DEPARTMENT: WATER AFFAIRS AND FORESTRY

REPORT ON AN INFORMATION MANAGEMENT STUDY VISIT

TO

THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

AND

THE UNITED STATES GEOLOGICAL SURVEY

10 – 20 October 2000

By

A Howman and M Nepfumbada

INSTITUTE FOR WATER QUALITY STUDIES, PRIVATE BAG X313, PRETORIA 0001, REPUBLIC OF SOUTH AFRICA

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Department of Water Affairs and Forestry

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1. AIM OF VISIT

The aim of the study tour was twofold. Firstly to discuss activities that relate to the Institute for Water Quality's (IWQS) core line function and key activities *vis-à-vis* the requirement of the implementation of the national water policy. Secondly to explore areas relating to the establishment of an information system for monitoring as required in the National Water Act (NWA), Act 36 of 1998.

The IWQS has been instrumental in the development of the NWA and has continued to be involved in its implementation. The main role of the IWQS is to provide the national water resource management function with resource quality and technical information, guidelines and procedures necessary to address the strategic and operational requirements of the protection and assessment of the water resources quality. The Institute also houses the national laboratories for water quality analysis. Now responsible for driving the process of developing a Water Resources Monitoring, Assessment and Information System (WRMAIS) based on a strategy that has been developed, it is critical for the IWQS to explore mechanisms, approaches and policy issues to make Chapter 14 of the NWA a reality. It should be noted that implementing Chapter 14 of the Act is a huge task that incorporates all water resources management related information and is, therefore, a corporate initiative and not solely water quality.

The study visit was aimed at meeting with experts from the United States Environmental Protection Agency and United States Geological Services who have the responsibility of making information management legislation work in reality. Questions asked included what are the priorities, pitfalls, lessons already learned and standards already established

The main interests of the study tour were as follows:

· Monitoring and co-ordination of national and regional water quality monitoring programs.
· Assessment and reporting of water quality.
· Analytical laboratories involved in the assessment of water quality.
· National co-ordination of laboratories.
· Mechanisms, approaches and policy issues relating to monitoring and assessment of water resources.

· National monitoring, recording, assessment and dissemination of information on water resources.
· Provision of information to assess all aspects of water resources.
· National information systems and infrastructure to store and provide the data and information.
· Coordination and collaboration between institutions, including government, state and private institutions.
· Integration of information and analytical tools, procedures and information systems to support high quality, transparent and defendable decision-making.
· Policies and guiding principles addressing issues such as data access, data sharing, intellectual property, data standards, copyright, custodianship, responsibilities, terminology.

Further we explored potential linkages and collaboration especially with regards to furthering monitoring and assessment activities. Utilising such opportunities as provided by the US-South Africa Bi-National Commission and link up with other initiatives such as those currently underway in the South African Department of Environmental Affairs and Tourism were discussed.

2 ISSUES PERTINENT TO DWAF

ISSUE	PERTINENT INFORMATION	USA CONTACT	DWAF CONTACT
Assessment techniques	National guidance in the form of Item 305B of the Clean Water Act.is provided to the States regarding how data and information should be reported on a biannual basis. For the EPA Regional Offices to be able to assess and make recommendations regarding the Item 305B report, the Item 303D reporting is being established in order to obtain information on specific streams. This is seen as a key to achieving standardised reporting. Environmental quality assessment techniques as developed at the IWQS are not evident at the EPA or USGS.	Charles App, Mark Barath, Charles Kanetsky	DD: Water Quality Assessment - IWQS
BASINS	Better Assessment Science Integrating Point and Non-Point Sources is a tool for watershed and water quality management. It integrates geographic information systems, environmental data, point and non point source data, analytical tools and modelling programs in one freely available package to undertake environmental assessment.	Russell Kinerson, Ed Partington, David Wells	D: IWQS
Computer budgets	EPA: Approximately $300 million per annum spent on computer facilities and Web access	Pat Garvey	CIO, CD: SS, Integrator
	USGS: Approximately 10-15% of total budget dedicated to IT support. The total USGS budget for 2001 financial year (Oct 2000-Sept 2001) is $882 046 million	Steve Blanchard	
	The EPA Region III IT budget is 10-15% of their total budget, approximately 2-3.5 million of $20 million budget.		
Computer Equipment	The EPA replaces their IT equipment every 4 years	Jo Smith	CIO

