AGRICULTURE

BACKGROUND

Agricultural activities in Washington are a significant contributor to the economy. They represent about 20 percent of the gross State product at the retail level. Over 250 different crops are grown in the State. Some crops, like spearmint, represent most of the national and, in a few cases, international market. The figures below show the importance of agricultural activities in Washington.

Number of farms	15,465
Total Acres	15,179,710
Value of Products	$4,767,727,000
Agricultural land base	35.6 percent (percent of total land)

(1997 Census of Agriculture, National Agricultural Statistics Service, USDA)

For the purposes of this document, agriculture is defined as the growing of crops or the keeping of livestock for commercial sale and/or personal benefit. Agriculture in Washington State is a diverse industry that encompasses everything from very large commercial livestock operations to very small part-time crop or livestock producers. Markets include industrial distribution systems and systems that market farm products through local cooperatives, farmers markets, or private contacts.

There are numerous programs that work with the agricultural community. By far the biggest assistance programs for agriculture are offered through local conservation districts and provided by the combined resources of the districts, Natural Resources Conservation Service, Farm Services Agency, and WSU Cooperative Extension. The State Department of Agriculture supports agricultural commodities and regulates certain agricultural practices. The Department of Ecology supports implementation of agricultural BMPs, to reduce the pollutant stream that runs off agricultural lands and provides enforcement support.

Large commercial livestock operations in Washington include dairy herds, herds of replacement dairy heifers, poultry raised for eggs and meat, and cow/calf operations raising beef cattle for slaughter locally or shipment to feedlots. However, most large concentrated animal feeding operations (CAFOs) are considered point sources of pollution and are regulated under the NPDES program.

Numerous smaller operations also qualify as "commercial" in nature. In addition to smaller versions of the types of operations listed above, horse breeding and the raising of pigs, sheep, dairy goats, geese/ducks, rabbits, and exotic animals such as llamas, emus and ostriches occur within the state. Livestock grown strictly for personal use comprise a significant portion of the total livestock numbers the state.

Plant-based agriculture in Washington includes cut flowers, bulbs, vegetables, fruits, nursery stock, berries, cranberries, orchards, vineyards, pasture grass for forage, and corn or other crops for silage, hay, and grains.

NONPOINT POLLUTION ASSOCIATED WITH AGRICULTURE

A report that Ecology prepared for EPA characterizing water quality conditions and sources in Washington found that 55 percent of impaired streams were degraded by agricultural activities. Most of the degradation was associated with fecal coliform contamination, high temperature, and excessive nutrients (305b report, 1998.)

The most common sources of surface water pollution from agricultural activities in Washington State are livestock manure, sediment, and loss of trees in riparian areas that results in increased surface water temperature. Overgrazed pastures, animal confinement areas, and eroding stream banks on cultivated or grazed lands contribute to the problem. In addition to impacts on surface waters, ground water has been polluted from manure applied to fields, application of commercial fertilizers, and pesticides and fungicides.

The effects of soil erosion on water quality are loss of in-stream habitat, increased temperature, and sedimentation. Ambient monitoring clearly shows that impairment to water quality exists in Washington's dry-land agricultural areas, particularly where soils are highly erodible as in the Palouse region. Sheet and rill erosion caused by rain and snowmelt affects 4.3 million acres (69 percent) of non-irrigated cropland statewide. Considerable soils are lost each year, with erosion rates in some locales exceeding 40 tons per acre per year (USDA, 1984). In most of western Washington, soil losses and associated water pollution by non-irrigated agriculture are much less pronounced, although some localized problems exist.

Irrigated agriculture effects on surface water quality in Washington are clearly documented in both the Columbia and Yakima basins, the State's two major irrigation regions. Of the 1.8 million acres of irrigated land in Washington, 575,000 acres are located in the Columbia Basin and 520,000 in the Yakima Basin (USDA, 1984). The remaining 700,000 acres are scattered throughout the State.

Soil loss caused by the application of irrigation water is estimated to be about 11.5 million tons annually (USDA, 1984). Sediments degrade fish habitat and decrease water clarity. Irrigation return flows draining agricultural areas carry pesticides and fertilizers to rivers and streams. Irrigation also increases the potential for leachable materials such as pesticides and fertilizers to reach ground water.

The major categories of animal feeding operations in Washington include beef cattle (290,000 mature animals), dairy cattle (260,000 mature animals), hogs and pigs (39,000 mature animals) sheep and lambs (62,000 animals) and poultry operations (animal numbers not available). Effects on surface and ground water quality from improperly managed manure and wastewater include high levels of fecal contamination, increased nutrient loads, and sedimentation. These are caused by confinement area runoff and

infiltration, improper manure spreading, excess surface runoff from overgrazed pastures, trampling of streamside vegetation, and direct access to streams by animals.

Grazing and rangeland management activities create a significant potential for water pollution, particularly in eastern Washington. According to the Washington State Grazing Land Assessment, a joint study by the Washington Rangeland Committee and the Conservation Commission, about one-third of the state, including both rangeland and associated agricultural and forested land, is grazed by livestock. Rangeland covers about 7 million acres, with an additional 5.5 million acres in grazable woodland. Since the riparian zone is attractive to animals for its lush vegetation for forage and water source, the primary effect of grazing on water quality is largely due to degradation of the stream corridor.

Dairy farms are the only category of animal feeding operation currently required to develop and implement nutrient management plans to prevent and correct water pollution problems. The 1998 Dairy Nutrient Management Act (Chapter 90.64 RCW) requires nutrient management plans be developed and fully implemented by December 31, 2003. Water pollution issues at other categories of animal feeding operations have been and will continue to be addressed through complaints and the Total Maximum Daily Load requirements in the federal Clean Water Act.

Beneficial uses are threatened or impaired in many areas of the state due to these diffuse agricultural sources of pollution. The 1989 assessment of nonpoint sources of pollution (319 Plan) determined that agriculture (and particularly animal keeping) has a greater impact on rivers than any other major source of nonpoint source pollution. Nearly half the river miles assessed in the report suffered impacts associated with farm animals, such as runoff from pastures and holding areas, and destruction of riparian vegetation.

SOURCE CONTROL STRATEGY

Washington's nonpoint source pollution control efforts in agriculture focus primarily on the voluntary actions of growers and producers linked with assistance and incentives from government. Enforcement usually targets producers who do not cooperate with local efforts to improve water quality.

Education and Technical Assistance. Implementing this program requires an extensive working relationship with growers and producers which is shared by local conservation districts, the State Department of Agriculture, Washington State University Cooperative Extension (CE), the State Conservation Commission, and the US Department of Agriculture through its Farm Services Agency and Natural Resources Conservation Service. The key points of this approach are summarized below.

The first step in this approach is direct education and technical assistance to growers. CE and local conservation districts provide this service. The water quality program at CE is educating growers on BMPs. In its 1998 Performance Plan, CE committed to several

educational goals. Some of these goals, along with achievements for 1998, are summarized in table 5.1.

Table 5.1
Education Targets for Agricultural BMPs
Washington State University Cooperative Extension

BMP Category	Units	1998 goal	1998 actual	Annual goal: 1999 – 2001
Animal waste	Farmers/ranchers	800	1340	1200
Nutrients	completing	897	2460	2000
Pesticides	educational	781	1333	1200
Irrigation	programs	715	1750	1200
ther water quality		3135	1634	1600
Animal waste	Total number of	33,000	48,750	40,000
Nutrients	acres on which	40,000	61,190	50,000
Pesticides	BMPs have been	33,000	73,110	60,000
Irrigation	applied on an	33,000	362,600	350,000
Other water quality	annual basis	30,800	35,630	35,000

CDs play a significant role in educating and technically assisting large and small landowners. For example, in the 1999 Biennium Water Quality Appropriation Report, districts reported 18,309 contacts with persons receiving information at meetings or some type of group session, and 3,351 who received direct one-on-one technical assistance. Conservation districts will be reporting BMP implementation through their efforts to the Conservation Commission.

CE also offers Farm*A*Syst, a nationwide educational program designed to improve ground water quality on farms and protect drinking water supplies. Farm*A*Syst helps farmers to prepare and implement individual farm plans in an effort to improve management of pesticides and fertilizers. A similar effort called HOME*A*SYST is offered by CE to urban homeowners.

Education plays an increasingly important role as a strategy to control agricultural sources of pollution. Cooperative Extension, CDs, NRCS, and Ecology all have prominent educational programs. One particularly successful program is Ecology's Padilla Bay National Estuarine Research Reserve.

The Padilla Bay Reserve has a demonstration farm that provides a practical laboratory where agricultural BMPs can be investigated, demonstrated, and transferred to other agricultural producers. Using a collaborative management structure, the farm is operated through advisory groups led principally by Skagit Valley farmers, Skagit Conservation District, Washington State University, and Padilla Bay staff.

Technical assistance is critical to water quality improvement in Washington's agricultural areas. NRCS focuses on the development of comprehensive farm plans. These plans promote integrated approaches including but not limited to conservation buffers, conservation tillage, nutrient management, and pest and disease management. NRCS employs a combination of standards described in the FOTG to assemble a plan that meets the overall needs of the farmer tailored to the farm site.

