

## COMPONENT FOUR

### RESOURCES

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#### 4.1 INTRODUCTION

The state is committed to meeting the needs of a State Management Plan (SMP) with personnel trained in agronomy, hydrology, pedology, geology, pesticides dynamics, human health, chemistry and economics. Assistance from various cooperators: the Environmental Protection Agency (EPA), the South Dakota Department of Agriculture (SDDA), the Department of Environment and Natural Resources (DENR), the Department of Health (DOH), South Dakota State University (SDSU), the Natural Resources Conservation Service (NRCS), pesticide dealers, the Fertilizer and Ag Chemical Association and the pesticide registrant will ensure South Dakota's SMPs are the best they can be.

#### 4.2 PERSONNEL

##### 4.2.1 SOUTH DAKOTA DEPARTMENT OF AGRICULTURE

*Organizational Structure* - Agricultural Services is one of three divisions in SDDA and within the division, the Office of Agronomy Services is responsible for developing and implementing the SMP. The Office is made up of seven program specialists, two agricultural investigators (primary responsibilities: complaints and investigations) seven agricultural inspectors (primary responsibilities: investigations), six agricultural inspectors (primary responsibilities: routine compliance inspections) and an office administrator. The SMP activities will be carried out by the SMP program specialist, the enforcement program specialist, and the agricultural inspectors. The Office of Agronomy Services administrator will oversee their activities.

*Technical Expertise* - The following are the educational and experience requirements for the administrator, program specialists and inspectors who are responsible for the SMP activities.

**Administrator** - This person oversees programs of statewide importance to the agricultural community. These programs protect the public, environment, and economic interest of agriculture. The incumbent must have a thorough knowledge of the economic and environmental ramifications of environmental and natural resource management. A thorough knowledge of all federal and state laws and rules dealing with agriculture and the environment is required. The incumbent must be able to effectively communicate both orally and in writing. The incumbent must be able to work cooperatively with staff, federal, state and local officials, as well as the public. A bachelor's degree in an agricultural field along with three years professional service in agriculture is required.

**Program Specialist** - This position oversees statewide agricultural programs, provides technical support to staff and industry, and coordinates agricultural program activities. The position requires the incumbent to interpret state and federal regulations, supervise professional staff and develop and administer agricultural programs. A thorough knowledge of environmental and natural resource management must be balanced with agricultural economic considerations.

Some knowledge of the states water resources is also necessary. An understanding of pesticide leaching and runoff properties, soil properties, and the interactions that can take place is necessary. Cooperative working relationships with federal, state, and local agencies is necessary. Technical report writing and oral communication skills are required. A bachelor's degree in an agricultural field along with two years equivalent combination of education and experience is required for the position.

**Agricultural Inspector** - This position is the investigative arm of the department. An incumbent inspects facilities, establishments, agencies, equipment, products, and individuals; collects samples, investigates adverse incidents to persons and the environment; recommends or takes enforcement action to ensure compliance with state and federal regulations concerning the storage, transportation, handling, disposal, and use of agricultural products. There is daily contact with producers, business owners, and the public. Pollution prevention programs enacted for the protection of people and the environment depend on the compliance evaluation capabilities of the field personnel. Educational requirements are a bachelor's degree in an agricultural field and no experience is necessary.

#### 4.2.2 S. D. DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

*Organizational Structure* - The DENR is organized into two divisions. They are the Division of Environmental Services and the Division of Financial and Technical Assistance. The Ground Water Quality Program is one of six programs within the Division of Environmental Services. The Geological Survey is a program in the Division of Financial and Technical Assistance. The DENR's responsibilities for the Pesticides and Ground Water State Management Plan (SMP) will be primarily accomplished by the Ground Water Quality and Geological Survey Programs. Department of Environment and Natural Resources personnel involved in the SMP consists of one or more of the following positions: natural resources engineer, geologist, natural resources technician, and hydrologist.

*Technical Expertise* - Following are the education and experience requirements for the DENR positions responsible for SMP activities.

**Natural Resources Engineer** - This position is responsible for supervising statewide natural resources engineering programs or major projects with significant statewide impact to ensure implementation of programs and compliance with state and federal statutes, regulations and policies. An incumbent in this position is required to have knowledge of the principles of environmental and natural resources engineering; the principles and practices of the environmental control and natural resources fields; the causes and control of pollution; laws and regulations pertaining to environmental quality and natural resources management; investigative procedures; the state's natural resources; and technical report writing. The incumbent must be able to effectively deal with the public and to plan, organize, and direct work effectively. An equivalent combination of education and experience of the following is required: a bachelor's degree in civil, geological, or environmental engineering, and up to three years of responsible experience in environmental control or natural resources fields is necessary.

