

United States Department of Agriculture

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## **FINDING OF NO SIGNIFICANT IMPACT**

# **USE OF NRCS CONSERVATION PRACTICES TO ADDRESS NATURAL RESOURCE CONCERNS ON NON-FEDERAL LANDS IN THE NEW ENGLAND STATES AND NEW YORK**

April, 2007

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**FINDING OF NO SIGNIFICANT IMPACT  
FOR USE OF NRCS CONSERVATION PRACTICES TO ADDRESS NATURAL  
RESOURCE CONCERNS ON NON-FEDERAL LANDS IN THE NEW ENGLAND  
STATES AND NEW YORK**

The National Environmental Policy Act (NEPA) requires Federal agencies to prepare an Environmental Impact Statement (EIS) for major Federal actions significantly affecting the quality of the human environment. We, the responsible federal officials for each of the NRCS New England State Offices and New York, have determined, based on the reasons provided below, that there will be no significant individual or cumulative impacts on the quality of the human environment as a result of providing financial assistance to implement common conservation practices identified within the Environmental Assessment (EA) to address natural resource concerns on non-Federal lands in our States, particularly when focusing on the significant adverse impacts which NEPA is intended to help decision makers avoid and mitigate. Therefore, an EIS need not be prepared.

The recommended action is the provision of Federal financial assistance and associated technical assistance under the various conservation programs administered by NRCS for implementation of conservation practices on non-Federal lands. The EA indicates that the financial and technical assistance NRCS is authorized to deliver is provided to support actions that:

- Maintain the condition of the land through continued good management where adequate conservation is already in place;
- Prevent damage to the land where assessment of social, economic, and environmental trends indicates potential for environmental degradation;
- Enhance the land for further productivity and environmental health; and
- Restore the land to health where damage to natural resources has already occurred. (EA, page 2.)

Because of the potential to adversely affect one type of resource while improving the condition of another resource, there may at times be minimal deleterious site-specific environmental effects (EA pages 17 and 25). However, NRCS has in the past and will continue to:

- Prepare documentation of an environmental evaluation on a site-specific level (EA pages 17, 19, 24),
- Use conservation practices in combinations or “systems” that minimize such effects (EA pages 17, 25, 32),
- Consult with the appropriate organizations to avoid, reduce or mitigate adverse impacts on protected resources, and comply with requirements protecting unique geographic features and other resources, as well as NRCS policies protecting natural resources (EA pages 17, 18, 19).

Thus, any undesired effects that may result from the proposed activities will occur at a much lower threshold than the EIS threshold.

Because of the steps NRCS has already taken and will take in the future to work with other agencies to avoid, mitigate and reduce any potential adverse effects (EA pages 17, 18), there is no threat of a violation of any Federal, State, Tribal, or local law or other requirements for the protection of the environment. There is no impact on public health or safety identified in this EA or otherwise expected. Furthermore, there is no effect identified that might be considered highly controversial or uncertain or that might involve unique or unknown risks. The proposed action is not likely to establish a precedent for future actions beyond those discussed in this EA or the related national programmatic EA's for NRCS conservation programs.

When considered either individually or cumulatively with other similar actions, providing financial assistance for the implementation of NRCS conservation practices to address natural resource concerns on non-Federal lands in the New England States and New York is not likely to result in the type of significant impacts that NEPA is intended to help decision makers avoid and mitigate. To the extent an environmental evaluation indicates that certain NRCS activities may result in significant effects to the quality of the human environment, a separate EA or EIS may be prepared (EA page 19).

Based on the information presented in the attached EA, we find that the proposed action is not a major Federal action significantly affecting the quality of the human environment that requires preparation of an EIS.

<u>/s/ Margo L. Wallace</u> State Conservationist, Connecticut	<u>4/16/07</u> Date
<u>/s/ George W. Cleek, IV</u> State Conservationist, New Hampshire	<u>4/16/07</u> Date
<u>/s/ Joyce Swartzendruber</u> State Conservationist, Maine	<u>4/10/07</u> Date
<u>/s/ Christine Clarke</u> State Conservationist, Massachusetts	<u>4/16/07</u> Date
<u>/s/ Roylene Rides at the Door</u> State Conservationist, Rhode Island	<u>4/19/07</u> Date
<u>/s/ Judith M. Doerner</u> State Conservationist, Vermont	<u>4/14/07</u> Date
<u>/s/ Donald J. Pettit, Acting</u> State Conservationist, New York	<u>4/18/07</u> Date



***Environmental  
Assessment  
of  
NRCS Conservation  
Practices Used to  
Address Natural  
Resource Concerns on  
Non-Federal Lands in  
the New England States  
and New York***

April 2007

*The Environmental Assessment was prepared by the  
USDA Natural Resources Conservation Service (NRCS)  
State Offices in:*

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Maine  
Massachusetts  
New Hampshire  
New York  
Rhode Island  
Vermont*

*April 2007*

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**Environmental Assessment  
of NRCS Conservation Practices Used to Address Natural Resource Concerns on  
Non-Federal Lands in the New England States and New York**

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# BACKGROUND

## Introduction

The National Environmental Policy Act of 1969 (NEPA) requires that Federal agencies evaluate, consider and disclose the impacts of major Federal actions significantly affecting the quality of the human environment through the preparation of an Environmental Impact Statement (EIS). In addition, the Council on Environmental Quality (CEQ) regulations implementing NEPA<sup>1</sup> require Federal agencies to prepare Environmental Assessments (EA's) to assist them in determining whether they need to prepare an EIS for actions that have not been categorically excluded from NEPA. The CEQ has defined "major federal action" to include activities over which Federal agencies have control, and this includes the provision of federal financial assistance to carry out otherwise private activities.

The United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) regulations implementing the provisions of NEPA state that an EIS is normally required for "broad Federal assistance programs administered by NRCS when the environmental evaluation indicates there may be significant cumulative impacts on the human environment"<sup>2</sup>. As a result, NRCS prepared a national programmatic EA for each of the conservation programs through which the agency makes financial assistance available and which were authorized by the 2002 Farm Bill<sup>3</sup>. After reviewing each of these EA's, the NRCS Chief made a finding of no significant impact, stating that when focusing on the significant adverse impacts that NEPA is intended to help decision makers avoid and mitigate, it is unlikely there will be significant cumulative impacts on the quality of the human environment because of implementing these programs. NRCS also prepared an EIS for the Emergency Watershed Protection Program. Each of these documents provides that additional environmental review will be undertaken at subsequent stages of program implementation consistent with NEPA requirements and NRCS policy and procedures. NRCS procedures implementing the provisions of NEPA<sup>4</sup> require NRCS planners to conduct an on-site environmental evaluation (EE) to evaluate the effects of alternatives and determine the need for development of an EA or EIS.

This EA focuses on the financial assistance NRCS is authorized to provide to address natural resource concerns through conservation programs in New York and the six New England states—Connecticut, New Hampshire, Maine, Massachusetts, Rhode Island, and Vermont (Figure 1). NRCS expects that, when focusing on the significant adverse impacts that NEPA is intended to help decision makers avoid and mitigate, it is unlikely there will be significant cumulative impacts on the quality of the human environment because of implementing conservation programs in New York and the New England states. The agency has developed this EA to review the effects of conservation practices implemented under its financial assistance programs and to assist in determining whether implementing these practices will significantly affect the quality of the human environment such that NRCS must prepare an EIS.

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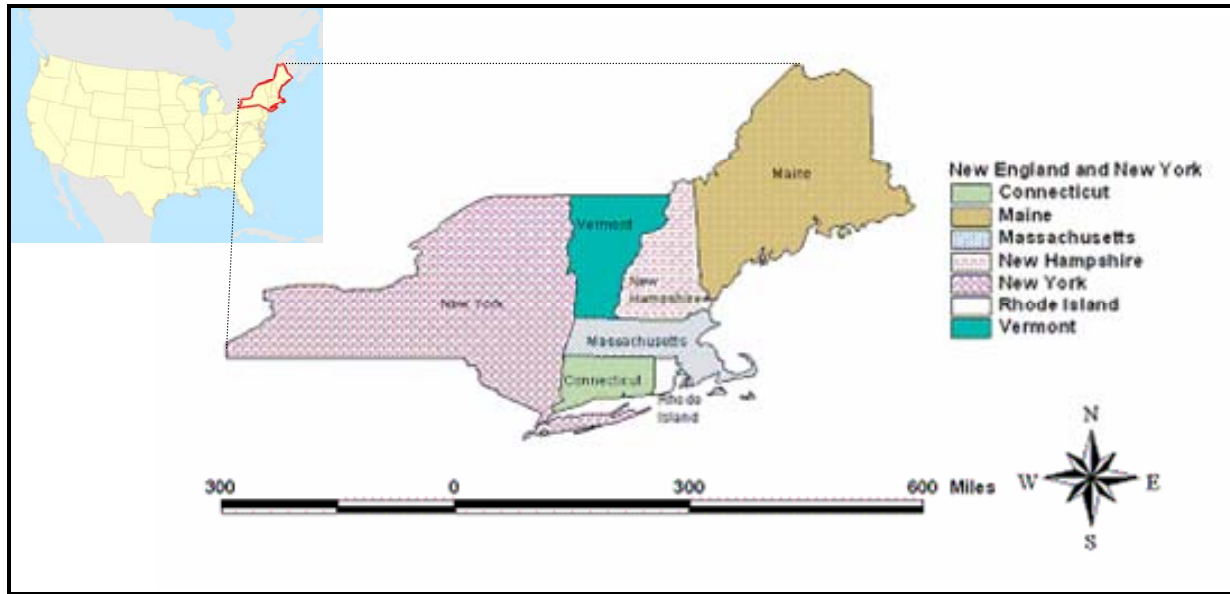
<sup>1</sup> 40 CFR Parts 1500-1508.

<sup>2</sup> 7 CFR 650.7 (a)(3).

<sup>3</sup> National EA's developed by NRCS for EQIP (2003), CSP (2004), AMA (2002), and GRP (2004) are available on the NRCS website at [http://www.nrcs.usda.gov/programs/Env\\_Assess/index.htm](http://www.nrcs.usda.gov/programs/Env_Assess/index.htm).

<sup>4</sup> 7CFR Part 650.4(c).





**Figure 1.** Location Map for the Seven States Included in the Regional EA

The proposed action under consideration involves region-wide decision-making, and no site-specific or ground-disturbing actions will occur as an immediate result of implementing the proposal. An on-site EE will be prepared before financial assistance is provided to individual landowners<sup>5</sup> to evaluate the effects of conservation alternatives and determine the need for development of additional EA's or EIS's consistent with NEPA requirements and NRCS regulations.

NRCS has developed a strategic plan<sup>6</sup> which defines the NRCS vision as “Productive Lands – Healthy Environment.” The NRCS mission is to “Help People Help the Land,” enabling people to be good stewards of the Nation’s soil, water, and related natural resources on non-Federal lands. NRCS does this by providing financial and technical assistance to support actions that:

- Maintain the condition of the land through continued good management where adequate conservation is already in place;
- Prevent damage to the land where assessment of social, economic, and environmental trends indicates potential for environmental degradation;
- Enhance the land for further productivity and environmental health; and
- Restore the land to health where damage to natural resources has already occurred.

The plan establishes goals to enable NRCS to accomplish its mission. In addition to the broad goals identified in its strategic plan, NRCS has identified specific, long-range targets for NRCS actions in each state on the basis of program authorities, funding levels and workload.

<sup>5</sup> As used in this document, the term “landowner” refers to the owner(s) of private, non-Federal land and/or others, such as farm operators, renters or leaseholders, who have been granted authority by the landowner(s) to make management decisions regarding the property.

<sup>6</sup> “*Productive Lands, Healthy Environment: NRCS Strategic Plan 2005-2010.*” See <http://www.nrcs.usda.gov/about/strategicplan/index.html>.

Quantified performance objectives direct how the agency will achieve its goals and track progress. An integrated accountability system adopted by NRCS in 2003 also ensures that managers at all levels of the organization will monitor program performance, costs and obligations, towards meeting the national goals and objectives shown in Table 1.

**Table 1.** NRCS National Strategic Plan: Goals and Performance Objectives for 2005-2010

Mission Goal	Performance Objectives	Key Conservation Practices
1) High-Quality, Productive Soils	Manage 70% of cropland to maintain/improve soil condition and increase soil carbon.	Residue Management; Conservation Crop Rotations; Terracing; Stripcropping; Critical Area Plantings; Cover Crops
2) Clean & Abundant Water	Reduce delivery of sediment and nutrients from agricultural lands: <ul style="list-style-type: none"> <li>• Sediment reduced by 70 million tons</li> <li>• Nitrogen reduced by 375,000 tons</li> <li>• Phosphorus reduced by 70,000 tons</li> </ul> Conserve 8 million acre-feet of water	Buffers; Nutrient Management; Grade Stabilization Structures; Wetland Restoration  Irrigation Water Management; Irrigation Systems; Irrigation Water Conveyance; Structure for Water Control
3) Healthy Plant & Animal Communities	Maintain/improve long-term vegetative condition on 150 million acres of grazing and forestland  Improve and manage 9 million acres of essential habitat to benefit at-risk and declining species	Prescribed Grazing; Pest Management; Brush Management; Prescribed burning; Use Exclusion  Early Successional Habitat Development/Management, Restoration and Management of Declining Habitats; Stream Corridor Restoration; Wetland Wildlife Habitat Management; Upland Wildlife Habitat Management; Wetland Restoration; Wetland Creation; Wetland Enhancement
4) Clean Air	To be established, measured in tons of carbon sequestered	Atmospheric Resource Quality Management; Windbreak Establishment; Cover Crops; Residue Management; Irrigation Water Management; Mulching Conservation Crop Rotations; Pasture Management; Tree/Shrub Plantings
5) An Adequate Energy Supply	To be established, measured by BTUs conserved	Residue Management; Conversion of high pressure Sprinkler Irrigation System to low pressure Sprinkler or Microirrigation System, Irrigation Water Management
6) Working Farmlands	70% of farms protected under easements will remain in active agriculture	

New York and the six New England states share similar climate, soils, and management techniques. NRCS staffs in these states have a history of collaboration, and continued partnership that provides regional consistency in the development, training and use of materials and tools in Federal Farm Bill<sup>7</sup> programs. In New England and New York, financial assistance programs implemented by NRCS include the Environmental Quality Incentives Program (EQIP), the Wetlands Reserve Program (WRP), the Wildlife Habitat Incentives Program (WHIP), the Grasslands Reserve Program (GRP), Conservation Security Program (CSP), Agricultural Management Assistance Program (AMA), and Healthy Forest Reserve Program (HFRP)<sup>8</sup>.

These programs enable NRCS to provide financial assistance to landowners and accelerate implementation and adoption of conservation practices. The same natural resource concern may be addressed using financial assistance provided by more than one financial assistance program. It is important to note, therefore, that regardless of the program through which funding is provided, NRCS uses the same planning process and selects from the same suite of conservation practices to address natural resource concerns. Thus, this EA focuses on the effects of the conservation practices that landowners are most likely to apply.

In some cases, assistance may also involve easements and rental agreements. Easements and rental agreements alone do not alter the physical environment at all. However, landowners may be required by the terms of participation in the particular program to apply conservation practices to maintain or improve the protected land.

The NRCS conservation planning and delivery procedures discussed below ensure that actions implemented to address specific natural resource concerns are consistent with established conservation practice standards and specifications, regardless of the funding source. If the current financial assistance programs are modified, or NRCS is charged with delivering new programs, the impacts resulting from the site-specific installation of the various conservation practices considered in this EA will not change.

Financial assistance programs are approved by the United States Congress through the Farm Bill or other legislation, as well as Congressional appropriations. Funding for NRCS conservation programs is appropriated by Congress to NRCS and then allocated by the NRCS national headquarters to state offices. At the state or local level, NRCS develops ranking systems for each program using criteria based on the national strategic plan and the program objectives as well as priorities established with the assistance of State Technical Committees<sup>9</sup>

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<sup>7</sup> The term “Farm Bill programs” is used here to reference USDA conservation programs authorized by the Food Security Act of 1985 (P.L. 99-198 (December 23, 1985)), as amended by the Food, Agriculture, Conservation and Trade Act of 1990 (P.L. 101-624 (November 28, 1990)), the Federal Agriculture Improvement and Reform Act of 1996 (P.L. 104-127 (April 4, 1996)), and the Farm Security and Rural Investment Act of 2002, P.L. 107-171 (May 13, 2002) which have been delegated to NRCS to implement.

<sup>8</sup> Information about NRCS financial assistance programs commonly used in New England and New York is included in Appendix B. For additional information on USDA conservation programs, visit a local NRCS office or <http://www.nrcs.usda.gov>.

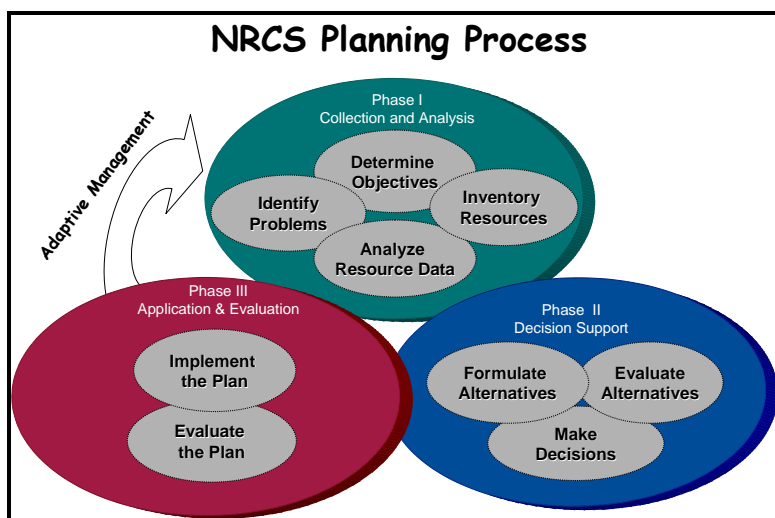
<sup>9</sup> State Technical Committees in each state advise the NRCS State Conservationist on the implementation of NRCS-administered programs and include representatives from Federal, state, local, and Indian Tribal governments as well as representatives of organizations knowledgeable about conservation issues.

and other local conservation partners. Landowners who request financial assistance from NRCS submit applications for individual programs. Applications are evaluated using the ranking system to determine which projects will best achieve the specified goals, objectives and priorities, and these applications are approved for funding. NRCS staffs work with the landowners to develop conservation plans (if they do not have one already) and contracts for financial assistance to implement selected conservation practices.

As noted above, NRCS procedures implementing the provisions of NEPA<sup>10</sup> require NRCS planners to conduct an on-site environmental evaluation (EE). While individual NRCS conservation practices are designed to address specific resource concerns, usually on agricultural lands, the agency recognizes that a comprehensive evaluation of impacts on all resources is necessary and has incorporated the EE process into the nine-step NRCS planning process discussed below that is mandated by agency policy<sup>11</sup> and guides all NRCS planning activities.

## NRCS Conservation Planning and Delivery

Conservation planning in NRCS follows the nine-step process (Figure 2) detailed in the National Planning Procedures Handbook<sup>12</sup> and NRCS planning policy<sup>13</sup>. The planning process provides a framework for planning and applying conservation systems on individual land units, as well as broader areas, and is based on the premise that clients will make decisions and implement actions that improve natural resource conditions if they understand their natural resource problems and opportunities and the physical and social effects of their decisions.



**Figure 2.** The Nine-Step NRCS Planning Process

The NRCS planner works with the landowner to identify natural resource concerns, determine the landowner’s objectives, and inventory and assess the condition of the resources. Once the objectives, needs and resource concerns are understood, the planner develops alternatives (composed of one or more conservation practices) to address those needs and concerns while meeting the landowner’s objective(s).

<sup>10</sup> 7CFR Part 650.4(c).

<sup>11</sup> NRCS General Manual 180, Part 409.

<sup>12</sup> NRCS National Planning Procedures Handbook (180-VI-NPPH, Amendment 4, March 2003) is available through the NRCS Electronic Directives System website, <http://directives.sc.egov.usda.gov/>, under Handbooks, Title 180, Part 600.

<sup>13</sup> NRCS General Manual 180 Part 409.

The National Handbook of Conservation Practices<sup>14</sup> contains national standards for each conservation practice. These standards are included in the handbook only after the public has had the opportunity to comment on them<sup>15</sup>. NRCS state staffs localize the standards to fit conditions in the state and establish quality and quantity requirements (specifications) for applying each conservation practice. Standards for conservation practices are detailed in Section IV of the local Field Office Technical Guide (FOTG)<sup>16</sup>. Conservation practice standards, quality criteria, and local resource data are maintained in the FOTG to provide detailed information for planners to plan and design practices in a manner consistent with local conditions and resource concerns. Commonly, suites of conservation practices are planned and installed together as part of a Conservation Management System (CMS) designed to enhance soil, water and related natural resources for sustainable use. Conservation practice standards and state-specific conservation practice specifications include considerations that ensure the minimization of potentially adverse impacts to associated resources.