ISSUE	PERTINENT INFORMATION	USA CONTACT	DWAF CONTACT
Data bases	Both EPA and USGS predominantly use Oracle and relational databases as the platform for their databases. A significant number of disparate databases are in existence and there are a number of models that are being adopted to migrate existing databases to an integrated platform		CIO
	The EPA was in a data replication environment, however, the magnitude of data, across the entire spectrum of their responsibilities (air, water, waste, toxics. etc, including confidential point source proprietary data and licences from Federal Agencies, Local Authorities and Indian States), proved to be too great to manage appropriately. The data could not be replicated in a time frame that was suitable for reporting and was always out of date. Their solution is an "Information Exchange Network" that will establish the link to all contracted, distributed databases resident in individual States and organisations. Public and other requests would be received through a single point and then routed to an appropriate single point of information.	Thomas Voltaggio, A Morris	CIO, Integrator
Data Standards	With a plethora of different systems it has primarily been the Web that has been a major driving force in the establishment of data standards. Defined as documented agreement on representation, formats and definitions for common data, it has long been recognised that it was necessary to converge the inconsistencies. EPA did not want to retrospectively rework old systems so they worked on 6 focus areas for their environmental data registry that needed consistency: date, facility identification (sites), chemical verification, biological names, industrial classifications and spatial latitude and longitude. (Note: It took 2 years to reach agreement on "date"). Where possible use was made of existing International and national standards. (Note: The EPA does not mandate that anyone else other than the EPA should use their data standards.) Data standards and the guides and standards for implementing them were established throughout the EPA. The process took political will as well as the business need. Six to eight people were dedicated to the job for its duration.	Marian Cody	DWAF Corporate Architect, SS Portfolio Managers
Envirofacts	Supporting the national public need to have integrated information from one source, Envirofacts has facilitated the process of getting the information online. Based on Oracle and relational databases the system is currently experiencing approximately 1.6 million hits and 600 000 data base queries per month. Envirofacts is not yet linked to the USGS National Hydrologic Database.	Bill Grabsch, Pat Garvey	CD:SS, Integrator

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Environmental Protection Agency (EPA)	Established in 1970 as an independent regulatory agency, serving at the pleasure of the President, to ensure the protection of public health and to safeguard the natural environment. The EPA has 10 National Goals for which they are accountable to Congress. These are as follows: Clean Air Clean and Safe Water Safe Food Pollution prevention Better waste management Reduction of cross border environmental risks Expansion of the American peoples' right to know about their environment Sound science, understanding and innovation to address environmental problems Credible deterrent to pollution (enforcement goal) Effective management of the environment. The ten EPA Regions are responsible for direct implementation of EPA regulations and policies. Approximately 17000 people decentralised throughout the US in what is a very politicised environment.		
Gateway to the Earth	The USGS Gateway, available through the World Wide Web, is a coherent set of interfaces, tools and architectures that enable diverse users to find, obtain and use natural science information in ways that are meaningful to them.	Ken Lanfear	CD: SS, Integrator
GIS	USGS officials widely utilise GIS as part of their every day working environment. As scientists GIS is a standard working tool. The EPA Region III Office provides specialist GIS support to their staff. A training programme to develop a wider group of staff to utilise GIS was not successful with very few officials choosing to use GIS as part of their daily operations.	Wendy Bartel, Don Evans	D: Geomatics
Liaison with Federal Agencies, Non Governmental Organisations, Universities and Researchers	It is established practise for both the EPA and the USGS to form close co-operative agreements and liaisons with individuals and organisations. Both agencies fund research, development and operational work via co-operative agreements, grants and contracts.	John Armstead	CD: SS
Licensing information system	The State of Virginia has progressed far with regards to information management and has developed a new operational system based around permits. They would be prepared to share their information. Dave Johnson is the contact person	Charles App	CD: SS

