summary Report
Volume 2:	Project Files
Volume 3 and 4:	Technical reports containing:
	- Part A : Social and Economic Analysis
	- Part B : Financing Mechanisms
	- Part C : Water Quality
	- Part D : Water Environmental Engineering

In the frame of national planning activities of the Pollution Reduction Programme, the results of the National Reviews provided adequate documentation for the conducting of National Planning Workshops and actually constitute a base of information for the national planning and decision making process.

Further, the basic data, as collected and analyzed in the frame of the National Reviews, will be compiled and integrated into the ICPDR Information System, which should be operational by the end of 1999. This will improve the ability to further update and access National Review data which is expected to be collected periodically by the participating countries, thereby constituting a consistently updated planning and decision making tool for the ICPDR.

UNDP/GEF provided technical and financial support to elaborate the National Reviews. Governments of participating Countries in the Danube River Basin have actively participated with professional expertise, compiling and analyzing essential data and information, and by providing financial contributions to reach the achieved results.

The National Review Reports were prepared under the guidance of the UNDP/GEF team of experts and consultants of the Danube Programme Coordination Unit (DPCU) in Vienna, Austria. The conceptual preparation and organization of activities was carried out by **Mr. Joachim Bendow**, UNDP/GEF Project Manager, and special tasks were assigned to the following staff members:

- Social and Economic Analysis and Financing Mechanisms: **Reinhard Wanninger**, Consultant
- Water Quality Data: **Donald Graybill**, Consultant
- Water Engineering and Project Files: **Rolf Niemeyer**, Consultant
- Coordination and follow up: **Andy Garner,** UNDP/GEF Environmental Specialist

The **Czech National Review** was prepared under the supervision of the Country Programme Coordinator, **Mr. Milan Bedrich**. The authors of the respective parts of the report are:

- Part A : Social and Economic Analysis: **Mr. Antonin Vaishar**
- Part B : Financing Mechanisms: **Ms. Miroslav Hajek**
- Part C : Water Quality: **Ms. Ilja Bernardova**
- Part D : Water Environmental Engineering: **Mr. Ladislav Pavlovsky**

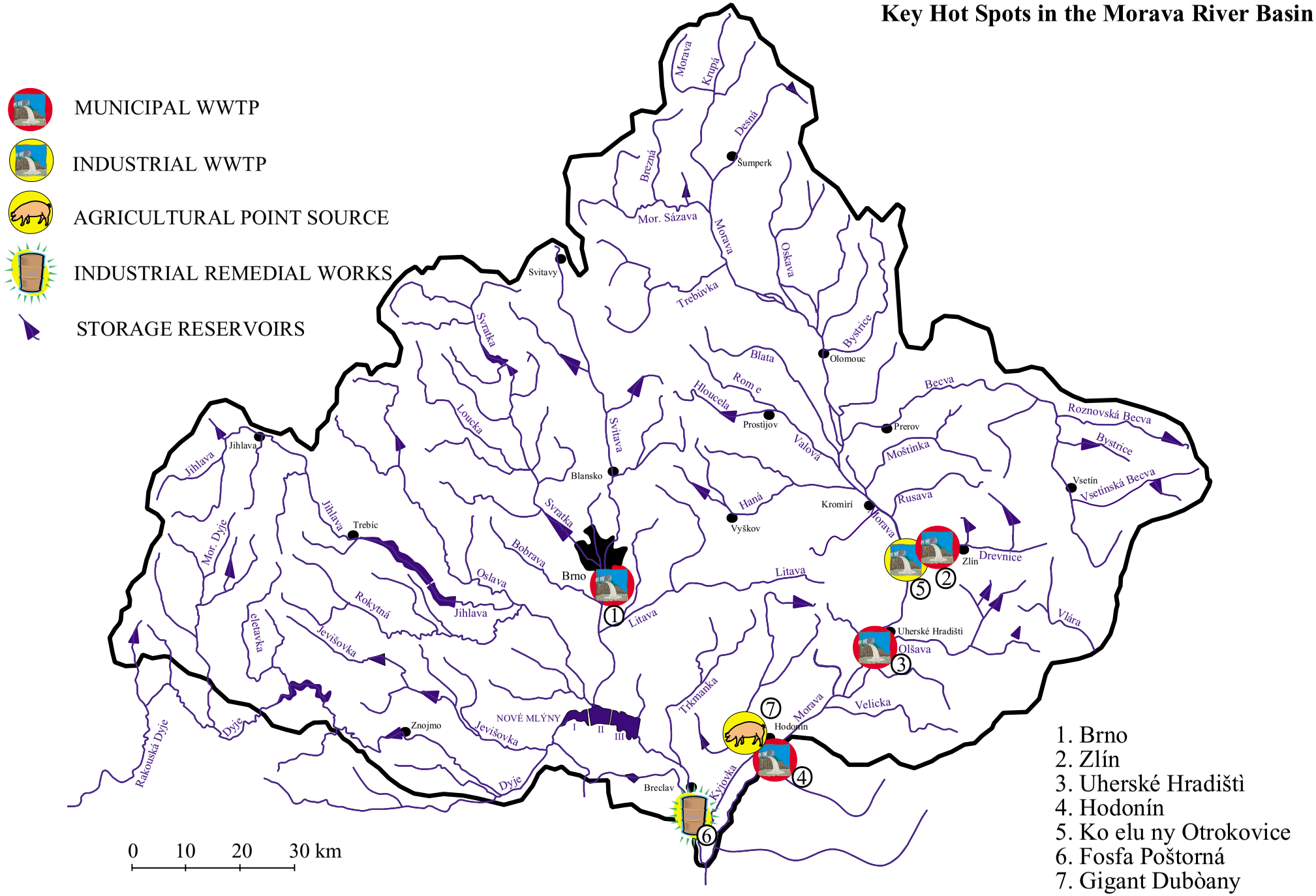
The Ministry of Environment, Czech Republic

The UNDP/GEF Danube Pollution Reduction Programme,
Danube Programme Coordination Unit (DPCU)
P.O.Box 500, 1400 Vienna – Austria
Tel: +43 1 26060 5610
Fax: +43 1 26060 5837

Vienna – Austria, November 1998

Table of Contents

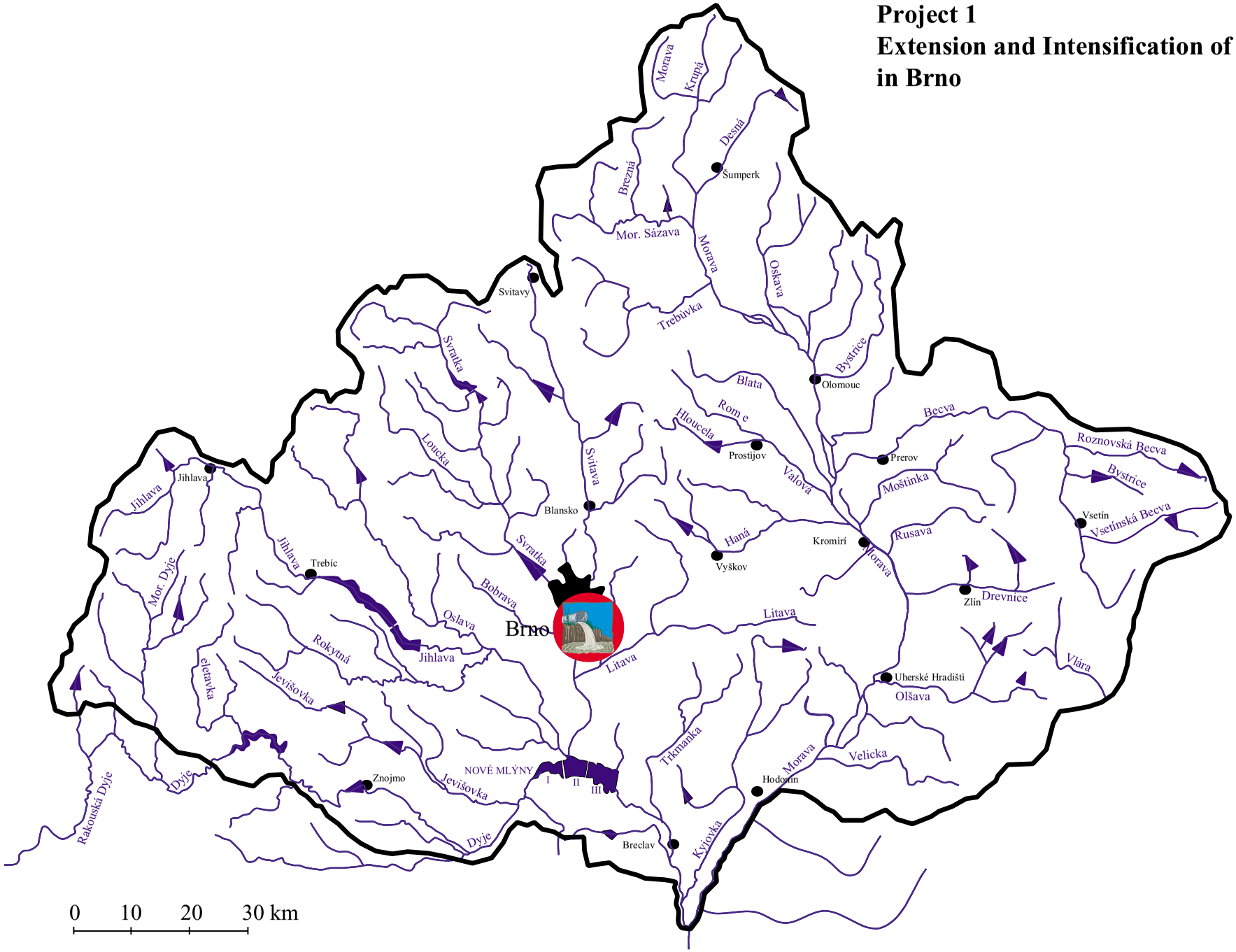
Key Hot Spots in the Morava River Basin



Project 1

Extension of the Municipal Wastewater Treatment Plant for the City of Brno

Project 1
Extension and Intensification of WWTP in Brno



Date of first setting up: 1961 Date of latest upgrade: 1992

Project Title

Extension of Municipal Wastewater Treatment Plant for the City of Brno (in Modrice)

Responsible/Legal Body

Authority: Magistrat mesta Brna

(in English: Municipal Authority in the City of Brno)

Address: Dominikanske namesti 1, 601 67 Brno, Czech Republic

Telephone: +420 (0)5 42171111 (exchange) or +420 (0)5 42172034

Fax: +420 (0)5 42211291.

e-mail: duchon@brno-city.cz

Company: Brnenske vodarny a kanalizace a.s. (in English: Waterworks and Sewerage Brno, joint-stock company), which is in a joint venture with the French company "Lyonnaise des Eaux"

Address: Hybesova 16 , 657 33 Brno, Czech Republic

Telephone: ++420 (0)5 43211803

Fax: ++420 (0)5 43211203

e-mail: mklos@bvk.cz

Project Target

Target of the Project: improvement of water quality to meet limits 2004/2005; main problems: $N\text{-}NH_4$, P_{Tot}

Benefits of the Project: essential improvement of water quality in all important parameters including nutrients

Beneficiaries: water management - mainly downstream users of water, environment (especially life in river), agriculture, forestry, fishery, recreation, transboundary impacts

Stakeholders: city of Brno and its inhabitants, neighboring downstream municipalities and their inhabitants, agriculture

Investment Costs

Preliminary calculation of project costs: investments in total 1,301 million CZK (39.7 million US $)

Status of Project

Actual status of the project: in the phase of ongoing process (firm Schüffl Forsthuber)

Language of Project Documents

Project documents are mostly in Czech, some summary texts in English would be prepared for European Bank for Reconstruction and Development and for European Union

1 Project Title

Extension of Municipal Wastewater Treatment Plant for the City of Brno (in Modrice)

2 Investor Details

2.1 Authority/Company

Authority = Investor:

Name:	Magistrat mesta Brna
	(in English: Municipal Authority in the City of Brno)
Address:	Dominikanske namesti 1, 601 67 Brno, Czech Republic
Telephone:	+420 (0)5 42171111 (exchange) or +420 (0)5 42172034
Fax:	+420 (0)5 42211291.
e-mail:	duchon@brno-city.cz

Company:

Name of the company commissioned by City of Brno:

Brnenske vodarny a kanalizace a.s. (in English: Waterworks and Sewerage Brno, joint-stock company)

Address:	Hybesova 16 , 657 33 Brno, Czech Republic
Telephone:	++420 (0)5 43211803
Fax:	++420 (0)5 43211203
e-mail:	mklos@bvk.cz

2.2 Contact Persons

Mr. Miroslav Klos, vice-director of the "Brnenske vodarny a kanalizace a.s."

Mr. Petr Duchon, deputy of Mayor for the City of Brno

Mr. Josef Gogela, head of technical department by the Municipal Authority in the City of Brno

2.3 Advisor/Consultant

Mr. Oldrich Kura, section director from the "Brnenske vodarny a kanalizace a.s."

consultants from the Austrian firm "Schüffl Forsthuber"

consultants from Czech firms cooperating with the investor ... maybe DUIS s.r.o., Aquatis a.s., Vodohospodarsky rozvoj a vystavba (Water Management Development and Construction) - division Brno

2.4 Legal/Financial Status

Legal status of investor: Municipal authority of the City

2.5 Authority/Company Profile

Authority profile: municipal authority in the second largest city in the Czech Republic (almost 400,000 inhabitants)

- task: administration and self-government in the city of Brno, with more than 20 suburbs and sub-authorities, with extent infrastructure and industry
- annual budget of authority: 5 - 6 million CZK
- number of persons employed: 900

Company Profile ("Brnenske vodarny a kanalizace a.s."): joint-stock company, shares of Brno and of French firm Lyonnaise des Eaux

- mandate field of business: management of water supply and sanitation systems in the city of Brno (with own waterworks, water pipelines, sewerage, water treatment plant - near the Svratka River, wastewater treatment plant in Modrice)
- turnover of company: ...
- number of persons employed: ...

2.6 Planning/Implementing Extent/Capacity of the Investor

All capacities of investor (authority) and respective company to plan and implement the project are adequate to the need of planning or implementing of Project, obviously with presumed cooperation with local and external experts, managers and other specialists, with local and regional companies and institutions

2.7 Institutions/Enterprises beside the Investor

- Planning/consulting: experts from the Austrian firm Schüffl & Forsthuber", Czech experts from DUIS s.r.o., Aquatis a.s., Vodohospodarsky rozvoj a vystavba (Water Management Development and Construction) - division Brno
- Construction: Ekoingstav Brno a.s., IMOS Brno a.s., ...

- Licensing/monitoring: licensing from many Czech firms for equipment, monitoring: Cesky hydrometeorologicky ustav Brno (Czech Hydrometeorological Institute, branch in Brno), Povodi Moravy a.s. (Morava River Basin Administration) etc.

3 Project Description

3.1 Project Outline

Solution of the project is oriented on the improvement of present unfavorable state of water quality related to outflow from the WWTP and to water quality requirements in surface waters.

The present water quality indicators 1996 - 1997 in the Svratka River downstream Brno are as follows:

BOD5	class 4	AMV ... 7.1 mg/l	ChV ... 11.5 mg/l
CODCr	class 4	AMV ... 28.9 mg/l	ChV ... 38.0 mg/l
TSS	class 3	AMV ... 18 mg/l	ChV ... 43 mg/l
N-NH4	class 4	AMV ... 2.37 mg/l	ChV ... 3.54 mg/l
PTot	class 4	AMV ... 0.45 mg/l	ChV ... 0.72 mg/l

(Note:
AMV ... two years mean value 1.1.1996 - 31.12.1997, ChV ...
- characteristic value in the same time;
- classification ... conforming with Czech standards)

Expected WWTP outflow concentration (for the final phase):

BOD5	15 mg/l
CODCr	75 mg/l
TSS	20 mg/l
NTot	5 mg/l
PTot	1 mg/l

(The design implementation should ensure the adequate wastewater treatment parameters in accordance to the Czech Governmental Decree No. 171/1992 as well as the emission limits of the EU)

The extension and intensification of the existing municipal wastewater treatment plant for the city of Brno is the largest project in the Morava River Basin. The plant is situated in the local area of neighboring municipality Modrice and the first stage was built in 1961. From this time there have been done some partial steps of extension and improvement here. In 1981 started the operation of the second degree and by this step increased the capacity of biological part of plant. Then in 1989 followed the 3rd phase by extension of mechanical parts (new sedimentation tanks etc.) of plant and the works have been ongoing at the beginning of ninetieth (4th phase - sludge thickeners, changes of technologies by sludge dewatering).