**Geologist** - This position conducts major geologic and/or hydrogeologic investigations to evaluate geologic and hydrologic resources in a specific area. An incumbent in this position is required to have knowledge of: the principles of geologic and hydrogeologic investigative procedures including knowledge of methods and equipment used in geological explorations; principles and practices of geology; technical report writing; mathematics; physics; and chemistry. The incumbent must have an analytical ability and be able to prepare and present accurate reports both orally and in writing. The incumbent must be able to conduct geologic and/or hydrogeologic investigations. An equivalent combination of education and experience is required; a bachelor's degree in geology, geological engineering, and one year of experience as a geologist is necessary.

**Natural Resources Technician** - This position inspects, investigates, records, obtains samples of natural resources, and maintains equipment necessary to perform these functions; assist in other field or office capacities as assigned; and assists in the assessment of natural resources of the state. An incumbent in this position is required to have knowledge of: basic methods and equipment used in geologic and hydrogeologic investigations; map reading; and of basic terminology and principles of natural resources. The incumbent must have the ability to gather and compile information accurately and operate and maintain the equipment used in the job. An equivalent combination of education and experience is required; a high school diploma or possession of a GED certificate and one year of experience related to natural resources is necessary.

**Hydrologist** - This position is responsible for supervising major hydrology programs and research projects to ensure compliance with state and federal statutes, regulations, policies, and guidelines, ensuring that adequate information is available for proper development and protection of the state's water resources. An incumbent in this position is required to have knowledge of: the principles of hydrology; hydrological investigative procedures; the state's water resources; the laws and regulations pertaining to the state's water resources; and technical report writing. The incumbent must be able to effectively deal with the public, work with and advise others in technical matters including hydrology, communicate well, and have analytical ability. An equivalent combination of education and experience is required; a bachelor's degree in hydrology, geology, geological engineering, civil engineering, agricultural engineering, or a related engineering field and up to three years of experience as a hydrologist is necessary.

#### 4.2.3 NATURAL RESOURCES CONSERVATION SERVICE

*Organizational Structure* – The Natural Resources Conservation Service is the lead conservation agency under the United States Department of Agriculture (USDA). The NRCS speaks for the health and well-being of the nation's land-soil, water, air, plant, and animal resources. The NRCS relies on many partners to help set conservation goals, work with people on the land, and provide assistance. Its partners include conservation districts, state and federal agencies, NRCS Earth Team volunteers, agricultural and environmental groups and with their own technical and support staff.

The nation's 3,000 conservation districts – virtually one in every county – are the heart of the conservation delivery system. These units of local government, organized by local citizens under state law, operate on the premise that local people know the most about local needs. They link NRCS with their neighbors and with local priorities for soil and water conservation. They also augment the work of NRCS conservationists with district programs and with their own technical and support staff.

The strength of NRCS is in its work force. Most of NRCS's employees serve in USDA's network of local, county-based offices. The rest are state, regional, and national offices, providing technology, policy and administrative support.

In South Dakota, NRCS has 66 field and tribal liaison offices located across the state. In addition, South Dakota has support staff located in Huron and field support offices located in Brookings, Pierre, and Rapid City.

*Technical Expertise* - NRCS personnel that might be involved in the SMP consist of, but are not limited to, the following positions:

**District Conservationist** – The incumbent in this position is responsible for developing and carrying out a comprehensive soil and water conservation program in support of the local conservation district. The principal role of this position is to advise and assist landusers in the development of Conservation Management Systems. The incumbent works with landowners and operators, individually and in groups, to develop conservation plans and apply practices according to established policies and procedures, and in accordance with the landuser's decisions. The incumbent also assists the local conservation district with technical guidance, participates in district meetings, and serves as the agency representative to the board.

**Soil Scientist** – The incumbent in this position is responsible for updating soils information and providing basic soil services to users of soils information for proper land use and conservation planning. Soils scientists are responsible for mapping soils in soil survey areas, updating older surveys, provides leadership in developing soil potential ratings, and preparing descriptions and interpretations for map units in accordance with National Soils Handbook standards. The incumbent also is responsible for maintaining soil information contained in the South Dakota Technical Guide, providing assistance to agencies, groups, and individuals on the utilization of published soil survey information, and on-site soil inventories and evaluations.