Incentives. Financial incentives are provided through various agencies. The current priority is the implementation of the Conservation Reserve Enhancement Program. The $250 million in this program will be used to restore between 3,000 and 4,000 miles of riparian habitat in agricultural areas over the next 15 years.

NRCS also provides cost-share and land leases for conservation through:

- Environmental Quality Incentives Program (EQIP)
- Conservation Reserve Enhancement Program (CREP)
- Wildlife Habitat Incentive Program (WHIP)
- Wetlands Reserve Program (WRP)

State funds are available to implement BMPs through grants from the Conservation Commission and Ecology's Water Quality program. Low-interest loans are also available to commodity groups and local governments from Ecology's State Revolving Fund.

Washington departments of Agriculture and Health also enforce laws and regulations related to nonpoint source pollution from agricultural sources. Agriculture regulates the use of registered pesticides and applicators of those pesticides. Health regulates human exposure to pesticides.

Enforcement

Agricultural Compliance Memorandum of Agreement. In 1988 the Department of Ecology, Washington Conservation Commission, and 47 of the state's 48 conservation districts entered into the Agricultural Compliance Agreement (MOA) The purpose for the MOA is to:

- Recognize the working relationship between these agencies in protecting water quality of the state;
- Coordinate the functions of these agencies; and
- Carry out a program of agricultural water quality protection and management.

The Agreement is largely complaint driven. If a complaint is received and verified by Ecology, the landowner is initially provided an opportunity for voluntary compliance. The landowner is given up to 6 months for development of a conservation plan and up to eighteen months to implement the plan. Technical assistance is provided to the landowner through their local conservation district. The conservation plans must meet applicable US Natural Resource Conservation Service standards and specifications.

The Agreement provides that if a landowner does not cooperate, Ecology will take enforcement action to prompt compliance. The agreement also provides that Ecology will require immediate corrective action if conditions posing a significant threat to the environment are identified.

The Agreement defines a consistent series of steps to help coordinate Ecology's water pollution control responsibilities with conservation district programs that provide technical assistance to landowners. Through its local conservation district office, a small farm owner may receive technical assistance to help develop and implement a water quality management plan or "Farm Plan". Farm Plans identify reasonable and economical ways to manage the farm to prevent or correct a water pollution problem.

It should be noted that dairy farm water quality issues are handled under the 1998 Dairy Waste Management Act. Under this act, farms that cause pollution are required to develop and implement animal waste management plans and obtain coverage under the statewide Dairy Waste General Discharge Permit.

The following series of steps are followed if Ecology receives a water quality complaint involving a farm:

1. Regional water quality staff will contact the operator and visit the site to see if the complaint is valid. If a water pollution problem does not exist, the complaint is dismissed.

2. If a pollution problem is verified by Ecology, the farm will be referred to its local conservation district for assistance. The agreement provides that Ecology will require severe pollution problems be corrected immediately if a potential threat to public health exists.

3. Normally, however, once a farm is referred to their conservation district, it has six (6) months to develop a Farm Plan with assistance from the conservation district. The plan will include best management practices (BMPs) to correct the identified water quality problems.

4. Then, the farm has an additional 18 months to implement the plan. The conservation district will continue to provide assistance.

5. If the farm owner chooses not to cooperate by voluntarily correcting the problem, the Agreement specifies that Ecology will take enforcement action if necessary to solve the water quality problem.

Over the last seven years, Ecology has been involved in numerous complaint resposnes and referrals to conservation districts. This partnership has resulted in good water quality improvement. In the vast majority of cases, farmers have worked cooperatively with district personnel to address the problems. In the few cases where the farmer is not

willing to work cooperatively or has failed to implement their farm plan, Ecology has stepped in and issued administrative orders and in several cases penalties for noncompliance and water quality violations.

Managing Dairy Waste. *Since adoption of 208 Plans under the federal Clean Water Act in the 1970's, dairy farms have been the priority category of animal feeding operation in Washington needing to improve animal waste management practices to achieve federal and state water quality goals. Dairy farms continue to be the priority category of animal feeding operation being addressed by Ecology.*

In 1998 the Washington state legislature enacted significant changes to the State Dairy Nutrient Management Act (Chapter 90.64 RCW). Ecology received additional funding to increase the number of dairy field inspectors from 3.5 FTE's to 7.5 FTE's. Two additional positions help implement this 1998 Act, including a statewide Program Coordinator and Dairy Database Administrator.

The major requirements of the new 1998 Dairy Nutrient Management Act are:

- *By September 1, 1998, and by that date every even-numbered year thereafter, Ecology must register all commercial dairy farms to provide baseline information on the industry. To date, 99% of the states dairies have registered.*

- Ecology must inspect all of the state's 755 commercial dairy farms at least once between October 1, 1998, and October 1, 2000. As of July 1, 1999, 57 percent of the states dairy farms were inspected. After October 1, 2000, inspections will be conducted by Ecology as necessary to maintain compliance.

- Since beginning the inspection program, actual or potential water quality problems have been found at 20-35 percent of the dairy farms. These dairy farms receive an informal or formal enforcement response from Ecology or are required to obtain NPDES permit coverage to address water quality issues. Approximately $307,000 in civil penalties were issued to dairy farms during the period October 1, 1998 through July 1, 1999.

- Washington Conservation Commission must develop minimum elements for nutrient management planning based upon U.S. NRCS technical standards for nutrient management plans required under the Act. The Commission adopted these minimum elements in December, 1998.

- All dairy farms must develop an approved nutrient (waste) management plan by July 1, 2002, and fully implement the plan by December 31, 2003. These plans must meet the minimum elements adopted by the Conservation Commission and be approved by the local conservation district.

- Federal Clean Water Act regulations requiring an NPDES waste discharge permit for dairy farms meeting the definition of a Concentrated Animal Feeding Operation are

affirmed.

- Ecology must establish a broad-based Dairy Advisory and Oversight Committee to oversee be accountable for implementation of the 1998 Act. The Committee has been formed and has met seven times since May 1998.

- Ecology must establish a database to track the inspection and registration programs, enforcement actions and industry compliance. This has been accomplished and detailed industry and individual dairy farm data are available.

- This legislation relies upon the technical assistance capabilities of conservation districts for developing and implementing required nutrient management plans.

Addressing Other Animal Waste Issues. The major types of other animal feeding operations in Washington include beef cattle and poultry operations. Several large (greater than 1,000 animal units) beef cattle operations are currently under NPDES permit coverage. The protection of both surface water and ground water protection is achieved by incorporating state ground water authority under the State Water Pollution Control Act to these permits.

Beef cattle and poultry operations are inspected primarily in response to complaints or as part of implementing TMDL's for 303(d) listed waterbodies. NPDES permits will be issued when inspections reveal permit coverage is needed or when permit applications are voluntarily submitted. This approach appears to be an adequate and appropriate method at this time to address these operations.

It should be noted this is the Phase One AFO/CAFO Implementation Plan for the State of Washington. Ecology will be assessing the number, size and location the major categories of animal feeding operations and any associated water pollution problems. Based upon this information, this Implementation Plan may be updated as necessary to more thoroughly address these animal feeding operations.

Grazing standards on State lands. In 1994 Legislature directed the Washington Department of Fish and Wildlife (WDFW) to develop standards for managing, preserving, and protecting the ecosystem on state-owned agricultural lands, rangelands, or grazeable woodlands. These standards are known as House Bill (HB) 1309 Ecosystem Standards for State-Owned Agricultural and Grazing Land. The mandatory ecosystem standards are required for all State lands utilized for agricultural and grazing activities. In order to comply with this bill, state agencies, began to incorporate new policy. For instance, DNR has integrated a Resource Management Plan (RMP) in all new agricultural leases and lease revision. An RMP is designed specifically for each lease and site condition in which it assesses the condition of the resource and targets the desirable ecological conditions.

As a result of RMPs, some valuable changes to land use patterns, primarily the minimization of land use activities, that contribute to the deterioration of ecosystem

health and the loss of fish and wildlife habitat on more than one million acres of DNR's agricultural lands alone. Currently, these standards as well as the Natural Resource Conservation Service (NRCS) and the Field Office Technical Guides (FOTGs) are being discussed for use on private lands. These ideas are under discussion by industry.

1998 GENERAL FINDING FROM EPA AND NOAA

***FINDING**: Washington's program does not include management measures in conformity with the 6217(g) guidance. The State has identified a back-up enforceable authority but has not yet demonstrated the ability of the authority to ensure implementation of the agriculture management measures throughout the 6217 management area.*

***CONDITION**: Within two years, Washington will include in its program agriculture management measures in conformity with the 6217(g) guidance. Within one year, Washington will develop a strategy (in accordance with Section XIII, page 14) to implement the agricultural management measures throughout the 6217 management area.*

***RATIONALE:** The Washington program submission presents summarized versions of the 6217(g) management measures in tables and relates them to its enforceable policies and implementation strategy. However, the State does not explicitly state that it intends to implement the management measures within the 6217 management area. In addition, Washington's program does not include management practices or a process to identify practices to implement the listed management measures.*

The State has identified the Water Pollution Control Act (Ch. 90.48 RCW); Water Quality Standards for Surface Waters (Ch. 173-201A WAC); and, Ground Water Quality Standards (Ch. 173-200 WAC) as backup enforceable policies and mechanisms, but has not described how these authorities will be used to ensure implementation of the management measures where voluntary efforts are unsuccessful. For example, the Agriculture Compliance Memorandum of Agreement (MOA) among the Department of Ecology, the State Conservation Commission, and individual Conservation Districts provides a mechanism that could be used to implement the agricultural management measures. The Agriculture MOA and the Guidance for Implementation of the Agricultural MOA are based largely on a voluntary approach in which a landowner is first given the opportunity to voluntarily develop and implement a conservation plan. If a landowner does not cooperate, and a citizen complains of violations, enforcement action is possible. However, there is not a clear path which links steps to actively encourage voluntary compliance with (g) management measures; to follow up where monitoring determines compliance is not occurring; and to undertake additional specific steps, including enforcement where necessary, to achieve implementation of the management measures.