- Technical description of the main components of the project: The extension and intensification of WWTP is proposed according to new project (Schüffl & Forsthuber) will consist in increased removal of phosphorus with cascade denitrification - by means of three completing tanks in the framework of biological part. There will be these tanks: anaerobic, anoxic and aerobic, complement of secondary settling system.
- Main elements of project to avoid or remedial water pollution
    - Structural project ... construction of some parts of sewage treatment plant as was mentioned above:

      The extended Municipal Wastewater Treatment Plant Brno should consist of the following units:

      Mechanical pre-treatment (6 pieces of coarse screen, 6 pieces of fine screen, 6 pieces of aerated grit chamber, 3 pieces of grit chamber)

      Mechanical treatment (4 primary smaller settlers, 4 primary larger settlers)

      Biological treatment (existing activation tanks with nitrification and denitrification, new activation tanks with nitrification and denitrification - with anaerobic parts, anoxic part and aerobic part, further 9 new secondary settlers to 21 existing ones)

      Tertiary treatment (precipitation tank, 4 settlers for sedimentation)

      Sludge handling (mechanical dewatering, 6 digesters, 2 sludge collectors, 3 pieces of sludge press, mechanical sludge dewatering for precipitated sludge, sludge dying)

    - Non-structural project (there is no at present)
- Beneficiaries: water management - mainly downstream users of water, environment (especially life in river), agriculture, forestry, fishery, recreation, transboundary impacts
- Stakeholders: city of Brno and its inhabitants, neighboring downstream municipalities and their inhabitants, agriculture
- Location: south of the Brno, near the city border
- Site: Modrice (municipality south of the city Brno)
- Existing use of site: existing municipal WWTP

3.2 Primary Needs for the Project

Description of targets of the project and its contribution to the reduction of the pollution in the Danube River Basin:

- main target ... improvement of water quality to meet limits 2004/2005

Targets in detail according to

- health benefits ... for people in downstream regions
- aquatic environment (fish etc.) ... downstream reaches of the Svratka River
- recreation ... surroundings of downstream reaches of the Svratka River
- aesthetics ... in the Svratka River and in surroundings of downstream reaches of the Svratka River
- biodiversity ... downstream reaches of the Svratka River
- economic development ... it will be step by step important, too
- transboundary effects ... according to plant efficiency and distance to the border (first Austria and then Slovakia)

Assumed deterioration without project measures: ongoing tendency of water pollution in the Svratka River, of other coherent unfavorable consequences for river, alluvium and users; the deterioration effect was not calculated

3.3 Status of Project Preparation

Actual status of project studies and reports:

- feasibility level and beginning of the phase of application and license
- bidding and selection of construction company would follow

Project documents/summary in English ... no; all texts are only in Czech, but some needful English summaries would be prepared

3.4 Technology Proposed

Mostly standard elements; relevant needful special features could be procured with the aid of Czech firms

3.5 Ownership of Project Site

Status of proprietary rights: project site is on plots of the owner

3.6 Specific Project Items

There are no additional remarks on project description

4 Project Effects and Interactions

4.1 Public's Expression of Interest

- Description of public participation/involvement measures: Public has been participated on remedial tasks of interest as in other parts of the Czech Republic; the environmental awareness will have to increase
- Attitude of concerned people to the project: The Municipal Authority and respective company representation are very interested in solving here mentioned problems. It has been searching for financial support because of the needed amount of finances. Very significant would be probably the help of European organizations (European Bank for reconstruction and Development, European Union)
- Results of social acceptance assessment: the task was assessed in this way

4.2 Environmental Impact Assessment

Environmental Impact Assessment was not carried out because of assumed favorable consequences, nevertheless probably in some special tasks would have to be worked up

4.3 Sensitivity of Locality/Receptor

Description of the area, location, receiving water influenced by the project:

The WWTP Brno is situated in the floodplain area of the Svratka River, near and downstream the confluence with its left-hand tributary Svitava River. Both rivers are not extremely polluted, but the impact of Brno and its industry is evident. In the south of Brno and downstream the WWTP there are wide floodplain systems formed in the past along rivers Svratka R.and Jihlava R.. which income together in the middle reservoir of the Nove Mlyny Hydraulic Structure on the Dyje River. In mentioned floodplains there have been some small water sources and very important is also the utilization of the Nove Mlyny Systems for recreation purposes.

4.4 Primary Effects of Project

Description of the effects of the project on different geographical levels

- local: better downstream environmental and water quality conditions (municipalities Rajhrad, Zidlochovice, smaller water source)
- regional and national: better downstream environmental and water quality conditions in the region of downstream reaches of the Svratka River floodplain (including other riverine municipalities towards Nove Mlyny and in all relevant landscape or surroundings (connection with better biodiversity, life of fishes and so forth),

- international and transboundary: better downstream environmental and water quality conditions owing to distance from border and to upgraded WWTP efficiency

5 Economic Project Justification

5.1 Economic Project Benefits

- Saved investment cost (compared to without project case): it was not evaluated
- Employment and income effects:
    - during construction period: employment and income occasion for workers in construction and equipment firms
    - during operation period: employment and income occasion for workers in construction and equipment firms
- Other economic effects: effects resulting from water quality improvement (mainly related to downstream reaches - agriculture, fishery, possible water abstraction for different users etc.)

5.2 Economic Internal Rate of Return (EIRR)

Economic Internal Rate of Return (EIRR) was not calculated

6 Financial Viability

6.1 Estimated Investment Cost

- Investment cost (in total)

national currency	CZK (Ceska koruna = Czech Crown)
in US dollars	1 US $ = 0.0306 CZK

- Allocation of capital cost:

* land	4.6 million CZK 0.14 million US $
* construction and machinery	1,106 million CZK 33.85 million US $
* planning and supervision	96.0 million CZK 2.94 million US $
* total cost	1,301 million CZK, 39.7 million US $

- on an annual basis: it was not calculated
- year of cost estimate: 1998
- nature of cost estimate: preliminary

6.2 Estimated Operational Cost

Expected annual (operational) recurrent costs in real terms according to assumed timing are not calculated at present. Likewise repair and replacement or total operational costs are not assessed. All mentioned values and will be determine in the project in detail; with these circumstances are also in connection year of cost estimate (1999?) and nature of cost estimate - first preliminary and then as a part of required "Financial Project" in detail.

Writing-down allowances bound to depreciation represent usually by buildings 1.5%, water pipelines 2.0%, sewers 3.3% and equipment 8 - 10%, all WWTP appr. 3.0 - 3.5% of their investments value. Total annual operational cost is adequate to 5.5 - 7.2% of investments cost and partial items represent following values: wages and salaries 0.9 - 1.2% (from investments cost), energy supply 2.5 - 3.0%, material 0.8 - 1.2%, repairs and maintenance 0.7 - 1.0%, transport etc. 0.6 - 0.8%..

6.3 Estimate of Revenues

Expected annual revenues in real terms have been calculated as interim values. Likewise the future year of estimate and nature of revenues estimate had not be determined exactly

- Expected annual revenues: it was not calculated more exactly
- Year of estimate: in the future
- Nature of cost estimate: it will be adequate to investments and operational cost

6.4 Financial Internal Rate of Return (FIRR)

- Financial Internal Rate of Return (FIRR) was not calculated

6.5 Anticipated/Proposed Funding Scheme (in million CZK)

Sources of funding	**Secured**	**Requested**	**Non - secured**
(1) Equity of project owner	37,278		
(2) National Environmental Fund	-	-	-
(3) Water Management Fund	non-existing		
(4) Public loan – central budget	-	-	-
(5) Public loan – regional budget	non-existing		
(6) Public loan – municipal budget	-	-	-
(7) Public grant – central budget	-	-	-
(8) Public grant – regional budget	non-existing		
(9) Public grant – municipal budget	167	-	-
(10) International loan	-	649	-
(11) International grant	-	299	-
(12) Commercial bank loan	-	-	-
(13) Other sources			186
Total funds/requirements	167	948	186*

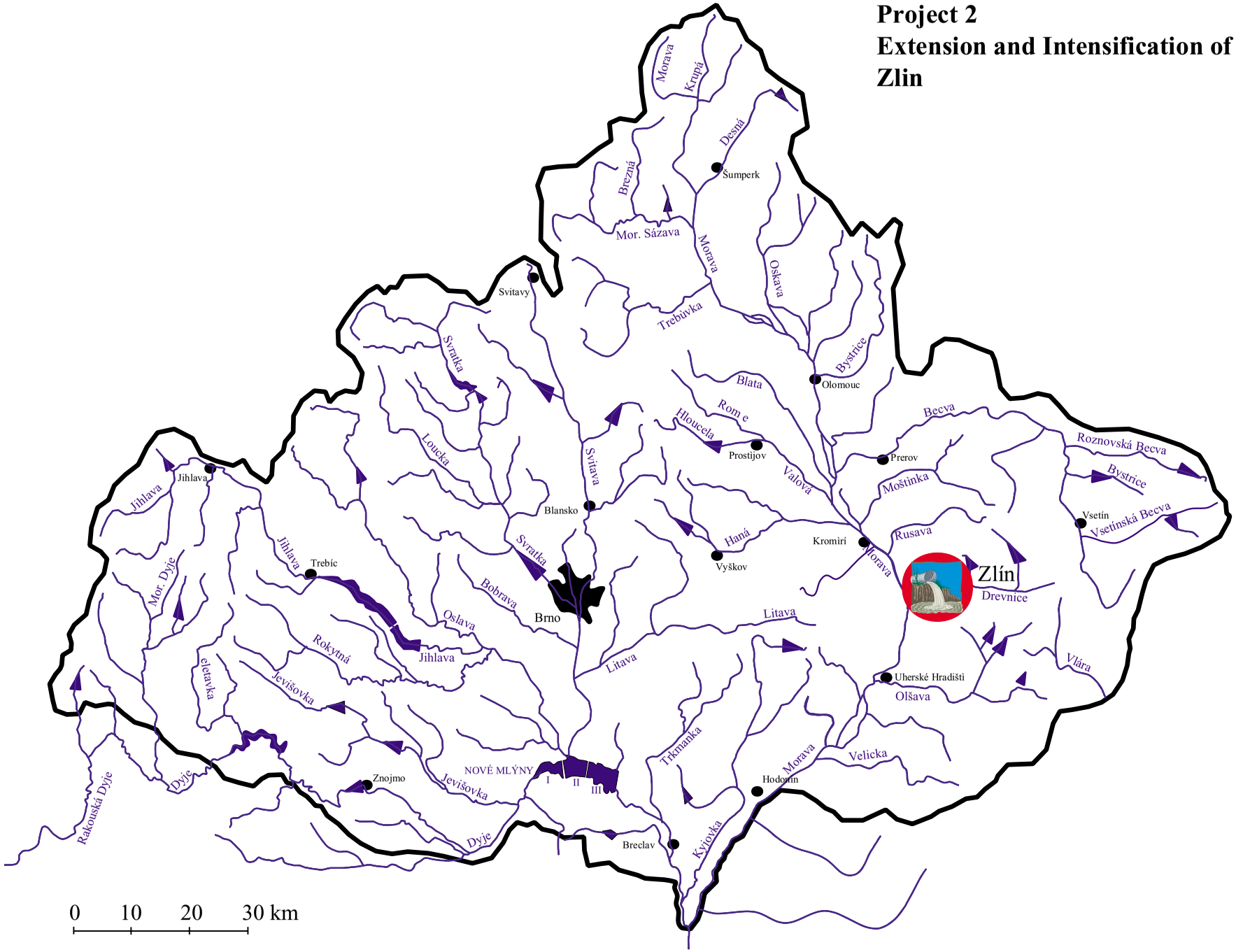
Notes:

* either GEF or syndicated loan

Project 2

Extension and Intensification of Wastewater Treatment Plant in Zlin – Malenovice

Project 2
Extension and Intensification of WWTP
Zlin



Date of first setting up: 1963 Date of latest upgrade: 1995 - 1996

Project Title

Extension and Intensification of Wastewater Treatment Plant in Zlin - Malenovice

Responsible/Legal Body

Authority: Mestsky urad Zlin

(in English Municipal Authority Zlin)

Address: Namesti Miru 12, 761 40 Zlin, Czech Republic

Telephone: +420 (0)67 7630111 (exchange) or +420 (0)67 7630185

Fax: +420 (0)67 329015 42211291.

e-mail: ...

Company: Vodovody a kanalizace a.s. Zlin (in English: Water Supply and Sewerage Zlin, joint-stock company)

Address: Trida Tomase Bati 383, 760 49 Zlin, Czech Republic

Telephone: ++420 (0)67 605 111 or ++420 (0)67 7661111

Fax: ++420 (0)5 605264

e-mail: ...

Project Target

Target of the Project: improvement of water quality to meet limits 2004/2005

Benefits of the Project: essential improvement of water quality in all important parameters including nutrients

Beneficiaries: downstream water resources in the Morava river floodplain (near Knezpole, Ostrozska Nova Ves etc.), other downstream users of water (agriculture, forestry, recreation, fishery, environment, transboundary impact)

Stakeholders: city of Zlin and its inhabitants, neighboring downstream municipalities (mainly Otrokovice, Napajedla) and their inhabitants, downstream industrial or other companies (again in Otrokovice and Napajedla), agriculture, sport etc.

Investment Costs

Investments costs were calculated on the amount of 354.0 million CZK (10.8 million US $).

Status of Project

Actual status of the project: ongoing project

Language of Project Documents

Studies, project or summaries are available only in Czech; needful texts in English could be prepared conforming with a demand

1 Project Title

Extension and Intensification of Wastewater Treatment Plant in Zlin - Malenovice

2 Investor Details

2.1 Authority/Company

Authority - Investor:

Name: Mestsky urad Zlin (in English Municipal Authority Zlin)

Address: Namesti Miru 12, 761 40 Zlin, Czech Republic

Telephone: +420 (0)67 7630111 (exchange) or +420 (0)67 7630185

Fax: +420 (0)67 329015 42211291.

e-mail: ...

2.2 Contact Persons

Mr. Jaroslav Krajca, Municipal Authority Zlin (responsible for project)

Mr. Ivan Mudrak, Vodovody a kanalizace a.s. Zlin - head of operation

2.3 Advisor/Consultant

Mr. Jaroslav Valkovic, Centroprojekt Zlin a.s., team leader of project consultants from other Czech firms cooperating with the investor (mostly from the region of Otrokovice and Zlin)

Mr. Miroslav Heger, Vodovody a kanalizace a.s. Zlin, equipment and technology specialist on the WWTP

2.4 Legal/Financial Status

Legal status of investor: joint-stock company

2.5 Authority/Company Profile

Authority profile: municipal authority in the third largest city in the Morava River Basin (more than 80,000 inhabitants)

- task: administration and self-government in the city of Zlin, with more suburbs, with extent infrastructure and industry
- annual budget of authority: max. 1 million CZK
- number of persons employed: 120

2.6 Planning/Implementing Extent/Capacity of the Investor

Enterprises own capacity to plan and implement the project: own capacity + aid of other companies and institutions (Hydroprojekt Praha, a.s. etc. - in the planning phase, companies dealing with building up and equipment assembly ... owing to a screening in the region)

2.7 Institutions/Enterprises beside the Investor

- Planning/consulting: mentioned Centroprojekt Zlin a.s. and other available companies and institutions
- Construction: owing to a screening in the region (Ingstav Uherske Hradiste a.s.); technology ... Desta Otrokovice
- Licensing/monitoring: licensing from many Czech firms for equipment,
  monitoring: Cesky hydrometeorologicky ustav Brno (Czech Hydrometeorological Institute, branch in Brno), Povodi Moravy a.s. (Morava River Basin Administration) or other institutions from the region etc.

3 Project Description

3.1 Project Outline

Solution of the project is oriented on the improvement of present unfavorable state of water quality related to outflow from the WWTP and to water quality requirements in surface waters.

The present water quality indicators 1996 - 1997 in the Drevnice River downstream Zlin are as follows:

BOD5	class 5	AMV ... 10.5 mg/l	ChV ... 16.9 mg/l
CODCr	class 4	AMV ... 28.3 mg/l	ChV ... 41.8 mg/l
TSS	class 4	AMV ... 51 mg/l	ChV ... 93 mg/l
N-NH4	class 5	AMV ... 2.87 mg/l	ChV ... 5.41 mg/l
PTot	class 5	AMV ... 0.73 mg/l	ChV ... 1.22 mg/l

(Note: AMV ... two years mean value 1.1.1996 - 31.12.1997, ChV ... characteristic value in the same time; classification ... conforming with Czech standards)

Expected WWTP outflow concentration (for the final phase):

BOD5	15 mg/l
CODCr	75 mg/l
TSS	20 mg/l
NTot	5 mg/l
PTot	1 mg/l

(The design implementation should ensure the adequate wastewater treatment parameters in accordance to the Czech Governmental Decree No. 171/1992 as well as the emission limits of the EU)

Among very important projects - with regard to bad water quality parameters in the receiving Drevnice River - pertain the proposal aimed at reconstruction and extension of municipal WWTP Zlin situated in its suburb Malenovice. The original plant was constructed in the period of 1964 - 1966 and ten - fifteen years ago started the overloading of WWTP. First stage of reconstruction was finished in 1993 and it referred to extension of the mechanical pre-treatment, construction of two secondary settlers etc. Some reconstruction works were performed from 1994 to 1996: decantation and secondary settling tanks, equipment for sludge press etc.