Typical effects of implementing conservation practices are summarized in each state's Conservation System Guides and Conservation Practice Physical Effects, contained in the FOTG Sections III and V, respectively. This collection of resource-based planning, design and implementation documents provides NRCS employees and other users with the necessary information, modified for local conditions, to develop alternative approaches to solving natural resource problems.

When alternatives have been developed, the conservation planner conducts the EE and documents the results on the Environmental Evaluation Worksheet (form NRCS-CPA-52 or a state modified equivalent)<sup>17</sup>. The proposed action is evaluated against a no action alternative and other alternatives being considered to determine and quantify, to the extent feasible, impacts upon soil, water, air, plant, animal, and human (SWAPA+H) resources. The planner also evaluates the alternatives with respect to a number of special environmental concerns identified by related laws, regulations, Executive Orders, and agency policies. Where adverse impacts or extraordinary circumstances are present, the planner identifies ways in which the alternative could be modified to avoid or minimize these effects<sup>18</sup>. Required permits or consultations with other agencies are also identified.

The results of the EE are shared with the landowner, who then selects a preferred alternative. The landowner determines what conservation practices they are willing to carry out, if any. NRCS may then provide financial assistance if there are no significant adverse effects, funds are available, program-specific requirements are met, and the landowner is willing to follow NRCS conservation practice standards and specifications. The NRCS Responsible Federal Official (RFO) reviews the results of the EE to ensure any necessary consultation has been carried out

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<sup>14</sup> For additional information on the National Handbook of Conservation Practices (450-VI-NHCP, November, 2001) and individual conservation practices, visit <http://www.nrcs.usda.gov/technical/Standards/nhcp.html>.

<sup>15</sup> For a description of how NRCS develops its conservation practice standards, see NRCS General Manual Title 450, Part 401, Subpart B, at the NRCS Electronic Directives System website, <http://directives.sc.egov.usda.gov/>.

<sup>16</sup> Local FOTG information is available at the electronic FOTG website, <http://www.nrcs.usda.gov/technical/efotg/>.

<sup>17</sup> A sample NRCS-CPA-52 form is available at <http://www.nrcs.usda.gov/technical/ECS/environment/CPA-52.doc>.

<sup>18</sup> See NRCS General Manual Title 190, Part 410.3 (in Subpart A) at the NRCS Electronic Directives System website, <http://directives.sc.egov.usda.gov/>.

and to determine whether implementation of the selected alternative requires additional NEPA analysis before Federal funding is provided (Figure 3).

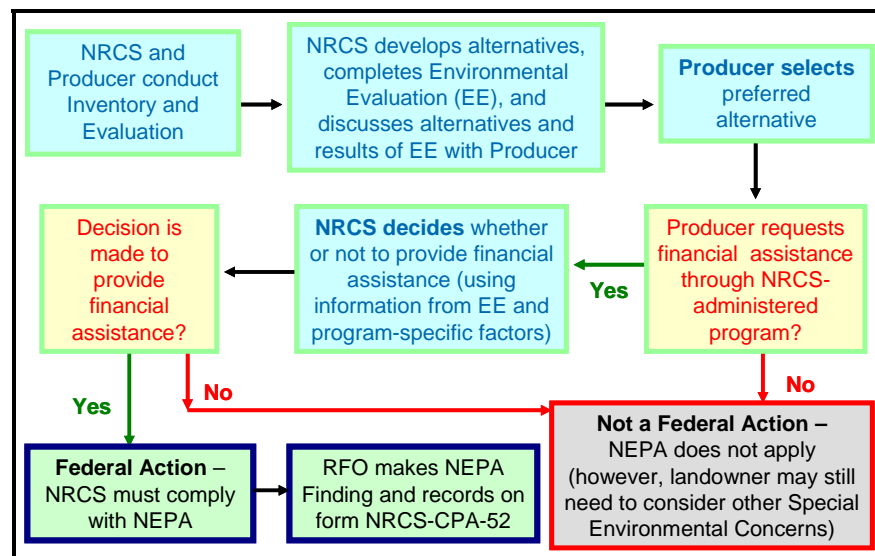


Figure 3. NEPA and the NRCS Planning Process

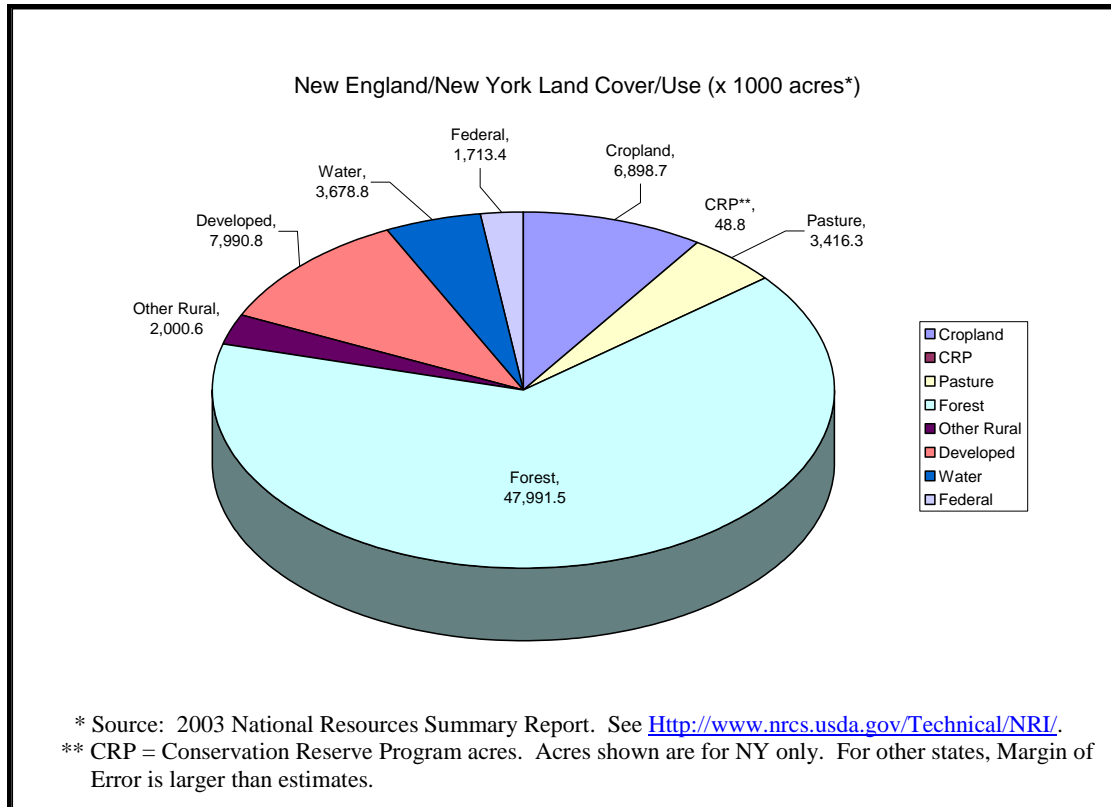
## Typical Land Uses and Associated Natural Resource Concerns

Ninety-eight percent of the land in New York and the New England states is privately owned and most is forested (Figures 4 and 5). There are also significant areas of cropland and pasture, as well as an increasing percentage of urban and suburban development. Recreation and tourism are important industries in the region, and there is strong support for natural resource protection (including conservation easements) and wildlife habitat enhancement and management.

The seven states are included in the Northeastern Forage and Forest Region, with a Lake States Fruit, Truck, and Dairy Region area in New York, and small coastal areas in Massachusetts and New York included in the Northern Atlantic Slope Diversified Farming Region<sup>19</sup>. The Northeastern Forage and Forest Region consists of plateaus, plains and mountains. In the Northern Atlantic Slope Diversified Farming Region the land surface is a nearly level to gently sloping glaciated plain.

Average annual precipitation ranges from 29 to 52 inches. In most of the region, more than one-half of the precipitation falls during the frost-free season. The average annual temperature is 37 to 52°F. The frost-free period generally is 110 to 160 days but ranges from 80 days in the higher mountains to as long as 200 days in some areas along the Atlantic coast and near the Great Lakes. The dominant soils have evolved from glaciation, stream deposition, marine and lake sediments, and organic deposits. Stoniness, steep slopes, and drainage are challenges for managing many of these soils which require some level of conservation treatment to ensure long-term productivity.

<sup>19</sup> USDA-NRCS, Land Resource Regions, [http://www.soilinfo.psu.edu/soil\\_lrr/](http://www.soilinfo.psu.edu/soil_lrr/).



**Figure 4.** Land Use Distribution in the New England States and New York

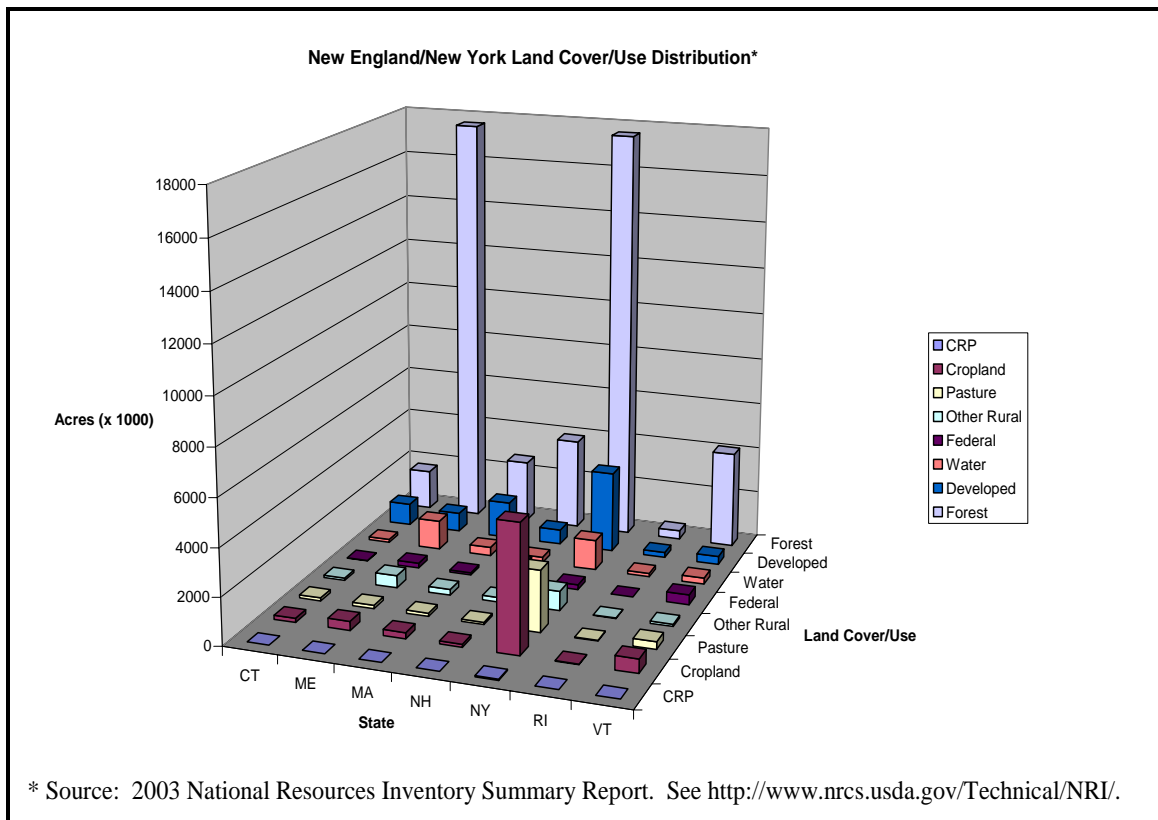
According to 2005 data from the National Agricultural Statistics Service (NASS), there are 63,550 farms in the New England states and New York, covering over 11.6 million acres of the almost 74 million acres in these seven states. Of those farms, 62% reported less than \$10,000 in annual sales. The average farm size in the region is 140 acres, ranging from 71 acres farmed in Rhode Island to 195 acres in Vermont. Forage and grains for dairy cattle are the principal crops. In places where markets, climate and soils are favorable, fruits, tobacco, potatoes, and vegetables are important crops. Wildlife habitat and recreation are also important land uses.

Cash receipts in 2005 totaled \$5 billion, with crops accounting for 42% of the total, and 58% coming from livestock. Milk and other dairy products from cows was the largest pool of livestock sales with 42% of the total. Greenhouse and nursery operations were the largest crop commodity, accounting for 18% of total sales. Vegetables were ranked third in market value with 10% of the total sales. Specialty agricultural products in the region include maple syrup, blueberries, cranberries, aquaculture, Christmas trees, and other animal operations, including goats, pigs, and sheep. It is important to note that NASS does not include most forest products (excluding maple syrup) in their evaluations. New England and New York, especially the northern portions of the region, have a strong forest products industry on working lands that benefit from the technical and financial resources available through NRCS.

Resource concerns have been identified for soils, water, air, plants, and animals for each land use. Many of the common resource concerns in the New England states and New York are summarized in Appendix C, along with the conservation practices included in this EA that are normally used to address those resource concerns. Additional resource concerns and

conservation practices commonly used in the region that have been adequately addressed in the Programmatic EA for EQIP (Appendix D)<sup>20</sup> are not included, because they were reviewed and determined to describe effects similar to those that occur when the practices are applied in New York or New England states. Common natural resource concerns in the region include:

- Soil quality and erosion - sheet and rill, gully and streambank erosion and poor soil condition (depletion of organic matter, compaction, and contaminants);
- Water quality - suspended sediments in surface waters, and nutrients and pesticides in surface and ground waters;
- Water quantity - excessive runoff, flooding or ponding, insufficient flows in water courses, and inadequate stock water for domestic animals;
- Plant condition – reduced productivity, health and vigor, noxious and invasive plants, and threatened, endangered, and declining species;
- Fish and wildlife habitat - inadequate cover/shelter, habitat fragmentation, and threatened, endangered and declining species; and
- Air quality - excessive greenhouse gases, ammonia, and objectionable odors.



**Figure 5.** Land Use Distribution by State for the New England States and New York

<sup>20</sup> The Programmatic EA for EQIP is available at the following website:  
[http://www.nrcs.usda.gov/programs/Env\\_Assess/EQIP/EQIP.html](http://www.nrcs.usda.gov/programs/Env_Assess/EQIP/EQIP.html).



For each resource, minimum levels of desired sustainability, also known as quality criteria have been identified for each land use of cropland, pasture land, headquarters, forest land, and wildlife land. This information is found in the NRCS Field Office Technical Guide (FOTG)<sup>21</sup>.

### Cropland

Over 6.8 million acres are classified as cropland in the New England states and New York. Almost 78 percent of these acres are located in New York. Over 2 million acres are considered to be highly erodible lands (HEL), with soil erosion occurring on over 750,000 (36 percent) of these lands at levels greater than the soil loss tolerance (T)<sup>22</sup>. An additional half-million acres of non-HEL land is also eroding at rates above T<sup>23</sup>.

Soil health and productivity is further reduced by common cropland farming practices. Continuous row crops without residue-building grasses and legumes in rotation can lead to disease, lower yields and decreased soil organic matter. Organic matter is an indicator of soil health and a relative measure of the amount of carbon stored in soils. Excessive tillage and the resultant mixing of soils cause the breakdown and loss of organic matter, reduce plant growth and yield, and increase compaction. It is estimated that conservation practices that manage crop residues to build soil organic matter are being used on as few as 20 percent of the cropland acres in the New England states and New York<sup>24</sup>.

Excessive runoff, flooding and ponding prevent optimum plant uptake of available moisture and lead to offsite movement of nutrients, pathogens and pesticides to surface and ground waters. Intensification of livestock-based agricultural systems in the region has increased soil nutrient levels, particularly phosphorus. Up to one-third of all cropland fields have been found to have either high or excessive phosphorus levels. Additional applications of phosphorus, whether from manures or commercial fertilizers, on these fields increases the potential for phosphorus loss in surface runoff. Nutrients and organics in surface waters lead to algal blooms, change water pH and tie up available oxygen needed by aquatic organisms. Algal blooms also render water unfit for terrestrial animals and humans. Pesticides are important management tools for producing potatoes, fruits, vegetables and the many other specialty crops grown in the region, and pesticide loss into the environment is a concern. Encroachment of urban development around farmland has increased complaints about odor from land application of manure and other wastes on cropland.

### Pasture Land

Few of the 3.4 million acres of pastures in New England and New York are managed to their full productive potential. NRCS estimates that some level of improved management would benefit productivity and/or natural resources on 60 percent of pastures in the northeast, and the majority

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<sup>21</sup>Local FOTG information is available at the electronic FOTG website: <http://www.nrcs.usda.gov/technical/efotg/>.

<sup>22</sup> The soil loss tolerance (T) value represents the average annual rate of soil erosion that could occur without causing a decline in long term productivity.

<sup>23</sup> 2003 data, USDA Natural Resources Inventory (NRI), <http://www.nrcs.usda.gov/technical/land/nri03/statereports/table5.html>.

<sup>24</sup> From data on use of Conservation Tillage practices, available from the National Crop Residue Management Survey at [http://www.conservatinformation.org/index.asp?site=1&action=crm\\_search](http://www.conservatinformation.org/index.asp?site=1&action=crm_search).

of the remaining 40 percent could benefit from minor changes in management<sup>25</sup>. Without proper livestock management and nutrient management, the intensive grazing practices that are increasingly practiced in the region can result in nitrogen applied as fertilizers leaching below the root zone and potentially into ground waters.

Often pastures are located along water courses or on the more marginally-productive lands associated with a farm. Improved grazing management is needed to optimize forage production and control soil erosion and nutrient runoff from heavily used areas or cattle walkways. Due to livestock presence and proximity to surface water, there is a moderate risk of surface water contamination from waste deposition and streambank degradation. Harmful levels of pathogens, excessive suspended sediment and turbidity, and nutrients and organics in surface waters may result from unrestricted livestock access and use along surface waters. Adequate livestock drinking water systems are needed to address these concerns. Livestock are also allowed access to sensitive environmental areas such as riparian areas, wetlands, and other important natural communities. Wildlife habitat has not been considered in many existing grazing plans, although grasslands in the region have been identified as important habitat for migratory birds<sup>26</sup>. Noxious weeds, invasive plants and other factors that limit plant productivity, health and vigor reduce forage available for domestic animals and wildlife, decrease livestock production, and increase animal stress and mortality.

### Headquarters

“Headquarters” is an NRCS land use designated for dwellings, barns, pens, corrals, or other facilities used in connection with farm operations. Structures for storage of livestock feed, waste storage and treatment are often located on these areas. Livestock are usually housed in barns and heavy use areas in the headquarters area during the winter months. Livestock often have uncontrolled access to springs, seeps, streams and ponds resulting in poor water quality and eroded areas around the water. Small areas of erosion occur around heavily used areas and along livestock trails. Odor and adverse impacts to surface and ground water quality from suspended sediments, nutrients, organics and pathogens in livestock feed (i.e. silage leachate) and animal waste are typical resource concerns in these areas.

Most livestock operations have animal concentration areas around the headquarter areas. These areas are often devoid of vegetation, heavily manured and potential sources of runoff to nearby surface waters. Corn and hay silage storage areas often produce a leachate that can runoff from the storage areas. This leachate is high in acidity and Biological Oxygen Demand (BOD) and is difficult to capture and/or treat.

Most of the livestock operations in the region fall into the category of small animal feeding operations (AFO's). Of the 31,579 livestock operations in the New England states and New York, 140 are classified as large confined animal feeding operations (CAFO's), 884 are medium

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<sup>25</sup> Estimated by NRCS; data in: Sanderson, M.A., Goslee, S.C., Cropper, J.B. 2005. Pasture Assessment in Northeast United States. Forage and Grazinglands, <http://www.plantmanagementnetwork.org/pub/fg/research/2005/assess/>.

<sup>26</sup> Partners in Flight Bird Conservation Plan for Southern New England, 2000, [http://www.blm.gov/wildlife/plan/pl\\_09\\_10.pdf](http://www.blm.gov/wildlife/plan/pl_09_10.pdf).

CAFO's, and 30,555 are small AFO's. Approximately two-thirds of the New England and New York feeding operations (140 large CAFO's with 1000 or more cows, 882 medium CAFO's with 300 – 1,000 cows, and 19,549 small AFO's, with less than 300 cows) are dairy facilities. Small feeding operations that have surface water running through the confinement area can be designated as a small CAFO by EPA or the state permitting authority after an onsite inspection. All CAFO's must meet regulatory requirements under the Clean Water Act.