The Pesticide Applicators Act (Ch. 17.21 RCW) regulates the applicators of restricted use pesticides. However, it does not address non-restricted use pesticides. The Dairy

Waste Management Act (Ch. 90.64 RCW), through the NPDES Dairy Waste General Discharge Permit, requires dairies designated as concentrated animal facilities (CAFOs), generally those with greater than 700 head, to develop and implement an animal waste management plan. Smaller dairies can be designated a CAFO upon determining that they are a significant contributor of pollution. However, dairies with less than 700 head and other confined animal facilities as defined in the (g) guidance are not addressed.

Washington also has several voluntary programs that could be used to promote implementation of the management measures for certain parts of Washington's coastal area. The Puget Sound Water Quality Management Plan requires activities identified in Watershed Action Plans to be consistent, as appropriate, with the 6217(g) management measures. Conservation Districts, Washington State University Cooperative Extension, and NRCS provide technical assistance and training to support implementation of BMPs. Financial assistance to address agricultural sources of water pollution is provided under the Centennial Clean Water Fund and the State Revolving Fund. However, the extent of voluntary implementation of these management measures under these programs is unclear.

RESPONSE TO FLEXIBILITY GUIDANCE FROM NOAA AND EPA

To meet the requirements of Section 6217, states must show that they have programs in place that meet the management measures and have enforceable back-up mechanisms. In the case of agriculture in Washington, the state relies heavily on the voluntary programs focused on development and implementation of comprehensive farm plans. The only exceptions are dairies which require implementation under the 1998 Dairy Nutrient Management Act (Chapter 90.64 RCW), and pesticide applications that are regulated under the Pesticide Control Act (Chapter 15.58 RCW)

Washington proposes to address all agricultural activities (except dairy management and pesticide application) based on the Flexibility Guidance, issued by NOAA and EPA in October, 1998. It contains a section called <u>Enforceable Policies and Mechanisms.</u> This section allows the two agencies to "approve program elements for which states have proposed voluntary or incentive-based programs backed by existing state enforcement authorities, if the following is provided:

1) *A legal opinion from the attorney general … that such authorities can be used to prevent nonpoint pollution and require management measure implementation, as necessary;*

   <u>Washington State response</u>: In a letter dated September 16, 1988, from the Assistant Attorney General Charles Lean determined that Department of Ecology had the legal authority to carry the requirements of the new CWA 319 Program. In his review, Mr. Lean discussed the rule making and enforcement capabilities of the Department and found that adequate authorities existed to implement a broad spectrum pollution

control program that included provisions for the management of nonpoint source pollution.

The following language has been excerpted from the letter. Areas that are pertinent to the above discussion of authorities have been bolded.

> "RCW 90.48.260 was amended by the 1988 Legislature to expressly reference the Clean Water Act amendments contained in the Water Quality Act of 1987 (P.L. 100-4), which are dated February 4, 1987. WASH. SESS. LAWS 1988, Ch. 220. **The authority granted the Department of Ecology by RCW 90.48.260 thus includes the authority to "take all action necessary" to meet the requirements of Section 319 of the Clean Water Act.** Similar authority existed to implement pre-existing sections of the Clean Water Act, including, among others, Section 208. The 208 planning documents identified within the Nonpoint Source Pollution Management Plan (including the Washington State Urban Storm Water Management Plan, the Dairy Waste Water Quality Management Plan, the Irrigated Agriculture Water Quality Management Plan, and the Dryland Agriculture Water Quality Management Plan), were all prepared pursuant to legislative authorization. Complete authority also exists to adopt any future "208" program elements necessary to implement nonpoint source pollution controls.
>
> **The Department of Ecology has authority to adopt rules "necessary and appropriated to carry out all of its authority."** RCW 43.21A.080. It specifically has broad rulemaking authority relating to water quality (RCW 90.48.035), as well as authority to jointly promulgate (with the Forest Practices Board) forest practice regulations relating to water quality. RCW 90.48.420. To the extent that the Timber, Fish and Wildlife Agreement results in the promulgation of regulations affecting water quality, these regulations will be promulgated by the Department of Ecology and subject to enforcement by that agency.
>
> State waste discharge permits are required of any person who conducts a commercial or industrial operation of any type which results in the disposal of solid or liquid waste material into waters of the state . RCW 90.48.160. **State discharge permits may be required for some discharges not covered by the NPDES program, such as certain agricultural discharges and discharges affecting ground water.**
>
> RCW 90.48.110 requires that the Department of Ecology approve plans for the construction of "sewerage systems, [and] sewage treatment or disposal plants or systems." Regulations implementing this provision (chapter 173-240 WAC) are broad, and require approval of all waste treatment systems, including those treating industrial and agricultural wastes. **This gives the Department of Ecology additional regulatory authority over systems which do not result in point source discharges**.

To enforce these provisions, the Department of Ecology may issue administrative orders to any person who "shall violate or creates a substantial potential to violate" water quality laws. RCW 90.48.120. Civil penalties of up to $10,000 per day may be levied against those violating the statutes, and regulations, permits or orders issued pursuant thereto. RCW 90.48.144. Civil and criminal judicial enforcement is also available. RCW 90.48.037 and .140"

Conclusion: The State of Washington concludes that adequate authorities exist to implement these management measures. The department has exercised this authority in a wide range of cases involving agricultural activities over the last 11 years since Mr. Lean's legal opinion was written. See Chapter 3 for a listing of enforcement actions by source category.

2) *A description of voluntary or incentive-based programs, including the methods of tracking and evaluating the programs, the states will use to encourage implementation of management measures;*

Washington State response: Voluntary and incentive-based programs are described in detail in the management measure discussion that follows. For some of the management measures there is a direct link to performance measures listed in Chapter 12. These performance measures will be reviewed annually to determine the level of implementation and activity associated with the program.

- Number of dairies inspected
- Number of dairy nutrient management plans approved; fully implemented
- Miles of riparian habitat on agricultural lands that is protected, restored, or preserved.
- Number of field office technical guides for riparian protection updated
- Quantity of water saved and retained in-stream from irrigation water conservation.
- Number of pesticide collection events
- Number of farm plans completed statewide
- Total acres under contract through CRP and CREP

In addition, the implementing agencies will be reviewing the elements of the program each year looking for ways to continue to improve and fine-tune the actions taken. There will be an emphasis on identifying needs, especially financial, that must be met for successful program implementation.

Conclusion: The State of Washington concludes that adequate voluntary or incentive-based programs exist to implement the CAFO/AFO and nutrient management measures. Application of agricultural pesticides is addressed under a regulatory program in Washington. Performance measures and annual program provide the appropriate mechanism to determine program progress and effectiveness.

3) *A description of the mechanism or process that links the implementing agency with the enforcement agency and a commitment to use the existing enforcement authorities where necessary.*

Washington State response: The primary implementing agencies for agricultural programs are the local conservation districts (with the assistance of Cooperative Extension, NRCS and FSA). The Agricultural MOA (see description above) establishes a mechanism for coordination and tracking of agricultural water quality enforcement actions. Under the MOA, the Conservation Commission maintains a detailed accounting of all of Ecology's non-dairy complaint referrals to conservation districts. A report is prepared each year summarizing the actions taken and the outcomes. The Commission has a Web site and web based forms to speed the entry of information from districts.

The dairy program is tracked using a different database maintained by Ecology. All actions pertaining to the implementation of the Dairy Nutrient Management Act are tracked including inspections, permits, enforcement actions, penalties, and farm plan approvals.

Department of Agriculture manages pesticide licensing and certifications, and a listing of pesticides approved for use in Washington. They also track incidents that have public health implications.

Ecology has already shown its willingness to exercise its enforcement authorities in the discussion found in Chapter 3.

Conclusion: Washington has mechanisms in place that link implementing agencies with the enforcement agencies and has shown a commitment to use the existing enforcement authorities where necessary.

EFFORTS TO IMPROVE AGRICULTURAL PROGRAMS IN WASHINGTON

Agricultural practices can generally be divided into practices of an agricultural nature and those specifically designed to address fish and water quality problems. Significant efforts are currently beginning which focus on improving water quality and fish habitat in agricultural areas.