- Technical description of the main components of the project: The project planned for years 1998 - 2000 was proposed by the firm Centroprojekt Zlin a.s. The cost calculation refers to the same phase. There will be two stages, dealing mainly with upgrade of insufficient systems of aeration,, secondary settlers, sludge handling. Main goal is decreasing of nutrient load in watercourses
- Main elements of project to avoid or remedial water pollution
    - Structural project - construction of some parts of sewage treatment plant as was mentioned above: The project in question aims at the second stage of reconstruction with two phases:

      I. construction of new activation tanks (with nitrogen and phosphorus removal), completing secondary settler, air compressing plant, sludge return pumping, completion of the gas and heating system etc.,

      II. reconstruction of the present aeration and distribution tanks, reconstruction of sludge treatment, screenings incineration etc.
    - Non-structural project (there is no at present)
- Beneficiaries: downstream water resources for drinking water supply (Knezpole, Ostrozska Nova Ves), downstream users of water (agriculture, forestry, recreation, fishery, environment, transboundary impacts)
- Stakeholders: Otrokovice, Napajedla and their inhabitants, neighboring downstream municipalities and their inhabitants
- Location: Zlin

- Site: Zlin - Malenovice, near the Drevnice River, upstream Otrokovice - Existing use of site: existing WWTP Zlin - Malenovice

3.2 Primary Needs for the Project

Description of targets of the project and its contribution to the reduction of the pollution in the Danube River Basin:

- main target ... improvement of water quality to meet limits 2004/2005
- Targets in detail according to
- health benefits ... for people in downstream regions (Otrokovice, Napajedla, Spytihnev, towards Uherske Hradiste)
- aquatic environment (fish etc.) ... downstream reaches of the Drevnice River and then Morava River
- recreation ... surroundings of downstream reaches of the Drevnice and Morava River
- aesthetics ... in both rivers and in their surroundings (downstream reaches)
- biodiversity ... downstream reaches of both rivers
- economic development ... it is not important
- transboundary effects ... according to plant efficiency and distance to the border (first Slovakia and then Austria)

Assumed deterioration without project measures: ongoing tendency of water pollution in the Drevnice and Morava River, of other coherent unfavorable consequences for rivers, alluvium and users; the deterioration effect was not calculated

3.3 Status of Project Preparation

Actual status of project studies and reports:

- feasibility level and beginning of the phase of application and license
- bidding and selection of construction company would follow Project documents/summary in English ... no; all texts are only in Czech

3.4 Technology Proposed

Mostly standard elements; relevant needful special features could be procured with the aid of Czech firms

3.5 Ownership of Project Site

Status of proprietary rights: project site is on plots of the owner

3.6 Specific Project Items

There are no additional remarks on project description

4 Project Effects and Interactions

4.1 Public's Expression of Interest

- Description of public participation/involvement measures: Public has been participated on remedial tasks of interest as in other parts of the Czech Republic; the environmental awareness will have to increase
- Attitude of concerned people to the project: City of Zlin and the company representation are interested in solving mentioned problems. Among concerned institutions pertain also the authority of the District Office Zlin, but there have been some special problems, e.g. after-effects coherent with damages from huge floods in July 1997 having affected some lower parts of the city. Zlin is situated near the Drevnice River. It has been searching for financial support because of the needed amount of finances.
- Results of social acceptance assessment: the task was not assessed in this way

4.2 Environmental Impact Assessment

Environmental Impact Assessment was not carried out because of assumed favorable consequences, nevertheless probably in some special tasks would have to be worked up

4.3 Sensitivity of Locality/Receptor

Description of the area, location, receiving water influenced by the project: The area of WWTP is in the floodplain of the Drevnice River and near the more extent floodplain of the Morava River. The downstream part of the Drevnice River has been very polluted by industry in Zlin (boot-and-shoe industry, leather industry, machine industry, chemical industry etc.) and by people staying in Zlin and its environs. Likewise the Morava River is very polluted. Round 10 - 15 downstream the municipal WWTP sites are groundwater resources in the floodplain area of the Morava River (Knezpole and further Ostrozska Nova Ves)

4.4 Primary Effects of Project

Description of the effects of the project on different geographical levels

- local: better downstream environmental and water quality conditions (towns Otrokovice, Napajedla, groundwater resource Knezpole)
- regional and national: better downstream environmental and water quality conditions in the region of downstream reaches of the Morava River floodplain (including groundwater resources Ostrozska Nova Ves, Bzenec and other), in riverine towns (Uherske Hradiste, Stare Mesto, Uhersky Ostroh, Veseli nad Moravou, Straznice, Hodonin) and other respective municipalities and in all relevant landscape or surroundings (connection with better biodiversity, life of fishes and so forth)

- international and transboundary: better downstream environmental and water quality conditions owing to distance from border and to upgraded WWTP efficiency

5 Economic Project Justification

5.1 Economic Project Benefits

- Saved investment cost (compared to without project case): it was not evaluated
- Employment and income effects:
    - during construction period: employment and income occasion for workers in construction and equipment firms
    - during operation period: employment and income occasion for workers in construction and equipment firms
- Other economic effects: effects resulting from water quality improvement (mainly related to downstream reaches - agriculture, fishery, possible water abstraction for different users etc.)

5.2 Economic Internal Rate of Return (EIRR)

Economic Internal Rate of Return (EIRR) was not calculated

6 Financial Viability

6.1 Estimated Investment Cost

- Investment cost (in total)	
national currency	CZK (Ceska koruna = Czech Crown)
in US dollars	1 US $ = 0.0306 CZK
- Allocation of capital cost:	
* land	3.4 million CZK 0.1 million US $
* construction and machinery	323.8 million CZK 9.9 million US $
* planning and supervision	26.8 million CZK 0.8 million US $
* total cost	354.0 million CZK, 10.8 million US $
- on an annual basis:	it was not calculated
- year of cost estimate:	1998
- nature of cost estimate:	preliminary

6.2 Estimated Operational Cost

Expected annual (operational) recurrent costs in real terms according to assumed timing are not calculated at present. Likewise repair and replacement or total operational costs are not assessed. All mentioned values and will be determine in the project in detail; with these circumstances are also in connection year of cost estimate (appr. 1999) and nature of cost estimate - first preliminary and then as a part of required "Financial Project" in detail. Preliminary Financial Project (FP) was prepared by Centroprojekt Zlin a.s.

Writing-down allowances bound to depreciation represent usually by buildings 1.5%, water pipelines 2.0%, sewers 3.3% and equipment 8 - 10%, all WWTP appr. 3,0 - 3.5% of their investments value. Total annual operational cost is adequate to 5.5 - 7.2% of investments cost and partial items represent following values: wages and salaries 0.9 - 1.2% (from investments cost; owing to FP 1.08%), energy supply 2.5 - 3.0%, material 0.8 - 1.2% (owing to FP 1.1%), repairs and maintenance 0.7 - 1.0% (on the lines of FP 1.06%), transport etc. 0.6 - 0.8%, credit interest 2 - 2.5% etc.

6.3 Estimate of Revenues

- Expected annual revenues: it was not calculated in detail
- Year of estimate: in the future
- Nature of cost estimate: it will be adequate to investments and operational cost

6.4 Financial Internal Rate of Return (FIRR)

- Financial Internal Rate of Return (FIRR) was not calculated

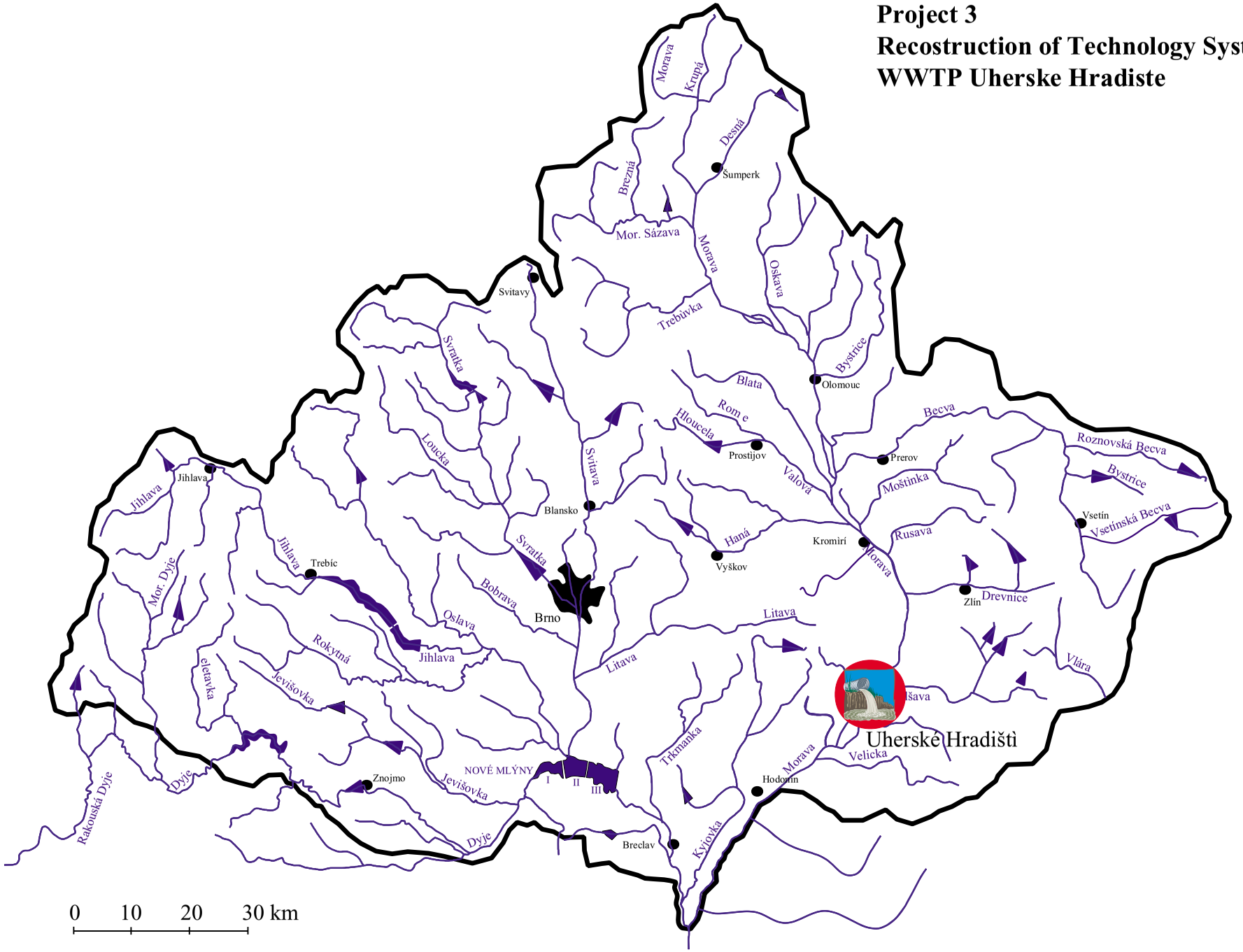
6.5 Anticipated/Proposed Funding Scheme (in million CZK)

Sources of funding	Secured	Requested	Non - secured
(1) Equity of project owner	...		
(2) National Environmental Fund	-	-	-
(3) Water Management Fund	non-existing		
(4) Public loan – central budget	-	-	-
(5) Public loan – regional budget	non-existing		
(6) Public loan – municipal budget	-	-	-
(7) Public grant – central budget	132	-	-
(8) Public grant – regional budget	non-existing		
(9) Public grant – municipal budget	117	-	-
(10) International loan	-	-	52.5
(11) International grant	-	-	52.5
(12) Commercial bank loan	-	-	-
(13) Other sources	-	-	-
Total funds/requirements	249	-	105

Project 3

Reconstruction of the Technology in Wastewater Treatment Plant in Uherske Hradiste

Project 3
Recostruction of Technology Systems in WWTP Uherske Hradiste



Date of first setting up: 1974 Date of latest upgrade: 1994

Project Title

Reconstruction of the Technology in Wastewater Treatment Plant Uherske Hradiste

Responsible/Legal Body

Responsible Authority:

Name:	**Okresni urad Uherske Hradiste** (in English: District Office Uherske Hradiste)
Address:	Svatovaclavska 568, 686 66 Uherske Hradiste, Czech Republic
Telephone:	+420 (0) 632 523111
Fax:	+420 (0) 632 551007
e-mail:	...

Company:

Name:	**Slovacke vodarny a kanalizace a.s.** (in English "Moravia-Slovakian Waterworks and Sewerage, Joint-stock Company")
Address:	Za Olsavkou 290, 686 36 Uherske Hradiste, Czech Republic
Telephone:	+420 (0)632 530111
Fax:	+420 (0)632 551118
e-mail	svkuh@net.cz

Project Target

Target of the Project: improvement of water quality to meet limits 2004/2005

Benefits of the Project: essential improvement of water quality in all important parameters including nutrients

Beneficiaries: downstream water resources for drinking water supply Ostrozska Nova Ves), downstream users of water (forestry, agriculture, industry, recreation, fishery, environment, transboundary impacts)

Stakeholders: Uherske Hradiste, Stare Mesto and their inhabitants, neighboring downstream municipalities and their inhabitants

Investment Costs

Investments costs were calculated on the amount of 165.0 million CZK (5.0 million US $). It must be probably considered with completing phase.

Status of Project

Actual status of the project: ongoing project (at present - study of biological part of WWTP)

Language of Project Documents

Studies, project or summaries are available only in Czech; needful texts in English will be prepared conforming with a demand

1 Project Title

Reconstruction of the Technology in Wastewater Treatment Plant Uherske Hradiste

2 Investor Details

2.1 Authority/Company

Company-Investor:

Name:	Slovacke vodarny a kanalizace a.s. (in English "Moravia-Slovakian Waterworks and Sewerage, Joint-stock Company")
Address:	Za Olsavkou 290, 686 36 Uherske Hradiste, Czech Republic
Telephone:	+420 (0)632 530111
Fax:	+420 (0)632 551118
e-mail	svkuh@net.cz

2.2 Contact Persons

Mr. Lubomir Trachtulec, director of company "Slovacke vodarny a kanalizace a.s."

Mr. Josef Motycka, technical director of company "Slovacke vodarny a kanalizace a.s."

Mr. Petr Prochazka, specialist for technology on WWTP, company "Slovacke vodarny a kanalizace a.s."

Mr. Zdenek Mitacek, head of WWTP, company "Slovacke vodarny a kanalizace a.s."

2.3 Advisor/Consultant

Mr. Vladimir Novotny, expert for biological parts of WWTPs, Sigma Engineering a.s. Olomouc

consultants from other Czech firms cooperating with the investor (as e.g. Ingstav Uherske Hradiste a.s., Povodi Moravy, a.s., Centroprojekt Zlin a.s., Vodohospodarsky rozvoj a vystavba a.s. Brno and other firms, above all from the region of Uherske Hradiste)

2.4 Legal/Financial Status

Legal status of investor: joint-stock company

2.5 Authority/Company Profile

Company Profile

- Task of the company and mandate field of business: tasks of the company have been aimed at drinking water supply and sanitation in the region, including the sewage treatment originating from municipalities Uherske Hradiste and Stare Mesto
- Annual turnover of company: appr. 150 million CZK (4.6 million US $)
- Number of persons employed: 260

2.6 Planning/Implementing Extent/Capacity of the Investor

Enterprises own capacity to plan and implement the project: own capacity + aid of other companies and institutions (Sigma Engineering a.s. Olomouc, Centroprojekt Zlin a.s., Aquatis Brno a.s. etc. - in the planning phase, companies dealing with building up -e.g. Ingstav Uherske Hradiste a.s. - and equipment assembly ... owing to a screening in the region)

2.7 Institutions/Enterprises beside the Investor

- Planning/consulting: mentioned Sigma Engineering a.s. Olomouc, Aquatis Brno a.s. and some local companies and institutions
- Construction: owing to a screening in the region (Ingstav Uherske Hradiste a.s., Ekoingstav Brno a.s. etc.)
- Licensing/monitoring: licensing from many Czech firms for equipment,
  monitoring: Cesky hydrometeorologicky ustav Brno (Czech Hydrometeorological Institute, branch in Brno), Povodi Moravy a.s. (Morava River Basin Administration) or other institutions from the region etc.

3 Project Description

3.1 Project Outline

Solution of the project is oriented on the improvement of present unfavorable state of water quality related to outflow from the WWTP and to water quality requirements in surface waters.

The present water quality indicators 1996 - 1997 in the Morava River downstream Uherske Hradiste are as follows:

BOD_5	class 3	AMV ... 4.8 mg/l	ChV ... 7.1 mg/l
COD_{Cr}	class 4	AMV ... 27.2 mg/l	ChV ... 53.1 mg/l
TSS	class 5	AMV ... 56 mg/l	ChV ... 125 mg/l
$N\text{-}NH_4$	class 4	AMV ... 0.75 mg/l	ChV ... 2.24 mg/l
P_{Tot}	class 4	AMV ... 0.31 mg/l	ChV ... 0.52 mg/l

(Note:
AMV ... two years mean value 1.1.1996 - 31.12.1997, ChV ...
- characteristic value in the same time;
- classification ... conforming with Czech standards)

Expected WWTP outflow concentration (for the final phase):

BOD_5	15 mg/l
COD_{Cr}	75 mg/l
TSS	20 mg/l
N_{Tot}	5 mg/l
P_{Tot}	1 mg/l

(The design implementation should ensure the adequate wastewater treatment parameters in accordance to the Czech Governmental Decree No. 171/1992 as well as the emission limits of the EU)

The construction of existing municipal WWTP was finished in 1974 and the operation started in 1976. There were carried up some reconstruction here: 1992 ... pumps for returned sludge, 1993 ... other pump systems and modification of sludge treatment, the latest reconstruction concerning mainly the aeration system was implemented in 1994.