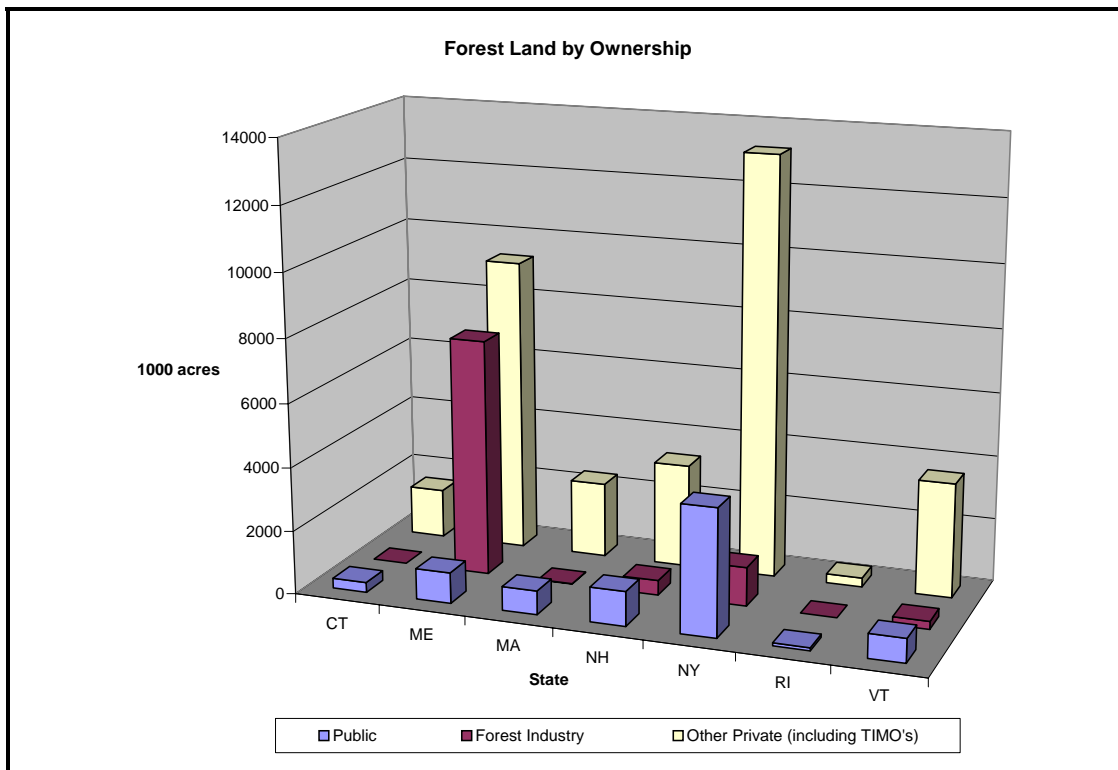
Waste produced from dairies includes feed waste, bedding, manure, urine and milking center wastes. Typically, 92 pounds of solids (potential suspended sediments) and 15 gallons of liquid wastes are produced each day per cow. Assuming an average size of 1000, 500 and 300 cows for large, medium and small operations respectively, 954 million tons of manure and 156 million gallons of liquid waste per year are produced in the region. Eight pounds of nitrogen/ton of manure equates to approximately 3.8 million tons/year of nitrogen produced. Three pounds of phosphorus/ton of manure equates to 1.4 million tons/year of phosphorus produced. Inadequate storage to properly store and manage the animal wastes produced continues to be a concern on many operations. Many existing storage systems are improperly constructed or managed in such a way that animal wastes are allowed to enter surface or ground waters. Milkhouse wastes on dairy operations are often inadequately treated or disposed of and often cause traditional septic systems to fail because of the solids associated with the wastes. Many farmers do not have the ability to store these liquids for proper disposal.

In addition to nutrients, livestock manures and other wastes contain pathogens that can adversely impact the health of humans, aquatic organisms, and the environment when stored or handled improperly. The magnitude of these impacts varies across the landscape and must be assessed on the site-specific level. In general, nitrogen from the waste stream is lost to volatilization into the atmosphere, leached into groundwater, carried into surface water by runoff, or incorporated into the soil and mineralized for use by plant and soil biota. Phosphorus is transported as soluble phosphorus or on suspended sediments into streams and lakes. Sediment and phosphorus loading of fresh surface waters, and nitrogen loading to estuaries, enriches the water to promote algae growth and reduce the availability of dissolved oxygen for aquatic organisms as the algae decompose. Volatile organic compounds from livestock wastes also result in odors and potentially adverse neighbor relations. There are opportunities to capture nutrients and other beneficial properties of livestock manures to enhance soil fertility and quality. However, the costs associated with improved infrastructure for storage and handling are often prohibitive.

### Forest Land

Forested lands cover almost 50 million acres and approximately 71 percent of the land area in the New England states and New York. Most, especially the steeper areas, is forested with northern hardwood and spruce-fir vegetation. Sugar maple, yellow birch, American beech, red spruce and eastern hemlock are dominant on the better drained soils and ridges in the northern part of the region, while red spruce and balsam fir are dominant on the wetter soils of long, gentle slopes and in depressions. Hardwood forest vegetation of oak, hickory and birch and softwood forest vegetation of white pine and eastern hemlock are more prevalent in the southern part. Red maple, black ash, American elm and Atlantic white-cedar are common on the wetter southern soils. Significant amounts of lumber and pulpwood are produced. Locally, Christmas trees and maple syrup are important forest products.

Ownership of forest land varies across the region (Figure 6). In some areas, very large holdings are owned mainly by forest industry and corporate Timber Investment Groups (TIMO's), while smaller holdings owned by private non-industrial owners predominate in other areas. Private, non-corporate, non-industrial forest land is usually owned in lots that vary from 5-100+ acre stands. Most consist of unmanaged, mixed hardwoods and coniferous species, used for timber production, firewood, wildlife, and recreation. Larger industrial and corporate forest lands are usually managed under professionally developed forest management plans. In some states smaller forest land owners receive tax incentives if they manage their forest lands under an approved forest management plan. In other states, few existing forest management plans are associated with these smaller non-industrial forest areas.



**Figure 6.** Forest Land by Ownership in the New England States and New York (2002)

Resource issues and concerns on forest land commonly include soil erosion from old landing areas and logging roads which impacts water quality through increased sediment and turbidity. A recent study of the use and effectiveness of forest Best Management Practices (BMP's) in Maine<sup>27</sup> found that when BMP's were not applied appropriately, sediment reached waterbodies at 25 percent of the approaches to stream crossing structures and 44 percent of the stream crossings. In addition, 67 percent of the most commonly installed permanent stream crossing structures, culverts, used for land management roads showed evidence of downstream scouring or erosion, indicating undersized structures that increase water velocity and create barriers for fish passage.

<sup>27</sup> Maine Forestry Best Management Practices Use and Effectiveness, 2005. Department of Conservation, Maine Forest Service (2006). [http://www.maine.gov/doc/mfs/pubs/pdf/bmp\\_annual\\_rpt/2005\\_me\\_bmp\\_rpt.pdf](http://www.maine.gov/doc/mfs/pubs/pdf/bmp_annual_rpt/2005_me_bmp_rpt.pdf).

Forest stands are often overstocked which reduces forest health, productivity and wildlife habitat. Wildlife food and cover are not commonly considered as management goals. Lack of varied forest structure, lack of species diversity and invasive plant species limit the viability of the natural woodland community and wildlife habitat. Invasive exotic pests, including diseases, insects and plants, will pose an even greater threat to forest health in the future. Suspended sediments, turbidity, nutrients and organics in surface water are common problems in forests, often resulting from poorly designed and maintained forest access roads and trails. Forest plants not adapted or suited for the intended use, low productivity, health and vigor, and noxious and invasive plants all lead to reduced timber, Christmas tree and sugar maple syrup production. In addition, forest stands are not currently managed to maintain the blocks of different stages or successions of plant communities which often provide habitat for a multitude of organisms, including threatened and endangered plant and wildlife species.

### Wildlife

All land uses previously discussed can be managed to benefit wildlife. The primary concern associated with wildlife is loss of habitat, including losses to invasive species and those due to fragmentation. Basic needs of food, shelter, water, and space for breeding and rearing young must be provided at a scale and time to allow the survival of the individual and the species. Unfortunately, the large blocks of uniform, monoculture plant communities that are common in agriculture and forestry do not provide the diversity needed by many species. The early successional habitat that benefits many species of terrestrial wildlife is generally lacking in the New England states and New York. Acid rain resulting from offsite sources of air pollution has acidified soils and reduced the buffering capacity of streams, adversely affecting aquatic species. Accelerated rates of erosion and sedimentation have also impacted aquatic habitats. While some plant and animal species are adaptive and have thrived with agricultural and urban land use, others have special habitat needs and may be less adaptive to changes in land use and structure. These species have declined significantly in number and include a number of species that have been listed as threatened or endangered.

Sixteen animals and 15 plants are listed as Federally threatened or endangered in the New England states and New York<sup>28</sup>. Roads, housing developments, utility right-of ways, and other alterations have fragmented habitat for many threatened and endangered species. Vernal pools, rivers and streams, special forests, such as Atlantic white cedar and pitch pine-scrub oak barrens, grasslands, cliffs and alpine mountain tops, sand beaches, and salt marshes are a few of the habitats vulnerable to agricultural or urban development.

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<sup>28</sup> U.S. Fish and Wildlife Service, <http://www.fws.gov/northeast/angered/>

## PURPOSE AND NEED

The need for the proposed action is to efficiently and effectively use NRCS authorities to assist in improving natural resource conditions on non-Federal lands in the New England states and New York, in order to provide:

1. High quality, productive soils protected against damage by erosion and other forms of degradation;
2. Clean and abundant water protected against contamination and managed efficiently to serve many uses;
3. Healthy and well-managed plant communities, including agricultural crops and vigorous and varied natural vegetative communities ;
4. Healthy animal communities, including both domestic animals and wildlife;
5. Clean air that is free of harmful substances; and
6. An adequate energy supply.

The public investment in conservation through programs administered by NRCS has increased substantially in the last 10 years. It is the responsibility of NRCS to ensure that Federal dollars are utilized effectively and efficiently in achieving programmatic and land use objectives, while improving the quality of the human environment. Historically, NRCS has been dedicated to the belief that a voluntary, incentive-based approach is the most effective method of achieving sound resource management and conservation on non-Federal lands.

Additionally, this EA supports NRCS efforts to improve the efficiency and effectiveness of the delivery of assistance for commonly implemented conservation practices not evaluated in existing agency programmatic EA's and EIS's. Frequently used conservation practices are evaluated at a regional level, reducing the repetitive workload of field staff.

## ALTERNATIVES

The two alternatives evaluated in this EA are described below.

- A. **No Action** – NRCS would not provide financial assistance or technical assistance associated with financially-assisted conservation programs. NRCS would continue to provide other technical and planning assistance (Conservation Technical Assistance<sup>29</sup>) to landowners upon request.
- B. **Proposed Action:** NRCS would provide Federal financial assistance and associated technical assistance under the various conservation programs administered by NRCS for implementation of conservation practices on non-Federal lands. Conservation practices implemented under these programs would be directed to address resource concerns which have been identified as a priority within the state. Practices would include those considered in this EA (see Appendices E and F) as well as similar practices in the FOTG that address the same resource concerns and are determined to have similar potential

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<sup>29</sup> Information on Conservation Technical Assistance is available at <http://www.nrcs.usda.gov/programs/cta/>.

impacts. In addition to financial assistance, NRCS or its partners would provide the technical assistance for conservation planning, design, layout and installation of the practices according to NRCS standards and specifications.

## **IMPACTS AND ALTERNATIVE ANALYSIS**

### **Introduction**

This EA assesses the effects of the more commonly implemented conservation practices in the New England states and New York, identifies those effects unique to the region that may be different from the effects disclosed in the National programmatic EA's, and provides descriptions of impacts closer to the local level than those found in the National EA's. Potential impacts of the proposed action and no action alternative are described. The discussion under each alternative then focuses on immediate and cumulative effects that the alternatives would have on the natural and human resources in the region.

### Practices and Supporting Network Diagrams

The conservation practices expected to be used most commonly in the New England states and New York address resource concerns on cropland, pasture land, livestock areas within the headquarters, forest land, and wildlife lands. The practices considered in this EA are listed in Appendix E, with an indication of the land uses on which each practice is commonly applied. Network diagrams and associated narratives for the listed practices can be found in Appendix F. Several of the practices considered are unique to the cranberry growing region of New England. In addition to these practices, many of the other conservation practices already described and assessed in the national programmatic assessments for the Farm Bill programs are also used in the region. Where a review showed similar effects to those disclosed in the national programmatic EA's, consideration of these practices are not repeated in this EA (Appendix D).

In many cases the same practice may be used to address resource concerns on different land uses. Practices are generally applied as part of a CMS, which may include facilitating practices or practices which mitigate potentially adverse impacts. This combination of practices may further enhance benefits to some resources or eliminate or reduce unwanted effects.

Some conservation practices, such as Prescribed Grazing, Prescribed Forestry, and Waste Treatment, are systematic in nature. They require the use of other component conservation practices to meet their intended function. For example, Prescribed Forestry may include Upland Wildlife Habitat Management, Forest Stand Improvement, Tree Planting, and Forest Trail and Landings. The impact on the land derives directly from the individual component practices or the combination thereof.

NRCS has developed network diagrams depicting the chain of natural resource effects resulting from the application of each practice (Appendix F). Each of the diagrams first identifies the typical setting to which the practice is applied. This includes identification of the predominating land use and the resource concerns that trigger use of the practice. The diagrams then identify the practice used to address the resource concerns. Following identification of the practice, there

is a description of the physical activities that are carried out to implement the practice. Next, the diagrams depict the occurrence of the direct, indirect and cumulative effects of the practice. Effects are qualified with a "+" or "-" which denote a direction of change, either an increase ("+") or decrease ("-") in the effect. For example, a "+ sedimentation" means an increase in sediment may occur, while a "- erosion" means a decrease in erosion is expected. Pluses and minuses do not imply desirability, i.e., that an effect is "good or bad" or even "positive or negative".

The diagrams depict only the potentially important and typical effects for the practice in the settings described. Where there is a likelihood that an adverse impact to a resource may occur, mitigating measures, which may be used to reduce the impact to the maximum extent practicable, have been included in the network diagrams. In addition to the network diagrams, Appendix F includes a photo and summary description about how each of these practices is intended to be used, the purposes of the practice, considerations when selecting or implementing the practice, and a list of practices commonly used in association with the practice in the NRCS conservation plans provided to landowners.

### Special Environmental Concerns

The effects of the conservation practices may vary somewhat depending on the local ecosystem(s), landscape position, methods of practice installation, scope or magnitude of the practice, and presence of special resources, such as a coastal zone, endangered or threatened species, and historic or cultural resources. While effects on these resources may be described in general terms at the regional level, they must still be addressed at the site-specific level. This is particularly true for endangered and threatened species, historic properties and other cultural resources, essential fish habitat, and other resources that are protected by special authorities that require consultation. The EE is used to determine and document the practice effects at the site-specific level. NRCS will consult with other agencies on a State level as needed and appropriate, to ensure that actions do not adversely affect special resources of concern. NRCS also implements practices in a manner that is consistent with the NRCS policy to minimize adverse effects, through appropriate avoidance or other mitigating measures, to the extent feasible<sup>30</sup>.

To ensure compliance with Section 106 of the National Historic Preservation Act<sup>31</sup> and associated authorities, NRCS primarily follows the procedures developed in accordance with a nationwide programmatic agreement between NRCS, the Advisory Council on Historic Preservation (ACHP), and the National Conference of State Historic Preservation Officers<sup>32</sup>, which called for NRCS to develop consultation agreements with State Historic Preservation Officers (SHPOs) and Federally-recognized Tribes (or their designated Tribal Historic Preservation Officers [THPOs]). These consultation agreements focus historic preservation reviews on resources and locations that are of special regional concern to these parties. Importantly, these consultation agreements also streamline the more inclusive Section 106

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<sup>30</sup> NRCS General Manual 190, Part 410.3.

<sup>31</sup> 16 USC 470 f, as amended.

<sup>32</sup> Nationwide Programmatic Agreement relative to Conservation Assistance, [http://www.nrcs.usda.gov/technical/ECS/culture/PA\\_31.pdf](http://www.nrcs.usda.gov/technical/ECS/culture/PA_31.pdf)



regulations of the ACHP<sup>33</sup>, by exempting certain classes of undertakings from review. For example, undertakings like the development of a conservation plan for which NRCS would provide no financial assistance for implementation would have little likelihood of affecting historic properties. Such projects would not require consultation with SHPOs or Tribes to identify, evaluate, or treat significant cultural resources. However, historic preservation review with consulting parties would be necessary under these consultation agreements for undertakings that would likely impact historic properties. All of the New England states and New York have consultation agreements with SHPOs, but not with all Tribes. In the absence of a Section 106 consultation protocol with a Tribe, NRCS will afford that Tribe, as appropriate, an opportunity to advise the NRCS State Office during project-specific planning about their historic and cultural resource concerns so that they may be taken into account in accordance with the ACHP regulations.

NRCS State Offices generally assess the effects of conservation practices on historic properties after the identification and evaluation of these significant cultural resources. In consultation with SHPOs, Tribes, and other appropriate parties, the State Offices consider how the practices might physically damage a historic property and what environmental changes might result from the practices that could indirectly impact the historic property now or over time. Examples of various effects of conservation practices on historic properties include: 1) the direct effect of grading a new Access Road and causing the physical destruction of an archaeological site; 2) the indirect effect of building a Pumping Plant and changing the visual setting of a historic farmstead; and 3) the cumulative effect of making a Recreation Trail and Walkway and adding to tourist traffic near a remote traditional cultural property where solitude is key. The State Offices employ the ACHP's criteria of adverse effect<sup>34</sup> — or similar criteria identified in a State Level Agreement or Tribal Consultation Protocol — to determine what changes in integrity might occur to those characteristics of the historic property that qualify it for the National Register of Historic Places. If adverse effects were anticipated, NRCS State Offices would seek alternative ways of implementing conservation practices to avoid or mitigate such effects, including deciding not to pursue particular practices in given locations. If the natural resource benefits were determined to be of overwhelming benefit, the State Offices also might decide to implement the conservation practices after resolving adverse effects on the historic property pursuant to a treatment plan executed by NRCS and the historic preservation consulting parties noted in the ACHP regulations<sup>35</sup>, State Level Agreements, or Tribal Consultation Protocols. Similar processes will be followed, as needed and appropriate, to address other special requirements for the protection of the environment.

The already complex network diagrams for the conservation practices under consideration do not include effects for historic preservation (Appendix F). One reason for this omission is that, as noted above, the main purpose of the diagrams is to show “the chain of *natural* resource effects resulting from the application of each practice” (emphasis added) — not the *sociocultural* resource effects. Also, as emphasized in State Level Agreements with SHPOs and in Consultation Protocols with Tribes, typical effects of conservation practices on historic properties may vary from state to state; and, consequently, the effects are not suited for general

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<sup>33</sup> 36 CFR 800

<sup>34</sup> 36 CFR 800.5

<sup>35</sup> 36 CFR 800.6

summary in network diagrams. These effects as well as effects upon other special resources will be evaluated during the site-specific EE during the conservation planning process and addressed according to the appropriate NRCS policies.

### Scope of Practice Network Diagrams

Some conservation practices result in effects that vary little regardless of the scope of the project or the specific site conditions. Applications of such practices, regardless of the location or specific site conditions, generally have effects that only improve the condition of natural resources. For example, Conservation Cover, regardless of the conditions under which the practice is implemented, generally provides natural resource benefits that include reduced soil erosion and improved soil health. For other practices, such as Access Roads, Irrigation Storage Reservoirs, Land Clearing, Stream Crossings, or Fish Passages, the effects will vary depending on the specific site conditions and the extent or magnitude of the practice. The effects of practices addressed in this EA are those which occur under the specific conditions described in the “initial settings” shown on the network diagram for each practice in Appendix F. In all cases, effects will be evaluated and described during the site-specific EE. Where the EE indicates a potential for degraded natural resource conditions, the NRCS conservation planner will refer the project to specialists at the State Office for further analysis of effects and a determination of whether an individual EA or EIS is needed.

In some cases where the project is subject to Federal regulations, the permit review and authorization will include an EA. It is recommended in these cases that NRCS involve permitting agencies early in the planning process as cooperating agencies to reduce duplication of efforts.