ISSUE	PERTINENT INFORMATION	USA CONTACT	DWAF CONTACT
Mid Atlantic Integrated Assessment (MAIA)	A programme started 10 years ago within the Office of Research and Development to ensure integrated monitoring and assessment of the Mid Atlantic States was accomplished. Top management wanted the area to be the best-monitored area in the world. MAIA followed a probabilistic approach to monitoring over the entire area to ensure that the monitoring was in fact representative of what was happening in the area. It was also based on partnerships with other agencies and strongly biologically based on the undertaking of complete and comprehensive monitoring at every site (i.e. forestry, fish and wildlife, water quality and quantity). The existence of the comprehensive data has made it possible to determine a considerable number of relationships regarding sustainability, effectiveness of regulations etc. For example the landscape assessment and the ability to statistically correlate activities and impacts. Documents are available. It has been a highly successful, statistically sound, repeatable and comprehensive process.	Stanley Laskowski	CD: SS MAIS

ISSUE	PERTINENT INFORMATION	USA CONTACT	DWAF CONTACT

Monitoring - Co-ordination of States	The EPA Region III Environmental Services Division (ESD) is responsible for co-ordination of effective monitoring programmes within the six States comprising the Region.
	
	The EPA has to try to get each State to develop a monitoring strategy. This has been facilitated by the number of lawsuits brought against the EPA by the US citizens. The States have to monitor all waters.
	
	In addition the ESD is responsible for the National Water Quality Inventory produced every 2 years. (See Assessment Techniques). Key in the reporting is undertaken in the following areas:
	   Present status of the information
	   Trend at that location
	   Geographic location (key)
	   Relation to management, is progress being made or not
	   Financial and personnel costs and implications
	
	The extent of monitoring being undertaken in the six EPA Region III States is provided as Appendix A.
	
	A group of approximately 40 personnel are involved in resource monitoring of 82000 miles of stream in the State of Pennsylvania. There are 18 field biologists in the State.
	
	Neither the USGS nor the EPA has a "monitoring management system" such as established in WMS. The USGS wish that they had such a system. Because the responsibility for monitoring lies with each State the EPA checks monitoring management via field visits.
		Charles App, Mark Barath, Charles Kanetsky
		
		Charles Kanetsky
			DD: Operational Monitoring - IWQS

ISSUE	PERTINENT INFORMATION	USA CONTACT	DWAF CONTACT
MOSES – Mission Oriented Systems Engineering Support Contract	Historically, the EPA found itself in a situation of multiple, diverse, incompatible, non standardised information systems and data bases that had been built and were maintained in disparate regional offices and head offices. Incompatible with the drive towards integrated systems it was recognised that it was necessary to consolidate the national mission critical systems. The solution was sought in outsourcing major developments to a company, or consortium of companies, that would provide a complete, integrated and accountable service that adhered to recognised software development standards.

 Located in a single location to ensure common understanding and alignment the System Development Centre (SDC) was established in Virginia. Currently in its third term of tendered contract, the EPA has SAIC, and a host of subcontracting companies in a 5-year contract and $262 million budget to support its development needs. Previously disadvantaged and minority businesses are, through Federal Regulation, incorporated into the contract.

Due to the variety of systems and requirements a number of software development methodologies and key technologies are supported at the SDC. The development methods include software engineering, information engineering, proto-typing, rapid application development and object orientated analysis and design. (Note: They do not experience incompatibilities due to the different approaches that are applied). The key technologies are: Web enabled and client server Oracle, Lotus Notes, Web site development and support, Verity (search engine standard), Cold Fusion, Cool Gen as the case tool.