- Technical description of the main components of the project: The project is dealing in particular with reconstruction of technology systems, above all with processes in biological parts.
- Main elements of project to avoid or remedial water pollution
    - Structural project - construction of some parts of sewage treatment plant as was mentioned above:

      The project proposal consists in

      - Mechanical pre-treatment (rack, grit chamber, grease trap)

      - Extension and upgrading of aeration tanks

      - Reconstruction and extension of secondary settlers

      - Reconstruction of sludge treatment

      All measures will contribute - also with the aid of additional structures and equipment in the course of following stage - to reduction of nitrogen and phosphorus load in waters

      The project will have to continue with the aid of final phase (more efficient WWTP referring to better nutrients removal)

    - Non-structural project (there is no at present)
- Beneficiaries: downstream water resources for drinking water supply (Ostrozska Nova Ves, Moravska Nova Ves), downstream users of water (agriculture, forestry, recreation, fishery, environment, transboundary impacts)
- Stakeholders: Uhersky Ostroh, Veseli nad Moravou, Straznice, Rohatec, Hodonin and their inhabitants, neighboring downstream municipalities and their inhabitants, agriculture

- Location: Uherske Hradiste
- Site: Uherske Hradiste, near the Morava River
- Existing use of site: existing WWTP

3.2 Primary Needs for the Project

Description of targets of the project and its contribution to the reduction of the pollution in the Danube River Basin:

- main target ... improvement of water quality to meet limits 2004/2005

Targets in detail according to

- health benefits ... for people in downstream regions
- aquatic environment (fish etc.) ... downstream reaches of the Morava River
- recreation ... surroundings of downstream reaches of the Morava River (Ostrozska Nova Ves)
- aesthetics ... in the Morava River and in surroundings of downstream reaches of the Morava River
- biodiversity ... downstream reaches of the Morava River
- economic development ... it is not important
- transboundary effects ... according to plant efficiency and distance to the border (first Slovakia by Rohatec and Hodonin, then Austria)

Assumed deterioration without project measures: ongoing tendency of water pollution in the Morava River, of other coherent unfavorable consequences for river, alluvium and users; the deterioration effect was not calculated

3.3 Status of Project Preparation

Actual status of project studies and reports:

- feasibility level and beginning of the phase of application and license
- bidding and selection of construction company would follow

Project documents/summary in English ... no; all texts are only in Czech

3.4 Technology Proposed

Mostly standard elements; relevant needful special features could be procured with the aid of Czech firms

3.5 Ownership of Project Site

Status of proprietary rights: project site is on plots of the owner

3.6 Specific Project Items

There are no additional remarks on project description

4 Project Effects and Interactions

4.1 Public's Expression of Interest

- Description of public participation/involvement measures: Public has been participated on remedial tasks of interest as in other parts of the Czech Republic; the environmental awareness will have to increase
- Attitude of concerned people to the project: The company representation is very interested in solving here mentioned problems. Among concerned people pertain also the authority of Hodonin which is situated very near the Morava River. It has been searching for financial support because of the needed amount of finances.
- Results of social acceptance assessment: the task was not assessed in this way

4.2 Environmental Impact Assessment

Environmental Impact Assessment was not carried out because of assumed favorable consequences, nevertheless probably in some special tasks would have to be worked up

4.3 Sensitivity of Locality/Receptor

Description of the area, location, receiving water influenced by the project:

The area of WWTP is in the floodplain of two rivers - larger Morava River and its left-hand tributary Oslava River. The Morava River is very polluted from upstream sources (Olomouc, Prerov, Prostejov, Kromeriz, Zlin, Otrokovice etc.). Round 5 - 10 km downstream the respective WWTP site are groundwater resources in the floodplain area of the Morava River (Ostrozska Nova Ves and further sources near Bzenec, Rohatec, Hodonin - Moravska Nova Ves)

4.4 Primary Effects of Project

Description of the effects of the project on different geographical levels

- local: better downstream environmental and water quality conditions (towns Uhersky Ostroh and Veseli nad Moravou, municipality and groundwater resource Ostrozska Nova Ves)
- regional and national: better downstream environmental and water quality conditions in the region of downstream reaches of the Morava River floodplain (including groundwater resources near Bzenec, Rohatec, Moravska Nova Ves), in riverine towns (Vnorovy, Straznice, Rohatec, Hodonin) and other respective municipalities and in all relevant landscape or surroundings (connection with better biodiversity, life of fishes and so forth),
- international and transboundary: better downstream environmental and water quality conditions owing to relatively short distance from border and to more or less upgraded WWTP efficiency

5 Economic Project Justification

5.1 Economic Project Benefits

- Saved investment cost (compared to without project case): it was not evaluated
- Employment and income effects:
    - during construction period: employment and income occasion for workers in construction and equipment firms
    - during operation period: employment and income occasion for workers in construction and equipment firms
- Other economic effects: effects resulting from water quality improvement (mainly related to downstream reaches - agriculture, fishery, possible water abstraction for different users etc.)

5.2 Economic Internal Rate of Return (EIRR)

Economic Internal Rate of Return (EIRR) was not calculated

6 Financial Viability

6.1 Estimated Investment Cost

- Investment cost (in total)

national currency	CZK (Ceska koruna = Czech Crown)
in US dollars	1 US $ = 0.0306 CZK

- Allocation of capital cost:

* land	1.5 million CZK 0.05 million US $
* construction and machinery	152.0 million CZK 4.64 million US $
* planning and supervision	11.5 million CZK 0.35 million US $
* total cost	165.0 million CZK, 5.04 million US $

- on an annual basis: it was not calculated
- year of cost estimate: 1998
- nature of cost estimate: preliminary

6.2 Estimated Operational Cost

Expected annual (operational) recurrent costs in real terms according to assumed timing are not calculated at present. Likewise repair and replacement or total operational costs are not assessed. All mentioned values and will be determine in the project in detail; with these circumstances are also in connection year of cost estimate (1999?) and

nature of cost estimate - first preliminary and then as a part of required "Financial Project" in detail.

Writing-down allowances bound to depreciation represent usually by buildings 1.5%, water pipelines 2.0%, sewers 3.3% and equipment 8 - 10%, all WWTP appr. 3,0 - 3.5% of their investments value. Total annual operational cost is adequate to 5.5 - 7.2% of investments cost and partial items represent following values: wages and salaries 0.9 - 1.2% (from investments cost), energy supply 2.5 - 3.0%, material 0.8 - 1.2%, repairs and maintenance 0.7 - 1.0%, transport etc. 0.6 - 0.8%..

6.3 Estimate of Revenues

- Expected annual revenues: it was not calculated
- Year of estimate: in the future
- Nature of cost estimate: it will be adequate to investments and operational cost

6.4 Financial Internal Rate of Return (FIRR)

- Financial Internal Rate of Return (FIRR) was not calculated

6.5 Anticipated/Proposed Funding Scheme (in million CZK)

Sources of funding	Secured	Requested	Non - secured
(1) Equity of project owner	...		
(2) National Environmental Fund	-	-	-
(3) Water Management Fund	non-existing		
(4) Public loan - central budget	-	-	-
(5) Public loan - regional budget	non-existing		
(6) Public loan - municipal budget	-	-	-
(7) Public grant - central budget	75	-	-
(8) Public grant - regional budget	non-existing		
(9) Public grant - municipal budget	-	-	-
(10) International loan	-	-	13
(11) International grant	-	-	13
(12) Commercial bank loan	-	-	-
(13) Other sources	64*	-	-
Total funds/requirements	139	-	26

Notes:

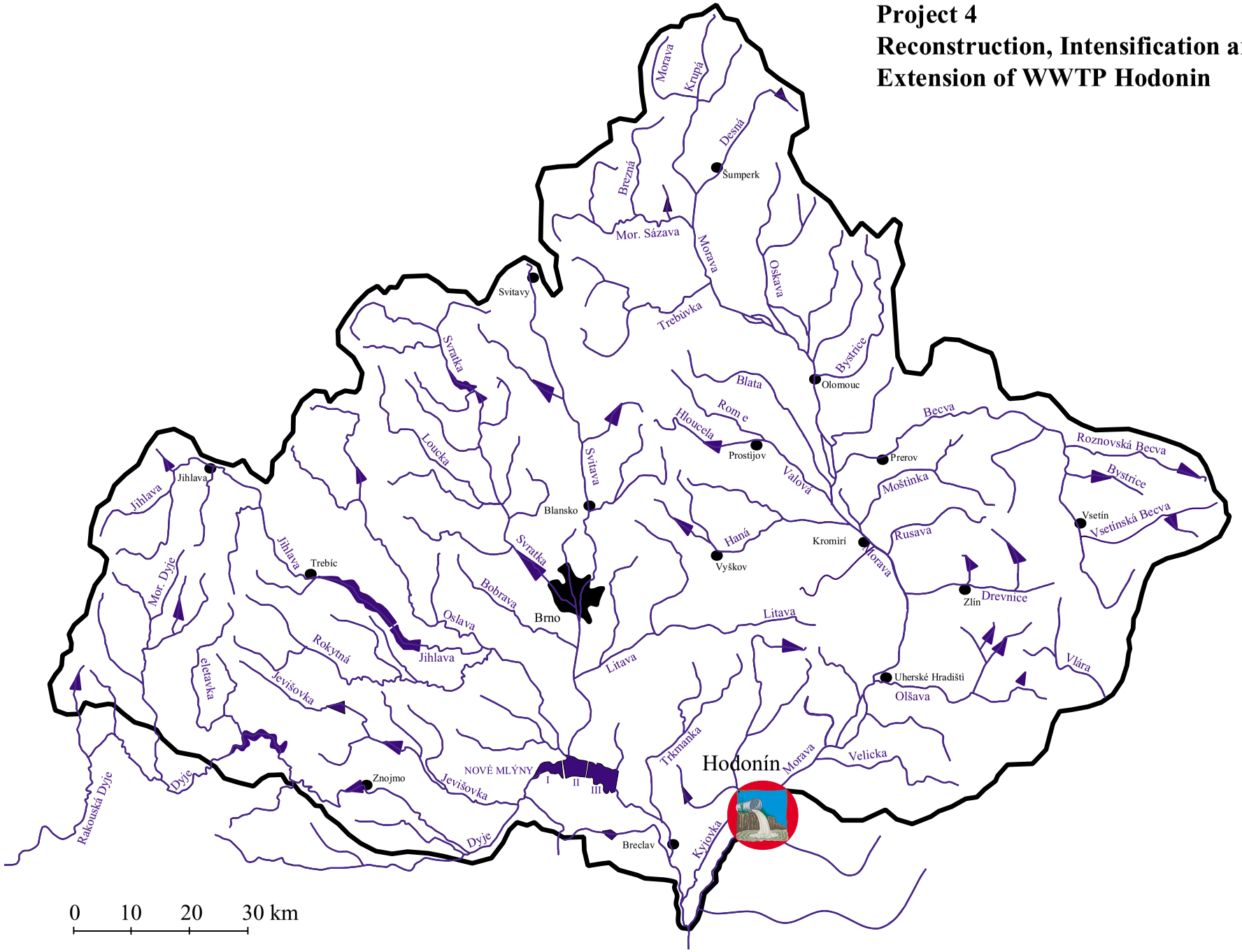
* local budget (of Slovacke vodarny a kanalizace a.s.)

For the termination of all needful works, constructions and equipment must be a completing phase implemented, but the cost for this phase is not calculated at present.

Project 4

Intensification and Extension of Wastewater Treatment Plant Hodonin

Project 4
Reconstruction, Intensification and Extension of WWTP Hodonin



Date of first setting up: 1982 Date of latest upgrade: 1997

Project Title

Intensification and Extension of Wastewater Treatment Plant Hodonin

Responsible/Legal Body

Authority/Company

Authority:	**Okresni urad Hodonin** (in English: District Office Hodonin)
Address:	Narodni trida 25, 695 32 Hodonin, Czech Republic
Telephone:	+420 (0) 628 316111 (exchange)
Fax:	+420 (0) 628 22100
e-mail:	...
Company:	**Vodovody a kanalizace Hodonin, a.s.** (in English: Water Supply and Sewerage Hodonin, joint-stock company)
Address:	Purkynova 2, 695 01 Hodonin, Czech Republic
Telephone:	++420 (0)628 24707
Fax:	++420 (0)628 21221
e-mail:	...

Project Target

Target of the Project: improvement of water quality to meet limits 2004/2005

Benefits of the Project: essential improvement of water quality in all important parameters including nutrients

Beneficiaries: downstream drinking water resources (near Moravska Nova Ves), downstream users of water (agriculture, forestry, recreation, fishery), favorable environmental effects transboundary impacts; Hodonin is on the boundary with Slovakia and near to border with Austria

Stakeholders: Hodonin and its inhabitants, neighboring downstream municipalities and their inhabitants (including Slovakia and then Austria), activities in forests

Investment Costs

Investments costs were calculated on the amount of 76.0 million CZK (2.3 million US $). This value was later modified on 54.0 million CZK (1.65 US $), but it is sure that final completion would require higher costs

Status of Project

Actual status of the project: ongoing project

Language of Project Documents

Studies, project or summaries are available only in Czech; needful texts in English will be prepared conforming with a demand

1 Project Title

Intensification and Extension of Wastewater Treatment Plant Hodonin

2 Investor Details

2.1 Authority/Company

Company:
Name: Vodovody a kanalizace Hodonin, a.s.(in English: Water Supply and Sewerage Hodonin, joint-stock company)
Address: Purkynova 2, 695 01 Hodonin, Czech Republic
Telephone: ++420 (0)628 340479
Fax: ++420 (0)628 21221
e-mail: ...

2.2 Contact Persons

Mr. Alois Mechura, Vodovody a kanalizace Hodonin, a.s, head of Technical Department

Ms. Jitka Koluchova, Vodovody a kanalizace Hodonin, a.s, sewage treatment specialist

Mr. Ivan Kuna, Vodovody a kanalizace Hodonin, a.s, head of sewerage department

2.3 Advisor/Consultant

Mr. Ondrej Dusek, DUIS s.r.o. (from Brno)

consultants from other Czech firms cooperating with the investor (mostly from the region of southern Moravia - surroundings of Hodonin)

2.4 Legal/Financial Status

Legal status of investor: joint-stock company

2.5 Authority/Company Profile

- Task of the company and mandate field of business: tasks of the company have been aimed at drinking water supply and sanitation in the region, including the sewage treatment originating from municipality Hodonin
- annual turnover of company: appr. 213 million CZK (6.5 million US $)
- Number of persons employed: 324

2.6 Planning/Implementing Extent/Capacity of the Investor

Enterprises own capacity to plan and implement the project: own capacity + aid of other companies and institutions (in the planning phase ... DUIS s.r.o., Aquatis Brno a.s., Vodohospodarsky rozvoj a vystavba Brno ... in English Water Management Development and Construction, etc. + companies dealing with building up and equipment assembly ... Ingstav Uherske Hradiste a.s., Sigma Hranice, ... or other owing to a screening in the region)

2.7 Institutions/Enterprises beside the Investor

- Planning/consulting: mentioned DUIS s.r.o. and other available companies and institutions
- Construction: owing to a screening in the region (Ingstav Uherske Hradiste a.s., Ekoingstav Brno a.s., IMOS Brno etc.)
- Licensing/monitoring: licensing from many Czech firms for equipment,
  monitoring: Cesky hydrometeorologicky ustav Brno (Czech Hydrometeorological Institute, branch in Brno), Povodi Moravy a.s. (Morava River Basin Administration) or other institutions from the region etc.

3 Project Description

3.1 Project Outline

Solution of the project is oriented on the improvement of present unfavorable state of water quality related to outflow from the WWTP and to water quality requirements in surface waters.

The present water quality indicators 1996 - 1997 in the Morava River downstream Hodonin are as follows:

BOD_5	class 3	AMV ... 5.2 mg/l	ChV ... 7.8 mg/l
COD_{Cr}	class 4	AMV ... 26.5 mg/l	ChV ... 38.1 mg/l
TSS	class 5	AMV ... 62 mg/l	ChV ... 136 mg/l
$N\text{-}NH_4$	class 4	AMV ... 0.70 mg/l	ChV ... 2.16 mg/l
P_{Tot}	class 4	AMV ... 0.28 mg/l	ChV ... 0.44 mg/l

(Note:
AMV ... two years mean value 1.1.1996 - 31.12.1997, ChV ...

- characteristic value in the same time;
- classification ... conforming with Czech standards)

Expected WWTP outflow concentration (for the middle/final phase):

BOD5	25 mg/l	15 mg/l
CODCr	90 mg/l	75 mg/l
TSS	20 mg/l	20 mg/l
NTot	5 mg/l	5 mg/l
PTot	1.5 mg/l	1 mg/l

(The design implementation should ensure the adequate wastewater treatment parameters in accordance to the Czech Governmental Decree No. 171/1992 as well as the emission limits of the EU)

The significance of the project dealing with WWTP Hodonin consists in necessary reconstruction, intensification and extension of some structures and equipment. The existing WWTP started its operation in 1982 and the last reconstruction works consisted in a dewatering and thickening of sludge.

- Technical description of the main components of the project: Main objectives of the proposed modernization of WWTP are decrease of carbon, nitrogen and phosphorus contamination with harmony to governmental decree limits from the 1st January 2005.
- Main elements of project to avoid or remedial water pollution
    - Structural project - construction of some parts of sewage treatment plant as was mentioned above:
        - Project is dealing mainly with problems concerning aeration, nitrification, denitrification and other biological and chemical ways of sewage treatment.
        - The reconstruction will be aimed at modernization of biological treatment (needful building and equipment completion, at higher capacities of settlers and secondary settlers, air pump systems, systems of measurement and regulation.
        - Other very important project task is represented by changes of aeration system, of nitrification and denitrification; in this way would be reduced the nitrogen pollution.
        - Removal of phosphorus will be solved by means of biological or chemical ways (in the next final phase).
    - Non-structural project (there is no at present)
- Beneficiaries: downstream water resources for drinking water supply (Moravska Nova Ves, Holic in Slovakia), transboundary impacts, environment, forestry, fishery, downstream users of water (agriculture, industry etc. in Slovakia and Austria), boundary and ecological tourism
- Stakeholders: boundary municipalities and their inhabitants, activities in floodplain forests and meadows
- Location: Hodonin
- Site: Hodonin, near the Morava River
- Existing use of site: existing WWTP

3.2 Primary Needs for the Project

Description of targets of the project and its contribution to the reduction of the pollution in the Danube River Basin:

- main target ... improvement of water quality to meet limits 2004/2005

Targets in detail according to

- health benefits ... for people in downstream regions
- aquatic environment (fish etc.) ... downstream reaches of the Morava River
- recreation ... surroundings of downstream reaches of the Morava River
- aesthetics ... in the Morava River, its floodplains or wetlands and in surroundings of downstream reaches of the Morava River
- biodiversity ... downstream reaches of the Morava River and its floodplains and wetlands
- economic development ... it will be important due to tourism development in the boundary region
- transboundary effects ... due to plant efficiency and very short distance to the border (first Slovakia and then Austria)

Assumed deterioration without project measures: ongoing tendency of water pollution in the Morava River, of other coherent unfavorable consequences for river, alluvium and users; the deterioration effect was not calculated

3.3 Status of Project Preparation

Actual status of project studies and reports:

- feasibility level and beginning of the phase of application and license
- bidding and selection of construction company would follow

Project documents/summary in English ... no; all texts are only in Czech

3.4 Technology Proposed

Mostly standard elements; relevant needful special features could be procured with the aid of Czech firms

3.5 Ownership of Project Site

Status of proprietary rights: project site is on plots of the owner

3.6 Specific Project Items

There are no additional remarks on project description

4 Project Effects and Interactions

4.1 Public's Expression of Interest

- Description of public participation/involvement measures: Public has been participated on remedial tasks of interest as in other parts of the Czech Republic; the environmental awareness will have to increase
- Attitude of concerned people to the project: The company representation is very interested in solving here mentioned problems. Among concerned people pertain also the authority of the town Hodonin, which is situated very near two rivers - the Morava River
  and neighboring smaller - Kyjovka River (left-hand tributary of the Dyje River, but with water transfer to the Morava River within Hodonin). It has been searching for financial support because of the needed amount of finances.
- Results of social acceptance assessment: the task was not assessed in this way

4.2 Environmental Impact Assessment

Environmental Impact Assessment was not carried out because of assumed favorable consequences, nevertheless probably in some special tasks would have to be worked up

4.3 Sensitivity of Locality/Receptor

Description of the area, location, receiving water influenced by the project:

The area of WWTP is in the floodplain of the Morava River in on the boundary region - near Slovakia. The Morava River is very polluted from upstream sources (Olomouc, Prerov, Prostejov, Kromeriz, Zlin, Otrokovice, Uherske Hradiste etc.). Relatively near are downstream groundwater resources in the floodplain area of the Morava River Moravska Ostrozska Nova Ves. Region is also very sensitive due to environmental and ecological quality of floodplains and their forests

4.4 Primary Effects of Project

Description of the effects of the project on different geographical levels

- local, regional, national: better downstream environmental and water quality conditions (surroundings of Holic, Kopcany, Brodske, Lanzhot,
  in all relevant landscape or surroundings, mentioned groundwater resources Moravska Nova Ves, connection with better biodiversity, life of fishes and so forth)

- international and transboundary: better downstream environmental and water quality conditions owing to distance from WWTP outcome and to its efficiency

5 Economic Project Justification

5.1 Economic Project Benefits

- Saved investment cost (compared to without project case): it was not evaluated
- Employment and income effects:
    - during construction period: employment and income occasion for workers in construction and equipment firms
    - during operation period: employment and income occasion for workers in construction and equipment firms
- Other economic effects: effects resulting from water quality improvement (mainly related to downstream reaches - agriculture, fishery, possible water abstraction for different users etc.)