Based on the analysis of agricultural programs in Washington, many needs were identified. Some could be tied back to meeting the 6217 management measures, while others were more general in nature. The following general needs have been identified:

- Most conservation districts lack a stable and local source of funding to support basic water quality activities.
- Agencies providing technical assistance to growers need to coordinate development of BMPs and use one set of standards.
- Improved BMPs are needed in many sectors of agriculture. Particular focus is needed in the areas of riparian management and irrigation systems.

- Implementation of agricultural programs needs improvements across the state. Significant increases to funding are needed to provide planning assistance, cost share and loans.

The review process of the agricultural programs in the state was evaluated using criteria developed by EPA and NOAA called the 6217 (g) Guidance. The following seven management measures are part of that evaluation:

1. Erosion and sediment control
2. Large animal facilities operations*
3. Small animal facilities operations*
4. Nutrient management*
5. Pesticide management*
6. Grazing management
7. Irrigation water management

Washington has reviewed the seven agricultural management measures and determined that programs with a "*" meet the requirements for those management measures. Future agricultural program development will focus on improving programs for:

- **Erosion and sediment control**
- **Grazing management, and**
- **Irrigation water management**

The programs and actions listed below will be used to update these programs.

Salmon Recovery Plan - Early Actions
The primary focus of agricultural efforts is shifting toward implementing the state's salmon recovery plan. It contains the following commitment:

> "The farm plan will be the mechanism used to address the quality of water and habitat. Conservation Districts and the Natural Resource Conservation Service will work with growers and producers to develop farm plans that recommend a set of conservation practices addressing water quality and habitat needs. Federal and state programs will be used to provide technical assistance and cost-share money to help the farmer implement the practices. The program will use conservation practices from the Natural Resources Conservation Service updated Field Office Technical Guide." Extinction is Not an Option, Vol 1, pg III.16

The intent behind the State's salmon recovery plan is to provide a higher level of support to the agricultural community in hopes that more regulatory actions will not become necessary. The plan does call for legislation to mandate farm plans for all farm lands, if non-regulatory actions fail to achieve the plan's goals and objectives. Under the plan, all agricultural BMPs will be evaluated to determine if they meet requirements of the Clean

Water Act and the Endangered Species Act. Those BMPs that do not meet standards will be upgraded.

The following "early" actions are commitments for the FY1999-2001 time period from the Joint Natural Resources Cabinet. They constitute the first two years of salmon recovery implementation activities submitted to NMFS. In addition, these actions provide important commitments to improving water quality and cleaning up agricultural nonpoint source pollution.

- Develop Statewide Irrigated Agriculture Comprehensive Plan to facilitate development of irrigation district plans.

- Update Field Office Technical Guide (FOTGs) for use by NRCS and CDs.

- Refine and update state restrictions on pesticide applications and provide technical assistance on proper use of pesticides to ensure compliance with the *Endangered Species* and *Clean Water Acts*, in both rural and urban areas.

- Implement Conservation Reserve Enhancement Program.

Agriculture Fish and Water (AFW)

A negotiation process to address water quality and endangered salmon has just begun to evaluate possible changes to the state's agricultural program. The primary focus will likely be on addressing riparian protection and irrigation issues. The process has been dubbed Agriculture Fish and Water (AFW) and it will follow a model similar to the historic Timber Fish and Wildlife process. The initial meetings were just completed at the time of this writing. Participants include state and federal agencies, representatives of agricultural producer groups, local governments, environmental groups and one tribe.

The AFW process is designed to address the technical issues identified in the Salmon Recovery Strategy for the state. BMPs improvement is an early action under the plan scheduled for the first two years of plan implementation by the state.

General Actions designed to improve water quality

The following general actions are planned to address water quality needs in Washington.

- Secure a source of permanent and ongoing funding for the FARM*A*SYST/HOME*A*SYST program within Washington State University.

- Build capacity in conservation districts to better deliver water quality programs by providing a stable source of funding.

- Actively engage agricultural producer groups in developing and implementing new BMPs.

- Expand well water protection program in areas with moderate to high potential for contamination. Support Ground Water Management Areas (GWMA) projects around the state.

- Establish a MOA with NRCS and WSU to evaluate BMP effectiveness.

- Use SRF low-interest loans to help agricultural producer groups in developing and implementing new of BMPs.

- Evaluate impacts of grazing on water quality in Washington.

- Study the feasibility of converting open gravity canals and other current delivery systems to more efficient systems, including pressurized pipe.

- Develop an education and outreach program targeted at small farms water quality and ESA compliance.

Management Measure Number IIA:
Erosion and Sediment Control

Description from Federal Guidance

Apply the erosion component of a Conservation Management System (CMS) as defined in the Field Office Technical Guide of the U.S. Department of Agriculture - Soil Conservation Service to minimize the delivery of sediment from agricultural lands to surface waters.

An additional source of sediments into water bodies is through wind erosion. Implementation of wind erosion BMPs is voluntary. EPA provides backup enforcement if areas are out of compliance with federal standards.

Design and install a combination of management and physical practices to settle solids and associated pollutants in runoff delivered from the contributing area for storms of up to and including a 10-year, 24-hour frequency.

1998 Findings from EPA and NOAA

"Washington's program does not include management measures in conformity with the 6217(g) guidance. The State has identified a back-up enforceable authority but has not yet demonstrated the ability of the authority to ensure implementation of the agriculture management measures throughout the 6217 management area."

Existing Statute(s) and Regulations

Natural Resource Conservation Service Field Office Technical Guides
Water Pollution Control Act (Chapter 90.48 RCW)

Description of Current Programs in Washington

This management measure designed to address erosion and sediment control is addressed primarily through voluntary efforts by conservation districts, cooperative extension and NRCS. The primary focus is on getting farmers to apply best management practices as defined in the NRCS field office technical guides (FOTG). Each management measure (MM) component is compared to the FOTG below.

MM Component	Standard Numbers / Description
Apply the erosion component of a Conservation Management System (CMS) to minimize the delivery of sediment from agricultural lands to surface waters.	**329 - Conservation tillage** (reduce sheet or rill erosion, reduce transport of contaminants. Includes no-till, ridge-till, strip-till, mulch-till, and reduced till) **332 - Contour buffer strips** (reduce sheet or rill erosion, reduce transport of contaminants) **330 - Contour farming** (reduce erosion and control water) **335 - Controlled drainage** (increase infiltration & reduce runoff, reduce nitrates)

	342 - Critical area planting (control erosion in highly erodible areas) **393 - Filter strip** (removing sediment, organic matter and other pollutants from runoff and waste water) **310 - Bedding** (improve surface drainage, minimize water ponding) **386 - Field border** (reduce water erosion) **423 - Hillside ditch** (minimize sediment in runoff waters, control flow of water from non-cultivated areas) **460 - Land clearing** (control soil erosion) **462 - Precision land forming** (improve drainage and reduce erosion) **607 - Field ditch** (collecting excess water & reducing erosion) **608 - Surface drainage on main or lateral** (collecting excess water & reducing erosion) **329A - Residue Management** (reduce sheet or rill erosion) **344 - Residue Management, seasonal** (reduce sheet or rill erosion) **391A - Riparian forest buffer** (create shade to lower stream temperatures and improve habitat, provide a source of wood and organic material, and reduce sediment, organic material, nutrients and pesticides in surface runoff) **612 - Tree/shrub establishment** (provides erosion control, supports riparian forest buffer establishment) **555 - Rock barrier** (check erosion on sloping land) **557 - Row arrangement** (prevent erosion) **580 - Streambank and shoreline protection** (vegetation or structures to stabilize and protect banks of streams, lakes estuaries and excavated channels from scour and erosion) **585 - Contour strip cropping** (reduce soil erosion on sloping cropland) **586 Strip cropping** - controls erosion and runoff on sloping croplands. **588 - Buffer strip cropping** (reduce soil erosion) **606 - Subsurface drain** (reduce erosion and improve water quality) **600 - Terrace** (reduce soil erosion) **412 - Grassed waterway** (convey runoff without degrading water quality) **210 - Irrigation erosion control (polyacrylamide)** (use of PAM to control erosion in irrigation systems) **484 - Mulching** (reduces runoff and erosion)
Implementation of wind erosion BMPs is	**335 - Controlled drainage** (reduce wind erosion) **589 - Cross wind stripcropping** (reduce wind erosion)

voluntary.	**392 - Field wind break** (reduce wind erosion) **386 - Field border** (reduce wind erosion) **329A - Residue Management** (reduce wind erosion) **344 - Residue Management, seasonal** (reduce wind erosion) **589 - Wind strip cropping** (reduce wind erosion and soil creep) **609 - Surface roughening** (reduce wind erosion) **380 - Windbreak/shelterbelt establishment** (reduce wind erosion) **422 - Herbaceous wind barriers** (reduces soil erosion from wind)
Design and install a combination of management and physical practices to settle solids and associated pollutants in runoff delivered from the contributing area for storms of up to and including a 10-year, 24-hour frequency.	**350 - Sediment basin** (reduce or abate pollution by providing basins for deposition and storage of silt, sand gravel, stone, agricultural wastes and other detritus; large sediment basins must comply with National Engineering Handbook Standards) **638 - Water and Sediment Control Basin** (structure to trap sediment and control runoff to prevent pollution) **410 - Grade stabilization structure** (controls grade and head cutting in natural and artificial channels)

Education and Technical Assistance: Local conservation districts, the NRCS, and Cooperative Extension provide education and technical assistance to growers in implementing best management practices in agriculture. Districts encourage the preparation and use of farm plans, which are based on NRCS standards as set in the Field Office Technical Guide.