Clearly differentiating between development and maintenance of systems, the EPA utilises the Research Triangle Park (RTP) and a separate consortium of consultants to maintain their systems. Lockheed Martin is responsible for the support of EPA systems at the RTP. | Andrew Meranda | CIO, CD: SS |
| National Hydrographic Database (NHD) | The NHD supersedes the Reach File 1 and 3 (RF1 and RF3), which were originally built at 1:500 000 and 1:100 000 scale respectively, representing river reaches for the entire country. The NHD took a year to design in detail taking 3 USGS staff and 3 EPA staff close to full time to achieve it. | Keven Roth | D: IWQS, D: Geomatics |
| National Instrumentation Laboratory | For the USGS all new instrumentation is checked and calibrated before use to ensure accuracy of monitored results. Approximately 15% of new equipment is found to be inaccurate | Steve Blanchard | D: IWQS |

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NAWQA	A USGS - National Water Quality Assessment Program, the objectives of the program are the following:
	   Status – Describe the quality of the Nation's water resources in a nationally consistent manner
	   Trends – Assess long term trends and changes in water quality
	   Understanding – Identify, describe and explain factors that govern water quality.
	
	There are 2 major elements to the NAWQA Program:
	   Study Unit investigations and
	   Regional and national synthesis.
	
	The entire country is divided into <u>study units</u>. Each study unit is assessed in 2 phases: an active phase focused on status and an inactive phase focused on understanding trends. 15 – 20 units are studied intensively at any one time. The first cycle of every study unit investigation being complete will be in 2002. A schedule of implementation identified when a study unit will be investigated. For each study unit the following minimum skills are deployed for the investigation:
	   Surface water specialist
	   Ground water specialist
	   Biologist
	   Geographer
	   Database manager
	   Two post graduate students
	   I Undergraduate student
	   I High school student
	   I Technician.
	
	For the <u>National synthesis</u> the top 5 nutrients, pesticides, trace metals and ecological components are evaluated in both surface and groundwater. Approximately 50 specialists are given this task.
		Walton Low
		
		Pat Leahy
			D: IWQS

National Water Information System (NWIS)	The USGS storage and retrieval system for water data. Comprises of approximately 50 distributed working databases maintained in each district.	John Briggs	CD: SS
National Water Quality Laboratory	Situated in Denver, Colorado, this laboratory is responsible for organising and coordinating all laboratory analyses to ensure national consistency of results. Use of multiple labs resulted in dramatic inconsistencies of analytical results. Many samples are time dependant. A contract has been arranged with FEDEX to have a one-night turn around for the delivery of samples.	Steve Blanchard	D: IWQS
Officials	The term "Administrator" is equivalent to SA's "Minister". However, the EPA is not considered to be at the level of a full "cabinet level" agency.		

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Provision of information to the Public	ENVIROFACTS has been an award winning initiative aimed at allowing users to retrieve environmental information from eight EPA databases on Super Fund sites, drinking water, toxic and air releases, hazardous wastes, water discharge permits, grant information and the Biennial Reporting System It is legislated that the public must have access to accurate information sufficient to effectively participate in managing human health and environmental risk. As a result of the Internet and the ease of access to data, the Public want to see raw, unfiltered data.	Bill Grabsch, Pat Garvey John Armstead	CD:SS, CIO
Safe Drinking Water Information System SDWIS	SDWIS is an EPA national database storing routine information about the nations drinking water captured from approximately 175 000 public water systems. Each State reports on drinking water and provides the following information: 　Basic information on each water system: name, ID number, number of people served, type of system and source of water 　Violation information for each water system: whether it has followed established monitoring and reporting schedules, complied with mandated treatment techniques, or violated any Maximum Contaminant Levels (MCL's) 　Enforcement information: what actions states have taken to ensure that drinking water systems return to compliance if they are in violation of a drinking water regulation 　Sampling results for unregulated contaminated and for regulated contaminants when monitoring results exceed the MCL. SDWIS can be sourced through the Envirofacts website	Richard Rogers	
Standard Reference Sample Project - SRSDATA ONLINE	The USGS Branch of Quality Systems runs the SRSDATA ONLINE, an inter laboratory evaluation program undertaken semi annually. "The objectives of the program accomplish the following: 　Evaluate and improve the performance of the USGS and other participating laboratories; 　Provide a library of carefully prepared, homogeneous, stable reference materials for use in the quality control programs of laboratories; 　Identify analytical problem areas; 　Identify quality assurance needs with respect to environmental analyses and develop new reference materials to meet these needs; and 　Ascertain the accuracy and precision of analytical methods. 215 USGS and non-USGS laboratories are registered in the program which can currently provide 8 standard reference sample types."	Ken Lanfear	D: IWQS