5.2 Economic Internal Rate of Return (EIRR)

Economic Internal Rate of Return (EIRR) was not calculated

6 Financial Viability

6.1 Estimated Investment Cost

- Investment cost (in total)

national currency	CZK (Ceska koruna = Czech Crown)
in US dollars	1 US $ = 0.0306 CZK

- Allocation of capital cost:

* land	1.3 million CZK 0.04 million US $
* construction and machinery	59.6 million CZK 1.82 million US $
* planning and supervision	5.0 million CZK 0.15 million US $
* total cost	76.0 million CZK, 2.32 million US $

- on an annual basis: it was not calculated
- year of cost estimate: 1998
- nature of cost estimate: preliminary

6.2 Estimated Operational Cost

Expected annual (operational) recurrent costs in real terms according to assumed timing are not calculated at present. Likewise repair and replacement or total operational costs are not assessed. All mentioned values and will be determine in the project in detail; with these circumstances are also in connection year of cost estimate (1999?) and nature of cost estimate - first preliminary and then as a part of required "Financial Project" in detail.

Writing-down allowances bound to depreciation represent usually by buildings 1.5%, water pipelines 2.0%, sewers 3.3% and equipment 8 - 10%, all WWTP appr. 3,0 - 3.5% of their investments value. Total annual operational cost is adequate to 5.5 - 7.2% of investments cost and partial items represent following values: wages and salaries 0.9 - 1.2% (from investments cost), energy supply 2.5 - 3.0%, material 0.8 - 1.2%, repairs and maintenance 0.7 - 1.0%, transport etc. 0.6 - 0.8%..

Annual operation costs would be assumed as follows: year 1998 ... 16.7 million CZK, 1999 ... 18.4 million CZK, 2000 ... 20.2 million CZK, 2001 ... 22.32 million CZK

6.3 Estimate of Revenues

- Expected annual revenues: it was not calculated
- Year of estimate: in the future
- Nature of cost estimate: it will be adequate to investments and operational cost

6.4 Financial Internal Rate of Return (FIRR)

- Financial Internal Rate of Return (FIRR) was not calculated

6.5 Anticipated/Proposed Funding Scheme (in million CZK)

Sources of funding	Secured	Requested	Non - secured
(1) Equity of project owner	952.7		
(2) National Environmental Fund	-	-	-
(3) Water Management Fund	non-existing		
(4) Public loan - central budget	-	-	-
(5) Public loan - regional budget	non-existing		
(6) Public loan - municipal budget	-	-	-
(7) Public grant - central budget	30	-	-
(8) Public grant - regional budget	non-existing		
(9) Public grant - municipal budget	20	-	-
(10) International loan	-	-	13
(11) International grant	-	-	13
(12) Commercial bank loan	-	-	-
(13) Other sources	-	-	-
Total funds/requirements	50	-	26

Notes:

The funding list was prepared due to recent preliminary information concerning the considered funding.

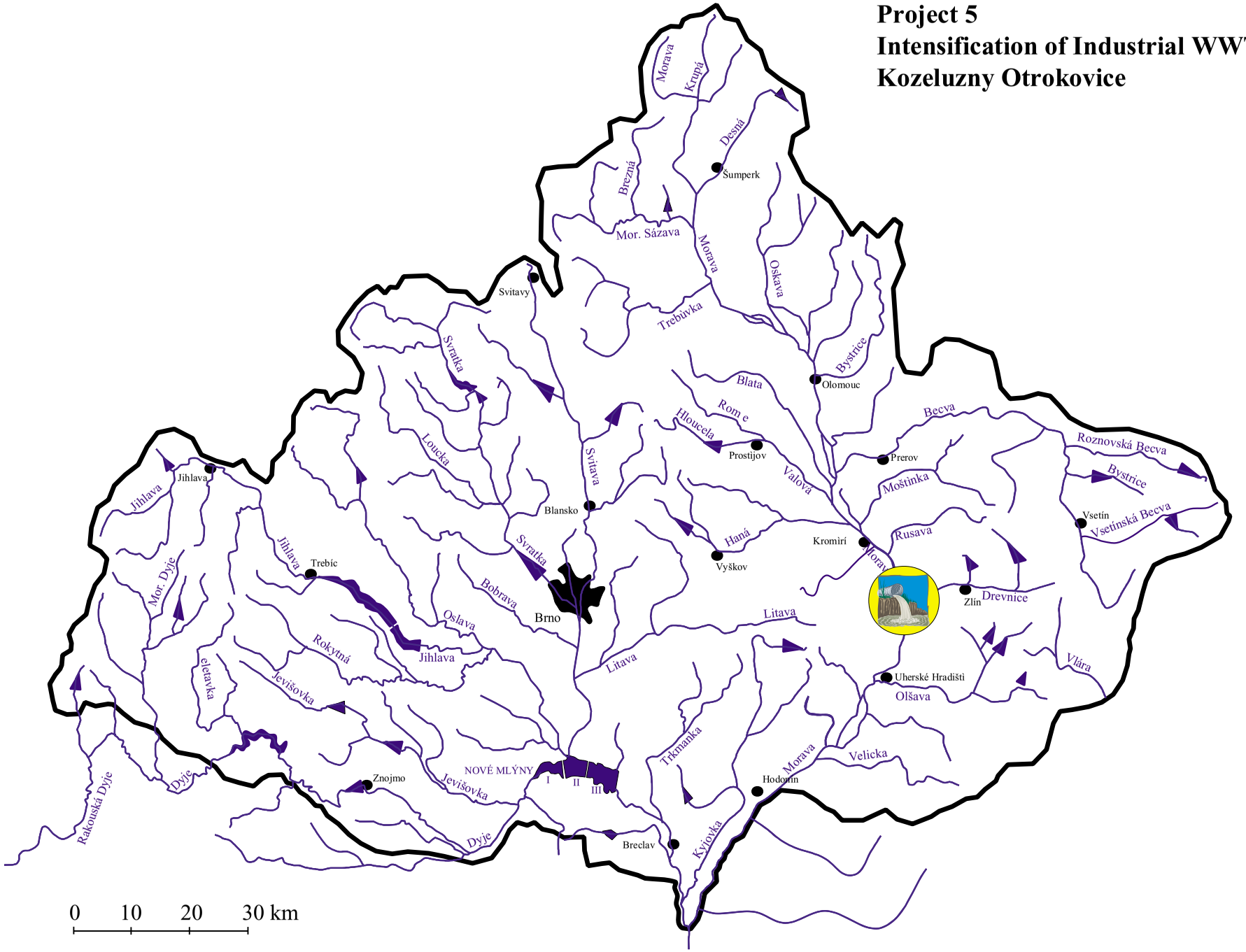
Not long ago was the investments cost "newly" estimated at the value of 54 million CZK in total, but it is sure for the purpose of termination of all needful works, constructions and equipment must be ensured further finances; that is why the submitted amount is rather higher.

Owing to new information from the part of investor there are some diverse values of this cost dividing - related to the amount of 54 million CZK: own ensured sources 10.0 million CZK, required international grant 27.0 million CZK, amount of 17.0 million CZK has not been covered (assumed from the State Environmental Fund).

Project 5

Intensification of Wastewater Treatment Plant Kozeluzny Otrokovice

Project 5
Intensification of Industrial WWTP
Kozeluzny Otrokovice



Date of first setting up: 1962 Date of latest upgrade: 1994

Project Title

Intensification of Wastewater Treatment Plant Kozeluzny Otrokovice

Responsible/Legal Body

Responsible Authority:

Name:	**Okresni urad Zlin (in English: District Office Zlin)**
Address:	Trida Tomase Bati 3792, 762 69 Zlin, Czech Republic
Telephone:	+420 (0) 67 526111
Fax:	+420 (0) 67 33359
e-mail:	...

Company:

Name:	**COV kozeluzny, a.s.** (abbr. of "Cistirna odpadnich vod kozeluzny, a.s.; in English "Wastewater Treatment Plant of Tannery, Joint-stock Company")
Address:	Objizdna 1576, 765 02 Otrokovice, Czech Republic
Telephone:	+420 (0)67 7662540
Fax:	+420 (0)67 766222
e-mail:	...

Project Target

Target of the Project: improvement of water quality to meet limits2004/2005

Benefits of the Project: essential improvement of water quality in all important parameters including hazardous substances

Beneficiaries: downstream water resources for drinking water supply (Knezpole, Ostrozska Nova Ves), downstream users of water (agriculture, forestry, recreation, fishery, environment, transboundary impacts)

Stakeholders: Otrokovice, Napajedla and their inhabitants, neighboring downstream municipalities and their inhabitants

Investment Costs

Investments costs were calculated on the amount of 77.0 million CZK (2.4 million US $)

Status of Project

Actual status of the project: ongoing project

Language of Project Documents

Studies, project or summaries are available only in Czech; needful texts in English will be prepared conforming with a demand

1 Project Title

Intensification of Wastewater Treatment Plant Kozeluzny Otrokovice

2 Investor Details

2.1 Authority/Company

Company = Investor:

Name:	COV kozeluzny, a.s. (abbr. of "Cistirna odpadnich vod kozeluzny, a.s."; in English "Wastewater Treatment Plant of Tannery, Joint-stock Company)
Address:	Objizdna 1576, 765 02 Otrokovice, Czech Republic
Telephone:	+420 (0)67 7662540
Fax:	+420 (0)67 766222
e-mail:	...

2.2 Contact Persons

Mr. Josef Melicharek, chairman of the Board of Directors

Mr. Jan Svancer, director of COV kozeluzny, a.s.

2.3 Advisor/Consultant

Mr. Ladislav Sommer, head of the project proposal (from Hydroprojekt Praha, a.s.)

consultants from other Czech firms cooperating with the investor (probably from the region of Otrokovice and Zlin)

2.4 Legal/Financial Status

Legal status of investor: joint-stock company

2.5 Authority/Company Profile

- Task of the company and mandate field of business: tasks of the company have been aimed at sewage treatment originating from the tannery (Kozeluzny) and partially also from the town Otrokovice
- Annual turnover of company: appr. 60 million CZK (1.8 million US $)
- Number of persons employed: 48

2.6 Planning/Implementing Extent/Capacity of the Investor

Enterprises own capacity to plan and implement the project: own capacity + aid of other companies and institutions (Hydroprojekt Praha, a.s. etc. - in the planning phase, companies dealing with building up and equipment assembly ... owing to a screening in the region)

2.7 Institutions/Enterprises beside the Investor

- Planning/consulting: mentioned Hydroprojekt Praha, a.s. and other available companies and institutions
- Construction: owing to a screening in the region
- Licensing/monitoring: licensing from many Czech firms for equipment,
  monitoring: Cesky hydrometeorologicky ustav Brno (Czech Hydrometeorological Institute, branch in Brno), Povodi Moravy a.s. (Morava River Basin Administration) or other institutions from the region etc.

3 Project Description

3.1 Project Outline

Solution of the project is oriented on the improvement of present unfavorable state of water quality related to outflow from the WWTP and to water quality requirements in surface waters.

The present water quality indicators 1996 - 1997 in the Morava River downstream Otrokovice are as follows:

BOD_5	class 3	AMV ... 4.4 mg/l	ChV ... 6.4 mg/l
COD_{Cr}	class 3	AMV ... 22.4 mg/l	ChV ... 30.4 mg/l
TSS	class 5	AMV ... 49 mg/l	ChV ... 115 mg/l
$N\text{-}NH_4$	class 4	AMV ... 0.91 mg/l	ChV ... 2.36 mg/l
P_{Tot}	class 4	AMV ... 0.34 mg/l	ChV ... 0.59 mg/l

(Note:
AMV ... two years mean value 1.1.1996 - 31.12.1997, ChV ...

- characteristic value in the same time;
- classification ... conforming with Czech standards)

Expected WWTP outflow concentration (for the final phase):

BOD5	15 mg/l
CODCr	75 mg/l
TSS	20 mg/l
NTot	5 mg/l
PTot	1 mg/l

(The design implementation should ensure the adequate wastewater treatment parameters in accordance to the Czech Governmental Decree No. 171/1992 as well as the emission limits of the EU)

Nearly identical purpose - as by typical municipal WWTPs - has the proposed intensification of WWTP Kozeluzny Otrokovice. The part of wastewaters have sprung from the factory Kozeluzny in Otrokovice (tannery), but a lot of sewage have been originated from the town Otrokovice and partially also from neighboring city of Zlin. The first phase of existing combined WWTP (treated together industrial and municipal sewage) consisted in one mechanical degree built in 1962. The plant was from 1983 to 1993 extended by biological degree and new sludge disposal.

- Technical description of the main components of the project: The submitted project is preoccupied with upgrading of nitrification, with sludge reclaiming and denitrification. Excepting nitrogen pollution will be also reduced the existing contamination by carbon and hazardous substances. There are no special problems with phosphorus pollution here.
- Main elements of project to avoid or remedial water pollution
    - Structural project - construction of some parts of sewage treatment plant as was mentioned above:
        - Pumping station (after reconstruction of building)
        - Technology completion (pumps, mixers, aeration elements)
        - Water distribution system within the WWTP
        - Upgrading of sludge regeneration
        - Upgrading of denitrification system
    - Non-structural project (there is no at present)
- Beneficiaries: downstream water resources for drinking water supply (Knezpole, Ostrozska Nova Ves), downstream users of water (agriculture, forestry, recreation, fishery, environment, transboundary impacts)
- Stakeholders: Otrokovice, Napajedla and their inhabitants, neighboring downstream municipalities and their inhabitants
- Location: Otrokovice
- Site: Otrokovice, near the Morava River
- Existing use of site: existing WWTP

3.2 Primary Needs for the Project

Description of targets of the project and its contribution to the reduction of the pollution in the Danube River Basin:

- main target ... improvement of water quality to meet limits 2004/2005

Targets in detail according to

- health benefits ... for people in downstream regions
- aquatic environment (fish etc.) ... downstream reaches of the Morava River
- recreation ... surroundings of downstream reaches of the Morava River
- aesthetics ... in the Morava River and in surroundings of downstream reaches of the Morava River
- biodiversity ... downstream reaches of the Morava River
- economic development ... it is not important
- transboundary effects ... according to plant efficiency and distance to the border (first Slovakia and then Austria)

Assumed deterioration without project measures: ongoing tendency of water pollution in the Morava River, of other coherent unfavorable consequences for river, alluvium and users; the deterioration effect was not calculated

3.3 Status of Project Preparation

Actual status of project studies and reports:

- feasibility level and beginning of the phase of application and license
- bidding and selection of construction company would follow

Project documents/summary in English ... no; all texts are only in Czech

3.4 Technology Proposed

Mostly standard elements; relevant needful special features could be procured with the aid of Czech firms

3.5 Ownership of Project Site

Status of proprietary rights: project site is on plots of the owner

3.6 Specific Project Items

There are no additional remarks on project description

4 Project Effects and Interactions

4.1 Public's Expression of Interest

- Description of public participation / involvement measures: Public has been participated on remedial tasks of interest as in other parts of the Czech Republic; the environmental awareness will have to increase
- Attitude of concerned people to the project: The company representation is very interested in solving here mentioned problems.

Among concerned people pertain also the authority of the town Otrokovice, but there have been many problems with damages from huge 1997 floods; The town is situated very near two rivers – the Morava River and the Drevnice River. It has been searching or financial support because of the needed amount of finances.