Incentives: Financial assistance for implementing farm plans and best management practices is provided through the NRCS EQIP program. The CREP program will also assist in reducing erosion and sediment through the lease or purchase of riparian buffer areas. There is an EQIP wind erosion project in Franklin and Benton Counties that pays farmers to increase residue left on their fields.

Enforcement: In the case of a discharge of sediment to a water body, Ecology enforces the general prohibition in the State's Water Pollution Control Act (Chapter 90.48 RCW). Erosion and sediment problems are directed to Ecology through complaints. Ecology responds to complaints and works with conservation districts through the Agricultural MOA.

Additional needs to meet this measure

Review and update of these standards are needed to ensure they protect water quality and fish habitat.

Actions to satisfy management measures

- Update Field Office Technical Guide (FOTGs) for use by NRCS and CDs
- Implement Conservation Reserve Enhancement Program

Management Measure Number IIB1 and IIB2:
Facility Wastewater and Runoff from Confined Animal Facility Management (Large Units)
Management Measure for Facility Wastewater and Runoff from Confined Animal Facility Management (Small Units)

Note: Washington's response to these two management measures and programs to implement are the same.

Description from Federal Guidance

Limit the discharge from the confined animal facility to surface waters by:
(1) Storing both the facility wastewater and the runoff from confined animal facilities that is caused by storms up to and including a 25-year, 24-hour frequency storm. Storage structures should:

(a) Have an earthen lining or plastic membrane lining, or
(b) Be constructed with concrete, or
(c) Be a storage tank.

(2) Managing stored runoff and accumulated solids from the facility through an appropriate waste utilization system.

1998 Findings from EPA and NOAA

"Washington's program does not include management measures in conformity with the 6217(g) guidance. The State has identified a back-up enforceable authority but has not yet demonstrated the ability of the authority to ensure implementation of the agriculture management measures throughout the 6217 management area.

The Dairy Waste Management Act (Chapter 90.64 RCW), through the NPDES Dairy Waste General Discharge Permit, requires dairies designated as concentrated animal facilities (CAFOs), generally those with greater than 700 head, to develop and implement an animal waste management plan. Smaller dairies can be designated a CAFO upon determining that they are a significant contributor of pollution. However, dairies with less than 700 head and other confined animal facilities as defined in the (g) guidance are not addressed."

Existing Statute(s) and Regulations

Water Pollution Control Act (Chapter 90.48 RCW)
Dairy Nutrient Management Act (Chapter 90.64 RCW)
NRCS Field Office Technical Guides

Description of Current Programs in Washington

This management measure is designed to address large and small confined animal facilities. Washington manages all CAFOs and AFOs through a combination of permits issued by the Department of Ecology and the voluntary efforts by conservation districts, CE and NRCS. The primary focus of the effort is to get farmers to develop and implement best management practices as defined in the NRCS field office technical guides (FOTG). The applicable standard is shown for each component of the management measure (MM) below.

MM Component	Standard Numbers / Description
To adequately meet this management measure, limit the discharge from the confined animal facilities to surface waters by: (1) Storing both the facility wastewater and the runoff from confined animal facilities that is caused by storms up to and including a 25-year, 24-hour frequency storm. Storage structures should: (a) Have an earthen lining or plastic membrane lining, or (b) Be constructed with concrete, or (c) Be a storage tank.	**521(A-E) - Pond sealing or lining** (reduce seepage losses in ponds to an acceptable level - covers asphalt, bentonite, cationic emulsion, soil dispersion materials) **313 - Waste storage facility** (temporary storage of wastes, design volume to meet a 25 year 24 hour storm event) **359 - Waste treatment lagoon** (biologically treat waste, reduce water pollution) **558 - Roof runoff management** (collecting, controlling and disposing of runoff water from roofs) **312 - Waste management system** (components for managing liquid and soil waste to prevent pollution) **425 - Waste storage pond** (minimum design requirements for storage of wastes, design volume to meet a 25 year 24 hour storm event) **313 - Waste storage structure** (structure for temporary storage of wastes, includes tanks and stacks) **358 - Waste transfer** (structures, conduits and equipment to transfer waste safely) **359 - Waste treatment lagoon** (biological waste treatment facility to prevent surface and groundwater pollution)
(2) Managing stored runoff and accumulated solids from the facility through an appropriate waste utilization system.	**590 - Nutrient management** "Nutrient application rates will be based on realistic yield goals for the crop and nutrient levels in the soil." "Time fertilizer application to coincide with nutrient uptake by the crop, allowing appropriate lead time for incorporation and mineralization." "Application rates will be based on the most

	environmentally sensitive nutrient using agronomic application rate for the crop." "Special consideration will be given to lands with a groundwater or surface water quality concern area where nutrients are applied." Use this standard "on soils that indicate a high sensitivity and vulnerability to surface runoff or deep percolation from the FOCS Nutrient Screening Procedure." "Sites will be managed to minimize off-site movements of nutrients." In nutrient management plans, "the following items will be documented on the plan map, in the plan narratives, or NRCS and crop consultant job sheets: a) location b) extent in acres c) nutrient budget worksheets d) nutrient credits e) sources of nutrients f) nutrient timing, application and placement g) leaching index and runoff h) irrigation water management soil tests"

***Education and Technical Assistance**:* Local conservation districts, NRCS and CE provide education and technical assistance to growers in implementing best management practices in agriculture. Districts encourage the preparation and use of comprehensive farm plans, which are based on NRCS standards as set in the Field Office Technical Guide (see above). The NRCS standards are consistent with the requirements of this management measure. In addition, CE has set specific education goals, resulting in at least 4900 farms and 150,000 acres that implement BMPs for nutrient management. The primary concern about this program is the ability of local CD and NRCS staff to provide the technical assistance needed to meet the schedule for compliance in the DNMA.

Incentives: Financial assistance for implementing farms plans and best management practices is provided through the NRCS EQIP and other funding programs. The State Revolving Fund also provides low-interest loans for BMP implementation. The State Conservation Commission also provides $1.5 million in cost-share funds specifically for dairy producers every two years. The total amount available from state and federal cost share and loan programs at this time is a limiting factor for dairy compliance with the DNMA.

Enforcement: In the case of a discharge of animal waste, sediment, or contaminated runoff to a water body, Ecology enforces the general prohibition in the State's Water Pollution Control Act (Chapter 90.48 RCW). Since adoption of 208 Plans under the federal Clean Water Act in the 1970's, dairy farms have been the priority category of animal feeding operation in Washington needing to improve animal waste management practices to achieve federal and state water quality goals. Dairy farms continue to be the priority category of animal feeding operation addressed by Ecology under Chapter 90.64 RCW.

The Dairy Nutrient Management Act (DNMA) requires all dairies in the State to register with Ecology. Ecology must inspect all dairies by October, 2000, and respond to any complaints regarding a dairy operation. Currently, 99 percent of the 750 dairies in the state have registered, and about 500 have been inspected. NPDES permit coverage is issued to dairy farms meeting the definition of a CAFO. About 25 dairy farms currently have permit coverage.

The DNMA requires all dairies to prepare and implement a dairy nutrient management plan by December 31, 2003. Plans must be approved by the local conservation district and follow NRCS standards unless alternative methods are established by the Conservation Commission or a Professional Engineer. For more details on the DNMA see the introductory discussion for Agriculture section.

Ecology is addressing water quality problems associated with non-dairy animal feeding operations in three primary ways. The first is through direct regulatory action. Where a significant current or potential water quality problem is identified on a site, Ecology will issue administrative orders to require the operator to clean up the problem or take action to prevent the problem from occurring. Ecology has take actions on sites ranging in size from a few pigs to over 100,000 chickens. With recent increases in staffing, Ecology is using this approach with increased frequency.

A second approach is through implementation of the agency AFO/CAFO policy. This is a complaint-based approach that leads to implementation under the Agricultural MOA. Farms with long-term animal waste management problems are identified through complaints and other agency observations. Once identified they referred to the local conservation district for farm plan development and other forms of assistance. If the owner or operator fail to cooperate, Ecology issues an order that results in action to correct the problem.

A third approach is through voluntary request by the operator. Some facilities come to Ecology and request a discharge permit. National Pollution Discharge Elimination System (NDPES) permits have been issued to the seven largest beef cattle feedlots in the State. They involve the development of a comprehensive farm plan that helps Ecology track the movement of waste on and off the operation's property.

A fourth approach to address non-dairy waste problems focuses on implementing a local plan. Shellfish closure response plans and TMDLs provide a way for Ecology to take

action to clean up problems on behalf of a community effort. Where operations have been the focus of load reduction efforts in a plan, Ecology will work with the landowner and operator to fix problems associated with the animal keeping activities. Where voluntary actions are not achieving the goals set in the plan, Ecology issues orders to producers to clean up the pollution problem.

Additional needs to meet this measure

No additional actions are required to meet this management measure.

Actions to satisfy management measures

Adequate programs exist to meet this management measure.