ISSUE	PERTINENT INFORMATION	USA CONTACT	DWAF CONTACT
System development	The EPA established an outsourced System Development Centre (SDC). See MOSES	Chuck Spooner, Pat Garvey, Steve Hufford Andy Meranda Chris Bullock	CD: SS, Integrator
United States Geological Survey (USGS)	The USGS mission is to serve the United States by providing reliable scientific information to describe and understand the earth; minimize loss of life and property from natural disasters; manage water, biological, energy and mineral resources; and enhance and protect quality of life. The Water Resources Division (WRD) "provides reliable, impartial, timely information needed to understand the Nation's water resources. WRD actively promotes the use of this information by decision makers to: Minimize the loss of life and property as a result of water related hazards such as floods, droughts, and land movement. Protect and enhance water resources for human health, aquatic health, and environmental quality. Effectively manage groundwater and surface – water resources for domestic, agricultural, commercial, industrial, recreational, and ecological uses. Contribute to wise physical and economic development of the Nation's resources for the benefit of present and future generations." It is a strictly scientific, monitoring institution with no regulatory function thereby avoiding any conflict of interest. It is, therefore, seen to be fair and objective and its data is acceptable and reliable for legal purposes	Anna Lennox, Steve Blanchard	CD: SS
USGS Web	The USGS has 200 web servers with 300 000 web sites and 88 major databases. "Gateway" is the integration of the 88 databases. The Web uses geographically distributed replication servers.	Ken Lanfear	Integrator

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World Wide Web	A Presidential Executive Order to electronically record all Federal and State information precipitated a major shift in moving all information onto the WWW.
	95% of schools are online, most libraries and every regulatory office. Of the approximately 270 million people in the USA, 67 million have access to the net. This has resulted in 7.5 million web domains being created.
	
	USGS
	The web site was one of the first in 1994 with a policy decision being taken to place as much information on the Web as possible.
	The web application has four main components
	    User interface (JAVA Applet)
	    Statistical database (ArcView and Access)
	    GIS database (ArcInfo Libraries)
	    Statistical Calculation Programmes (Avenue scripts running interactively in ArcView).
	The benefits of this approach has been to be able to publish statistics and make them easily available; there is little error in the process, the process is reproducible; there is consistent delivery of information and little understanding of hydrology is required.
	
	EPA
	It took the EPA approximately 4 years to get all of their offices on board. It takes a serious commitment from all involved to keep the Web information up to date. The following has been realised through the use of the Web
	➢ There has been a major shift in media budget to the WWW. Significant cost savings in media have been realised.
	➢ There has been significant collection, storage and access of all environmental information online
	➢ There are initiatives underway to initiate the migration of key data bases onto an integrated platform
	➢ Access through the Web has increased dramatically specifically in two key areas
	    Free, immediate access to Federal Regulations encouraged industry to get online
	    Allocation of grants and funding encouraged all NGO's and funded organisations to get online
		Pat Garvey	CD: SS, Integrator

3. RECOMMENDATIONS

3.1 The following recommendations were forthcoming from both USGS and EPA officials regarding information management
    ➢ A strong manager is required to ensure the desired results are achieved. A Chief Information Officer (CIO) should be responsible for all information management

within the organisation (not just the outsourced Integrator contract as currently the situation in DWAF)