- Results of social acceptance assessment: the task was assessed in this way

4.2 Environmental Impact Assessment

Environmental Impact Assessment was not carried out because of assumed favorable consequences, nevertheless probably in some special tasks would have to be worked up

4.3 Sensitivity of Locality/Receptor

Description of the area, location, receiving water influenced by the project:

The area of WWTP is in the floodplain of two rivers - larger Morava River and its left-hand tributary Drevnice River. This second one flows through the near upstream city of Zlin with world-known boot-and-shoe industry (it was fifty years ago the original center of Bata Company). The Morava River is very polluted from upstream sources (Olomouc, Prerov, Prostejov, Kromeriz etc.). Round 10 - 15 downstream the respective WWTP site are groundwater resources in the floodplain area of the Morava River (Knezpole and further Ostrozska Nova Ves)

4.4 Primary Effects of Project

Description of the effects of the project on different geographical levels

- local: better downstream environmental and water quality conditions (town Napajedla, groundwater resource Knezpole)
- regional and national: better downstream environmental and water quality conditions in the region of downstream reaches of the Morava River floodplain (including groundwater resources Ostrozska Nova Ves, Moravska Nova Ves), in riverine towns (Uherske Hradiste, Stare Mesto, Uhersky Ostroh, Veseli nad Moravou, Straznice, Hodonin) and other respective municipalities and in all relevant landscape or surroundings (connection with better biodiversity, life of fishes and so forth),
- international and transboundary: better downstream environmental and water quality conditions owing to distance from border and to upgraded WWTP efficiency

5 Economic Project Justification

5.1 Economic Project Benefits

- Saved investment cost (compared to without project case): it was not evaluated
- Employment and income effects:
    - during construction period: employment and income occasion for workers in construction and equipment firms
    - during operation period: employment and income occasion for workers in construction and equipment firms
- Other economic effects: effects resulting from water quality improvement (mainly related to downstream reaches - agriculture, fishery, possible water abstraction for different users etc.)

5.2 Economic Internal Rate of Return (EIRR)

Economic Internal Rate of Return (EIRR) was not calculated

6 Financial Viability

6.1 Estimated Investment Cost

- Investment cost (in total)

national currency	CZK (Ceska koruna = Czech Crown)
in US dollars	1 US $ = 0.0306 CZK

- Allocation of capital cost:

* land	1.0 million CZK 0.03 million US $
* construction and machinery	58.9 million CZK 1.80 million US $
* planning and supervision	5.5 million CZK 0.23 million US $
* total cost	77.0 million CZK, 2.41 million US $

- on an annual basis: it was not calculated
- year of cost estimate: 1998
- nature of cost estimate: preliminary

6.2 Estimated Operational Cost

Expected annual (operational) recurrent costs in real terms according to assumed timing are not calculated at present. Likewise repair and replacement or total operational costs are not assessed. All mentioned values and will be determine in the project in detail; with these circumstances are also in connection year of cost estimate (1999?) and nature of cost estimate - first preliminary and then as a part of required "Financial Project" in detail.

Writing-down allowances bound to depreciation represent usually by buildings 1.5%, water pipelines 2.0%, sewers 3.3% and equipment 8 - 10%, all WWTP appr. 3,0 - 3.5% of their investments value. Total annual operational cost is adequate to 5.5 - 7.2% of investments cost and partial items represent following values: wages and salaries 0.9 - 1.2% (from investments cost), energy supply 2.5 - 3.0%, material 0.8 - 1.2%, repairs and maintenance 0.7 - 1.0%, transport etc. 0.6 - 0.8%.

6.3 Estimate of Revenues

- Expected annual revenues: it was not calculated
- Year of estimate: in the future
- Nature of cost estimate: it will be adequate to investments and operational cost

6.4 Financial Internal Rate of Return (FIRR)

- Financial Internal Rate of Return (FIRR) was not calculated

6.5 Anticipated/Proposed Funding Scheme (in million CZK)

Sources of funding	Secured	Requested	Non - secured
(1) Equity of project owner	340		
(2) National Environmental Fund	-	-	-
(3) Water Management Fund	non-existing		
(4) Public loan – central budget	-	-	-
(5) Public loan – regional budget	non-existing		
(6) Public loan – municipal budget	-	-	-
(7) Public grant - central budget	-	-	-
(8) Public grant - regional budget	non-existing		
(9) Public grant – municipal budget	-	-	-
(10) International loan	-	-	7
(11) International grant	-	-	13
(12) Commercial bank loan	-	-	-
(13) Other sources	37 *	20 **	-
Total funds/requirements	37	20	20

Notes:

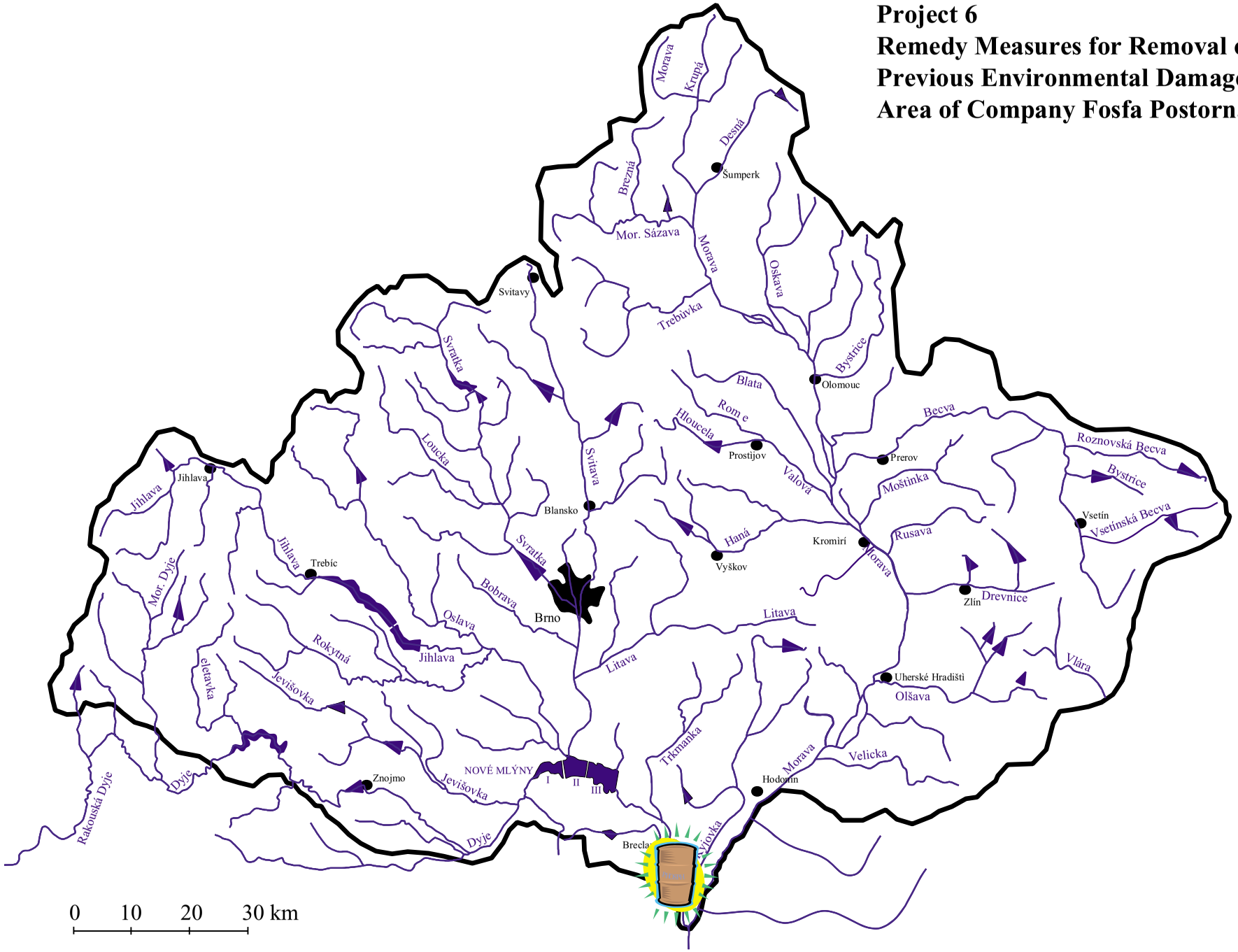
* local budget (of COV kozeluzny, a.s.)

** loan or central budget

Project 6

Remedying Measures in Area of Company “Fosfa Postorna”

Project 6
Remedy Measures for Removal of Previous Environmental Damages in Area of Company Fosfa Postorna



Date of first setting up: 1884, nationalized 1950, WWTP 1988 Date of latest upgrade: 1997

Project Title

Remedial Measures in Area of Company "Fosfa Postorna"

Responsible/Legal Body

Company

Name:	**Fosfa Postorna a.s.**
Address:	Hranicni 268, 691 41 Breclav - Postorna, Czech Republic
Telephone:	+420 - (0) 627 - 306 111
Fax:	+420 - (0) 627 - 306 363
e-mail:	proks@fosfa.cz

Authority

Name:	**Okresni urad Breclav, referat zivotniho prostredi** (in English: **District Office Breclav, Department of Environment**)
Address:	T. G. Masaryka 6, 690 15 Breclav, Czech Republic
Telephone:	+420 - (0)627 - 721 111
Fax:	+420 - (0)627 - 21501
e-mail:	...

Project Target

Urgency of ongoing actions dealing with remedying measures in area of company "Fosfa Postorna" is the point in question. The project defined at this time represents the 2nd stage of rehabilitation works between years from 1998 to 2002 and its targets consist in linking up to former stage and in further improvement of water quality conditions in the Dyje River and in alluvial aquifers.

Main benefits will consist in above mentioned water quality improvement, also with important transboundary effects; Fosfa Postorna is very near the border between Czech Republic and Austria and nearby the boundary between Slovakia and Austria. Most benefits would be received by all three states (mainly for irrigation purposes and other withdrawals) and in particular by natural ecosystems in extent floodplains and in planned international trilateral park (“Confluence of the Morava River and the Dyje River”).

Resulted target of the Project: improvement of water quality to meet limits 2004/2005

Benefits of the Project: essential improvement of water quality in all important parameters including nutrients

Beneficiaries: downstream users of water (first-rate procurement of Austrian water demands and other transboundary impacts, forestry, fishery, environment)

Stakeholders: boundary region in Austria, Slovakia and respective inhabitants, downstream agricultural and forest systems

Investment Costs

Investments costs were calculated on the amount of 110.0 million CZK (3.4 million US $)

Status of Project

The first stage aiming mainly at construction and technology works was implemented in years 1995 - 1997. The project in question of the 2nd stage is prepared at this time for next implementation. However, the works must continue by following operation stage with respect to urgency of long-term remedial measures in the same locality - in terms of wastewater pumping and treatment by similar conditions as in the course of the 2nd stage.

Language of Project Documents

All documents are available only in Czech now, but attention of responsible persons was drawn to the fact of necessity of translation to English.

1 Project Title

Remedial Measures in Area of Company "Fosfa Postorna"

2 Investor Details

2.1 Authority/Company

Company - Investor:

Name	Fosfa Postorna a.s.
Address	Hranicni 268, 691 41 Breclav - Postorna, Czech Republic
Telephone	+420 - (0)627 - 306 111
Fax	+420 - (0)627 - 306 363
e-mail	proks@fosfa.cz

2.2 Contact Persons

Mr. Ivan Nemetz, general director of Fosfa Postorna a.s.

Mr. Antonin Proks, technical director of Fosfa Postorna a.s.

Mr. Jiri Markvart, commercial director of Ekoingstav Brno a.s.

2.3 Advisor/Consultant

Mr. Josef Maly, hydrogeological expert, Hydrologie Napajedla

Mr. Vaclav Halek, hydrogeological expert and former professor of Technical University in Brno

Mr. Petr Kokes, cooperation on the project solution (private firm)

consultants from other Czech firms cooperating with the investor (e.g. Interprojekt Odpady Praha and other firms, mostly from the region of southern Moravia - Brno etc.)

2.4 Legal/Financial Status

Legal status of investor: joint-stock company

2.5 Authority/Company Profile

Company Profile:

- Task of the company and mandate field of business: "new" tasks of the
  company after 1991 have been aimed at the production of acids (phosphoric acid, sulphuric acid) and some phosphoric salts. From 1950 to 1991 were produced phosphates, some compounds containing zinc, sulphuric acid and later calcium superphosphates, too. Very important part of production formed wastes disposed in some sludge beds and setting pits.
- Annual turnover of company: appr. 1,200 million CZK (36.7 million US $)
- Number of persons employed: 420

2.6 Planning/Implementing Extent/Capacity of the Investor

Enterprises own capacity to plan and implement the project: own capacity + aid of many other companies and institutions (Interprojekt Odpady Praha, EkoINPROS s.r.o. Brno, Energoprojekt Praha a.s., Geospol Brno s.r.o.., CKD Dukla a.s. Praha and experts - in the planning phase, companies dealing with building up and equipment assembly ... Ekoingstav Brno a.s. and other organizations owing to a screening in the region)

2.7 Institutions/Enterprises beside the Investor

- Planning/consulting: mentioned firms Interprojekt Odpady Praha and other companies + institutions
- Construction: Ekoingstav Brno a.
- Licensing/monitoring: licensing from many Czech firms for equipment, monitoring: Geospol Brno s.r.o., Geosan s.r.o., Hydrogeologie Napajedla, Cesky hydrometeorologicky ustav Brno (Czech Hydrometeorological Institute, branch in Brno), Povodi Moravy a.s. (Morava River Basin Administration), etc. or other institutions from the region etc.

3 Project Description

3.1 Project Outline

Solution of the project is oriented on the improvement of present unfavorable state of water quality related to outflow from the WWTP and to water quality requirements in surface waters. Main challenges have been represented here by large phosphorus load in the river.

The present water quality indicators 1996 - 1997 in the Dyje River downstream Breclav are as follows:

BOD_5	class 3	AMV ... 5.6 mg/l	ChV ... 9.6 mg/l
COD_{Cr}	class 4	AMV ... 36.1 mg/l	ChV ... 41.9 mg/l
TSS	class 2	AMV ... 19 mg/l	ChV ... 33 mg/l
$N\text{-}NH_4$	class 3	AMV ... 0.47 mg/l	ChV ... 1.29 mg/l
P_{Tot}	class 4	AMV ... 0.41 mg/l	ChV ... 0.62 mg/l

(Note:
AMV ... two years mean value 1.1.1996 - 31.12.1997, ChV ...

- characteristic value in the same time;
- classification ... conforming with Czech standards)

Expected WWTP (industrial plant for Fosfa Postorna) outflow concentration (for the final phase):

BOD5	15 mg/l
CODCr	75 mg/l
TSS	20 mg/l
NTot	5 mg/l
PTot	1 mg/l

(The design implementation should ensure the adequate wastewater treatment parameters in accordance to the Czech Governmental Decree No. 171/1992 as well as the emission limits of the EU)

- Technical description of the main components of the project:

  Remedying measures for removal of previous environmental damages in area of company Fosfa Postorna are actions linking the 1st stage between 1995 - 1997. The "old" factory was modernized in 1984 and then in 1988 started its operation the industrial WWTP. However, these measures were not sufficient regarding environmental requirements. The project defined at this time represents the 2nd stage of rehabilitation works between years from 1998 to 2002 and its targets consist in further improvement of water quality conditions in the Dyje River and in alluvial aquifers.

- Main elements of project to avoid or remedial water pollution
    - Structural project - construction of some parts of sewage treatment plant as was mentioned above:

      There have been two main measures:

      - first with respect to wastewater treatment downstream the factory produced sulphuric acid, two types of phosphoric acid

      - second to leakage and leaches from existing setting pits storing substances as gypsum with phosphates, matters containing rests containing fluor, arsenic, sulphates, ammonia etc.

      Very important is the linking up to former stage and in further improvement of water quality conditions in the Dyje River and in alluvial aquifers. The projected activities will be related to some building works and mostly to operation issues: construction of water linkages, technology of remedial pumping of wastewaters, surface finishing of setting pits, getting up in the decontamination station, extension of dump sites for dangerous wastes, wastewater treatment for liquids pumped from hydraulic antifiltering screen (downstream setting pits), remedial pumping of groundwater.
    - Non-structural project (there is no at present)
- Beneficiaries: very significant transboundary impacts (Austria, Slovakia), environment in trilateral floodplain and wetland area, downstream water resources for water supply, downstream users of water (forestry, agriculture, fishery)
- Stakeholders: municipalities near borders (Rabensburg, Hohenau in Austria etc.), environmentally oriented NGO´s and fan´s
- Location: Breclav - Postorna
- Site: Postorna, suburb of district town Breclav, near the Dyje River
- Existing use of site: existing area of Fosfa Postorna

3.2 Primary Needs for the Project

Description of targets of the project and its contribution to the reduction of the pollution in the Danube River Basin:

- main target ... improvement of water quality to meet limits 2004/2005

Targets in detail according to

- health benefits ... for people in downstream regions
- aquatic environment (fish etc.) ... downstream reaches of the Dyje River and Morava River

- recreation ... surroundings of downstream reaches of the Morava River, mainly on the right-hand bank in Austria
- aesthetics ... in the Dyje River and Morava River and in surroundings of downstream reaches of both rivers
- biodiversity ... downstream reaches of the Dyje and Morava River
- economic development ... it will be important in future (possible ecotourism)
- transboundary effects ... according to measures efficiencies and to very short distance to the border (first Austria and then Slovakia)

Assumed deterioration without project measures: ongoing tendency of water pollution in the Dyje and Morava River, of other coherent unfavorable consequences for rivers, alluvium and users; the deterioration effect was not calculated

3.3 Status of Project Preparation

Actual status of project studies and reports:

- more than feasibility level, ongoing of works, beginning of the phase of new application and license
- bidding and selection of construction company would follow

Project documents/summary in English ... no; all texts are only in Czech

3.4 Technology Proposed

Mostly standard elements; relevant needful special features could be procured with the aid of Czech firms

3.5 Ownership of Project Site

Status of proprietary rights: project site is on plots of the owner

3.6 Specific Project Items

There are some special conditions here:

- essential part of costs relevant to previous environmental damages have been covered by the National Property Fund in the course of privatization of Fosfa Postorna
- round 1,500,000 tons of wastes have been disposed in sludge beds and setting pits of Fosfa Postorna
- this waste disposal has represented very large risk for respective environment (this risk was evaluated not long ago)
- works will have to continue for a long time (protection of critical zones and areas, permanent pumping etc.)