## **Alternative Analysis**

The analysis of alternatives is based on the implementation of the conservation practices listed in Appendix E throughout the New England states and New York. The number and extent of practices will vary by state and land resource area; however the overall impacts will not change significantly. Differences in practice impacts due to localized site conditions or implementation techniques will be included and documented in the site-specific EE.

Two alternatives have been identified for evaluation. The first is the “no action” alternative under which conservation practices would be implemented by landowners on their own at a reduced rate. The second alternative is an accelerated practice implementation program involving NRCS technical and financial assistance to the landowners.

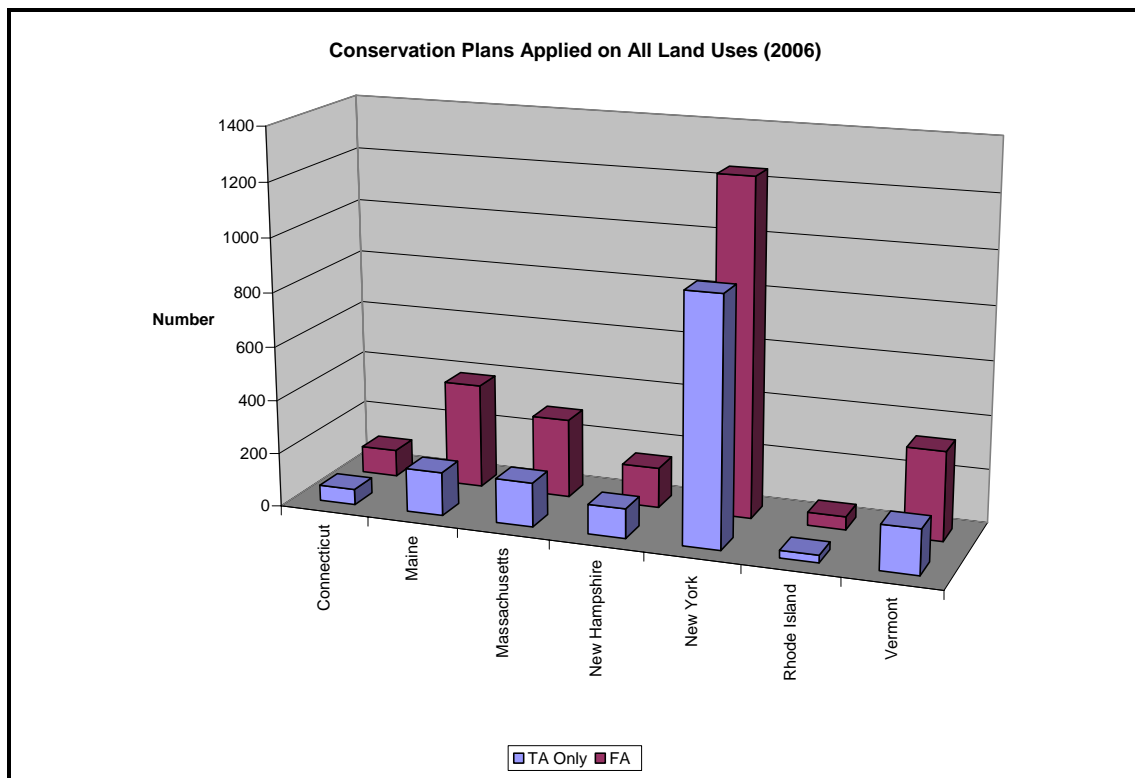
## **Alternative A**

### Introduction

***No Action:** NRCS would not provide financial assistance or technical assistance associated with financially-assisted conservation programs. NRCS would continue to provide other technical and planning assistance (Conservation Technical Assistance) to landowners upon request.*

Under this “no action” alternative farmers would most likely not be able to implement the more costly or management-intensive conservation practices on their own. Considerable costs are often associated with compliance with regulatory requirements of Federal, state, Tribal, and local environmental laws, such as the Clean Water Act. Most producers do not possess the required technical expertise required to plan and design the majority of conservation practices needed. In addition, they often lack the economic resources to implement potentially expensive structural conservation practices, such as Waste Storage Facilities, Heavy Use Area Protection, Anaerobic Digesters, or Solid/Liquid Waste Separation Facilities, needed to adequately improve the efficiency of their operation, protect natural resources, and meet regulatory requirements.

Without NRCS assistance, most of the conservation practices needed would not be implemented, resulting in reduced rates of implementation and adoption by landowners across the landscape. A percentage of landowners would voluntarily implement and adopt conservation practices without NRCS financial assistance (Figure 7). Conservation practices that reduce the operator’s time or out-of-pocket labor and inputs costs without requiring specialized knowledge are often adopted without financial assistance. However, some form of incentive is needed to encourage implementation of conservation practices that do not pay for themselves in reduced costs or increased yields, require more management time, involve costly equipment upgrades or other large capital investments, or mainly result in off-site improvements to natural resources, sometimes far downstream or after a considerable time lag<sup>36</sup>.



**Figure 7.** Number of Conservation Plans Applied with Technical Assistance (TA) Only and with Financial Assistance (FA) in Fiscal Year 2006

<sup>36</sup> From Lambert, D., P. Sullivan, R. Claassen, and L. Foreman. 2006. Conservation –Compatible Practices and Programs – Who Participates? Economic Research Report Number 14. USDA Economic Research Service.

Other non-USDA incentive programs might assist some landowners in addressing their resource concerns. Regulatory mandates and statutory requirements might influence certain agricultural sectors to apply conservation practices as well.

Many agricultural producers do not have a good understanding of the science-based technology on which conservation systems are based. They rely on the program technical assistance provided by NRCS to provide them with the necessary education and information required to make sound decisions about which suite of practices to implement in order to address identified resource concerns. Through the associated program financial assistance, NRCS also provides some of the funds necessary for implementation of practices that the landowner might not otherwise be able to afford. Consequently, without the technical and financial assistance provided by NRCS, agricultural producers and other landowners would face greater environmental and/or financial risks to their operations, and off-site impacts to the community would not be addressed.

### Impacts by Land Use

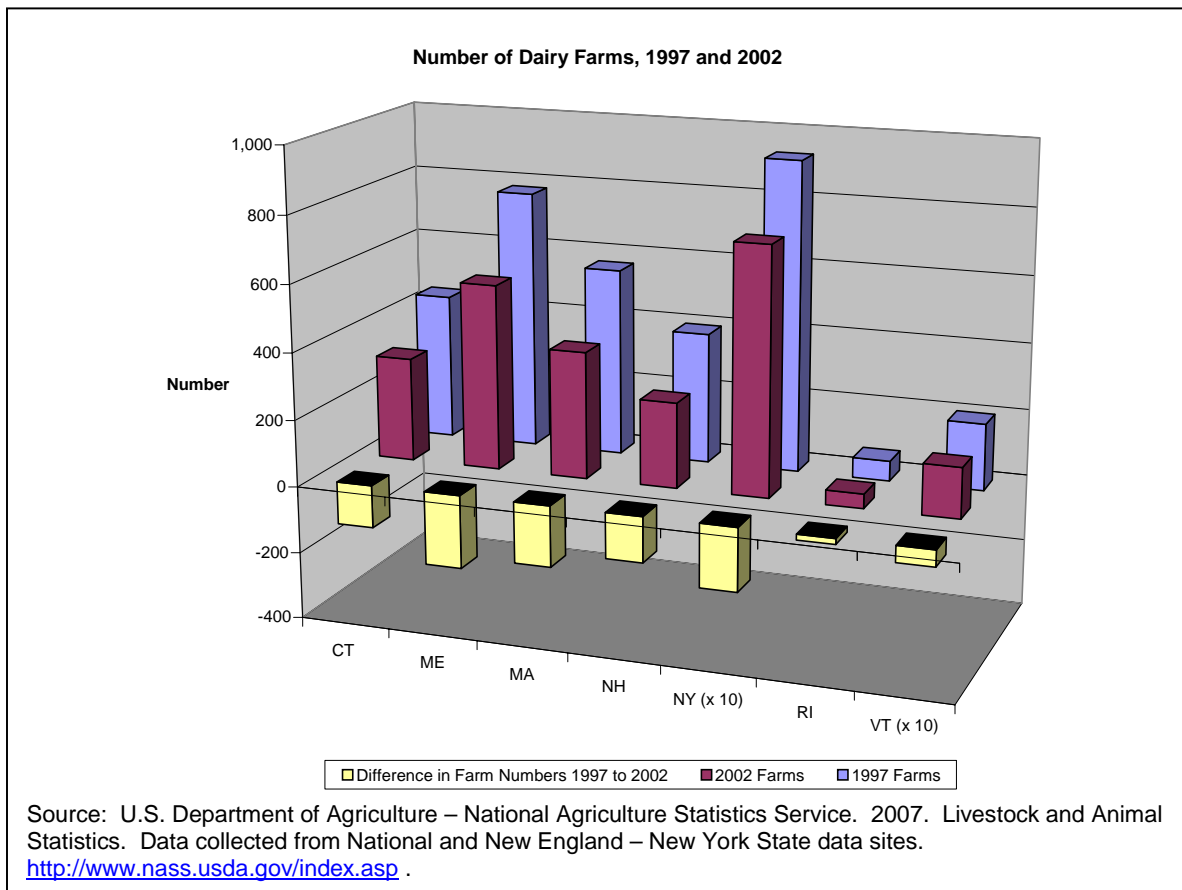
**Cropland.** Existing resource concerns associated with cropland would continue or grow in magnitude. Soil erosion rates would remain constant or increase, decreasing the productivity of cropland soils and increasing sediment and sediment bound-pollutants reaching surface waters. Nutrient application would continue to be based solely on crop uptake rates, rather than the availability of nutrients existing in the soil and in applied manure, increasing the potential for over-application and loss to the surrounding environment. Pesticide applications would continue with little or no risk assessment or pest scouting. Nutrient and pesticide loss to surface and groundwaters would continue at current unacceptable rates or actually increase. Crop production would remain constant or decrease over time due to poor nutrient management and loss of soil productivity. Costs of irrigating crops would increase due to the continued use of inefficient systems and rising energy prices. Overall levels of energy consumption would continue unchanged.

**Pasture Lands.** Many pastures are under utilized, poorly managed and have low forage production rates. This is at a time when at least 10 to 15 percent of farmers are transitioning to grass-based production systems due to the increasing costs of crop production and the higher prices associated with organic products, with more anticipated to make this transition in the future. Uncontrolled access to surface waters is also a concern. Improved pasture management requires capital investments such as fencing and watering systems along with improved management skills. The lack of technical and financial assistance to implement conservation practices would result in many farmers continuing to operate and manage their farms as they have in the past, with a continual decline in the quality of vegetation, soils, and associated production.

**Headquarter Areas.** Manure and wastewater management would continue to be resource concerns associated with livestock operations. The no action alternative would not provide any incentives for farmers to address ongoing resource concerns related to storage and treatment of by-products. The conservation practices designed to address these resource concerns usually involve the building of expensive structures or waste management systems. Most farmers have

neither the financial resources nor the technical skills needed to properly implement these practices without assistance. Energy use would remain unchanged.

There is a decreasing trend in the number of dairy farms in the New England states and New York (Figure 8). However, while the number of dairy farms decreased 22 percent across the region between 1997 and 2002, the number of dairy cows milked decreased by only 6 percent. Over the same time period, the number of dairy cows on farms having more than 200 head increased in five of the seven states<sup>37</sup>. Although total farm numbers are decreasing, dairy cattle are becoming more concentrated, with a corresponding concentration of associated resource concerns. Faced with increasing production costs and regulatory requirements, livestock farmers may not be able to adequately address these resource concerns without financial assistance.



**Figure 8.** Number of Dairy Farms by State in 1997 and 2002.

**Forest Lands.** The private forest lands in the New England states and New York are poorly managed and under utilized. Forest growth and yield is often below capacity and would remain constant or be reduced to unhealthy conditions under this alternative. Soil erosion, sedimentation and other related concerns would continue at existing rates or increase due to lack of appropriate management. The unmanaged harvesting of forest land is projected to increase in

<sup>37</sup> U.S. Department of Agriculture – National Agriculture Statistics Service. 2007. Livestock and Animal Statistics. <http://www.nass.usda.gov/index.asp>.

the future. This will lead to decreased plant biodiversity, decreased water quality, and increased soil erosion. Indirect effects will be a decrease in the quality of aquatic and terrestrial habitats, such as the invasion of non-native plants. Also, cumulatively, there is potential for flooding to increase and the quantity of drinking water to decrease due to reduced water retention by forests if regeneration of healthy forest stands is not encouraged.

**Wildlife.** Under the no action alternative, existing concerns associated with wildlife would continue. Wildlife associated with many plant communities that are experiencing declines would exhibit continued declines themselves. Populations and occurrences of rare, threatened and endangered species would continue at existing low levels or experience further declines. Aquatic systems and fisheries affected by poor water quality, barriers and accelerated erosion and sedimentation rates would continue to suffer from degraded habitats and declining populations. New occurrences of invasive species would increase and existing populations would continue to expand, further degrading wildlife habitat for many species.

### Indirect and Cumulative Impacts

Indirect effects of the no action alternative can be identified for each of the land uses. For example, the indirect effects on cropland, pasture land and livestock operations would include long-term decreases in:

- Soil productivity;
- Crop, forage and livestock production;
- Surface and groundwater quality resulting from continued inputs from agricultural sources;
- Quality of aquatic habitats; and
- Sustainability of agriculture in the region as farm, and associated community, profits decline.

Indirect effects for forestland include a long-term decrease in forest health and sustainability and the loss of natural plant communities that provide income, environmental, wildlife, and human health benefits to the community. Without financial assistance to encourage sustainable forestry practices and improved fish and wildlife habitat management on non-Federal lands, a continued decline in plant and animal diversity is likely, as well as increased erosion rates and decreased quality of surface waters and associated aquatic habitats.

Cumulatively, the resulting effect of this no action alternative is that the existing resource concerns continue at the same or increasing levels across the landscape. For example, existing rates of soil erosion would continue, contributing to the reduction in soil productivity and water quality. Water quality declines would limit the intended uses of waters and impact native fishes and other aquatic organisms. Air quality concerns, such as odor and greenhouse gases, would continue due to the ongoing agricultural activities without mitigation. Forest land growth and yield would continue below potential due to the lack of proper management. Domestic animals and wildlife would continue to suffer from inadequate food, water and shelter.

All of these environmental cumulative impacts ultimately impact the human environment as well. Recreational opportunities and the quality of life are limited. Agricultural production remains the same or declines, with a corresponding increase in production costs and decline in net income. Communities pay more as sedimentation increases and potable water decreases, and in some cases human health may even be impacted. Facing increasing costs without a corresponding increase in productivity and profits, and often pressures from urbanization of surrounding areas, agricultural producers may be forced out of business, creating a chain reaction of instability in agribusiness and communities and loss of farmland and greenspace to other uses.

Additional cumulative impacts from other Federal, state, Tribal, and local entities might result from:

- Regulatory mandates and statutory requirements; and
- Technical assistance, primarily on cropland, pasture land, headquarters, and forest land.

However, many landowners will be unable to make operational changes to address natural resource concerns, whether voluntary or mandated, in the absence of financial assistance because the costs of these changes exceed their available economic resources.

## **Alternative B**

### Introduction

***Proposed Action:** NRCS would provide Federal financial assistance and associated technical assistance under the various conservation programs administered by NRCS for implementation of conservation practices on non-Federal lands.*

Under the proposed action, landowners would receive technical and financial assistance from NRCS to implement conservation practices and CMS's to address identified natural resource concerns at an accelerated rate. NRCS staff would work with landowners in the development of conservation plans using the nine-step NRCS conservation planning process. A site-specific EE would be conducted as part of the planning process, evaluating and comparing impacts of alternatives upon natural resource and human concerns. The results of the EE would then be shared with the landowner to assist in the selection of a preferred alternative. The NRCS RFO then would make a determination of whether financial assistance might be appropriate and whether additional NEPA analysis would be required. Federal financial assistance would be provided as available and appropriate to assist landowners in implementing conservation practices or CMS's documented in the conservation plans. Financial assistance would allow landowners to implement conservation practices and comply with Federal, state, Tribal, and local regulatory requirements that might have previously exceeded the economic resources of the operation.

In addition to financial assistance, NRCS or its partners would provide the technical assistance for conservation planning, design, layout and installation of the practices according to NRCS standards and specifications. Technical assistance from NRCS provides the integrity of Federal standards and quality criteria when practices are planned, designed and applied. Federal financial assistance program rules guarantee that funds are distributed to the projects with the

greatest environmental benefit. Federal contracting ensures that the practices installed are operated and maintained according to their intended purposes.

Regardless of the funding source, more conservation practices are implemented due to the increase in available financial assistance to people who make decisions about natural resource use and management on non-Federal lands (Figure 7). As a result, implementation and adoption of conservation practices is accelerated.

Significant adverse impacts have not been identified for the conservation practices considered in this EA when they are implemented correctly and fully according to the NRCS standards and specifications and in the appropriate situations as described in the “initial setting” box found on each network diagram (Appendix F). When selected using NRCS conservation planning procedures and implemented according to NRCS practice standards and specifications, these practices generally provide overall beneficial impacts to the landscape.

However, resources act in an interdependent manner, and a benefit to one resource may be adverse to another. Undesirable effects can be associated with the implementation of some conservation practices in certain situations. Common adverse effects include potential disturbance of cultural resources, increased soil erosion and sedimentation, loss of wildlife habitat or habitat connectivity, and an initial reduction in profits and income stability resulting from the costs associated with practice implementation. Often these effects can be mitigated through the use of other practices. For example, several practices, including Contour Orchard and Other Fruit Areas, Row Arrangement and Subsurface Drain, result in increased water infiltration, which has a corresponding indirect effect of increased potential for transport of dissolved contaminants to groundwaters. This potential for transport can be greatly reduced through the use of Nutrient Management and Pest Management as mitigating practices. Properly planned and implemented as part of a CMS, these practices will minimize the availability of agricultural amendments for transport.

Often appropriate mitigating measures are referenced in the standards and specifications for conservation practices to minimize any adverse impacts, such as those that may occur in the short-term during practice establishment. These measures have also been included in the network diagrams for the practices considered in this EA (Appendix F) whenever a potential adverse impact to a natural resource concern has been recognized and an appropriate mitigating practice or measure is available.

Regardless of the land use, disturbance to cultural resources will be avoided through the use of cultural resource surveys, evaluation and treatment, as appropriate. If present, other special environmental concerns will be addressed on a site-specific basis through consultation with appropriate agencies and other means in a manner that is consistent with the NRCS policy to minimize adverse effects, through appropriate avoidance or other mitigating measures, to the extent feasible<sup>38</sup>.

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<sup>38</sup> NRCS General Manual 190, Part 410.3.



## Impacts by Land Use

**Cropland.** The practices identified for application on cropland (Appendix E) are generally designed to reduce erosion, redirect water flow, enhance crop production, produce bio-fuels and other bio-products, enhance wildlife food and cover, and/or reduce surface runoff that may carry contaminants to receiving water. They perform these functions by covering the soil with live vegetation or crop residues, creating barriers, creating channels, establishing crops or other vegetation with specialized characteristics, or adjusting the timing and techniques used to apply fertilizers or pesticides. Additional information about impacts resulting from the application of specific conservation practices on cropland is available in the publication Environmental Benefits of Conservation on Cropland<sup>39</sup>.

In addition to the primary functions mentioned above, other effects may occur. Livestock feed production, soil organic matter, and biodiversity increase. Improved management of vegetation and crop residues increases wildlife habitat. Carbon sequestration increases, while particulate matter generation and transport decreases. Nutrient cycling is improved and the corresponding need for purchased nutrients reduced. Water use efficiency by crops is improved as well. Many of the practices will also decrease runoff while correspondingly increasing infiltration, the effects of which may vary depending upon site-specific conditions. The practices will also result in an initial up-front cost, changes in fuel and energy use, changes in the management level and labor required, and continuing operation and maintenance costs.