**Geographic Information Systems Specialist** – The specialist in this position serves as the Geographic Information System (GIS) specialist in support of natural resource programs with a primary focus on integrating NRCS natural resource planning principals and guidelines with GIS for the NRCS field offices. The incumbent assists in identifying and trouble shooting problems in resource inventories and soil delininations when identifying and obtaining available soil survey spatial and tabular data needed for analysis. Produces GIS products to facilitate communications with project sponsors and the general public. Supports projects statewide by acquiring digital soils data, developing workable GIS methods, transferring data efficiently, and producing outputs. In addition, the incumbent provides GIS technical support and consultation to other agencies, i.e., U.S. Geological Survey, Bureau of Indian Affairs, and Indian reservations.

**Agronomist** – The incumbent in this position provides technical leadership, guidance, and assistance in the agronomic phases of all NRCS programs. Technical guidance and direct assistance to field office personnel is provided to carry out compliance planning for the Food Security Act and Food, Agriculture, Conservation, and Trade Act. In addition, the agronomist is responsible for solving agronomic problems on individual farms or group projects. Assistance with vegetative and management practices to secure a balanced program of soil and moisture conservation. Conducts training in Agronomy for field office personnel. Provides information to field offices on agronomic techniques for inventorying, analyzing, and selecting treatment alternative and use and application of the Revised Universal Soil Loss Equation and the Wind Erosion Equation. The incumbent provides leadership in promoting conservation tillage through tours, conferences, and assistance to field offices. Works with operators, groups, units of government, and business people to stimulate interest, different farming methods with improved agronomic, economic and environmental benefits.

**Agricultural Engineer** – The incumbent in this position provides professional engineering services in field investigations, design, installation, and maintenance of engineering practices in the area served. Conducts investigations to obtain planning and design data for engineering practices such as floodwater retarding structures, waterways, irrigation structures, determines need, makes site selection, supervises installations, and checks completed practices, spot checks works of improvement at the field office level, advises field office staff on engineering procedures, develops technical guidelines for use by technicians, and develops preliminary designs for structures of varying engineering complexity.

#### **4.2.4 SOUTH DAKOTA BOARD OF REGENTS**

##### **South Dakota State University - South Dakota Agricultural Experiment Station**

*Technical Expertise* – The SDSU Agricultural Experiment Station (AES) provides research based answers to agricultural issues in South Dakota. Technical expertise is available at the AES, but funding support is needed to carry on applied research efforts, and to allow the development of educational programs specifically dealing with water quality and pesticide SMP issues. At the AES staff are experts in most areas of pest management and pesticide behavior. These individuals are available to consult with SDDA and contribute to the development and evaluation of the SMP.

## South Dakota State University - Cooperative Extension Service

*Technical Expertise* - The South Dakota Cooperative Extension Service (CES) provides unbiased research based information to the agricultural community. Extension Specialist in the Agricultural and Biological Sciences college at SDSU and Extension Agents in the counties across the state provide education regarding ground water contamination prevention and correct pesticide use. A portion of the SDDA and EPA Consolidated Pesticide Cooperative Agreement has been designated to provide training to pesticide applicators in South Dakota. This is a joint project between SDDA and SDSU. This cooperative effort between SDDA and SDSU on both private and commercial pesticide applicator training undergoes a yearly review and update.

The CES at SDSU has established diverse educational and technical expertise with programs addressing pesticide and water protection SMP related issues. Areas addressed are pesticides, water quality, environment, environmental health, and agricultural education through integrated pest management, pesticide applicator training, sustainable agriculture, waste management, and water quality programs.

### 4.3 FUNDING

SMP costs will be met through a variety of federal, state, county, and private agencies, along with participating individuals and companies (refer to Box 4.1 for planning category and participant).

<b>Box 4.1</b>
<b>Planning Category And Participants</b>
<b>Plan Development</b> - SDDA, DENR, and the Advisory Group;
<b>Product Development, Label Changes, Registration, Reregistration</b> - Registrant and SDDA;
<b>Monitoring</b> - DENR, SDDA, Registrant, and local PWSs;
<b>Immediate Response and Cleanup</b> - SDDA, DENR, Registrant, and the Responsible Party;
<b>Long Term Cleanup</b> - Responsible Party;
<b>Prevention Measures</b> - SDDA, SDSU, NRCS, DENR, Dealers, and the Registrant;
<b>Research</b> - SDDA, SDSU, and Registrant;
<b>Education and Public Information</b> - SDSU, SDDA, DENR, Retail Dealer, Commodity Groups, and Registrant;
<b>Soils</b> - NRCS, SDDA, and, SDSU; and
<b>Enforcement</b> - SDDA and DENR.