4 Project Effects and Interactions

4.1 Public's Expression of Interest

- Description of public participation/involvement measures: Public has been participated on remedial tasks of interest as in other parts of the Czech Republic; the environmental awareness will have to increase
- Attitude of concerned people to the project: The company representation and many experts are very interested in solving here mentioned problems.
- Results of social acceptance assessment: the task was not assessed in this way

4.2 Environmental Impact Assessment

Environmental Impact Assessment was carried out with respect to some special environmental issues

4.3 Sensitivity of Locality/Receptor

Description of the area, location, receiving water influenced by the project:

The area of Fosfa Postorna is the floodplain of the Dyje River rivers and near the confluence with smaller left-hand tributary Kyjovka River and in no time with the Morava River. The Dyje River is half-polluted watercourse by industrial and agricultural activities in the catchment area (Brno, Breclav etc.).
In the Morava River floodplain downstream the mouth of the Dyje River there are some smaller water sources and water abstractions (mainly for irrigation in Austria).

4.4 Primary Effects of Project

Description of the effects of the project on different geographical levels

- local, regional and national: better downstream environmental and water quality conditions (confluence of the Dyje River, Kyjovka River and Morava River)
- international and transboundary: with respect to very short distance to borders better downstream environmental and water quality conditions in the region of downstream reaches of the Morava River floodplain in Slovakia and Austria, in riverine municipalities (Rabensburg, Hohenau, Vysoka pri Morave, Marchegg) and in all relevant landscape or surroundings (connection with better biodiversity, life of fishes and so forth)

5 Economic Project Justification

5.1 Economic Project Benefits

- Saved investment cost (compared to without project case): it was not evaluated
- Employment and income effects:
    - during construction period: employment and income occasion for workers in construction and equipment firms
    - during operation period: employment and income occasion for workers in construction and equipment firms
- Other economic effects: effects resulting from water quality improvement (mainly related to downstream reaches - agriculture, fishery, possible water abstraction for different users etc.)

5.2 Economic Internal Rate of Return (EIRR)

Economic Internal Rate of Return (EIRR) was not calculated

6 Financial Viability

6.1 Estimated Investment Cost

- Investment cost (in total)	
national currency	CZK (Ceska koruna = Czech Crown)
in US dollars	1 US $ = 0.0306 CZK
- Allocation of capital cost:	
* land	0.3 million CZK 0.01 million US $
* construction and machinery	25.7 million CZK 0.79 million US $
* permanent water treatment and water pumping	78.0 million CZK 2.39 million US $
* planning and supervision	3.5 million CZK 0.11 million US $
* total cost	110.0 million CZK, 3.37 million US $
- on an annual basis:	it was not calculated
- year of cost estimate:	1998
- nature of cost estimate:	preliminary

6.2 Estimated Operational Cost

Expected annual (operational) recurrent costs in real terms according to assumed timing are not calculated at present excluding costs for wastewater treatment and remedial pumping of water. However, these costs are involved among investment costs; they are above mentioned in the list of investments costs.

Most of operational costs concern the operation in the existing WWTP and other buildings pertaining to Fosfa Postorna. These costs were not calculated. Likewise repair and replacement or special operational costs are not assessed. All mentioned values and will be determine in the project in detail; with these circumstances are also in connection year of cost estimate and nature of cost estimate - first preliminary and then as a part of required "Financial Project" in detail.

Writing-down allowances bound to depreciation of WWTP or other constructions represent usually by buildings 1.5%, water pipelines 2.0%, sewers 3.3% and equipment 8 - 10%, all WWTP appr. 3,0 - 3.5% of their investments value. Total annual operational cost is adequate to 5.5 - 7.2% of investments cost and partial items represent following values: wages and salaries 0.9 - 1.2% (from investments cost), energy supply 2.5 -3.0%, material 0.8 - 1.2%, repairs and maintenance 0.7 - 1.0%, transport etc. 0.6 - 0.8%.

6.3 Estimate of Revenues

-	Expected annual revenues:	it was not calculated
-	Year of estimate:	in the future
-	Nature of cost estimate:	it will be adequate to investments cost and to operational cost

6.4 Financial Internal Rate of Return (FIRR)

- Financial Internal Rate of Return (FIRR) was not calculated

6.5 Anticipated/Proposed Funding Scheme (in million CZK)

Sources of funding	Secured	Requested	Non - secured
(1) Equity of project owner	780		
(2) National Environmental Fund	-	-	-
(3) Water Management Fund	non-existing		
(4) Public loan – central budget	-	-	-
(5) Public loan – regional budget	non-existing		
(6) Public loan – municipal budget	-	-	-
(7) Public grant – central budget	-	-	-
(8) Public grant – regional budget	non-existing		
(9) Public grant – municipal budget	-	-	-
(10) International loan	-	-	22.5
(11) International grant	-	-	22.5
(12) Commercial bank loan	-	-	-
(13) Other sources	65 *	-	-
Total funds/requirements	65 *	-	45

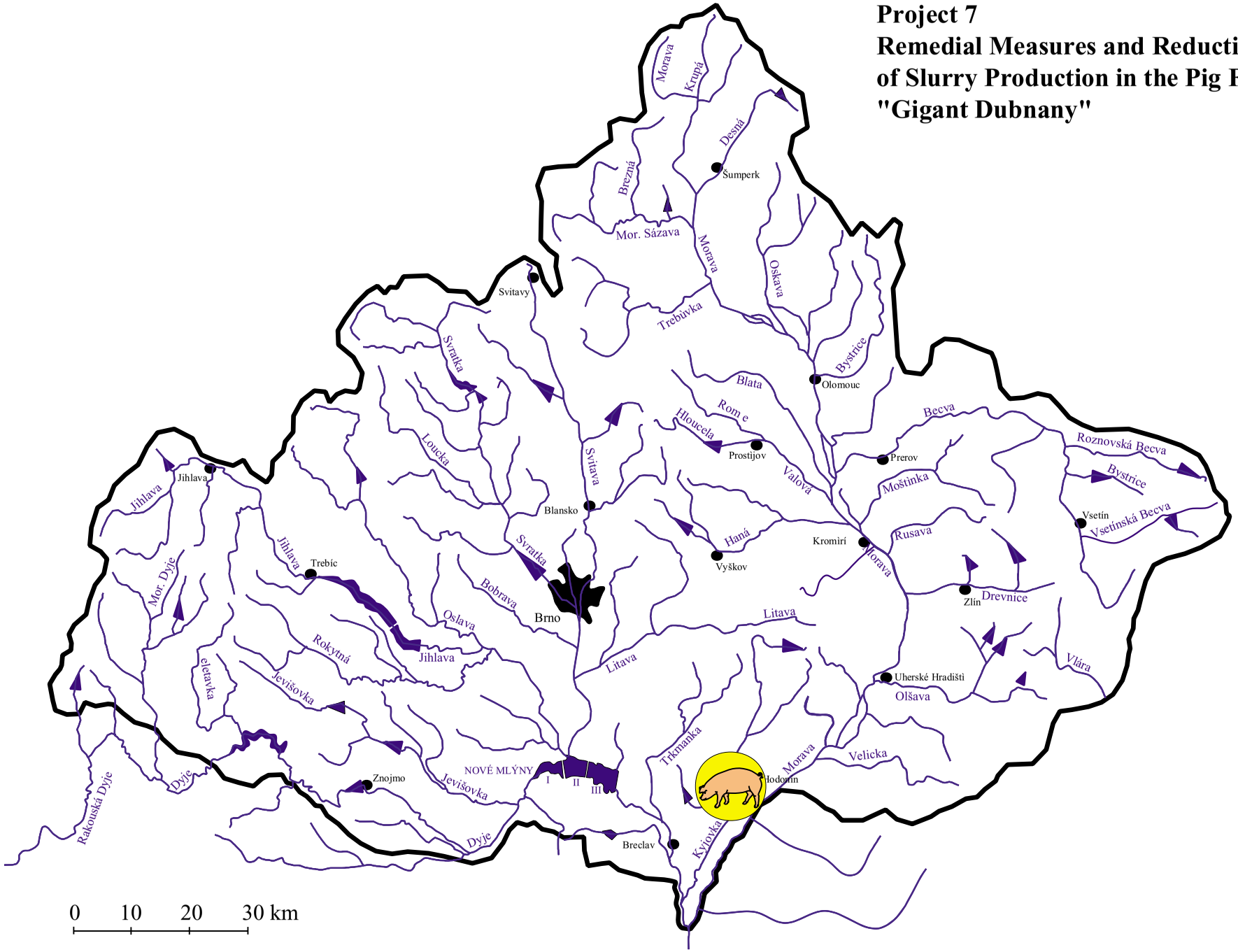
Notes:

* Fund of National Assets

Project 7

Remedial Measures and Reduction of Slurry Production in the Pig Farm "Gigant Dubnany"

Project 7
Remedial Measures and Reduction of Slurry Production in the Pig Farm "Gigant Dubnany"



Date of first setting up: 1973 Date of latest upgrade: occasional small repairs

Project Title

Remedial Measures and Reduction of Slurry Production in the Pig Farm "Gigant Dubnany"

Responsible/Legal Body

Authority: Okresni urad Hodonin
(in English: District Office in Hodonin)

Authority: Okresni urad Hodonin (in English: District Office Hodonin)

Address: Narodni trida 25, 695 32 Hodonin, Czech Republic
Telephone: +420 (0)628 316111 (exchange)
Fax: +420 (0)628 22100
e-mail: ...

Company: Gigant Dubnany, s.r.o. (in English: Gigant Dubnany, limited company)

Address: Lesetin II, No. 385, 760 01 Zlin, Czech Republic
Telephone: ++420 (0)628 96226 or ++420 (0)628 96424
Fax: ++420 (0)628 96424
e-mail: ...

Project Target

Target of the Project: improvement of water quality to meet limits 2004/2005; main problems: N-NH4, PTot, micobiol.

Benefits of the Project: essential improvement of water quality in all important parameters including nutrients

Beneficiaries: downstream drinking water resources (near Moravska Nova Ves), downstream users of water (agriculture, forestry, recreation, fishery), favorable environmental effects transboundary impacts; Dubnany is near district town Hodonin which is on the boundary with Slovakia and near the border with Austria

Stakeholders: neighboring downstream municipalities and their inhabitants (Hodonin and inhabitants of near towns and villages - including Slovakia), activities in forests

Investment Costs

Preliminary calculation of project costs: investments in total 101 million CZK (4.6 million US $)

Status of Project

Actual status of the project: in the phase of ongoing process (firms Gigant Dubnany, s.r.o. + Agroprojekta Brno s.r.o. + TOPGEO Brno s.r.o.)

Language of Project Documents

Project documents are mostly in Czech, some short texts (for preparatory phase of the Danube Programme, preparation of feasibility study) are in English

1 Project Title

Remedial Measures and Reduction of Slurry Production in the Pig Farm Gigant Dubnany

2 Investor Details

2.1 Authority/Company

Company = Investor:

Name	Gigant Dubnany, s.r.o..
Address:	Lesetin II, No. 385, 760 01 Zlin, Czech Republic
Telephone:	++420 (0)628 366226 or ++420 (0)628 366424
Fax:	++420 (0)628 366424
e-mail:	...

2.2 Contact Persons

Mr. Karel Pilcik, owner and representative of Gigant Dubnany, s.r.o.

Mr. Jan Hrabanek, director of Gigant Dubnany, s.r.o.

Mr. Pavel Martan, head of project proposal, Agroprojekta s.r.o., workplace Uherske Hradiste telephone ++420 (0)632 579765

2.3 Advisor/Consultant

Mr. Pavel Martan, head of project proposal, Agroprojekta s.r.o., workplace Uherske Hradiste

Mr. Albert Kmet, geological specialist from the company "GEON Sokolnice"

consultants from other Czech firms cooperating with the investor ... TOPGEO Brno s.r.o. ("Analysis of Risk" from June 1997), TEBODIN Consultants & Engineers (representing the Netherlands firm NEI in Czech Republic - in Prague), etc.

2.4 Legal/Financial Status

Legal status of investor: Limited Company

2.5 Authority/Company Profile

Authority profile: district authority in Hodonin (town on the boundary with Slovakia, with almost 30,000 inhabitants)

- task: authority for the district of Hodonin (appr. 160,000 inhabitants)

Company Profile ("Gigant Dubnany, s.r.o. ") : limited company

- mandate field of business: mainly pig breeding and fattening
- turnover of company: 170 million CZK
- number of persons employed: 83

2.6 Planning/Implementing Extent/Capacity of the Investor

All capacities of investor (mentioned company) - to plan and implement the project are adequate to the need of planning or implementing of Project, with presumed cooperation with local and external experts, managers and other specialists, with further companies and institutions

2.7 Institutions/Enterprises beside the Investor

- Planning/consulting: Czech experts from Agroprojekta a.s., GEON Sokolnice, TOPGEO Brno s.r.o., TEBODIN Consultants & Engineers
- Construction: Ingstav Uherske Hradiste, Ekoingstav Brno a.s., IMOS Brno a.s., ...
- Licensing/monitoring: licensing from many Czech firms for equipment,
  monitoring: Cesky hydrometeorologicky ustav Brno (Czech Hydrometeorological Institute, branch in Brno), Povodi Moravy a.s. (Morava River Basin Administration), GEON Sokolnice, TOPGEO Brno s.r.o, etc.

3 Project Description

3.1 Project Outline

Solution of the project is oriented on the improvement of present unfavorable state of water quality related to outflow from the large-capacity pig farm, to old environmental damages (contaminated sediments in the lagoon, etc.) and to water quality requirements in surface and ground waters.

The present water quality indicators 1993 - 1998 in the Kyjovka River and brooks Mlynarka B. and Rumzovsky Jarek B. downstream Dubnany are as follows:

BOD_5	class 4 -5	values between ... 3.0 - 200 mg/l
COD_{Cr}	class 4 - 5	values between ... 10.0 - 360.0 mg/l
TSS	class 3 - 5	values between ... 60 - 110 mg/l
TDS	class 3 - 5	values between ... 800 - 1320 mg/l
$N\text{-}NH_4$	class 3 - 4	values between ... 3.0 - 4.60 mg/l
P_{Tot}	class 3 - 4	values between ... 0.10 - 0.80 mg/l

There are also problems with heavy metals occurring in particular in slurry residua and sediments: zinc - up to 5000 mg/kg of sediments, copper - up to 15000 mg/kg of sediments. Likewise, the microbiological contamination of surface waters is significant, above all coliforms, fecal coliforms and enterococci.

(Note: classification ... conforming with Czech standards)

Expected limits due quality in surface water bodies downstream the pig farm Gigant Dubnany:

BOD5	8 mg/l
CODCr	50 mg/l
TSS	60 mg/l
TDS	800 mg/l
N - NH4	3 mg/l
PTot	0.4 mg/l

(The design implementation should ensure the adequate wastewater treatment parameters in accordance to the Czech Governmental Decree No. 171/1992 as well as the emission limits of the EU)

Expected limits in groundwaters downstream the pig farm would be as follows (according to requirement of district authority):

NH4	3 mg/l
Zn	5 mg/l
Cu	0.5 mg/l
CrTot	0.3 mg/l

The rehabilitation design of the pig farm "Gigant Dubnany" and proposal of measures needful for the reduction of slurry production is the most important agricultural "hot spot" project in the Morava River Basin. There are two steps of the project: a) measures to reduce the slurry production and application, b) reconstruction of pig farm, removal of contaminated sediments in lagoons an neighboring areas of the pig farm and their rehabilitation.

- Technical description of the main components of the project: The first stage of the Project will consist mainly in measures aiming for a quantity reduction of produced and applied slurry. The recent quantity 140,000 m3 per year will be decreased at the value of 70,000 m3/year. There will be used here new feeding technologies ("wet" feeding instead of "dry")

and additional measures will be dealt with an abatement of groundwater inflow into the slurry systems. Among other important steps will belong 6-month slurry storage in secured impermeable tanks with total volume of 35,000 m3 - 40,000 m3. The slurry quality will be modified treated by dosage of some materials (beef cattle straw etc.) and substances. This treated manure will be after homogenization embedded into the soil of near plots and pieces of land. One partial step is related to the removal of contaminated sediments and rehabilitation of all respective areas. In combination or as a variant of the mentioned first step it could be also used other method consisting in the excavation of slurry wastes, contaminated soils and sediments, then in managed treatment of slurry and other degradable organic matters with the aid of fermentation procedures and next - after fermentation procedures - in the production of special organic manure. Buildings and other parts of the pig farm are obsolete, cracked and impaired. It concerns also the structures of water and slurry management within the farm. All this systems including slurry flow, storage in tanks or lagoons, sedimentation and later application must be step by step upgraded or reconstructed in the course of a short time. All these works represent the future principal reconstruction of large-capacity pig farm.