➢ The Chief Information Officer (CIO) must report to the highest level Chief Executive Officer and be fully responsible for budget and personnel
➢ The CIO should be a departmental person and not a contractual post to ensure accountability and effective policy making. A background in IT is a bonus, but more importantly the CIO needs to be a good manager and have a vision
➢ Ensure that people work together
➢ All information management operations must be integrated
➢ Organisational overheads should be consolidated (e.g. expertise and resources)

3.2   The EPA cautions that it is just a matter of time before it becomes necessary for information regarding water, air quality, waste etc. to be integrated to provide appropriate environmental solutions. If the Departments responsible for environmental management and resource protection in SA do not communicate with one another and remain in separate "stove pipes" then we will not be able to provide sustainable resource management.

      According to Dr Alvin Morris, Director: Office of Environmental Data, three components are critical for success if SA has the opportunity to start from "scratch". There should be one integrated database. All components of the database should be mapped according to their spatial attributes as a site (latitude and longitude). The output should be orientated towards graphical displays of information.

3.3   There are a number of areas in which considerable benefit can be gained from collaborating more closely with the USGS. These areas include assistance with the development of water resource quality monitoring capacity, development in the design of monitoring programmes, assistance with laboratory instrumentation, standard reference samples, coordination of laboratories, development of information technology.

3.4   Of specific value would be cooperation regarding the development of the National Hydrographic Database River Reaches for South Africa. The USGS's experience in this regard could elevate DWAF's efforts which could otherwise take considerably longer. It is recommended that DWAF send experts in the field of GIS to scientifically and technically determine the best approach required to establish River Reaches here in South Africa.

3.5   For the last decade the EPA have out-sourced their IT systems development function with great success. Their success is evident in the MOSES (Mission Oriented Systems Engineering Support) contract. It is recommended that the EPA be approached with a request to assist DWAF in setting up a contract in which IT systems development is out-sourced. The EPA has the knowledge and experience in drawing up IT tenders and contracts, and managing and maintaining IT system development contracts that can be invaluable to the department.

3.6   The assessment of water resources could be assisted by investigating the applicability of standards identified in the Section 303D report. New documents addressing the new reporting format should be available in Jan 2001; Charles Kanetsky should be contacted in this regard.

      The application of BASINS, in conjunction with the Water Management System (WMS), should be investigated to assist in the assessment of point and non point sources in catchments.

3.7   Both the EPA and USGS have established data standards and naming conventions for many of the data sets of relevance to DWAF. Instead of reinventing the wheel it is recommended that their standards be obtained, investigated and, where applicable, applied.

3.8   There could be substantial benefit for the Department to establish, or link up to, the equivalent in South Africa of a National Instrumentation Laboratory to ensure the accuracy and stability of all new analytical equipment.

3.9   Considerable progress has been achieved by the EPA in the regulation of water use. It would be in the department's interests to contact Dave Johnson of the EPA in this regard.

4.   ITINERARY AND AGENDA

DATE	AGENCY	PERSON	AREA OF INTEREST
9.10.2000	EPA Head Office	Pat and Patty Garvey	Welcome dinner
10.10.2000	EPA Head Office	Pat Garvey Marian Cody Steve Hufford	Introduction and Overview to EPA with an emphasis on the Water Program and the Office of Environmental Information
		Bill Grabsch	Office of International Activities: North American Partnerships on Environmental Protection and Economic Prosperity: Open House
			Overview of the Information Office and how information is managed at the EPA: Web Access, Public Access and Data Resources at EPA, Envirofacts Warehouse, Index of Watershed Indicators, Surf your Watershed, GIS and EnviroMapper
		Marian Cody	Data Security, Data Standards, Information Planning
11.10.2000	EPA Head Office	Steve Hufford Andy Meranda Chris Bullock	Management of Information Systems Development and visit to System Development Centre (SDC) MOSES
		Chuck Spooner	Data management, information planning
12.10.2000	USGS	Anna Lennox	Welcome
		Steve Blanchard	Introduction to the USGS and the Water Resources Division
		Ken Lanfear	Gateway to the earth and information transfer
		Keven Roth	National Hydrographic Data Set
13.10.2000	USGS	Pat Leahy	USGS International Programmes (former Chief of NAWQA)
		Walton Low	Overview of the USGS National Water Quality Assessment Program (NAWQA)
		Fransceska Wilde	Office of Water Quality, USGS water quality programs, field manual and standard procedures, water quality laboratory
		John Briggs	Testing, Data Transfer, Support, and