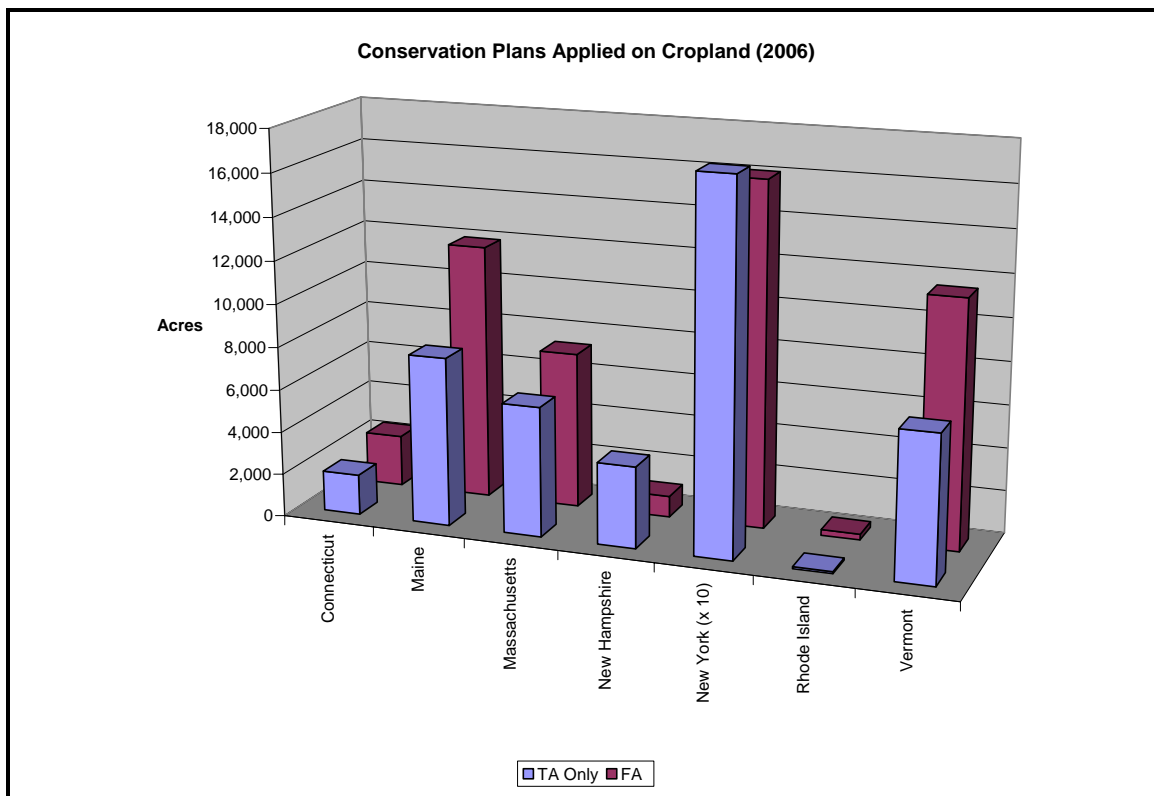
Operational costs and fuel use on the cropland will often decrease over time because of increased efficiencies resulting from practice implementation. Implementation of fertilizer application rates recommended with Nutrient Management typically result in an overall decrease in the amount of chemical fertilizer purchased and applied on a farm. The production of chemical fertilizers requires considerable energy inputs. Efficiencies gained through improvement of irrigation systems can also result in significant energy savings by reducing the amount of water that has to be pumped to the fields. Other practices, such as the minimal tillage practices (e.g. Residue and Tillage Management, No-till), can reduce the number of passes of farm machinery across a field. Overall, changes in farm field based practices can result in large reductions in energy consumption.

The direct effects lead to indirect effects. Improved wildlife habitat results in increased wildlife populations and biodiversity. Reduced runoff and erosion reduces loss of soluble and sediment-bound contaminants to receiving water bodies. Improved management of nutrients results in reduced levels of phosphorus in surface waters and reduced need for nutrient and pesticide applications, which in turn will reduce farmer costs, leading to increased profits. Indirect effects lead to cumulative effects such as reduced energy consumption, income stability for farmers and communities, improved air quality, water quality, habitat suitability, and environmental health. These effects occur when the practice is applied within the same watershed or region on many farms or fields.

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<sup>39</sup> Schnepf, Max and Craig Cox, editors. 2007. Environmental Benefits of Conservation on Cropland. Soil and Water Conservation Society, Ankeny, IA. 326 pp.

Past results of NRCS technical and financial assistance provide insight as to how the proposed action may impact the natural resources of the region. In fiscal year 2006, conservation practices were implemented on over 393,000 acres of cropland in the New England states and New York. Financial assistance was provided to landowners to implement practices on 195,000 of these acres (approximately 50 percent). In five of the seven states, application of conservation practices on cropland with financial assistance exceeded application with technical assistance alone (Figure 9).



**Figure 9.** Acres of Conservation Plans Applied on Cropland by State in Fiscal Year 2006

As a result of NRCS assistance provided in 2006, erosion on 174,500 acres of cropland was reduced to acceptable soil loss levels<sup>40</sup>. Almost 1.2 million tons of topsoil were conserved due to the land management practices of Crop Rotation, Conservation Tillage, seeding of grasses and legumes, and structural practices such as Diversions. Five-hundred acre-feet of water were also conserved using Irrigation Water Management and improvement or replacement of existing inefficient irrigation systems to more efficient big gun, center pivot sprinkler and drip irrigation systems.

**Pasture Land.** The practices identified for use to treat concerns on pasture lands (Appendix E) are generally designed to improve availability of forage and water for livestock production, enhance wildlife food and habitat, enhance plant biodiversity, protect air, soil, and water resources, and provide a basis for diversifying farm income. Practices frequently used to carry out these functions involve manipulation of livestock numbers, grazing intensity, duration, and

<sup>40</sup> NRCS Progress Reporting System, 2006 Annual Report (PRS); see <http://ias.sc.egov.usda.gov/PRSHOME/>.

distribution. Other practices used to augment these include clipping, crop rotation, drainage, fertilization and addition of soil amendments, irrigation, mechanical harvest, pest control, vegetative plantings, selection and/or protection of plant species, tillage, brush management, watering facility development, nutrient management and livestock exclusion from sensitive areas.

In addition to the primary effects mentioned above, other effects occur with practice installation or implementation. Improved plant growth and condition result from controlling erosion on steep slopes and around feed areas. The increase in plant cover protects streams, ponds, and other water supplies from sediment and other possible contaminants, as well as providing food for livestock and wildlife and decreasing the potential for wind erosion and particulate matter generation. Soil condition improvements, from increased cover and organic matter and decreased compaction, result in increased nutrient cycling and carbon sequestration. Initial installation costs and changes in equipment, labor, materials, operation, and maintenance often result in reduced profits to the producer, at least in the short term.

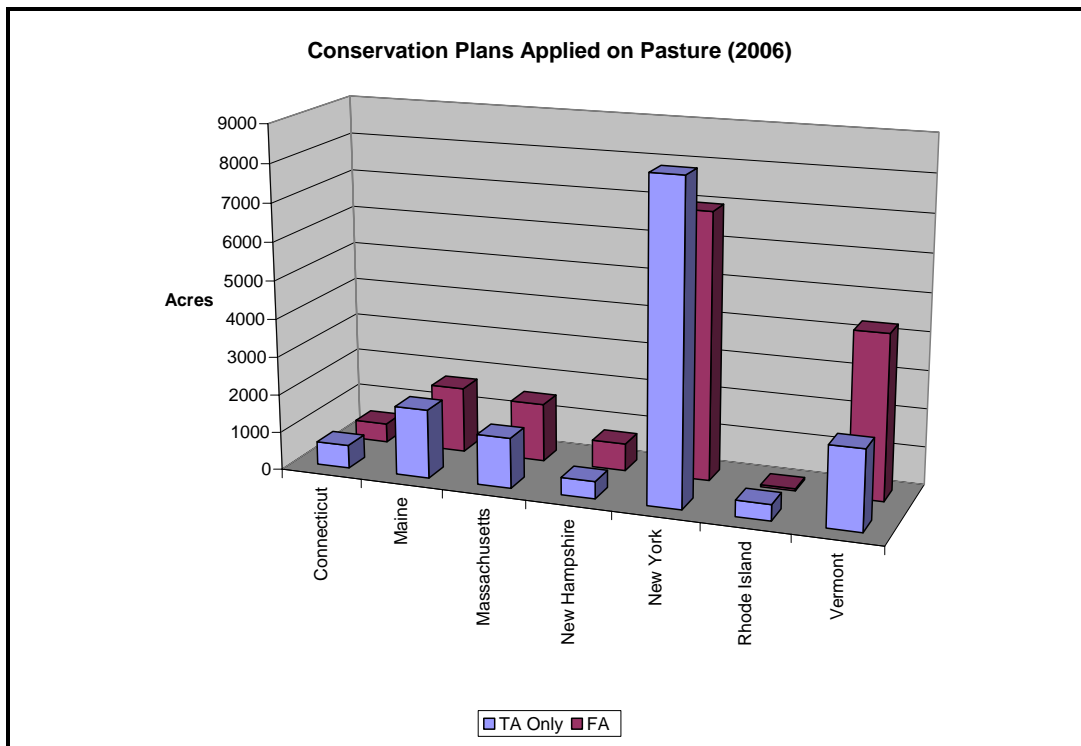
The direct effects lead to indirect effects. Controlled access to sensitive areas and installation of riparian forest buffers results in increased streambank stability, a reduction in contaminants, pathogens and sediments in receiving waters, improved thermal characteristics of streams, and protection and productivity of desired plant species. Development of watering facilities and mechanisms for providing source water for livestock lead to an increase in animal health and production and sometimes benefits for wildlife. Proper management of livestock in smaller grazing paddocks increases plant productivity, which in turn increases forage yields and potential animal production while reducing supplemental feed costs. Reseeding pastures and managing livestock also reduces soil erosion from poorly vegetated areas. Increased health and productivity of vegetation and livestock leads to increased profits for the producer. Indirect effects lead to cumulative effects such as income stability for producers and communities, improved water quality, habitat suitability, and human and animal health.

In fiscal year 2006, conservation practices were implemented on almost 31,000 acres of pasture land in the New England states and New York. Financial assistance was provided to landowners to implement practices on 15,800 of these acres (51 percent). In five of the seven states, application of conservation practices on pasture land with financial assistance exceeded application with technical assistance alone (Figure 10).

Of the approximately 3.4 million acres<sup>41</sup> of pasture in the New England states and New York, it is anticipated that an additional 37,000 acres annually will have grazing-related practices implemented on them for the next several years with NRCS technical and financial assistance. These systems typically include practices such as Prescribed Grazing, Watering Facilities, livestock Use Exclusion, Pasture and Hay Planting, Riparian Buffers, and Fencing.

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<sup>41</sup> NRCS, Natural Resources Inventory (NRI), 2003 Summary Report.



**Figure 10.** Acres of Conservation Plans Applied on Pasture Land by State in Fiscal Year 2006

**Headquarters.** Collectively, the practices identified for use in Headquarters Areas (Appendix E) provide a means of minimizing the potential harm to water quality from nutrients and pathogens associated with animal manure and at the same time using the beneficial properties of manure to enhance soil fertility. The primary physical change as a result of these practices often includes the construction of a structure to store and/or treat animal manure and the purchase and use of equipment for handling and moving it. There can be sizeable financial investments associated with such structures and equipment.

The direct effects include the costs associated with this infrastructure, such as construction, operation, maintenance and energy costs, production of compost that can be used on-farm or sold, storage of manure that can be applied at the appropriate time and amounts to crops and pastures, and a reduction in pollutants (nutrients, organics, pathogens and pesticides) in runoff because the material is stored and composted rather than directly discharged to waterways. To some, the presence of confined animals and the associated practices are a perceived nuisance or a regulatory concern under the Clean Air Act. Livestock operations designated as CAFO's have a requirement to comply with Clean Water Act regulations, including having a Non-Point Discharge Elimination System (NPDES) permit in place. Development and application of a Comprehensive Nutrient Management Plan (CNMP) as part of the NRCS conservation planning process helps livestock operators to address and satisfy NPDES permit requirements as well as improving odor control. These plans are designed to collect, store and utilize agricultural wastes and mitigate offsite impacts for air and water quality.

A few of the practices associated with the Headquarters have the potential to reduce the consumption of energy from existing sources. Anaerobic Digesters provide the potential for farmers to generate their own electricity through the combustion of the methane produced in the digester. This electricity can be utilized on farm as a replacement for electricity off the grid, or it can be sold to utilities to be used by other customers. Other practices, such as Composting Facility, also have the potential to produce energy in the form of heat for on-farm use.

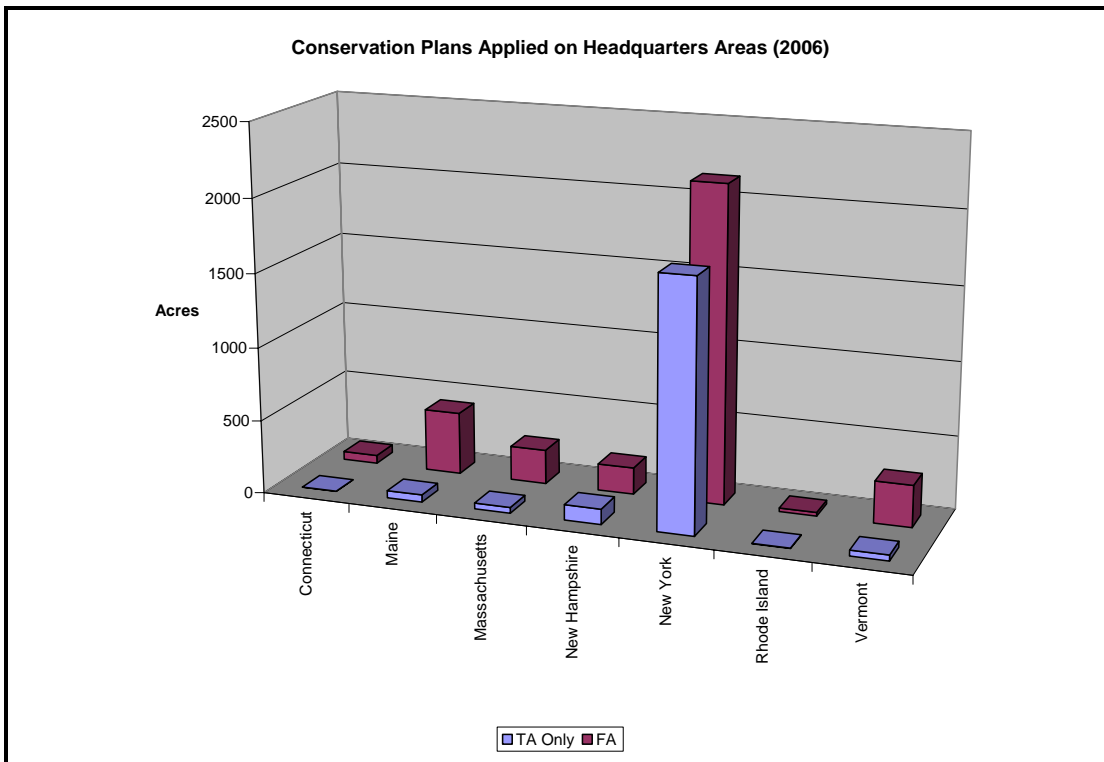
The direct effects provide indirect effects, such as enhanced plant productivity on crop and pastureland where wastes are applied because of an improvement in soil nutrients and soil tilth. Farms need less commercially purchased fertilizer as a result of effective manure utilization. Increased plant productivity and reduced costs for fertilizers are an economic benefit to farms. Some supporting agribusiness, such as harvesting-associated businesses, benefit from increased crop production, while other sectors, such as the commercial fertilizer industry, see a reduced need for their services. The reduced flow of nutrients to streams and other waterbodies reduces noxious algal growth and increases availability of dissolved oxygen, thereby helping to meet water quality standards. Anaerobic digesters capture the greenhouse gas methane and can use it to generate electricity which can then sometimes be sold to the rural utility grid.

The cumulative effects, in general, can often lead to better water quality of streams, which benefits both the aquatic habitat of the streams and the people and domestic and wild animals that rely on the streams as a source of water. Long-term income stability for the farmer and the community are enhanced because manure represents a valuable by-product that is utilized to its greatest potential. Production of on-farm sources of energy also helps the farmer reduce overall energy costs and increases the profitability of the farm. Financial burdens that may be associated with regulatory compliance are also reduced, as is some of the friction between suburban landowners and livestock producers. Without the collection of practices to process and utilize the manure by-product, the cumulative effects would weigh strongly toward environmental degradation.

Past result of NRCS assistance to livestock operations include the development and application of 313 CNMP's in the New England states and New York in 2006<sup>42</sup>. Mitigating practices such as Windbreaks, Composters, Waste Storage Facilities, and Anaerobic Digesters are commonly included to reduce odors and protect water quality. Similar results are expected as future technical and financial assistance is provided in the future. Conservation plans were applied on almost 5,300 acres of lands designated as headquarters in fiscal year 2006. Financial assistance was provided to landowners to implement practices on over 3,300 of these acres (63 percent), with application of conservation practices with financial assistance far exceeded application with technical assistance alone in all seven states (Figure 11). This is largely a factor of the large financial investment required to purchase, build or install the structures and equipment for storing and handling animal manures and other by-products.

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<sup>42</sup> NRCS Progress Reporting System, 2006 Annual Report (PRS); see <http://ias.sc.egov.usda.gov/PRSHOME/>.



**Figure 11.** Acres of Conservation Plans Applied on Lands Designated as Headquarters by State in Fiscal Year 2006

**Forest Land.** The practices commonly used on forest land and in agroforestry<sup>43</sup> are identified in Appendix E. There is growing interest in the use of these practices to manage existing forests, establish new forests, sequester carbon, produce bio-products such as fuel, and mitigate odor and particulate matter transport from livestock operations.

These practices have two primary effects: to increase forest health and to reduce soil erosion. Depending upon the landowner’s objectives, wildlife habitat and water quality can also be improved. Practices such as Forest Stand Improvement and Prescribed Forestry manage existing trees and shrubs to promote productivity, health and vigor of the forest. Other practices such as Forest Trails and Landings are used to control erosion while facilitating management. On forest land, practices are often employed chronologically and include: Prescribed Forestry, Tree/Shrub Site Preparation, Tree/Shrub Establishment, Forest Stand Improvement (thinning), Forest Trails and Landings, and Forest Stand Improvement (harvest). Riparian Forest Buffers are used on forest lands having water bodies, watercourses and wetlands.

Direct effects of forestry systems on forest land include the establishment and growth of woody vegetation that quickly alters the characteristics of habitat on a spatial and vertical basis, accumulates marketable and renewable wood fiber and other forest products, sequesters large amounts of carbon in biomass and the soil profile, and produces localized changes in the

<sup>43</sup> Agroforestry is the intentional growing of trees and shrubs in combination with crops or livestock production to provide woody plant products and agricultural crops or forage while optimizing the physical, ecological, economic and social benefits.

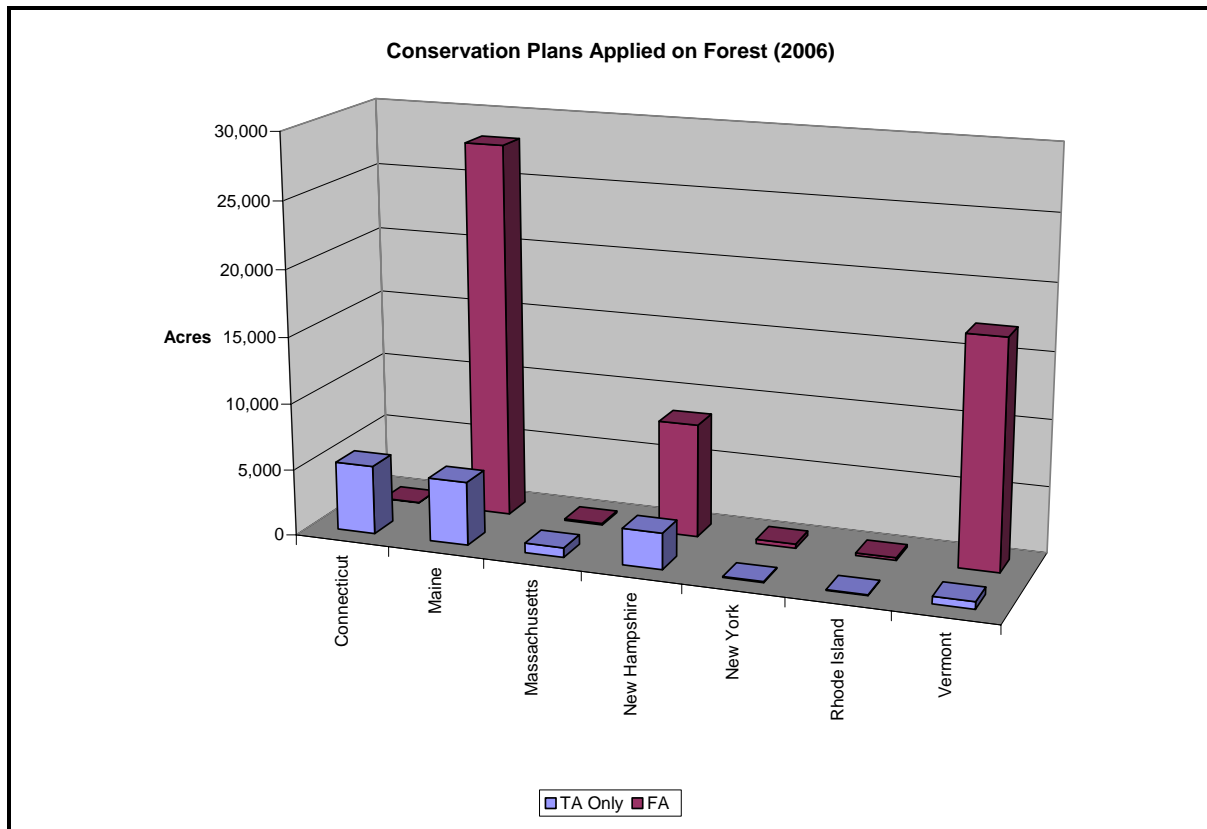
hydrologic cycle. Early successional habitat is found infrequently across the regional landscape. Species that rely on this habitat, such as Canada lynx and woodcock, have exhibited continuous declines in population. Conservation practices promoting development of early successional habitat to benefit these and other species can be incorporated into forest management plans. When a forest stand is harvested, roads, trails, landings and openings are created which can permanently or temporarily alter local hydrology, wildlife movement, types of wildlife, forage growth and accessibility, and risk of wildfire.