#### 4.3.1 SOUTH DAKOTA DEPARTMENT OF AGRICULTURE

The SDDA receives State general funds, EPA Pesticides and Ground Water funds, EPA Enforcement funds, EPA Certification funds, EPA Pesticide Handling and Disposal Program funds, and State, Federal and other Special funds when available (for example 1993 - \$200,000 in flood relief for flood damaged pesticides). The Performance Partnership Agreement (PPA) contains the most current funding information for each category and is available upon request.

The SDDA collects fees from the registration of pesticide products (approximately 80% of the pesticide products registered are for non-agricultural use). The biennial fee is \$175/product. Of this amount SDDA receives \$40/product for pesticide program use. The department also collects a \$25 fee for each pesticide applicator license issued. The SDDA has the authority to charge a fee of \$5 for each private pesticide applicator certification issued, but to date has not implemented the charge. The department for each pesticide dealer's license issued collects a fee of \$50. The department Waste Pesticide Collection, Disposal and Container Recycling Program collects \$25/pesticide product registered in South Dakota. The department has the authority to accept donations from public and private sources. To date support of the SMP process has been through the realignment of current funding sources. As the SMP process moves forward in South Dakota, current funding levels will be reevaluated.

#### **4.3.2 DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES**

The DENR also receives state general funds and EPA grant funds. Under the PPA, through both section 106 of the Clean Water Act (Ground Water) and section 319 the Clean Water Act (Nonpoint Source), the DENR receives EPA funds that are applicable to the development and implementation of SMPs. State Management Plan funding is included in the PPA with State, EPA and other funding information available upon request. The DENR GWQP will continue to participate as necessary in SMP efforts through this agreement.

Currently, a statewide ground water quality monitoring network is being established by DENR. One of the uses of the network will be to examine pesticides in ground water. Establishment of the network is being funded through DENR (\$182,000 state funds) and an EPA section 319 grant (\$237,000). This includes installation of the monitoring wells and dedicated sampling equipment for each well. Sampling and analysis of ground water from the network will cost approximately \$98,000 to \$117,000 annually at current sampling frequencies and for current lists of analytes.

#### **4.3.3 REGENT PROGRAMS**

##### **South Dakota State University - South Dakota Agricultural Experiment Station**

There are no specific funds allocated for research related to ground water protection. When particular research needs develop, grant funding or other funding will be secured to allow specific pesticide and water quality questions to be investigated.

##### **South Dakota State University - South Dakota Cooperative Extension Service**

Funds are available for general pesticide education, which includes ground water and surface water protection, however no funds are designated specifically for SMP pesticide education. As ground water protection needs develop, resources will be allocated to address those needs based on the severity of the problem and the availability of funds.

#### **4.3.4 REGISTRANT<sup>1</sup>**

The registrants' expertise, assistance and cooperation will be sought and encouraged when carrying out the following activities:

- Monitoring;
- Remediation;
- Providing Safe Drinking Water;
- Inspections;
- Education;
- Remediation;
- Well Replacement;
- BMP Development;
- Chemical Expertise;
- Public Education;
- Product Reformulation;

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<sup>1</sup> Registrant – "Registrant" means a person who has registered any pesticide pursuant to the provisions of the Federal Insecticide Fungicide and Rodenticide Act

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- Site Assessment;
- Monetary Incentives; and/or
- Label Changes.

#### 4.3.8 DEALERS/FERTILIZER AND AG CHEMICAL ASSOCIATION

Dealers annually provide updated agricultural management programs to their customers. As the SMP process is developed and implemented dealers can incorporate best available SMP information into their programs. Specific label information, as well as water quality and pesticide use data can be presented as a service to their customers.

#### 4.4 FUTURE FUNDING

The following estimates are for SMP development and implementation. Funding sources for complete SMP development and implementation have not yet been determined. However, it is anticipated that EPA, the state and the registrant will bear most, if not all of the costs for SMP development and implementation. Future funding sources may include, but are not limited to state general and other funds, registrants, EPA sections 106 and 319 funds, pesticides and ground water funds, and the Agricultural Conservation Grants Program.

##### 4.4.1 SOUTH DAKOTA DEPARTMENT OF AGRICULTURE

The SDDA will continue looking to EPA for funding of the SMP. It is hoped that more federal resources will be secured to implement the SMP process. A program specialist will continue the development and implementation of the SMP.