DATE	AGENCY	PERSON	AREA OF INTEREST
			Maintenance Unit – USGS data storage and retrieval systems
15.10.2000	EPA Region 3	Francesca Di Cosmo and Les	Welcome dinner
16.10.2000	EPA Region 3 Philadelphia	Francesca Di Cosmo John Armstead	Welcome and Overview of EPA and Region III
		Joseph Hamilton Joseph Smith Wendy Bartel Jo Kunz Thomas Voltaggio Alvin Morris	Information management at the Regional Office Level
		Joseph Smith Wendy Bartlet Don Evans	Tour of IT facilities
		Charles App Mark Barath Charles Kanetsky	Clean Water Act 303D and 305B Reporting
		Stanley Laskowski John Armstead	Overview of the Mid Atlantic Integrated Assessment (MAIA)
17.10.2000	EPA Region 3 Philadelphia	Rick Rogers	Data and Reporting Requirements under the Safe Drinking Water Act (SDWA)
		Warren Huff	Information Management – Delaware River Basin Commission (DRBC)
		Tony Shaw	Information Management: State of Pennsylvania
		John Bartholomew	Information Management: US Army Corps of Engineers (USACE)
19.10.2000	EPA Head Office		Pat Garvey
20.10.2000	EPA Head Office	Robert King Charles Spooner Pat Garvey	STORET / BASINS

5.   PERSONS VISITED

5.1   EPA Head Office

401 M Street, SW
Washington, DC
20460

Arial Rios Building

1200 Pennsylvania Ave, N.W.
Washington, DC 20460

Pat Garvey Office of Information Collection Office of Environmental Information US EPA Headquarters Mail Code 2823 Ariel Rios Building 1200 Pennsylvania Ave. N.W. Washington DC 20460 202-260-3103 202-401-0182 fax Email: pgarvey@epa.gov	Steve Hufford Office of InformationTechnology Operations and Planning Office of Environmental Information Mail Code 2834 Email shufford@epa.gov
Chris Bullock Office of InformationTechnology Operations and Planning Office of Environmental Information Mail Code 2834 Email: cbullock@epa.gov	Marian Cody Office of InformationTechnology Operations and Planning Office of Environmental Information Mail Code 2822 Email: mcody@epa.gov
Charles Spooner Office of Water Mail Code: 4503F Email: cspooner@epa.gov	Bill Grabsch Office of Information Analysis and Access Office of Environmental Information Mail Code: 2843 Email: bgrabsch@epa.gov

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John Armstead Deputy Director Environmental Services Division US EPA Region III 1650 Arch Street Philadelphia, PA 19103 215-814-3127 215-814-2782 (fax) armstead.john@epa.gov	Wendy Bartel Chief Information Systems Branch Office of Policy and Management
Joseph Hamilton Program Manager Office of Information Resources Management	Jo Kunz Office of Information Resources Management
Thomas Voltaggio Deputy Regional Administrator	Alvin Morris Director: Office of Environmental Data
Charles App Associate Director: Office of Ecological Assessment and Management, Environmental Services Division	Mark Barath Environmental Services Division
Charles Kanetsky Environmental Services Division	Stanley Laskowski Director: Environmental Services Division
Rick Rogers Chief Drinking Water Branch	Warren Huff Chief: Information Resources