Various practices are employed to mitigate any direct and indirect effects from site preparation and harvesting considered to be adverse, e.g., improvements to Access Roads, Critical Area Planting, Sediment Basin, and Structure for Water Control. Other effects such as increased forage growth from forest stand improvement and animal accessibility from harvest trails and landings stimulate the introduction of livestock and trigger the need for Prescribed Grazing and related practices. Opening the canopy also has wildlife effects such as fewer "closed canopy" species and more "open habitat" species with species richness being augmented by the increase of "edge effect" from a mosaic of harvested, regenerated and older forested areas being in close proximity.

On agricultural land, common agroforestry practices such as Windbreak/Shelterbelt Establishment, Windbreak/Shelterbelt Renovation, Riparian Forest Buffer and Alley Cropping can be strategically located as integral parts of cropland, pasture and headquarters systems to optimize pollution mitigation, aesthetics and wildlife habitat, and to provide wood crops in addition to traditional farm crops. Mitigation of wind, water, and farm-related pollutants are a primary focus of many other agroforestry systems. Effects of agroforestry practices are similar to effects on forested land, but with greater increases to wildlife habitat ("refuge" effect) and less generation of wood-fiber products.

Effects from both forestry and agroforestry systems lead to cumulative effects such as income stability for farmers and communities, water quality improvements, more sustainable natural plant communities, wildlife habitat suitability, and environmental health. These effects occur when the systems and practices are applied within the same region on many forests, farms or fields, as might be expected when assistance is provided over a period of years. Without the proper application and organization of forestry and agroforestry practices, cumulative effects would weigh strongly toward environmental degradation.

Conservation plans were applied on approximately 68,500 acres of forested lands in fiscal year 2006. Financial assistance was provided to landowners to implement practices on over 54,000 of these acres (79 percent). In five of the seven states, the application of practices with financial assistance far exceeded implementation with technical assistance only (Figure 12). It is anticipated that NRCS financial assistance will be provided on approximately 35,000 acres of non-Federal forest lands annually for the next several years. Improved management and planning multiple resource objectives will greatly improve natural resource conditions in these forested stands.



**Figure 12.** Acres of Conservation Plans Applied on Forest Land by State in Fiscal Year 2006

**Wildlife.** Wildlife concerns can occur on all of the land uses described above. The wildlife practices identified in Appendix E generally seek to establish appropriate habitat types by planting food and cover, manipulating existing vegetation, restoring natural hydrology and aquatic habitats, and facilitating movement between habitats. Wildlife practices can be found on any land use and in combination with any of the practices listed for the other land uses. Management goals may include the restoration of native plant communities to benefit multiple species, the management of areas to maintain a particular successional state in the vegetative community, or restoration and improvement of specific habitats that benefit a specific species. Most practices involve the establishment or management of vegetation, although a few, such as Fish Passage, include structural measures. The primary effect of these practices is an increase in various wildlife populations. This can include terrestrial mammals, birds, amphibians, reptiles, and insects, as well as aquatic organisms such as fish and aquatic invertebrates. Benefits to fish and wildlife result both from practices specifically targeting wildlife as well as through indirect benefits from establishment of habitat through practices where wildlife is not a primary objective, reduced sediment in streams, and other similar effects. More information about the impacts of NRCS-assisted financial assistance programs on wildlife can be found in the



publication “Fish and Wildlife Benefits of Farm Bill Conservation Programs, 2000-2005 Update”<sup>44</sup>

Practices such as Early Successional Habitat Development and Field Borders are used to establish grass or grass/shrub habitats that are managed for the benefit of wildlife species that utilize these areas. Habitat can be established for grassland birds, turkeys, quail, deer and a host of other species. Other practices involve the management of existing forest areas to improve wildlife habitat. Practices such as Tree and Shrub Establishment, Forest Stand Improvement, Upland Wildlife Habitat Management, and Use Exclusion are often used for this purpose. These practices increase the occurrence of desired tree and shrub species, increase the vertical structure of the forest, and improve other habitat features. Forest species such as songbirds, deer, bear, fox, raccoon, cavity nesting birds, and others benefit from this improved habitat.

The primary practices used to re-establish and improve wetland habitat are Wetland Restoration, Use Exclusion, and Wetland Wildlife Habitat Management. Facilitating practices such as Fencing and Structure for Water Control may be used in conjunction with the primary practices to restore the natural hydrology of altered wetlands and improve the vegetation community in these natural areas. Wetland-dependent species such as waterfowl, amphibians, reptiles and some fishes benefit from the implementation of these practices.

A number of practices are used to restore and improve aquatic communities associated with rivers and streams. Streambank and Shoreline Protection, Stream Habitat Improvement and Management, Riparian Forest Buffer, and Fish Passage are all used for this purpose. These practices help restore channels to a natural configuration with natural habitat features, moderate stream temperatures, and promote movement throughout the aquatic system. Aquatic species such as fish, mussels, and insects benefit from the improved habitat.

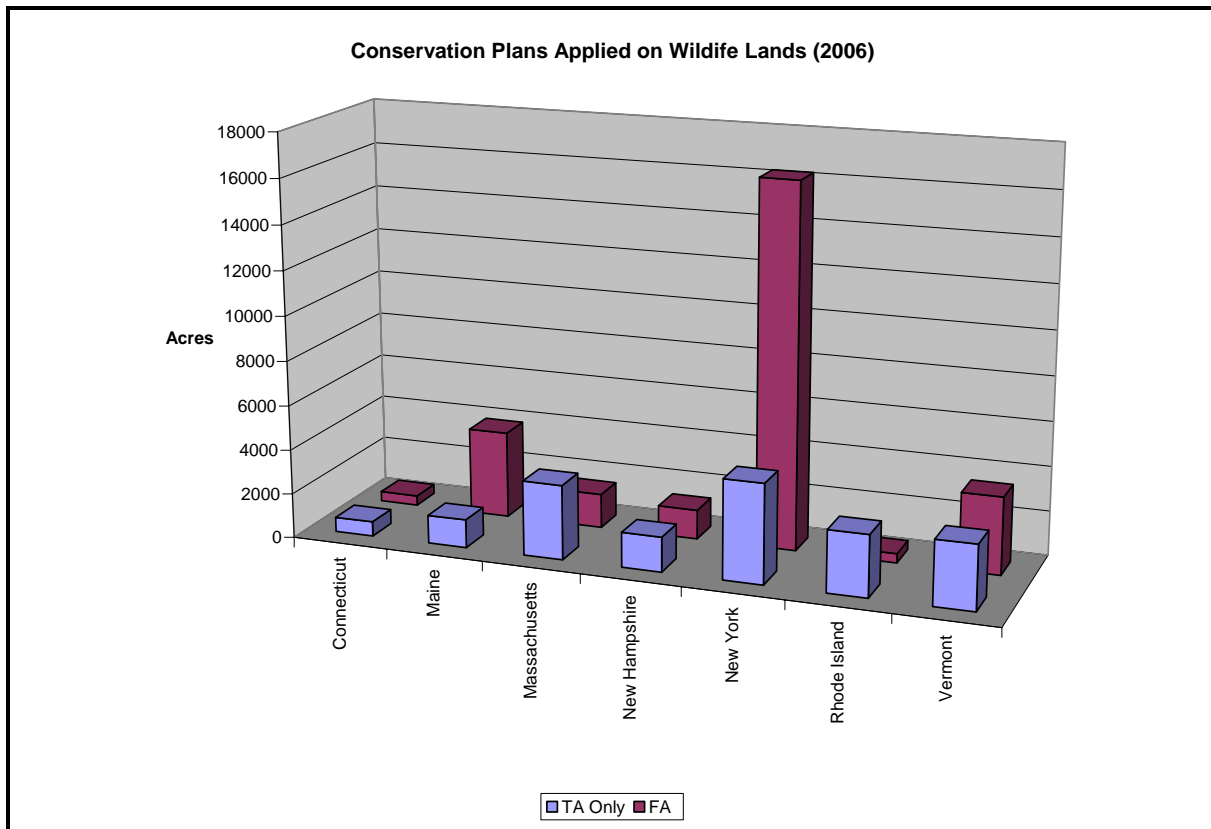
Numerous indirect effects are related to the implementation of practices to improve wildlife habitat. An increase in plant cover protects streams, ponds, and other water supplies from sediment and other possible contaminants, and improves air quality. Soil condition is improved, resulting in increased nutrient cycling, organic matter, and carbon sequestration. Equipment, labor, materials, and loss of productive land associated with the installation and maintenance of the practices often result in added costs for the producer. There may be an increase in both target and non-target wildlife species, increasing opportunities for various types of wildlife-related recreation. Other indirect effects could include greater loss of crops to wildlife and the need for wildlife control measures such as fencing.

The cumulative effects of these practices include increased wildlife populations and biodiversity, increased potential revenues to the community and the landowner due to increased opportunities for hunting and fishing as well as non-consumptive uses such as bird watching, greater income stability for landowners and communities, improved water quality, more sustainable natural plant communities, and improved human and animal health.

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<sup>44</sup> Haufler, Jonathan B. 2005. Fish and Wildlife Benefits of Farm Bill Conservation Programs, 2000-2005 Update. The Wildlife Society Technical Review 05-2. The Wildlife Society, Bethesda, MD.  
<http://www.nrcs.usda.gov/technical/nri/ceap/fwbenefit.html>.

Conservation plans were applied on over 44,000 acres specifically to improve wildlife habitat in fiscal year 2006. Financial assistance was provided to landowners to implement practices on over 27,000 of these acres (61 percent), with the majority of these acres found in Maine, New York and Vermont (Figure 13). It is anticipated that NRCS financial assistance will be provided on approximately 40,000 acres of non-Federal lands annually for the next several years to improve wildlife habitat. Additional benefits to wildlife will be provided on other land uses, usually through indirect or cumulative effects of implementing conservation practices to address other resource concerns.



**Figure 13.** Acres of Conservation Plans Applied on Wildlife Land by State in Fiscal Year 2006

### Indirect and Cumulative Impacts

Indirect effects are associated with application of conservation practices on each land use. For example, the cropland practices associated with reducing soil erosion all have indirect effects that include decreased sediment and turbidity in surface waters, improve aquatic habitat and improved crop productivity. The practices implemented on pasture land can indirectly promote livestock health and improve wildlife habitat by creating buffers and protecting sensitive areas. Practices associated with livestock operations on headquarter areas indirectly decrease farm labor requirements, improve nutrient application to fields, and promote livestock health. Forestry practices indirectly improve water quantity and quality, improve air quality, and restore or enhance wildlife habitat. Wildlife practices indirectly improve air and water quality and often result in the creation of potential recreational opportunities.

These individual practices, systems of practices, and combined systems of practices result in cumulative effects upon soil, water, air, plants, animals, and humans. Soil erosion reductions are additive from cropland practices, pasture practices and forest practices. Improvements in water quality are produced by a variety of practices on all land uses. Plant productivity increases from the application of a variety of practices on cropland, pasture and forestland. Wildlife benefits occur from practices on all landuses. Farm income stability, community economic returns, and often human health and safety increase cumulatively as well when conservation practices are applied across the landscape.

Additional cumulative impacts from other Federal, state, Tribal, and local entities might result from:

- Regulatory mandates and statutory requirements; and
- Technical assistance, primarily on cropland, pasture land, headquarters, and forest land.

NRCS financial assistance works in concert with these activities, providing a means through which landowners can make desired operational changes, whether voluntary or mandated, to address resource concerns.

The cumulative total of environmental benefits associated with implementation of conservation practices with NRCS financial and technical assistance is difficult to measure and will vary depending upon the location and timing of practice application across the landscape. Overall, the practices do have a cumulative positive benefit to the environment both on and off-site. These cumulative benefits can be enhanced by targeted financial assistance which focuses assistance in specific geographic areas or on certain highly sensitive resource concerns.

NRCS technical assistance provides landowners with sound knowledge of what is needed to protect and enhance natural resources in a holistic approach. This holistic approach teaches the landowner not only what conservation practices are necessary to achieve their goals and objectives and address the identified resource concern(s), but also teaches them why they are needed, how to implement and maintain them, and potential impacts on other natural resources on the landscape. Also, financial assistance provides landowners with economic incentives and support to overcome the short-term financial burden of installing practices. In some cases, the landowner will benefit directly from the long-term benefits of installing the practice. In other cases, long-term benefits primarily accrue off-site, and it is the community, rather than the individual landowner, that benefits the most. Without financial assistance, landowners may be unwilling or unable to make the investments that are needed for successful conservation practice implementation.

## PERSONS AND AGENCIES CONSULTED

The draft EA and the supporting network diagrams were reviewed internally by members of the NRCS technical staff in each of the New England states and New York, as well as by the Technology and Assistance Team at the East National Technology Support Center. Members of the State Technical Committees in each of the New England states and New York were provided with an opportunity to review and comment on the draft EA. State Technical Committees include representatives from Federal, state, local, and Indian Tribal governments as well as representatives of organizations knowledgeable about conservation issues<sup>45</sup>. Each of the comments received was considered and appropriate changes were made by the NRCS team working on the EA.

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<sup>45</sup> The list of members for each State Technical Committee, which may also be referred to as the State Technical Team in some states, can be obtained by contacting the appropriate State Conservationist.

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## **APPENDICES**

Appendix A – Common Acronyms

Appendix B – Summaries of NRCS Administered Financial Assistance Programs

B1 - Agricultural Management Assistance Program (AMA)

B2 - Conservation Security Program (CSP)

B3 - Environmental Quality Incentives Program (EQIP)

B4 - Grasslands Reserve Program (GRP)

B5 - Healthy Forest Reserve Program (HFRP)

B6 - Wetland Reserve Program (WRP)

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Appendix C – Common Natural Resource Concerns and Mitigating Practices

Appendix D – Common Conservation Practices Reviewed and Determined to be Adequately Addressed in Existing Programmatic EA for EQIP

Appendix E – Conservation Practices Examined in EA

Appendix F – Network Diagrams



## APPENDIX A

### COMMON ACRONYMS<sup>46</sup>

<b>AMA</b>	Agricultural Management Assistance Program
<b>AFO</b>	Animal Feeding Operation
<b>BOD</b>	Biological Oxygen Demand
<b>CE or “CatX”</b>	Categorical Exclusion
<b>CNMP</b>	Comprehensive Nutrient Management Plan
<b>CAFO</b>	Confined Animal Feeding Operation
<b>CMS</b>	Conservation Management System
<b>CSP</b>	Conservation Security Program
<b>CEQ</b>	Council on Environmental Quality
<b>CFR</b>	Code of Federal Regulations
<b>DC</b>	District Conservationist
<b>EA</b>	Environmental Assessment
<b>EE</b>	Environmental Evaluation
<b>EIS</b>	Environmental Impact Statement
<b>EQIP</b>	Environmental Quality Incentives Program
<b>EO</b>	Executive Order
<b>EPA</b>	Environmental Protection Agency
<b>ESA</b>	Endangered Species Act of 1973 as amended
<b>FOTG / eFOTG</b>	Field Office Technical Guide/electronic FOTG
<b>FOIA</b>	Freedom on Information Act
<b>FONSI or FNSI</b>	Finding of No Significant Impact
<b>GM</b>	General Manual
<b>GRP</b>	Grasslands Reserve Program
<b>HFRP</b>	Healthy Forest Reserve Program
<b>HEL</b>	Highly Erodible Land
<b>NECH</b>	National Environmental Compliance Handbook
<b>NEPA</b>	National Environmental Policy Act
<b>NPPH</b>	National Planning Procedures Handbook
<b>NRCS</b>	USDA Natural Resources Conservation Service
<b>NPDES</b>	Non-Point Discharge Elimination System
<b>NOA</b>	Notice of Availability
<b>RFO</b>	Responsible Federal Official
<b>SWAPA + H</b>	Soil, Water, Air, Plant, Animal, plus Human concerns
<b>TSP</b>	Technical Service Provider
<b>TIMO</b>	Timber Investment Group
<b>USDA</b>	United States Department of Agriculture
<b>WRP</b>	Wetland Reserve Program
<b>WHIP</b>	Wildlife Habitat Incentives Program

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<sup>46</sup> For more acronyms commonly used by the Natural Resources Conservation Service (NRCS), see <http://www.nrcs.usda.gov/technical/acronym.html>.

## **APPENDIX B**

### **Summaries of NRCS Administered Financial Assistance Programs**

B1 - Agricultural Management Assistance Program (AMA)

B2 - Conservation Security Program (CSP)

B3 - Environmental Quality Incentives Program (EQIP)

B4 - Grasslands Reserve Program (GRP)

B5 - Healthy Forest Reserve Program (HFRP)

B6 - Wetland Reserve Program (WRP)

B7 - Wildlife Habitat Reserve Program (WHIP)

## Program Description

August 2005

## *Agricultural Management Assistance*

### *Overview*

Agricultural Management Assistance (AMA) is a voluntary program that provides financial assistance through long-term contracts to agricultural producers on private lands to construct or improve water management structures or irrigation structures; to plant trees for windbreaks or to improve water quality; and to mitigate risk through production diversification or resource conservation practices, including soil erosion control, integrated pest management, or transition to organic farming.

USDA's Natural Resources Conservation Service (NRCS) has leadership for the conservation provisions of AMA. The Agricultural Marketing Service (AMS) is responsible for an organic certification cost-share program and the Risk Management Agency (RMA) is responsible for mitigation of financial risk through an insurance cost-share program.

### *Authority*

AMA is authorized under Title I, Section 133, of the Agricultural Risk Protection Act of 2000. This Act, which is Public Law 106-224, amended the Federal Crop Insurance Act by adding Section 524(b), Agricultural Management Assistance (AMA). Section 524(b), was further amended by the Farm Security and Rural Investment Act of 2002, (Farm Bill), Public Law 107-171, May 13, 2002. This public law authorizes funding for AMA through fiscal year (FY) 2007.

### *Scope*

AMA is available in the following 15 States: Connecticut, Delaware, Maine, Maryland,

Massachusetts, Nevada, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Utah, Vermont, West Virginia, and Wyoming. These states were designated by the Secretary of Agriculture where participation in the Federal Crop Insurance Program is historically low.

### *Eligibility*

Applicants must own or control the land and agree to implement specific eligible conservation practices. Applicants must meet the Food Security Act's definition of "person." Eligible land:

- Cropland
- Hayland
- Pasture and rangeland
- Land used for subsistence purposes
- Other land (such as forestland) that produces crops or livestock where risk may be mitigated through operation diversification or change in resource conservation practices.

### *Funding*

AMA is budgeted at \$20 million per year for each of the fiscal years 2003 through 2007. Funds are distributed to the applicable states using an allocation formula which is based on environmental factors which characterize the resources of the state.

### *Eligible Practices and Cost-Share Rates*

The NRCS State Conservationist, in consultation with the State Technical Committee, determines eligible practices using a locally led process. The Federal cost-share rate shall be 75 percent of the cost of an eligible practice, based on the percent of actual

cost, or percent of actual cost with not-to-exceed limits, or flat rates. Participants will be paid based upon certification and verification of completion of the approved practice.

Incentive payments may be made to encourage a producer to perform land management practices, such as nutrient management, manure management, integrated pest management, irrigation water management and wildlife habitat management.

#### ***Contract Terms and Payment Limitations***

The AMA final rule published on April 9, 2003, provides that contracts shall be three to ten years in duration and permits financial assistance in the form of cost-share or incentive payments. The total AMA (NRCS, RMA, and AMS) financial assistance payments paid per person shall not exceed \$50,000 for any fiscal year.