- Estimated costs for Pesticides and Ground Water Aquifer Vulnerability Mapping will be between \$700 and \$800 per 1:24,000 scale quadrangle for the following basic information layers: transportation; hydrography; surficial aquifers; soils; well head protection areas; and aquifer sensitivity<sup>2</sup>. There are over 1,500 7.5' quadrangles for the state. Not all represent areas of a sensitive nature and so not all will need to be digitized. It is estimated that 75% of the quadrangles may need to be digitized. Work will continue with SDDA, the East Dakota Water Development District (and the other districts), the NRCS, DENR, county governments and Plains Research to develop these base maps. The estimated cost of this project over the next 10 years is approximately \$500,000.
- Collection of pesticide use and sales data will come from several sources. The SDDA will work with the pesticide industry, SDSU, and the state Agricultural Statistics Service to develop the most effective and efficient method to obtain pesticide sales and use data. The cost for this project is estimated at \$20,000 per year.
- Enforcement actions and investigative costs related to PSSMPs may require additional enforcement funding from EPA. A funding level increase will be dependent on the number of ground water pesticide detections.

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<sup>2</sup> A watershed map layer has been suggested as an additional layer to the base map.

#### 4.4.2 DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

Funding sources for the remediation of pesticide contaminated ground water may vary. The responsible party handles point source pesticide contamination remediation. Nonpoint source pesticide contamination remediation has no special specific funding and may involve federal, state, local and registrant funding opportunities.

- Two staff members will allocate most of their time to the collection of ground water and surface water samples, data compilation and interpretation, sampling network maintenance, and other concerns related to the SMP. It is estimated \$55,000 per year in SMP costs will be only a portion of a larger water quality assessment effort.
- Estimated cost of laboratory analysis of water from the Statewide Ground Water Quality Monitoring Network for one year is approximately \$50,000 for sample analysis of between 23 and 27 pesticides plus \$35,000 for sampling shipping and other laboratory analytical costs. If the frequency of sampling is increased above that described in component six of this document and if an expanded list of analytes is required, then the associated costs will rise commensurately.

#### 4.4.3 REGENT PROGRAMS

##### *Cooperative Extension Service*

Many of the activities the CES will be involved in will involve redirection of county and extension specialist staff to address the information and education efforts of the SMP.

- Additional operation and maintenance funds will be necessary. The current CES estimate is \$13,000 per year in additional funds will be needed to develop and implement the SMP.

##### *SDSU - Teaching*

Additional funds are needed to complete expected SMP activities. Also, as development of PSSMPs are undertaken a Pesticides and Ground Water Advisory Group (PAGWAG) may uncover additional educational funding needs.

- The additional funding need for updating and maintaining preventative ground water contamination educational materials is estimated at \$2,000 to \$3,000 per year. Initial educational material development may require additional staff, estimated at \$10,000 for the first year to meet educational objectives.

##### *Agricultural Experiment Station*

Additional funding is needed for SMP related research.

- The total one time cost of funding required for Pesticide Contamination in Ground Water Research is estimated between \$100,000 and \$150,000 for in-house evaluation, development of best management practices, and study of leaching mechanisms of a specific pesticide to prevent or reduce pesticide contamination in ground water.

#### 4.4.4 USDA -NATURAL RESOURCES CONSERVATION SERVICE

The objective of the NRCS is the sound use and management of South Dakota's natural resources to prevent their degradation and assure their sustained use and productivity while considering the social, cultural, and economic needs of landusers. This objective is implemented by the voluntary planning and application assistance provided to landusers in the implementation of sound conservation management systems. The role of NRCS in the SMP is to act with other state and federal groups or agencies on policy development, technology transfer, and information dissemination to landusers.

- To accomplish these actions in the SMP, NRCS, in South Dakota, will continue to involve staff in the development of the SMP and the PAGWAG. The NRCS field offices will also be available to disseminate information pertaining to sound ground water and surface water management. In addition, if an identified ground water or surface water concern arises, (i.e., special restrictions placed on the use of a pesticide identified in a pesticide specific SMP) these concerns will be addressed in Resource Management System planning with producers in the affected area.

#### 4.4.5 REGISTRANTS:

The registrants of SMP pesticides may offer their expertise, assistance and cooperation in dealing with SMP activities. The following is a current list of registrants registering proposed SMP pesticides in South Dakota:

- NOVARTIS;
- UNITED AGRI PRODUCTS;
- ZENECA INC;
- MONSANTO COMPANY;
- BASF CORPORATION;
- RHONE - POULENC;
- DUPONT;
- DOW ELANCO; and
- BAYER.

#### 4.4.6 FERTILIZER AND AG CHEMICAL ASSOCIATION

The Fertilizer and Ag Chemical Association may offer its expertise, assistance, and cooperation in dealing with SMP activities.