Additional actions to improve water quality

- Adequately fund required dairy nutrient management planning and provide meaningful financial assistance programs to achieve goals.

Management Measure Number IIC:
Nutrient Management Measure

Description from Federal Guidance

Develop, implement, and periodically update a nutrient management plan to:
1. apply nutrients at rates necessary to achieve realistic crop yields,
2. improve the timing of nutrient application, and
3. use agronomic crop production technology to increase nutrient use efficiency. When the source of the nutrients is other than commercial fertilizer, determine the nutrient value and the rate of availability of the nutrients. Determine and credit the nitrogen contribution of any legume crop. Soil and plant tissue testing should be used routinely.

1998 Findings from EPA and NOAA

"Washington's program does not include management measures in conformity with the 6217(g) guidance. The State has identified a back-up enforceable authority but has not yet demonstrated the ability of the authority to ensure implementation of the agriculture management measures throughout the 6217 management area."

Existing Statute(s) and Regulations

Water Pollution Control Act (Chapter 90.48 RCW)
Ground Water Quality Standards (Chapter 173-200 WAC)
Water Quality Standards for Surface Waters (Chapter 173-201A WAC)
NRCS Field Office Technical Guide

Description of Current Programs in Washington

***Education and Technical Assistance**:* Local conservation districts, the NRCS and CE provide education and technical assistance to growers in implementing best management practices in agriculture. BMPs are achieved through the development and implementation of farm plans. Nutrient management is a key component to all farm plans.

Cooperative Extension has set specific goals to implement BMPs for nutrient management on at 8000 farms covering 200,000 acres. These BMPs are essentially similar to the management measure. Cooperative Extension continues to evaluate new methods of crop production to minimize use of nutrients.

In addition, the Department of Agriculture's Chemigation and Fertigation Technical Assistance Program is working with growers to protect water resources from the potential hazard of pesticides and fertilizers. Agriculture staff are also evaluating current fertigation rules to determine what revisions need to be made to provide more protection to ground water from fertigation practices.

Incentives: Financial assistance for implementing best management practices is provided through the NRCS EQIP program. Commodity groups receive funding through loans from the State Revolving Fund. One emphasis of these two funding efforts is to improve irrigation practices which reduce erosion and result in more efficient application of nutrients to certain types of crops (eg. Hops.)

Enforcement: In the case of a discharge of nutrients to a water body, Ecology enforces the general prohibition in the State's Water Pollution Control Act (Chapter 90.48 RCW). Nutrient problems are directed to Ecology through complaints. Ecology responds to complaints and works with conservation districts through the Agricultural MOA.

MM Component	**Standard Numbers / Description**
To meet the Nutrient Management Measure, technical guides must develop, implement, and periodically update a nutrient management plan to: 1) apply nutrients at rates necessary to achieve realistic crop yields; 2) improve the timing of nutrient application; 3) use agronomic crop production technology to increase nutrient use efficiency	**590 - Nutrient management** 1) "**Nutrient application rates will be based on realistic yield goals for the crop** and nutrient levels in the soil." 2) "**Time fertilizer application to coincide with nutrient uptake by the crop,** allowing appropriate lead time for incorporation and mineralization." 3) "Application rates will be based on the most environmentally sensitive nutrient using **agronomic application rate** for the crop."

. Nutrient management plans contain the following core components: (1) Farm and field maps showing acreage, crops, soils, and waterbodies. (2) Realistic yield expectations for the crop(s) to be grown, based primarily on the producer's actual yield history, State Land Grant University yield expectations for the soil series, or SCS Soils-5 information for the soil series. (3) A summary of the nutrient resources available to the producer, which at a minimum include: (a) Soil test results for pH, phosphorus, nitrogen, and potassium; (b) Nutrient analysis of manure, sludge, mortality compost (birds, pigs, etc.), or effluent (if applicable); (c) Nitrogen contribution to the soil from legumes grown in the rotation (if applicable); and (d) Other significant nutrient sources (e.g., irrigation water). (4) An evaluation of field limitations based on environmental hazards or concerns, such as: (a) Sinkholes, shallow soils over fractured bedrock, and soils with high leaching potential, (b) Lands near surface water, (c) Highly erodible soils, and (d) Shallow aquifers. (5) Use of the limiting nutrient concept to establish the mix of nutrient sources and requirements for the crop-based on a realistic yield expectation. (6) Identification of timing and application methods for nutrients to: provide nutrients at rates necessary to achieve realistic crop yields; reduce losses to the environment; and avoid applications as much as possible to frozen soil and during periods of leaching or runoff. (7) Provisions for the proper calibration and operation of nutrient application equipment.	1-**In nutrient management plans, "the following items will be documented on the plan map, in the plan narratives, or NRCS and crop consultant job sheets**: i) location j) extent in acres k) nutrient budget worksheets l) nutrient credits m) sources of nutrients n) nutrient timing, application and placement o) leaching index and runoff p) irrigation water management q) soil tests" 2- "Time fertilizer application to coincide with nutrient uptake by the crop, allowing appropriate lead time for incorporation and mineralization." 3- See 1e. 4- See 1g. 5- "Nitrogen, phosphorus and potassium are the major nutrients. Application rates will be based on the most environmentally sensitive nutrient using agronomic application rate for the crop." 6- See 1f. 7- "The owner and operator will be responsible for operating all application equipment safely and maintaining this practice." (includes 6 specific requirements

Additional needs to meet this measure

No additional actions are required to meet this management measure.

Actions to satisfy management measures

Adequate programs exist to meet this management measure.

Additional actions to improve water quality

- Secure a source of permanent and ongoing funding for the FARM*A*SYST/HOME*A*SYST program within Washington State University.
- Actively engage agricultural producer groups in developing and implementing new BMPs.
- Expand well water protection programs to prioritize where to focus technical support and compliance inspections. Support Ground Water Management Areas (GWMA) projects around the state.
- Use SRF low-interest loans to help agricultural producer groups develop and implement new BMPs.

Management Measure Number IID:
Pesticide Management

Description from Federal Guidance

To reduce contamination of surface water and ground water from pesticides:

1. Evaluate the pest problems, previous pest control measures, and cropping history;
2. Evaluate the soil and physical characteristics of the site including mixing, loading, and storage areas for potential leaching or runoff of pesticides. If leaching or runoff is found, steps should be taken to prevent further contamination;
3. Use integrated pest management (IPM) strategies that:
   (a) apply pesticides only when an economic benefit to the producer will be achieved (i.e., applications based on economic thresholds); and
   (b) apply pesticides efficiently and at times when runoff losses are unlikely;
4. When pesticide applications are necessary and a choice of registered materials exists, consider the persistence, toxicity, runoff potential, and leaching potential of products in making a selection;
5. Periodically calibrate pesticide spray equipment; and
6. Use anti-backflow devices on hoses used for filling tank mixtures.

1998 Findings from EPA and NOAA

"Washington's program does not include management measures in conformity with the 6217(g) guidance. The State has identified a back-up enforceable authority but has not yet demonstrated the ability of the authority to ensure implementation of the agriculture management measures throughout the 6217 management area.

The Pesticide Applicators Act (17.21 RCW) regulates the applicators of restricted use pesticides. However, it does not address non-restricted use pesticides."

Existing Statute(s) and Regulations

Pesticide Control Act (Chapter 15.58 RCW)
.150(2)(c) Unlawful Practices
Washington Pesticide Applications Act (Chapter 17.21 RCW)
Pesticide Regulations (Chapter 16-228 WAC)
Water Pollution Control Act (Chapter 90.48 RCW)

Description of Current Programs in Washington

The Washington Pesticide Control Act (WPCA) requires that all pesticides transported, sold, distributed or used in the state be registered by the state Department of Agriculture. Contrary to 1998 findings from EPA and NOAA, Chapter 17.21 RCW addresses the application of **all** pesticides including General Use and Home and Garden.

The following sections of the WPCA relate to the registration of pesticides:

.050 Requires the registration of all pesticides
.060 Specifies the content of the registration application
.065 Allows for the protection of privileged or confidential information
.070 Establishes an annual fee for registering pesticides
.080 Establishes an additional fee for late registration
.090 Exempts government agencies from the registration fee
.100 Established the criteria for registering a pesticide
.110 Allows WSDA to refuse to register or cancel the registration of any pesticide
.120 Allows for the suspension of the registration of a pesticide

A number of pesticides used on agricultural lands in Washington State are restricted use pesticides. However, a great many of the pesticides used are General Use. The application of General Use pesticides for agricultural purposes does not require a pesticides applicator license.

In addition, RCW 15.58.160(1)(a) prohibits the sale of restricted use pesticides and subsection (2)(a) prohibits the sale of restricted use pesticide to anyone who does not have a pesticide license. Licensing of pesticide users is governed by the Pesticide Applicator Act (Chapter 17.21 RCW). This act sets the following requirements for obtaining a pesticide license:

.150(11) must be qualified to manage pesticides
.132 made application to the Department of Agriculture
.134 successfully pass an examination of the department.