- Main elements of project to avoid or essentially reduce water pollution
    - Structural project ... reconstruction of some parts of pig farm
        - Geological and pedological survey
        - Needful earthworks (appr. 150,000 m3)
        - Repair, reconstruction and upgrade works (houses, sewage, pipelines, court yards, equipment etc.)
        - Modernization of slurry handling and assemblage of 6 - 8 tanks (altogether 40,000 m3)
        - Rehabilitation of lagoons, river beds and neighboring areas
        - Equipment for dry technology and fermentation processes
        - Modernization of transport processes, information and warning systems
        - Needful waste treatment provision
    - Non-structural project (there is no at present)
- Beneficiaries: water management - mainly downstream users of water (drinking water resources by Moravska Nova Ves), environment (especially life in rivers - Kyjovka R., then Morava R. - connected by means of water transfer in Hodonin), transboundary impacts (related

mainly to Slovakia and partially to Austria), agriculture, forestry - in floodplain forests, fishery

- Stakeholders: municipality Mutenice, ponds between Mutenice and Hodonin, then the town of Hodonin with suburb Luzice, then downstream villages Mikulcice, Moravska Nova Ves, Tynec, Tvrdonice, Kostice, Lanzhot and their inhabitants, archaeological localities near Mikulcice, oil and natural gas exploitation places near Luzice, agriculture
- Location: south-west of Dubnany, towards Mutenice, 9 km to the boundary with Slovakia
- Site: Dubnany (town north of the district town Hodonin; near – recent lignite mining sites)
- Existing use of site: existing pig farm

3.2 Primary Needs for the Project

Description of targets of the project and its contribution to the reduction of the pollution in the Danube River Basin:

- main target ... improvement of water quality to meet limits 2004/2005, improvement of other environment components (soil, air, food, plants)

Targets in detail according to

- health benefits ... for people in downstream regions
- aquatic environment (fish etc.) ... downstream reaches of the Kyjovka River, its ponds and two small tributaries, of the Morava River, surrounding groundwaters
- recreation ... surroundings of downstream reaches of the Kyjovka River (mainly tourism, fishing for sport)
- aesthetics ... in the Kyjovka River, its ponds and tributaries, in surroundings of downstream reaches of the Kyjovka and Morava rivers
- biodiversity ... downstream reaches of mentioned water bodies
- economic development ... it will be step by step important, too
- transboundary effects ... according to efficiency of implemented measures and distance to the border (first Slovakia - 9 km and then Austria - 36 km)

Assumed deterioration without project measures: ongoing tendency of water pollution in the Kyjovka River and respective water bodies, of other coherent unfavorable consequences for waters, alluvium, soil, near air and users; the deterioration effect was not calculated

3.3 Status of Project Preparation

Actual status of project studies and reports:

- feasibility level and beginning of the phase of application and license; some parts were prepared before (for Phare)
- bidding and selection of construction company would follow

Project documents / summary in English ... there were some parts prepared before - for the need of Phare; almost all "new" texts are only in Czech, needful English summaries would be probably prepared as soon as possible

3.4 Technology Proposed

Mostly standard elements; relevant needful special features could be procured with the aid of Czech firms

3.5 Ownership of Project Site

Status of proprietary rights: project site is on plots of the owner

3.6 Specific Project Items

There are no additional remarks on project description

4 Project Effects and Interactions

4.1 Public's Expression of Interest

- Description of public participation / involvement measures: Public has been participated on remedial tasks of interest as in other parts of the Czech Republic; the environmental awareness will have to increase
- Attitude of concerned people to the project: The District Authority and respective company representation are very interested in solving here mentioned challenges. It has been searching for financial support because of the needed amount of finances. Very significant would be above all the help related to the second stage of the Project - reconstruction and upgrade of the pig farm
- Results of social acceptance assessment: the task was assessed in this way

4.2 Environmental Impact Assessment

Environmental Impact Assessment was not carried out because of old environmental damages which also refers to needful reconstruction and upgrade of existing buildings and equipment.

4.3 Sensitivity of Locality/Receptor

Description of the area, location, receiving water influenced by the project:

The large-capacity pig farm "Gigant Dubnany" is situated in the floodplain area of the Kyjovka River, its two left-hand tributaries and pond system, near and upstream the confluence of the left-hand diversion-arm of the Kyjovka River with the Morava River in Hodonin on the border with Slovakia; Kyjovka River flows currently towards the Dyje River. Kyjovka River and respective water bodies have been mostly very polluted and the impact of pig farm is evident. In addition other large-capacity pig farm threatens the mentioned waters: farm near Milotice, upstream and only 4 km far from Dubnany farm. with its. In river and brook floodplains there have been some small water sources and very important is the utilization of groundwater resources near Moravska Nova Ves, downstream Hodonin.

4.4 Primary Effects of Project

Description of the effects of the project on different geographical levels

- local: better downstream environmental and water quality conditions (municipalities Mutenice, Hodonin, Luzice, mentioned water resources)
- better upstream environmental conditions (Dubnany - mainly air)
- regional and national: better downstream environmental and water quality conditions in the region of downstream reaches of the Kyjovka and Morava rivers floodplains (including more distant riverine municipalities towards confluences of three rivers - Kyjovka R. with Dyje R. and Dyje R. with the Morava R.), connection with better biodiversity, life of fishes and so forth,
- international and transboundary: better downstream environmental and water quality conditions owing to short distance from borders with Slovakia and then Austria - due to efficiency of proposed measures

5 Economic Project Justification

5.1 Economic Project Benefits

- Saved investment cost (compared to without project case): it was not evaluated
- Employment and income effects:
    - during construction period: employment and income occasion for workers in construction and equipment firms

- during operation period: employment and income occasion for workers in construction and equipment firms

- Other economic effects: effects resulting from water quality improvement (mainly related to downstream reaches - municipalities, agriculture, fishing and fishery, possible water abstraction for different users etc.)

5.2 Economic Internal Rate of Return (EIRR)

Economic Internal Rate of Return (EIRR) was not calculated

6 Financial Viability

6.1 Estimated Investment Cost

- Investment cost (in total)	
national currency	CZK (Ceska koruna = Czech Crown)
in US dollars	1 US $ = 0.0306 CZK
- Allocation of capital cost:	
* land	3.2 million CZK 0.1 million US $
* construction and machinery	1,106 million CZK 33.85 million US $
* planning and supervision	6.5 million CZK 0.2 million US $
* total cost	151 million CZK, 4.6 million US $
* 1st stage (slurry reduction, environment rehabilitation)	99 million CZK (covered by Fund of National Assets), 3.0 million US $
* 2nd stage (reconstruction)	52 million CZK, 1.6 million US $
- on an annual basis:	it was calculated only in part
- year of cost estimate:	1998
- nature of cost estimate:	preliminary

6.2 Estimated Operational Cost

Expected annual (operational) recurrent costs in real terms according to assumed timing were calculated in part. Likewise repair and replacement or total operational costs are similarly assessed. All mentioned values will be determine in the project in detail; with these circumstances are also in connection year of cost estimate (maybe 1999) and nature of cost estimate - first preliminary and then as a part of required "Financial Project" in detail.

Writing-down allowances bound to depreciation represent usually by earthworks 1.0%, buildings 1.5%, water pipelines 2.0%, sewers 3.3% and equipment (including related to tanks) 8 - 10% of their investments value. Total annual operational cost is adequate to 3.5 - 5.0% of investments cost and partial items represent following values: wages and salaries 0.9 - 1.2% (from investments cost), energy supply 2.5 - 3.0%, material 0.8 - 1.2%, repairs and maintenance 0.7 - 1.0%, transport etc. 0.6 - 0.8%.

6.3 Estimate of Revenues

Expected annual revenues in real terms have been calculated as interim values. Likewise the future year of estimate and nature of revenues estimate had not be determined exactly

- Expected annual revenues: it was not calculated more exactly
- Year of estimate: in the future
- Nature of cost estimate: it will be adequate to investments and operational cost

6.4 Financial Internal Rate of Return (FIRR)

- Financial Internal Rate of Return (FIRR) was not calculated

6.5 Anticipated / Proposed Funding Scheme (in million CZK)

Sources of funding	Secured	Requested	Non - secured
(1) Equity of project owner	12.0		
(2) National Environmental Fund	-	-	-
(3) Water Management Fund	non-existing		
(4) Public loan – central budget	-	-	-
(5) Public loan – regional budget	non-existing		
(6) Public loan – municipal budget	-	-	-
(7) Public grant – central budget	-	-	-
(8) Public grant – regional budget	non-existing		
(9) Public grant – municipal budget	-	-	-
(10) International loan	-	-	26**
(11) International grant	-	-	26**
(12) Commercial bank loan	-	-	-
(13) Other sources	99*		-
Total funds/requirements	99*	-	52**

Notes:

* Fund of National Assets

** GEF (assumed)

Annexes

Annex to Project Files
on the basis of the National Planning Workshop in Czech Republic

Introduction

In the course of the National Planning Workshop - which took place in Brno (Morava River Basin Administration) from 2nd to 5th September 1998 - was paid attention to four special tasks of high priority in agriculture, forestry, land and water management. The project titles have been as follows:

1. Rehabilitation of Important Watercourses
2. Definition of Obligatory Agrotechnical and Organizational Measures for Soil Erosion Reduction
3. Minimization of Output of Harmful Substances from Animal Husbandry Farms
4. Introduction of Natural Regeneration of Forests

All mentioned projects are defined only generally, without large details. The following overview characterizes significant circumstances concerning the measures related to existing, running and urgently proposed projects in the question.

1. Rehabilitation of Important Watercourses

Responsible authority: Ministry of Environment

Ministry of Agriculture

Project implementation: there are more companies and administrations in this field ..... Povodí Moravy, a.s. (in English ... Morava River Basin Administration) Státní meliorační správa (in English ... State Land Reclamation Administration) different companies engaging in Forest Management or other organizations

Project Target: Restoration of environmentally sound floodplains, meanders, oxbows, valley wetlands due to the rate of past watercourse straightening and denaturalization

Following improvement of water quality in respective hydrological network of brooks and rivers (mainly nutrients)

Coherent improvement of ecological conditions

Status of Project (or project complexes):

Project complexes are in the phase of slowly ongoing processes in dependence on annual financial potential of state budget

Language of Project Documents:

Mostly in Czech with the exception of Phare project „Restoration of Fish Habitat and Hydrological Condition of the Lower Dyje / Morava Rivers“; it is in English, too

Project Outline:

The basic programme (Rehabilitation of hydrological network in Czech Republic - financially supported from the state budget) has been aimed at successive mitigation of unfavourable effects caused by former denaturalized river training and numerous straightening of streams. The summary economic, environmental and holistic evaluation of all needful partial sub-projects have been carried out neither for all the state of Czech Republic nor for three main river basins (the Elbe, Oder and Morava Rivers). Finances have been allocated with respect to needs, urgency and other factors. Some studies and small sub-projects have been also implemented in the Morava River Basin: „Biocorridor through the Nové Mlýny Hydraulic Structure“ (the constructions due to the 1st phase for the 1st island was finished two years ago, the 2nd phase related tro the 2nd island has been realized between 1997 and 1999, next stages will follow), „Meanders Restoration in the Morava River Floodplain - near Rohatec“ (study completed 1998). Special sub-projects ensued from the situation owing to large floods in July 1997: „Studies of Possible Naturalized Conservation of Watercourses after Flood Events in the Krupá, Branná, Desná and head Morava Rivers“ (finished in 1998), „Study of Possible Naturalized Conservation of Watercourses after Flood Events of July 1997 in the Bečva River“ (completed in 1998) and „Pilot Rehabilitation Project after Flood in July 1997 referring to 5 Reaches of the Bečva River“ (study evaluation; from 1998 to 1999). There have been also some „small“ rehabilitation projects prepared (or sometimes implemented) by the State Land Reclamation Administration or by different companies engaging in Forestry and Forest Management. The above mentioned trilateral Phare project „Restoration of Fish Habitat and Hydrological Conditions of the Lower Dyje / Morava Rivers“ (marked as PEC No. 85.32000.31, EU OSS No. 98-5154.00) was iniciated in 1998 and will be completed in 1999. This project deals with investigations of water management of the lower Dyje River (with main goal of the improvement of river ecosystems), with rehabilitation on lower reaches study, with rehabilitation of oxbows by the Morava River upstream Hodonín, with fish marking in lower reaches of the Dyje and Morava rivers. The Project is characterized by co-operation with Slovakia, Austria and WWF, with biology specialists. Among planned projects belong 1) the proposal of connection between the Dyje River with cut-off stream branch on the border witrh Austria, 2) the proposal of remedial measures upstream the Luhačovice Storage Reservoir (on the Luhačovický potok - in English „Luhačovice Brook“ and world-known spa municipality Luhačovice, 3) further rehabilitation proposals of the State Land Reclamation Administration and elaborated by different companies or organizations engaging in Forestry and Forest Management.

Partial Goals of the Project:	Main target is the improvement of water quality in the future, in the 1st stage to meet limits 2004/2005. Among additional and mostly equivalent targets belong in particular the improvement of aquatic environment and biodiversity, of flood control conditions, of landscape diversity, of relevant surface water, soil and hydrogeological regime
Primary Effects of Project:	Better environmental and water quality conditions in all the Morava River Basin
Estimated Investment Costs:	The sum of all necessary measures in the Morava River Basin was not calculated (very approximate estimation .... more than 10,000 million CZK = appr. 330 million USD, including the implementation of all necessary sub-projects). The Phare Project represents appr. 62,000 USD (2.2 million CZK), the 2nd phase of „Biocorridor Nové Mlýny“ was estimated at 1.8 million USD (appr. 46 million CZK). Other „smaller“ acivities have been represented in years 1997 - 1998 by less than 50,000 USD (< 1.5 million CZK).
Funding Scheme:	Almost 100% from the State budget - without above mentioned Phare project

2. Definition of Obligatory Agrotechnical and Organizational Measures for Soil Erosion Reduction

Responsible authority:	Ministry of Environment
	Ministry of Agriculture (above all)
Project implementation:	there are more instutions and companies in this field .....
	Mendel Agricultural Univesity in Brno
	Academy of Sciences in Czech Republic (Institutes aimed at agriculture, pedology and protection against soil erosion)
	Státní meliorační správa (in English ... State Land Reclamation Administration)
	different companies engaging in relevant studies, project preparation, agricultural issues
Project Target:	Restoration of environmentally sound agriculture, reduction of soil erosion, rehabilitation of near hydrological elements and floodplains (in all the Morava River Basin)
	Related improvement of water quality in surrounding brooks and rivers in the Morava River Basin(mainly nutrients)
	Improvement of coherent ecological conditions

Status of Project (or project complexes):

Needful project is not prepared at this time; it will depend upon financial potential of state budget

Language of Project Documents:

Project Outline:	Solution of the holistic project must be oriented on the improvement of present unfavourable state of water erosion conditions in many parts of the Morava River Basin and on the connected substantial improvement of water regime and ecosystems
Partial Goals of the Project:	Main target is the improvement of water quality in the future, in the 1st stage to meet limits 2004/2005. Among additional and mostly equivalent targets belong in particular the improvement of soil regime and management, of agricultural and aquatic environment and biodiversity, of flood control conditions and all respective water regime, of landscape diversity. Very important ill be also the role of the support of traditional rural conditions and the successive asserting of ecological agriculture
Primary Effects of Project:	Better environmental, agricultural and water quality conditions in all the Morava River Basin
Estimated Investment Costs:	The sum of all necessary measures in the Morava River Basin was not calculated (very approximate estimation .... more than 500,000 million CZK = appr. 16,700 million USD, including the total-project implementation).
Funding Scheme:	Assumed almost 100% from the State budget (with respect to old environmental damages)

3. Minimization of Output of Harmful Substances from Animal Husbandry Farms

Responsible authority:	Ministry of Environment
	Ministry of Agriculture (above all)
Project implementation:	there are more institutions, companies and enterprises in this field
	Mendel Agricultural University in Brno
	Academy of Sciences in Czech Republic (Institutes aimed at agriculture, animal husbandry, soil and manure management, pedology etc)
	different companies engaging in agriculture, food industry or other organizations
Project Target:	Restoration of environmentally sound animal husbandry, soil and manure management - with respect to connected land pieces and water bodies (in all the Morava River Basin)
	Following improvement of water quality in respective hydrological network of brooks and rivers (mainly nutrients)
	Coherent improvement of ecological conditions

Status of Project (or project complexes):

Needful project is not prepared at this time; it will depend upon financial potential of state budget (or of other source)

Language of Project Documents:

-

Project Outline: Solution of the system project must be oriented on the improvement of present unfavourable state of manure and slurry management in many farms dealing with animal husbandry in the Morava River Basin and on the connected substantial improvement of soil and water regime and ecosystems

Partial Goals of the Project: Main target is the improvement of water quality in the future, in the 1st stage to meet limits 2004/2005. Among additional and mostly equivalent targets belong in particular the improvement of soil structure and regime, of respective terrestrial, aquatic environment and biodiversity, of surface water and groundwater regime, of landscape diversity: Very important will be also the role of the ecological agriculture asserting

Primary Effects of Project: Better environmental, agricultural and water quality conditions in the essential region affected by the animal husbandry - scatterred almost in all parts of the Morava River Basin

Estimated Investment Costs: The sum of all necessary measures in the Morava River Basin was not calculated (very approximate estimation .... about 100 million CZK= appr. 3.3 million USD, including the implementation of all necessary sub-projects).

Funding Scheme: Assumed almost 100% from the State budget (in particular with respect to old environmental damages and uncleared ownership relations)

4. Introduction of Natural Regeneration of Forests

Responsible authority: Ministry of Environment

Ministry of Agriculture (above all)

Project implementation: there are more companies and administrations in this field .....

Mendel Agricultural Univesity in Brno (Faculty of Forestry)

Academy of Sciences in Czech Republic (Institutes aimed at forestry, pedology and protection against soil erosion)

different institutions a nd companies engaging in Forest Management, in the preparation of studies and projects referring to forestry and forest regeneration

Project Target: Restoration of environmentally sound landscape with forests and coherent rehabilitation of connected systems (run-off conditions, soil systems, evapotranspiration, infiltration and floodplains regime etc.) - in all the Morava River Basin

Following improvement of water regime in respective hydrological network of brooks and rivers

Coherent improvement of ecological conditions

Status of Project (or project complexes):

Needful project is not prepared at this time; it will depend upon financial potential of state budget

Language of Project Documents:

-

Project Outline: Solution of this multilateral project must be oriented on the possible rehabilitation of present „historical“ and monocultural state of forest systems in most parts of the Morava River Basin, further on the improvement of given erosion conditions, of connected soil, water, climatic and ecological regime

Partial Goals of the Project: Main target is the improvement of water quality in the future, in the 1st stage to meet limits 2004/2005. Among additional and mostly equivalent targets belong in particular the improvement of forest and aquatic environment and biodiversity, of surface water and groundwater regime, of flood control conditions, of landscape diversity

Primary Effects of Project: Better environmental, forest and water quality conditions in predominant parts of the Morava River Basin, mainly in mountain, highlands and floodplain areas

Estimated Investment Costs: The sum of all necessary measures in the Morava River Basin was not calculated (very approximate estimation .... more than 200,000 million CZK = appr. 6,600 million USD, including the total-project implementation of all necessary sub-projects).

Funding Scheme: Assumed almost 100% from the State budget (with respect to historical monoculture and to old environmental damages caused mainly by long-range air pollution)

(prepared by L. P., 22 January 1999)