#### ***Sign-up Period***

There will be a continuous signup, with periodic ranking cutoff dates as determined by the State Conservationist in consultation with the State Technical Committee.

#### ***Contract Determinations***

The State Conservationist, with advice from the State Technical Committee, develops a process to collect and categorize AMA applications in order to rank eligible applications for funding.

#### ***In-Kind Contributions***

Participants may contribute his or her portion of the cost of practice installation through in-kind contributions, including labor and materials, if the materials being contributed meet the NRCS Field Office Technical Guide standards and specifications for the practice being installed.

#### ***For More Information***

If you need more information about AMA, please contact your local USDA Service Center, listed in the telephone book under U.S. Department of Agriculture, or your local conservation district. Information also is available on the World Wide Web at: <http://www.nrcs.usda.gov/programs/ama/>



Visit USDA on the Web at:  
<http://www.usda.gov/farmbill>

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## Program Description

October 2005

## Conservation Security Program

### Overview

The Conservation Security Program (CSP) is a voluntary conservation program that supports ongoing stewardship of private agricultural lands by providing payments for maintaining and enhancing natural resources. CSP identifies and rewards those farmers and ranchers who are meeting the highest standards of conservation and environmental management on their operations.

### Authority

The Farm Security and Rural Investment Act of 2002 (2002 Farm Bill) (Pub. L. 107-171) amended the Food Security Act of 1985 to authorize the program. CSP is administered by USDA's Natural Resources Conservation Service (NRCS).

### Scope

CSP is available in all 50 States, the Caribbean Area (Puerto Rico and the Virgin Islands), and the Pacific Basin Area (Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands).

### Eligibility

*Applicants:* Agricultural producers – individuals or entities engaged in livestock or agricultural production on working lands – may participate in CSP. There are, however, circumstances that limit an individual's or entity's participation; these include:

- The applicant must have control of the land for the life of the contract.
- The applicant must share in the risk of producing any crop or livestock and be entitled to a share in the crop or livestock marketed from the operation.

- The applicant must be in compliance with highly erodible land and wetland conservation provisions.
- The adjusted gross income provision of the 2002 Farm Bill impacts eligibility for CSP and several other 2002 Farm Bill programs. Individuals or entities that have an average adjusted gross income exceeding \$2.5 million for the three tax years immediately preceding the year the contract is approved are not eligible to receive program benefits or payments. However, an exemption is provided in cases where 75 percent of the adjusted gross income is derived from farming, ranching, or forestry operations.
- Applicants may submit only one application. Participants can only have one active contract at any one time.
- Applications with multiple beneficiaries must provide Social Security numbers at the time of application for purposes of monitoring payment limitations.

*Land:* Private agricultural land eligible for CSP includes cropland, grassland, prairie land, improved pasture land, and rangeland. Also, private non-industrial forested land that is an incidental part of the agriculture operation (limited to up to ten percent of the contract acres) is eligible. The majority of the agricultural operation must be within one of the selected watersheds.

Land that is not eligible for CSP includes:

- Land owned by Federal and State governments and their political subdivisions;

- Land enrolled in the Conservation Reserve Program, the Wetlands Reserve Program, or the Grassland Reserve Program; in addition, land accepted in a recent CRP sign-up for contract development is not eligible;
  - Land used for crop production after May 13, 2002, that had not been planted, considered to be planted, or devoted to crop production, as determined by NRCS, for at least 4 of the 6 years preceding May 13, 2002 is not eligible for any CSP payment.
- In order to apply, applicants must submit:
    1. A completed self-assessment workbook, including the benchmark inventory;
    2. Two years of written records to document past stewardship levels, including fertilizer, nutrient, and pesticide application schedules, tillage, and grazing schedules if applicable.
    3. Completed Conservation Program Application, CCC-1200, available through the self-assessment online guide and at any USDA Service Center.

### ***Application Process***

CSP sign-ups are offered in selected watersheds across the Nation. Selected watersheds are listed on the CSP Web page and in NRCS offices nationwide.

Applicants are encouraged to attend preliminary workshops, which are announced locally. At the workshop, basic qualifications are explained, and assistance is provided to help attendees understand the self-assessment workbook and benchmark inventory.

- Producers begin the application process by filling out a self-assessment to determine if they meet the basic qualifications for CSP. Self-assessment workbooks are available in hard copy at USDA Service Centers within the watersheds, and electronically for download or from an interactive Web site linked from the CSP Web page. The self-assessment workbook includes a benchmark inventory where applicants document the conservation practices and activities that are ongoing on their operation. This benchmark inventory serves as the basis for the stewardship plan.
  - Once producers determine that they meet the minimum requirements for CSP, as outlined in the workbook, they should make an appointment for an interview to discuss their application with the NRCS local staff.
- Based on the application, description of current conservation activities, and the interview, NRCS determines CSP eligibility and in which program tier and enrollment category the applicant may participate.
    - For Tier I, the producer must have addressed soil quality and water quality to the described minimum level of treatment for eligible land uses on part of the agricultural operation prior to acceptance.
    - For Tier II, the producer must have addressed soil quality and water quality to the described minimum level of treatment on all eligible land uses on the entire agricultural operation prior to acceptance and agree to address an additional resource concern applicable to their watershed by the end of the contract period.
    - For Tier III, the producer must have addressed all applicable resource concerns to a resource management system level that meets the NRCS Field Office Technical Guide standards on all eligible land uses on the entire agricultural operation before acceptance into the program and have riparian zones adequately treated.

### ***Approval Process***

Applications which meet the minimum requirements will be placed in enrollment categories and subcategories for funding consideration. Categories will be funded in order from A through E until funds are exhausted. If funds are not available to fund an entire category, then subcategories will be used to determine funding order within a category.

### ***CSP Contract Payments and Limits***

CSP contract payments include one or more of the following components subject to the described limits:

- An annual per acre stewardship component for the benchmark conservation treatment. This component is calculated separately for each land use based on eligible acres, the stewardship payment rate, and additional factors.
- An annual existing practice component for maintaining existing conservation practices. Existing practice payments will be calculated as a flat rate of 25 percent of the stewardship payment.
- A new practice component for additional practices on the watershed specific list. New practice payments for limited resource farmers and beginning farmers will be made at not more than a 65 percent cost-share rate. New practice payments for all other contracts will be made at not more than a 50 percent cost-share rate. All new practice payments are limited to a \$10,000 cumulative total for the contract.
- An annual enhancement component for exceptional conservation effort and additional conservation practices or activities that provide increased resource benefits beyond minimum requirements.

### ***For More Information***

If you need more information about CSP, please contact your local USDA Service Center, listed in the telephone book under U.S. Department of Agriculture, or your local conservation district. Information also is available on the CSP Web page: <http://www.nrcs.usda.gov/programs/csp>



Visit USDA on the Web at:  
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## Program Description

October 2004

## *Environmental Quality Incentives Program*

### *Overview*

The Environmental Quality Incentives Program (EQIP) is a voluntary program that provides assistance to farmers and ranchers who face threats to soil, water, air, and related natural resources on their land. Through EQIP, the Natural Resources Conservation Service (NRCS) provides assistance to agricultural producers in a manner that will promote agricultural production and environmental quality as compatible goals, optimize environmental benefits, and help farmers and ranchers meet Federal, State, Tribal, and local environmental requirements.

### *Authority*

Section 1241 of the 1985 Food Security Act (16 U.S.C. 3841), as amended by the Farm Security and Rural Investment Act of 2002 (2002 Farm Bill), provides the funds, facilities, and authorities of the Commodity Credit Corporation (CCC) to NRCS for carrying out EQIP and working with landowners to implement conservation practices on their property.

### *Scope*

EQIP is available in all 50 States, the Caribbean Area (Puerto Rico and the Virgin Islands), and the Pacific Basin Area (Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands).

### *New Provisions*

The 2002 Farm Bill added EQIP funding for Ground and Surface Water Conservation (GSWC) which provides cost-share and incentive payments to producers where the assistance will result in a net savings in ground or surface water resources in the agricultural

operation of the producer. In Fiscal Year (FY) 2002, eight states, considered high plains aquifer states, received funding (Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming). In FY 2003, in addition to the high plains aquifer states, eight western drought states (Arizona, California, Idaho, Montana, North Dakota, Oregon, Utah, and Washington) also received GSWC funding. GSWC provided \$45 million for FY 2003. An additional \$50 million was appropriated for fiscal years 2002-2007 to support use and installation of ground and surface water conservation practices in the Klamath River Basin, located on the Oregon and California state boundary.

### *Eligibility*

*Producers:* Agricultural producers—individuals or entities engaged in livestock or agricultural production—may participate in EQIP. There are, however, circumstances that may limit an individual's or entity's participation; these include:

- Federal and State governments and their political subdivisions are not eligible.
- The applicant must be in compliance with highly erodible land and wetland conservation provisions.
- The adjusted gross income provision of the 2002 Farm Bill impacts eligibility for EQIP and several other 2002 Farm Bill programs. Individuals or entities that have an average adjusted gross income exceeding \$2.5 million for the three tax years immediately preceding the year the contract is approved are not eligible to



receive program benefits or payments. However, an exemption is provided in cases where 75 percent of the adjusted gross income is derived from farming, ranching, or forestry operations.

- The 2002 Farm Bill limits the total amount of cost-share and incentive payments paid to an individual or entity to an aggregate of \$450,000, directly or indirectly, for all contracts entered into during fiscal years 2002 through 2007.

All individual producers, entities, or other applications with multiple beneficiaries must provide Social Security numbers at the time of application for purposes of monitoring payment limitations.

*Land:* Eligible land means land on which agricultural commodities or livestock are produced. This includes:

- Cropland;
- Rangeland;
- Grassland;
- Pasture land;
- Private, non-industrial forestland; and
- Other land determined to pose a serious threat to soil, air, water, or related resources.

#### ***How EQIP is Implemented in Your State***

EQIP uses the locally led process to adapt National priorities to address local resource concerns and achieve its objective of optimizing environmental benefits. To accomplish this, EQIP uses a four-part process:

- Allocation of funds from the National level to State NRCS offices based on National priorities;
- Identification of State and local priority resource concerns and allocation from the State level to the local level using the National priorities as guidance;
- Selection of conservation practices and practice cost lists to address the priority resource concerns; and

- Development of a ranking process that prioritizes those applications that addresses the priority resource concerns in the most cost effective manner.

The State Conservationist and designated conservationist implement the locally led process for EQIP by considering the advice of the State Technical Committee and local work groups when making decisions about State and local priorities, practice cost lists, and ranking.

More information regarding State and local EQIP implementation can be found at: [http://www.nrcs.usda.gov/programs/eqip/EQIP\\_signup/2004\\_EQIP/2004\\_EQIP.html](http://www.nrcs.usda.gov/programs/eqip/EQIP_signup/2004_EQIP/2004_EQIP.html)

#### ***Eligible Practices and Cost-Share Rates***

The State and local decision makers determine which conservation practices are eligible for EQIP assistance. Selected practices are those that address the identified resource concerns in a most cost effective manner.

Cost-sharing may pay up to 75 percent of the costs of certain conservation practices, such as grassed waterways, filter strips, manure management facilities, capping abandoned wells, and other practices important to improving and maintaining the health of natural resources in the area. The EQIP cost-share rates for limited resource producers and beginning farmers and ranchers may be up to 90 percent. USDA has established a self-determination tool for applicants to determine eligibility as a limited resource producer.

The tool can be found at:

<http://www.nrcs.usda.gov/programs/smlfarmer/tool.asp>.

Incentive payments may be made to encourage a producer to perform land management practices, such as nutrient management, manure management, integrated pest management, irrigation water management, and wildlife habitat management. These payments may be provided for up to three years to encourage producers to carry out

management practices that they otherwise might not implement.

### ***Criteria Used to Evaluate Applications***

Each State or locality develops a ranking system to prioritize the applications that will ensure EQIP will address priority natural resource concerns. The ranking process assists the State and local decision makers in determining which applications merit EQIP enrollment. The ranking systems developed are size neutral, meaning that the rank is not influenced by the size (whether large or small) of an operation.

### ***Application Process***

The EQIP application process consists of the following five steps:

1. A landowner submits an application to a local USDA Service Center, NRCS office, conservation district office, or office of a designated cooperating entity.
2. The NRCS State Conservationist or designee works with the applicant to develop an EQIP plan of operations.
3. The State Conservationist or designated conservationist ranks each application using the locally developed ranking process.
4. When funds are allocated, the State Conservationist or designated conservationist commits allocated funds to high ranking landowner offers and enters into contracts with selected participants.
5. Following contract signature by NRCS and the selected entity, funds are obligated to the project and the participant may begin to implement the EQIP plan of operations.

### ***Standard Program Contracts***

Once an applicant is selected, the participant works with the appropriate NRCS office to finalize and sign EQIP contracts, incorporating all EQIP requirements. An EQIP contract is the legal contract with which the NRCS establishes its relationship with the participant. The EQIP contract details the practices the producer will implement, when they will be implemented, and what level of assistance USDA will provide to the participant. The length of an EQIP contract is, at minimum, one year after the last scheduled practice is installed and may not exceed ten years.

### ***For More Information***

If you need more information about EQIP, please contact your local USDA Service Center, listed in the telephone book under U.S. Department of Agriculture, or your local conservation district. Information also is available on the World Wide Web at:

<http://www.nrcs.usda.gov/programs/farmbill/2002/>.



Visit USDA on the Web at:  
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## Fact Sheet

March 2006

## Grassland Reserve Program

### Overview

The Grassland Reserve Program (GRP) is a voluntary program that helps landowners and operators restore and protect grassland, including rangeland, pastureland, shrubland, and certain other lands, while maintaining the areas as grazing lands. The program emphasizes support for working grazing operations; enhancement of plant and animal biodiversity; and protection of grassland and land containing shrubs and forbs under threat of conversion to cropping, urban development, and other activities that threaten grassland resources.

GRP is authorized by the Food Security Act of 1985, as amended by the Farm Security and Rural Investment Act of 2002 (2002 Farm Bill). The USDA Natural Resources Conservation Service (NRCS) and USDA Farm Service Agency (FSA) administer the program. Funding for the GRP comes from the Commodity Credit Corporation (CCC).

### Benefits

Restoring and protecting grasslands contributes positively to the economy of many regions, provides biodiversity of plant and animal populations, and improves environmental quality.

### How GRP Works

Applications may be filed for an easement or rental agreement with NRCS or FSA. Participants voluntarily limit future development and cropping uses of the land while retaining the right to conduct common grazing practices; produce hay, mow, or harvest for seed production (subject to certain restrictions during the nesting season of bird species that are in significant decline or those

that are protected under Federal or State law); conduct fire rehabilitation; construct firebreaks and fences; and conduct common grazing practices and operations related to the production of forage and seed.

GRP contracts and easements prohibit the production of crops (other than hay), fruit trees, and vineyards that require breaking the soil surface and any other activity that would permanently disturb the surface of the land, except for appropriate land management activities included in a grassland conservation plan.

Each state will establish ranking criteria that will prioritize enrollment of working grasslands. The ranking criteria will consider threats of conversion, including cropping, invasive species, urban development, and other activities that threaten plant and animal diversity on grazing lands.

The program offers several enrollment options:

*Permanent Easement.* This is a conservation easement in perpetuity. Easement payments for this option equal the fair market value, less the grassland value of the land encumbered by the easement. These values will be determined using an appraisal.

*Thirty-year Easement.* USDA will provide an easement payment equal to 30 percent of: the fair market value of the land, less the grassland value of the land of the land encumbered by the easement.

For both easement options, USDA will provide all administrative costs associated

with recording the easement, including appraisal fees, survey costs, title insurance, and recording fees. Easement payments may be provided, at the participant's request, in lump sum or annual payments (equal or unequal amounts) for up to 10 years.

*Rental Agreement.* Participants may choose a 10-year, 15-year, 20-year, or 30-year contract. USDA will provide annual payments in an amount that is not more than 75 percent of the grazing value of the land covered by the agreement for the life of the agreement. Payments will be disbursed on the agreement anniversary date each year.

*Restoration agreement.* An approved grassland resource management plan identifying required restoration activities will be incorporated within the rental agreement or easement. CCC may provide up to 90 percent of the restoration costs on lands that have never been cultivated, and up to 75 percent of the cost on restored grasslands and shrub lands that were previously cropped. Participants will be paid upon certification of the completion of the approved practice(s). Participants may contribute to the application of a cost-share practice through in-kind contributions. The combined total cost-share provided by Federal or State Governments may not exceed 100 percent of the total actual cost of restoration.

### ***Eligibility***

Landowners who can provide clear title on privately owned lands are eligible to participate for either easement option. Landowners and others who have general control of the acreage may submit an application for a rental agreement.

There is no national maximum limitation on the amount of land that may be enrolled by a participant in the program. However, there is a minimum requirement established in law. Offers for enrollment must contain at least 40 contiguous acres, unless special circumstances exist to accept a lesser amount. These special

circumstances are determined by the NRCS State Conservationist.

The Adjusted Gross Income provision of the 2002 Farm Bill impacts eligibility for GRP and several other 2002 Farm Bill programs. Individuals or entities that have an average adjusted gross income exceeding \$2.5 million for the three tax years immediately preceding the year the contract is approved are not eligible to receive program benefits or payments. However, an exemption is provided in cases where 75 percent of the adjusted gross income is derived from farming, ranching, or forestry operations.

Eligible land includes privately owned and Tribal lands, such as grasslands; land that contains forbs (including improved rangeland and pastureland or shrubland); or land that is located in an area that historically has been dominated by grassland, forbs, or shrubland that has the potential to serve as wildlife habitat of significant ecological value. Incidental lands may be included to allow for the efficient administration of an agreement or easement.

### ***For More Information***

If you need more information about GRP, please contact your local USDA Service Center, listed in the telephone book under U.S. Department of Agriculture, or your local conservation district. Information also is available on the World Wide Web at: <http://www.nrcs.usda.gov/programs/farmbill/2002/> and <http://www.fsa.usda.gov/dafp/GRP/default1.htm>



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## Healthy Forests Reserve Program

### **Overview**

The Healthy Forests Reserve Program (HFRP) is a voluntary program established for the purpose of restoring and enhancing forest ecosystems to: 1) promote the recovery of threatened and endangered species, 2) improve biodiversity; and 3) enhance carbon sequestration.

The HFRP was signed into law as part of the Healthy Forests Restoration Act of 2003. The program is authorized to be carried out from 2004 through 2008.

### **Benefits**

Restoring and protecting forests contributes positively to the economy of our nation, provides biodiversity of plant and animal populations, and improves environmental quality.

Landowner Protections will be made available to landowners enrolled in the HFRP who agree, for a specified period, to restore or improve their land for threatened or endangered species habitat. In exchange, they avoid future regulatory restrictions on the use of that land protected under the Endangered Species Act.

### **Enrollment Options**

The Program offers three enrollment options:

- 1) A 10-year cost-share agreement; for which the landowner may

receive 50 percent of the average cost of the approved conservation practices,

- 2) A 30-year easement, for which the landowner may receive 75 percent of the easement value of the enrolled land plus 75 percent of the average cost of the approved conservation practices, or
- 3) An easement of not more than 99-years, for which landowners may receive 100 percent of the easement value of the enrolled land plus 100 percent of the average cost of the approved conservation practices.

### **Eligibility**

To be eligible for enrollment, land must be private land or Tribal lands which will restore, enhance, or measurably increase the likelihood of recovery of a threatened or endangered species, must improve biological diversity, or increase carbon sequestration.

### **For More Information**

If you need more information about HFRP, please contact your local USDA Service Center, listed in the telephone book under U.S. Department of Agriculture, or your local conservation district. Information is available on the Internet at:

<http://www.nrcs.usda.gov/programs>

## Fact Sheet

September 2004

## Wetlands Reserve Program

### Overview

The Wetlands Reserve Program (WRP) is a voluntary program that provides technical and financial assistance to eligible landowners to address wetland, wildlife habitat, soil, water, and related natural resource concerns on private lands in an environmentally beneficial and cost-effective manner. The program provides an opportunity for landowners to receive financial incentives to restore, protect, and enhance wetlands in exchange for retiring marginal land from agriculture. WRP is reauthorized in the Farm Security and Rural Investment Act of 2002 (Farm Bill). The Natural Resources Conservation Service (NRCS) administers the program. Funding for WRP comes from the Commodity Credit Corporation.

### Benefits

WRP participants benefit by:

- Receiving financial and technical assistance in return for restoring, protecting and enhancing wetland functions and values;
- Seeing a reduction in problems associated with farming potentially difficult areas; and
- Having incentives to develop wildlife recreational opportunities on their land.

Wetlands benefit the Nation by providing fish and wildlife habitat; improving water quality by filtering sediments and chemicals; reducing flooding; recharging groundwater; protecting biological diversity; as well as providing opportunities for educational, scientific, and recreational activities.