WSU Cooperative Extension provides a study manual for the Private Applicator. The study manual covers federal and Washington State pesticide laws, pesticide formulations, label information, pesticide hazards and health concerns, **safe use of pesticides** to protect people, the environment, non target plants, wildlife, and beneficial insects; **application and calibration of equipment**; **historical pest control**, **integrated pest management**, management of insects and mites, weeds, plant diseases, and vertebrate pests."

RCW 15.58.150(2)(c) makes it unlawful "for any person to use or cause to be used any pesticides contrary to label directions…"

To reduce contamination of surface water and ground water from pesticides:

MM Component	**Standard Number or Rule / Description**
Evaluate the pest problems, previous pest control measures, and cropping history;	**595 - Pest management** (managing agricultural pest infestations to reduce adverse effects on plant growth, crop production, and environmental resources) **Pesticide Applicator's Study Manual:** historical pest control

Evaluate the soil and physical characteristics of the site including mixing, loading, and storage areas for potential leaching or runoff of pesticides. If leaching or runoff is found, steps should be taken to prevent further contamination;	**WAC 16-228-185(2)(3)** "No person shall pollute streams lakes or other water supplies in pesticide loading, mixing and application." **Pesticide Applicator's Study Manual:** Soil and terrain evaluation is part of the section on the safe use of pesticides
Use integrated pest management (IPM) strategies that: • apply pesticides only when an economic benefit to the producer will be achieved (i.e., applications based on economic thresholds); and • apply pesticides efficiently and at times when runoff losses are unlikely;	**595 - Pest management** ("Integrated pest management (IPM principles will be incorporated into all management activities." **Pesticide Applicator's Study Manual:** Section on integrated pest management
When pesticide applications are necessary and a choice of registered materials exists, consider the persistence, toxicity, runoff potential, and leaching potential of products in making a selection;	**Pesticide Applicator's Study Manual:** These actions are included in the section on safe use of pesticides.
Periodically calibrate pesticide spray equipment; and	**WAC 16-228-180(1)(d)** prohibits the operation of "faulty ro unsafe apparatus." **WAC 16-228-190(7)** "All apparatus shall be kept in good repair and only that apparatus which capable of performing all functions necessary to ensure proper and thorough application of pesticides shall be used." **Pesticide Applicator's Study Manual:** Section on application and calibration of equipment
Use anti-backflow devices on hoses used for filling tank mixtures.	**WAC 16-228-185(3)** "Adequate, functioning devices and procedures to prevent back siphoning shall be used."

Education and Technical Assistance*:* The Department of Agriculture has a water quality protection program aimed at reducing levels of pesticides and nitrates in ground water. In addition, the Department is developing and implementing a Fertigation and Chemigation Technical Assistance Program to help operators protect water resources.

Specific goals have been set by Cooperative Extension for education, resulting in at least 4,900 farms and 200,000 acres implementing BMPs for pesticide management. These BMPs are essentially similar to the management measure. In additional to on-site technical assistance, WSU's Tri-cities branch maintains a database of current pesticide registrations and their labels in the Pesticide Notification Network. Commodity groups

are notified when the parameters of use are changed for a pesticide. The information is also available on the Internet on a fee basis.

Incentives: The NRCS EQIP and other funding programs provide financial assistance for implementing best management practices. In addition, the State's Commission on Pesticide Registration funds research leading to the registration of newer, reduced risk pesticides as well as bio-rational agents and Integrated Pest Management methods. Currently, the Commission provides $1 million per biennium for such grants.

Department of Agriculture regularly collects unusable pesticides from residents, farmers, business owners, retailers and dealers, and the general public in their Waste Pesticide Collection Program. The goal of this program is to eliminate the potential source of contamination to the environment.

Conservation Districts operate a State-funded cost share program for water quality grants. Much of districts' water quality appropriations go on the ground as cost share to actually construct and implement BMPs.

Integrated Pest Management

Chapter 17.15 RCW which requires implementation of integrated pest management (IPM) by all state agencies and state educational institutions with pest control responsibilities. According to RCW 17.15.010, IPM is defined as:

> "a coordinated decision-making and action process that uses the most appropriate pest control methods and strategy in an environmentally and economically sound manner to meet agency programmatic pest management objectives. The elements of integrated pest management for preventing pest problems include:

1. monitoring for the presence of pests and pest damage;
2. establishing the density of the pest population, that may be set at zero, that can be tolerated or correlated with a damage level sufficient to warrant treatment of the problem based on health, public safety, economic, or aesthetic thresholds;
3. treating pest problems to reduce populations below those levels established by damage thresholds using strategies that may include biological, cultural, mechanical, and chemical control methods and that must consider human health, ecological impact, feasibility, and cost-effectiveness; and
4. evaluating the effects and efficacy of pest treatments."

The Washington State Commission on Pesticide Registration also provides $1 million per biennium to research and market integrated pest management systems and techniques. The use of these funds has made Washington State the largest supported of research related to Organic Farming in the nation.

Enforcement*:* The Department of Agriculture licenses about 25,000 pesticide applicators in every city and rural area of the State. WSDA performs a variety of inspections

pertaining to the manufacture, sale, distribution, use, and disposal of pesticides as well as responds to complaints from citizens. In addition, the Department has rules requiring secondary and operational area containment at bulk pesticide and fertilizer storage facilities.

In the case of a discharge of pesticides to a water body, Ecology enforces the general prohibition in the State's Water Pollution Control Act (Chapter 90.48 RCW). If human exposure occurs, the Department of Health may also take enforcement action. The actions of the three agencies are coordinated through the Pesticide Incident Tracking System.

Additional needs to meet this measure

No additional actions are required to meet this management measure.

Actions to satisfy management measures

Adequate programs exist to meet this management measure.

Additional actions to improve water quality

- Refine and update state restrictions on pesticide applications and provide technical assistance on proper use of pesticides to ensure compliance with the *Endangered Species* and *Clean Water Acts*, in both rural and urban areas.

- Secure a source of permanent and ongoing funding for the FARM*A*SYST/ HOME*A*SYST program within Washington State University. (Ag 10)

- Actively engage agricultural producer groups in developing and implementing new BMPs. (Ag 13)

- Expand well water protection programs in order to prioritize where to focus technical support and compliance inspections. Support Ground Water Management Areas (GWMA) projects around the state. (Ag 3)

- Develop an education and outreach program targeted at small farms water quality and ESA compliance. (Ag 11)

- Refine and update state restrictions on pesticide applications and provide technical assistance on proper use of pesticides with the *Endangered Species* and *Clean Water Acts*, in both rural and urban areas. (Ag 8)

Management Measure Number IIE:
Grazing Management

Description from Federal Guidance

Protect range, pasture and other grazing lands;

(1) By implementing one or more of the following to protect sensitive areas (such as streambanks, wetlands, estuaries, ponds, lake shores, and riparian zones):
   - (a) Exclude livestock,
   - (b) Provide stream crossings or hardened watering access for drinking,
   - (c) Provide alternative drinking water locations,
   - (d) Locate salt and additional shade, if needed, away from sensitive areas
   - (e) Use improved grazing management (e.g., herding) to reduce the physical disturbance and reduce direct loading of animal waste and sediment caused by livestock; and

(2) By achieving either of the following on all range, pasture, and other grazing lands not addressed under (1):
   - (a) Implement the range and pasture components of a Conservation Management System (CMS) as defined in the Field Office Technical Guide of the USDA-NRCS (see Appendix 2A of this chapter) by applying the progressive planning approach of the NRCS, or
   - (b) Maintain range, pasture, and other grazing lands in accordance with activity plans established by either the Bureau of Land Management of the U.S. Department of the Interior or the Forest Service of USDA.

1998 Findings from EPA and NOAA

"Washington's program does not include management measures in conformity with the 6217(g) guidance. The State has identified a back-up enforceable authority but has not yet demonstrated the ability of the authority to ensure implementation of the agriculture management measures throughout the 6217 management area."

Existing Statute(s) and Regulations

Water Pollution Control Act (Chapter 90.48 RCW)
USFS Standards and Guides
NRCS Field Office Technical Guides
HB 1309 Standards

Description of Current Programs in Washington

Two primary mechanisms are in place to plan and implement grazing programs on range and pasturelands in Washington.

The NRCS assists private landowners with range management issues focusing on Coordinated Resource Management Planning processes. All resource conservation

planning by the NRCS must integrate the policy and procedures outlined in the National Planning Manual with the technical standards and guidelines outlined in the Field Office Technical Guide and other Program Manuals (Watershed Planning Manual, RC&D Manual, RAMP Manual, etc.) and topical manuals (Engineering Field Manual, Agricultural Waste Handbook, etc.) to develop technically sound and properly developed conservation management systems.

A Conservation Management System (CMS) is the umbrella term that includes any combination of practices and management that achieves the level of treatment of the five (5) resources specified by the quality criteria used. These treatment criteria are stated in either qualitative or quantitative terms and will become more refined over time.

State range and pasturelands are managed under the requirements of HB 1309 - Ecosystem Standards for State-Owned Agricultural and Grazing Land. This bill required the state to set strict standards to protect fish and wildlife on state lands. The standards address stream bank erosion, riparian management zones, plant community status, soil stability and protection of native plant species. Tools to achieve the standards rely on the implementation of NRCS standards.

On federal lands the USFS employs its standards and guides to prevent water quality programs and impacts to fish. These will be reviewed under the federal consistency requirements of Section 319 of the CWA.