Water Protection Division	Delaware River Basin Commission
Tony Shaw Water Pollution Biologist Pennsylvania	

5.2   USGS

**National Center
12201 Sunrise Valley Drive
Reston
Virginia
20192**

Anna Lenox International Water Resource Branch Email: alenox@usgs.gov	Steve Blanchard Hydrologist Water Resources Division Email: sfblanch@usgs.gov
Ken Lanfear Network Information Products Coordinator for Water Resources Email: lanfear@usgs.gov	Pat Leahy
Keven Roth Cartographer Email: kroth@usgs.gov	Walton Low 703 648 5707
Fransceska Wilde 703 648 6866	John Briggs Chief National Water Information Systems (NWIS) Testing, Data Transfer, Support, and Maintenance Unit Phone: 703 648 5624

6. KEY CONTACT INFORMATION

6.1 <u>USGS</u>

http://water.usgs.gov/

National Hydrographic Database (NHD)
Email: nhd.usgs.gov

Spatially Referenced Regressions on Watershed Attributes (SPARROW) Model
http://water.usgs.gov/nawqa/sparrow/

Standard Reference Sample
Chief Laboratory Section
USGS
Branch of Quality Systems
Denver Federal Center
Box 25046 MS 401
Denver, CO 80225-0046
Email: schroder@usgs.gov

6.2 EPA Environmental Information On-Line

Envirofacts Warehouse
Web address: http://www.epa.gov/enviro/index_java.html

Laws and Regulations
Web address: http://www.epa.gov/epahome/rules.html

EPA Information Sources, Databases and Software
<u>Online and downloadable tools to access environmental data</u>.

Example Information Topics

General Information - Find directories of systems and software to download for use in the home or office.

Media Specific - Find databases and tools that apply to specific environmental media (e.g. water, air, land, pesticides)

Integrated Media - Find tools that address the relationships of all environmental media.

Geographic Information Systems - Information about systems and software used to support mapping of environmental data.

Technical Tools - Find tools to assist in modelling environmental conditions, assessing water quality and more.

Environmental Test Methods & Guidelines - Test methods found on the Agency web site and sources for acquiring test methods from the EPA.

EPA Models - Models are used to increase the level of understanding about natural systems and the way in which they react to varying conditions.

Envirofacts - A national information system that provides a single point of access to data extracted from seven major EPA databases.

Environmental Data Registry - A data registry which allows you to retrieve

information about the data elements used in selected EPA systems.

Environmental Information Management System - Access to descriptive information (metadata) for data sets, databases, documents, models, projects, and spatial data.

Surf Your Watershed - A service to help you locate, use, and share environmental information on your watershed or community.

EPA/State One Stop Program
http://www.epa.gov/reinvent/onestop/index.html

Environmental Council of States-Environmental Information Management
http://www.sso.org/ecos/projects/EIM/eim.htm

Region's have their own Web-sites with links to their State Environmental Agencies
Region III for example links to the 6 States in the Mid-Atlantic region
Delaware   http://www.dnrec.state.de.us/DNREC2000/

District of Columbia   http://www.environ.state.dc.us/

Maryland   http://www.mde.state.md.us/

Pennsylvania   http://www.dep.state.pa.us/

Virginia   http://www.deq.state.va.us/

West Virginia   http://www.dep.state.wv.us/

7.   GENERAL INFORMATION

AREA OF INTEREST	PERTINENT INFORMATION
Transport	Very easy to find your way around Washington by means of taxi, underground, train and tourist busses
Dress code	Washington is smart and official
Hotels in Washington	Take care to book a long time ahead. Washington and its immediate surrounds can get completely full and you can find yourself with nowhere to stay. Remember to ask for Government rates when you book.

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9. DISCLAIMER

All attempts to capture mountains of information succinctly and truthfully have been made. If, however, the authors have misinterpreted information and represented that information poorly, our apologies are given unequivocally.