Management measures for grazing must protect range, pasture and other grazing lands by:

MM Component	FOTG Numbers / Description
1. Implementing one or more of the following to protect sensitive areas (such as stream banks, wetlands, estuaries, ponds, lake shores, and riparian zones): (a) Exclude livestock, (b) Provide stream crossings or hardened watering access for drinking, (c) Provide alternative drinking water locations, (d) Locate salt and additional shade, if needed, away from sensitive areas (e) Use improved grazing management (e.g., herding) to reduce the physical disturbance and reduce direct loading of animal waste and sediment caused by livestock; and	**USFS Standards and Guides** **NRCS Standards**: **575 - Animal trails and walkways** (divert travel from ecologically sensitive areas) **382 - Fencing** (exclude livestock and big game, protect riparian plantings) **550 - Range seeding** (prevent excessive soil loss and erosion) **614 - Trough or Tank** (watering facilities for livestock at selected locations that will protect vegetative cover through proper distribution of grazing; eliminates the need for livestock to be in streams) **548 - Grazing land mechanical treatment** (reduces runoff and increases infiltration leading to improved water quality)

2. Achieving either of the following on all range, pasture, and other grazing lands not addressed under (1): (a) Implement the range and pasture components of a Conservation Management System (CMS) as defined in the Field Office Technical Guide of the USDA-NRCS (see Appendix 2A of this chapter) by applying the progressive planning approach of the NRCS, or (b) Maintain range, pasture, and other grazing lands in accordance with activity plans established by either the Bureau of Land Management of the U.S. Department of the Interior or the Forest Service of USDA.	**NRCS FOTG** - Dictates that all plans developed for private range and pasture lands must meet basic requirements of a Conservation Management System. **USFS Standards and Guides** are used on all Federal range lands under the control of the USFS.

On federal lands: Usage of federal lands is under the jurisdiction and the responsibility of the respective federal agency, as noted above. Ecology will verify the implementation of this management measure on federal lands through the federal consistency provisions of the federal Clean Water Act (33 USC 1329).

On state lands: The Public Lands Act requires the State Conservation Commission to establish guidelines for grazing management on state lands. These guidelines meet or exceed the standards of this management measure. If the guidelines are not followed, the Department of Natural Resources may revoke the lease or grazing permit.

On private lands: The agricultural education and incentive programs were noted in the overview of the agricultural management measures. In cases of sediment or manure discharge to a water body, Ecology may enforce the Water Pollution Control Act.

Additional needs to meet this measure

The state does not have a clear picture of the severity of grazing and water quality problems.

Actions to satisfy management measures

- Evaluate impacts of grazing on water quality in Washington.

Management Measure Number IIF:
Irrigation Water Management

Description from Federal Guidance

To reduce nonpoint source pollution of surface waters caused by irrigation.

(1) Operate the irrigation system so that the timing and amount of irrigation water applied match crop water needs. This will require, as a minimum:
   (a) the accurate measurement of soil-water depletion volume and the volume of irrigation water applied, and
   (b) uniform application of water.

(2) When chemigation is used, include backflow preventers for wells, minimize the harmful amounts of chemigated waters that discharge from the edge of the field, and control deep percolation. In cases where chemigation is performed with furrow irrigation systems, a tailwater management system may be needed.

The following limitations and special conditions apply:

(1) In some locations, irrigation return flows are subject to other water rights or are required to maintain stream flow. In these special cases, on-site reuse could be precluded and would not be considered part of the management measure for such locations.
(2) By increasing the water use efficiency, the discharge volume from the system will usually be reduced. While the total pollutant load may be reduced, the concentration of pollutants in the discharge may increase. In these special cases, where living resources or human health may be adversely affected and where other management measures do not reduce concentrations of nutrients and pesticides in the discharge, increasing water use efficiency would not be considered part of the management measure.
(3) In some irrigation districts, the time interval between the order for and the delivery of irrigation water to the farm may limit the irrigator's ability to achieve the maximum on-farm application efficiencies that are otherwise possible.
(4) In some locations, leaching is necessary to control salt in the soil profile. Leaching for salt control should be limited to the leaching requirement for the root zone.
(5) Where leakage from delivery systems or return flows supports wetlands or wildlife refuges, it may be preferable to modify the system to achieve a high level of efficiency and then divert the "saved water" to the wetland or wildlife refuge. This will improve the quality of water delivered to wetlands or wildlife refuges by preventing the introduction of pollutants from irrigated lands to such diverted water.
(6) In some locations, sprinkler irrigation is used for frost or freeze protection, or for crop cooling. In these special cases, applications should be limited to the amount necessary for crop protection, and applied water should remain on-site.

1998 Findings from EPA and NOAA

Washington's program does not include management measures in conformity with the 6217(g) guidance. The State has identified a back-up enforceable authority but has not yet demonstrated the ability of the authority to ensure implementation of the agriculture management measures throughout the 6217 management area.

Description of Current Programs in Washington
NRCS uses the following standards from the FOTG to meet this management measure.

MM Component	FOTG Numbers / Description
(2) Operate the irrigation system so that the timing and amount of irrigation water applied match crop water needs. This will require, as a minimum: (a) the accurate measurement of soil-water depletion volume and the volume of irrigation water applied, and (b) uniform application of water.	**449 - Irrigation water management** (determining and controlling the rate, amount, and timing of irrigation water in a planned and efficient manner)
(3) When chemigation is used, include backflow preventers for wells, minimize the harmful amounts of chemigated waters that discharge from the edge of the field, and control deep percolation. In cases where chemigation is performed with furrow irrigation systems, a tailwater management system may be needed.	WAC 16-228-185(3) "Adequate, functioning devices and procedures to prevent back siphoning shall be used."

Most irrigation occurs in eastern Washington, which is arid, in the Yakima River Basin and the Columbia Basin Project. The water for both these areas is provided by the federal Bureau of Reclamation to local irrigation districts, which in turn provide water to each individual grower. Delivery of water is generally through open, concrete-lined canals.

Several factors limit irrigated agriculture in Washington:

- Due to the aridity of the irrigated areas, water is reused several times before returning it back into the source. For example, in the Columbia Basin, water is diverted from the Columbia River at Grand Coulee Dam into Banks Lake for storage and distribution. The water in Banks Lake is used in the upper basin, and then flows to the Potholes Reservoir. Water from Potholes is used in the lower basin and recovered in Scootenay Reservoir, then feeds to the Esquatzel Coulee area. The water is then discharged back to the Columbia River near Pasco, nearly 200 miles downstream. In

addition, the water is reused several times between reservoirs, as the runoff from one field is used as the feed water for a lower one, prior to its return to the main canal.

- Due to the extensive nature of many of the reclamation projects, covering thousands of acres, and the reuse discussed above, water is delivered according to a schedule rather than an on-demand basis. The scheduled intervals may or may not match the specific needs of a grower in the system.

- Wetlands have appeared in irrigated areas since reclamation, and irrigation water is the source of the water for these wetlands. Many of these now harbor abundant wildlife, and some have even been designated as National Wildlife Refuges as well as state and private preserves. Examples of such areas are the North and South Columbia Basin and Seep Lakes National Wildlife Refuges.

- Water is used for cooling in orchards and some row crops in eastern Washington.

However, within these limitations, efforts are being made to promote water conservation in the irrigated agricultural community.

Education and Technical Assistance: As noted in the overview of agricultural management measures, local conservation districts and Cooperative Extension provide education and technical assistance to growers in implementing best management practices in agriculture. Specific goals have been set by CE, resulting in at least 5000 farms and 1.4 million acres implementing BMPs for irrigation water management. These are essentially similar to the management measure, and were established under section 208 of the Clean Water Act.

The Department of Agriculture Chemigation and Fertigation Technical Assistance Program is working with growers to make sure their irrigation systems have the appropriate backflow prevention devices and other system components. Properly configured and functioning systems reduce the risk of contaminating surface and ground water.

Incentives: Financial assistance for implementing best management practices is provided through the NRCS EQIP and other funding programs. SRF monies are also available to install more efficient irrigation systems. An example of the use of these financial incentives is the current efforts to convert the State's hops industry to drip irrigation. In addition, the State provides funds to purchase a portion of the saved water from willing growers.

Decrease in water use also provides a significant cost saving to growers.

Additional needs to meet this measure

- Irrigation water management continues to be an issue of concern for both water quality and fish habitat. A comprehensive approach is needed. (The Agriculture Fish and Water negotiations will address this need.)

- Headwater volumes could be reduced if systems are converted to pressurized delivery rather than gravity drain canals.

- Due to the fact that there are more than 6,000 irrigation systems in the state, many of which are not in compliance and at risk of polluting the environment, more resources should be dedicated to bringing these systems into compliance. The Department of Agriculture Chemigation and Fertigation program staff of two is dedicated to helping the agricultural community bring these systems into compliance but is overwhelmed by the workload. Additional staff would make the task more realistic.

Actions to satisfy management measures

- Develop a statewide Agricultural Comprehensive Plan to facilitate development of irrigation district plans.

- Study the feasibility of converting open gravity canals and other current delivery systems to more efficient systems, including pressurized pipe.