### How WRP Works

Landowners and Tribes may file an application for a conservation easement or a cost-share restoration agreement with the U.S.

Department of Agriculture (USDA) to restore and protect wetlands. Participants voluntarily limit future use of the land, but retain private ownership.

The program offers three enrollment options:

*Permanent Easement.* This is a conservation easement in perpetuity. Easement payments for this option equal the lowest of three amounts: the agricultural value of the land, an established payment cap, or an amount offered by the landowner. In addition to paying for the easement, USDA pays 100 percent of the costs of restoring the wetland.

*30-Year Easement.* Easement payments through this option are 75 percent of what would be paid for a permanent easement. USDA also pays up to 75 percent of restoration costs.

For both permanent and 30-year easements, USDA pays all costs associated with recording the easement in the local land records office, including recording fees, charges for abstracts, survey and appraisal fees, and title insurance.

*Restoration Cost-Share Agreement.* This is an agreement (generally for a minimum of 10 years) to re-establish degraded or lost wetland habitat. USDA pays up to 75 percent of the cost of the restoration activity. This enrollment option does not place an easement on the property. Other agencies, conservation districts, and private conservation

organizations may provide additional incentive payments as a way to reduce the landowner's share of the costs. Such special partnership efforts are encouraged.

NRCS and its partners, including conservation districts, continue to provide assistance to landowners after completion of restoration activities. This assistance may be in the form of reviewing restoration measures, clarifying technical and administrative aspects of the easement and project management needs, and providing basic biological and engineering advice on how to achieve optimum results for wetland dependent species.

Applications are accepted through a continuous sign-up process. Applications may be obtained and filed at any time with your local USDA Service Center or conservation district office. Applications also may be obtained through USDA's e-gov Internet site at: [www.sc.egov.usda.gov](http://www.sc.egov.usda.gov). Enter "Natural Resources Conservation Service" in the Agency field, "Wetlands Reserve Program" in the Program Name field, and "AD-1153" in the Form Number field.

### ***Eligibility***

To offer a conservation easement, the landowner must have owned the land for at least 12 months prior to enrolling it in the program, unless the land was inherited, the landowner exercised the landowner's right of redemption after foreclosure, or the landowner can prove the land was not obtained for the purpose of enrolling it in the program. To participate in a restoration cost-share agreement, the landowner must show evidence of ownership.

To be eligible for WRP, land must be restorable and be suitable for wildlife benefits. This includes:

- Wetlands farmed under natural conditions;
- Farmed wetlands;
- Prior converted cropland;

- Farmed wetland pasture;
- Farmland that has become a wetland as a result of flooding;
- Range land, pasture, or production forest land where the hydrology has been significantly degraded and can be restored;
- Riparian areas which link protected wetlands;
- Lands adjacent to protected wetlands that contribute significantly to wetland functions and values; and
- Previously restored wetlands that need long-term protection.

*Ineligible Land.* Ineligible land includes wetlands converted after December 23, 1985; lands with timber stands established under a Conservation Reserve Program contract; Federal lands; and lands where conditions make restoration impossible.

The Adjusted Gross Income provision of the 2002 Farm Bill impacts eligibility for WRP and several other 2002 Farm Bill programs. Individuals or entities that have an average adjusted gross income exceeding \$2.5 million for the three tax years immediately preceding the year the contract is approved are not eligible to receive program benefits or payments. However, an exemption is provided in cases where 75 percent of the adjusted gross income is derived from farming, ranching, or forestry operations.

### ***Uses of WRP Land***

On acreage subject to a WRP easement, participants control access to the land and may lease the land for hunting, fishing, and other undeveloped recreational activities. At any time, a participant may request that additional activities be evaluated to determine if they are compatible uses for the site. This request may include such items as permission to cut hay, graze livestock, or harvest wood products. Compatible uses are allowed if they are fully consistent with the protection and enhancement of the wetland.

***For More Information***

If you need more information about WRP, please contact your local USDA Service Center, listed in the telephone book under U.S. Department of Agriculture, or your local conservation district. Information also is available on the World Wide Web at: <http://www.nrcs.usda.gov/programs/farmbill/2002/>



Visit USDA on the Web at:  
<http://www.usda.gov/farmbill>

**Note:** This is not intended to be a definitive interpretation of farm legislation. Rather, it is preliminary and may change as USDA develops implementing policies and procedures. Please check back for updates.



## Program Description

September 2004

## ***Wildlife Habitat Incentives Program***

### ***Overview***

The Wildlife Habitat Incentives Program (WHIP) is a voluntary program that encourages creation of high quality wildlife habitats that support wildlife populations of National, State, Tribal, and local significance. Through WHIP, the Natural Resources Conservation Service (NRCS) provides technical and financial assistance to landowners and others to develop upland, wetland, riparian, and aquatic habitat areas on their property.

### ***Authority***

Section 387 of the Federal Agricultural Improvement and Reform Act of 1996 authorized NRCS to work with landowners to develop wildlife habitat on their property. WHIP is reauthorized in the Farm Security and Rural Investment Act of 2002 (Farm Bill). NRCS works with private landowners and operators; conservation districts; and Federal, State, and Tribal agencies. Funding for WHIP comes from the Commodity Credit Corporation.

### ***Scope***

WHIP is available in all 50 States, the Caribbean Area (Puerto Rico and the Virgin Islands), and the Pacific Basin Area (Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands). To participate in WHIP, NRCS State offices must submit a State WHIP plan.

### ***Eligibility***

***Land.*** Eligible lands under the program are:

- Privately owned land;

- Federal land when the primary benefit is on private or Tribal land;
- State and local government land on a limited basis; and
- Tribal land.

If land is determined eligible, NRCS places emphasis on enrolling:

- Habitats for wildlife species experiencing declining or significantly reduced populations;
- Practices beneficial to fish and wildlife that may not otherwise be funded; and
- Wildlife and fishery habitats identified by local and State partners and Indian Tribes in each State.

***Entity.*** To be eligible, an entity must own or have control of the land to be enrolled in the program for the duration of the agreement period.

The Adjusted Gross Income provision of the 2002 Farm Bill impacts eligibility for WHIP and several other 2002 Farm Bill programs. Individuals or entities that have an average adjusted gross income exceeding \$2.5 million for the three tax years immediately preceding the year the contract is approved are not eligible to receive program benefits or payments. However, an exemption is provided in cases where 75 percent of the adjusted gross income is derived from farming, ranching, or forestry operations.

### ***Application Process***

The WHIP application process consists of the following five steps:

- A landowner submits an application to an NRCS local office, conservation district office, or office of a designated cooperating entity.
- The local work group identifies local wildlife habitat priorities and then communicates these priorities to the State Technical Committee. The NRCS State Conservationist consults with the State Technical Committee to rank the applications received in the field based on the State WHIP plan and the state established ranking criteria.
- When funds are available, NRCS makes allocations to the NRCS State offices based on the expressed unfunded demand for the program, the priorities in the State WHIP plan, and the level of contribution by partner organizations.
- The NRCS State Conservationist commits allocated funds to high ranking landowner offers and enters into long-term agreements with selected participants.
- Following agreement signature by NRCS and the selected entity, funds are obligated to the project, and the participant may begin to implement the wildlife habitat development plan.

### ***Determining National WHIP Allocations***

WHIP funding is available to States that submit an NRCS State WHIP plan to the National office. Allocations may be adjusted based on updated plans received and at the discretion of the NRCS Chief.

The State Conservationist is responsible for developing a State WHIP plan with advice from the State Technical Committee. The State Technical Committee receives input from many sources, including the local work groups convened by conservation districts.

The State WHIP plan includes ranking considerations used by the State, the National criteria identified in the WHIP rule, and other State ranking criteria. The criteria include, but are not limited to, proximity to protected clusters of wildlife habitat, projected longevity of the habitat created, parcel size, type of land use, maximum cost expended per acre, and degree of leveraging by a partnering entity. State ranking criteria are developed on a State-by-State basis and are available if requested.

### ***Criteria Used to Evaluate Proposals***

Each State develops a ranking system to ensure consistent and efficient WHIP implementation. The ranking process assists the State Conservationist in determining parcels that merit WHIP enrollment. Ranking criteria, derived from the State WHIP plan, enable the State Conservationist to prioritize proposals.

The State Conservationist, with assistance from the State Technical Committee, establishes a weighted ranking process to prioritize eligible proposals and parcels. Priority is given to projects that will protect habitat or species of National or regional significance.

### ***Standard 5- to 10-year Program Agreements***

Once selected, entities must work with the appropriate NRCS office to finalize and sign WHIP agreements, incorporating all WHIP requirements. A WHIP agreement is the legal contract with which the NRCS establishes its relationship with the participant; State, Tribal, or local government entities; or non-governmental organizations.

### ***15-year agreements***

In exchange for entering into a 15-year WHIP agreement, a landowner may receive higher cost-share rates for the implementation of habitat development practices on essential plant and animal habitat. Up to 15 percent of available WHIP funds can be used to enter into 15-year agreements.

***For More Information***

If you need more information about WHIP, please contact your local USDA Service Center, listed in the telephone book under U.S. Department of Agriculture, or your local conservation district. Information also is available on the World Wide Web at: <http://www.nrcs.usda.gov/programs/farbill/2002/>



Visit USDA on the Web at:  
<http://www.usda.gov/farbill>

**Note:** This is not intended to be a definitive interpretation of farm legislation. Rather, it is preliminary and may change as USDA develops implementing policies and procedures. Please check back for updates.

## **APPENDIX C**

### **Common Natural Resource Concerns and Mitigating Practices**

**Appendix C. Common Natural Resource Concerns and Mitigating Conservation Practices Used in the New England States and New York**

<b>Resource Concern</b>	<b>Conservation Practices to Address Concern</b> <sup>C-1</sup>
<b>Soil</b>	
Soil erosion – sheet and rill, gully, streambank	Access Road (560); Conservation Cover (327); Contour Orchard And Other Fruit Area (331); Forest Trails and Landings (655); Irrigation System, Tailwater Recovery (447); Lined Waterway Or Outlet (468); Mulching (484); Recreation Trail And Walkway (568); Riparian Herbaceous Cover (390); Row Arrangement (557); Stream Crossing (578); Stream Habitat Improvement (395); Streambank And Shoreline Protection (580); Stripcropping (585); Water And Sediment Control Basin (638)
Soil condition – Organic matter depletion	Conservation Cover (327); Mulching (484); Stripcropping (585)
Soil condition – Compaction	Deep Tillage (324); Prescribed Forestry (409)
Soil condition – Contaminants, animal waste and other organics N and P	Anaerobic Digester, Controlled Temperature (366); Irrigation System, Tailwater Recovery (447)
<b>Water</b>	
Water quantity: Excessive runoff, flooding or ponding	Deep Tillage (324); Lined Waterway Or Outlet (468); Subsurface Drain (606); Surface Drainage, Field Ditch (607); Surface Drainage, Main or Lateral (608); Underground Outlet (620)
Water quantity: Insufficient flows in water courses	Practices Are Primarily For Cranberry Bogs: Dike (356); Irrigation Storage Reservoir (436); Irrigation System, Microirrigation (441); Irrigation System, Sprinkler (442); Irrigation System, Tailwater Recovery (447); Irrigation Water Conveyance, Pipeline, Steel (430FF); Land Smoothing (466); Obstruction Removal (500); Open Channel (582); Pumping Plant (533); Water Well (642)
Water quality: Harmful levels of pesticides in surface and ground water	Irrigation System, Tailwater Recovery (447); Lined Waterway Or Outlet (468); Stripcropping (585); Wastewater Treatment Strip (635);
Water quality: Excessive nutrients in surface and ground water	Anaerobic Digester, Controlled Temperature (366); Heavy Use Area Protection (562); Irrigation System, Tailwater Recovery (447); Lined Waterway Or Outlet (468); Riparian Herbaceous Cover (390); Stream Crossing (578); Stripcropping (585); Waste Treatment (629); Wastewater Treatment Strip (635)
Water quality: Harmful levels of pathogens in surface and ground water	Anaerobic Digester, Controlled Temperature (366); Irrigation System, Tailwater Recovery (447); Lined Waterway Or Outlet (468); Stream Crossing (578); Stripcropping (585); Waste Treatment (629); Wastewater Treatment Strip (635)
Water quality: Excessive suspended sediment in surface water	Access Road (560); Conservation Cover (327); Contour Orchard And Other Fruit Area (331); Forest Trails and Landings (655); Irrigation System, Tailwater Recovery (447); Lined Waterway Or Outlet (468); Mulching (484); Prescribed Forestry (409); Recreation Trail And Walkway (568); Riparian Herbaceous Cover (390); Row Arrangement (557); Sediment Basin (350); Stream Crossing (578); Streambank And Shoreline Protection (580); Stripcropping (585); Wastewater Treatment Strip (635); Water And Sediment Control Basin (638)

<sup>C-1</sup> This table includes only those conservation practices considered in this EA that are normally used to address the listed resource concerns. Additional resource concerns and conservation practices commonly used in the region that have been adequately addressed in the Programmatic EA for EQIP are not included. The Programmatic EA for EQIP is available at the following website: [http://www.nrcs.usda.gov/programs/Env\\_Assess/EQIP/EQIP.html](http://www.nrcs.usda.gov/programs/Env_Assess/EQIP/EQIP.html).

<b>Resource Concern</b>	<b>Conservation Practices to Address Concern</b> <sup>C-1</sup>
<b>Air</b>	
Air quality: Excessive greenhouse gases (CO <sub>2</sub> , N <sub>2</sub> O, CH <sub>4</sub> )	Anaerobic Digester, Controlled Temperature (366); Riparian Herbaceous Cover (390); Stripcropping (585); Prescribed Forestry (409); Forest Stand Improvement (666)
Air quality: Ammonia and objectionable odors	Anaerobic Digester, Controlled Temperature (366), Windbreak/Shelterbelt Establishment (380)
<b>Plants</b>	
Plant condition: Productivity, health and vigor	Contour Orchard And Other Fruit Area (331); Dike (356); Forest Stand Improvement (666); Firebreak (394); Irrigation Storage Reservoir (436); Irrigation System, Microirrigation (441); Irrigation System, Sprinkler (442); Irrigation System, Tailwater Recovery (447); Irrigation Water Conveyance, Pipeline, Steel (430FF); Land Smoothing (466); Mulching (484); Prescribed Grazing (528); Recreation Trail And Walkway (568); Stripcropping (585); Tree/Shrub Pruning (660)
Plant condition: Threatened, endangered and declining species	Early Successional Habitat Development (647); Recreation Trail And Walkway (568); Restoration And Management Of Declining Habitats (643); Upland Wildlife Habitat Management (645); Wetland Enhancement (659)
Plant condition: Noxious and invasive plants	Brush Management (614); Forest Stand Improvement (666); Mulching (484); Pest Management (595); Restoration And Management Of Declining Habitats (643); Wetland Enhancement (659)
<b>Animals</b>	
Fish and wildlife: Inadequate cover/shelter	Brush Management (614); Conservation Cover (327); Early Successional Habitat Development (647); Forest Stand Improvement (666); Hedgerow Planting (422); Land Clearing (460); Prescribed Forestry (409); Restoration And Management Of Declining Habitats (643); Riparian Herbaceous Cover (390); Shallow Water Management For Wildlife (646); Stream Habitat Improvement (395); Streambank And Shoreline Protection (580); Stripcropping (585); Tree/Shrub Pruning (660); Upland Wildlife Habitat Management (645); Wetland Enhancement (659)
Fish and wildlife: Habitat fragmentation	Early Successional Habitat Development (647); Fish Passage (396); Hedgerow Planting (422); Restoration And Management Of Declining Habitats (643); Riparian Herbaceous Cover (390); Stream Habitat Improvement (395); Wetland Enhancement (659); Windbreak/Shelterbelt Establishment (380)
Fish and wildlife: Threatened, endangered and declining species	Early Successional Habitat Development (647); Fish Passage (396); Prescribed Forestry (409); Recreation Trail And Walkway (568); Restoration And Management Of Declining Habitats (643); Shallow Water Management For Wildlife (646); Stream Habitat Improvement (395); Streambank And Shoreline Protection (580); Wetland Enhancement (659)
Domestic Animals: Inadequate stock water	Pumping Plant (533); Water Well (642); Pipeline (516); Spring Development (574 )

<sup>C-1</sup> This table includes only those conservation practices considered in this EA that are normally used to address the listed resource concerns. Additional resource concerns and conservation practices commonly used in the region that have been adequately addressed in the Programmatic EA for EQIP are not included. The Programmatic EA for EQIP is available at the following website: [http://www.nrcs.usda.gov/programs/Env\\_Assess/EQIP/EQIP.html](http://www.nrcs.usda.gov/programs/Env_Assess/EQIP/EQIP.html).

## **APPENDIX D**

### **Common Conservation Practices Reviewed and Determined to be Adequately Addressed in Existing Programmatic EA for EQIP**

**Appendix D.** Common Conservation Practices Reviewed and Determined to be Adequately Addressed in Existing Programmatic EA for EQIP <sup>D-1</sup>

Practice Name	Practice Code	Common Landuse for Application				
		Head-quarters	Crop-land	Pasture	Forest	Wildlife
Alley Cropping	311		X	X		
Animal Trails and Walkways	575	X		X		
Composting Facility	317	X				
Conservation Crop Rotation	328		X			
Contour Buffer Strips	332		X			
Contour Farming	330		X	X		
Cover Crop	340		X			
Critical Area Planting	342	X	X	X	X	X
Diversion	362	X	X	X	X	X
Filter Strip	393	X	X			
Forage Harvest Management	511		X	X		
Forest Site Preparation	490				X	
Grade Stabilization Structure	410	X	X	X	X	
Grassed Waterway	412		X			
Irrigation Water Conveyance, Aluminum Tubing Pipeline	430AA		X			
Irrigation Water Conveyance, Asbestos-Cement Pipeline	430BB		X			
Irrigation Water Conveyance, Nonreinforced Concrete Pipeline	430CC		X			
Irrigation Water Conveyance, High-Pressure Plastic Pipeline	430DD		X			
Irrigation Water Conveyance, Low-Pressure Plastic Pipeline	430EE		X			
Irrigation Water Management	449		X	X		
Manure Transfer	634	X				
Nutrient Management	590		X	X	X	X
Pasture and Hay Planting	512		X	X		
Pest Management*	595		X	X	X	X
Pond	378	X	X	X	X	X
Prescribed Burning	338			X	X	X
Residue and Tillage Management, Mulch-Till	345		X			
Residue and Tillage Management, No Till/Strip Till/Direct Seed	329		X	X		
Residue and Tillage Management, Ridge Till	346		X			
Residue Management, Seasonal	344		X			

<sup>D-1</sup> The Programmatic EA for EQIP and associated network diagrams for these practices are available at the following website: [http://www.nrcs.usda.gov/programs/Env\\_Assess/EQIP/EQIP.html](http://www.nrcs.usda.gov/programs/Env_Assess/EQIP/EQIP.html).

\* The Pest Management network diagram was reviewed and determined to adequately address concerns other than treatment of invasive species and is modified in this EA specifically for this purpose.



	Common Landuse for Application					
Practice Name	Practice Code	Head-quarters	Crop-land	Pasture	Forest	Wildlife
Riparian Forest Buffer	391	X	X	X	X	X
Roof Runoff Structure	558	X				
Terrace	600		X	X		
Tree/Shrub Establishment	612				X	X
Use Exclusion	472		X	X	X	X
Waste Storage Facility	313	X				
Waste Treatment Lagoon	359	X				
Waste Utilization	633	X	X	X		
Watering Facility	614	X		X		
Wetland Development or Restoration	657		X	X	X	X
Wetland Wildlife Habitat Management	644		X	X	X	X

## **APPENDIX E**

### **Conservation Practices Considered in This EA**

**Appendix E.** Conservation Practices Considered in This EA

Practice Name	Practice Code	Common Landuse for Application				
		Head-quarters	Crop-land	Pasture	Forest	Wildlife
Access Road	560	X			X	
Anaerobic Digester, Controlled Temperature	366	X				
Brush Management	614			X	X	X
Conservation Cover	327		X			
Contour Orchard and Other Fruit Area	331		X			
Deep Tillage	324		X			
Dike	356	X	X	X	X	X
Early Successional Habitat Development/Management	647			X	X	X
Fence	382	X	X	X	X	X
Field Border	386		X			
Firebreak	394		X	X	X	X
Fish Passage	396		X	X	X	X
Forest Stand Improvement	666				X	X
Forest Trails and Landings	655				X	X
Heavy Use Area Protection	562	X		X		
Hedgerow Planting	422		X			
Herbaceous Wind Barriers	603		X			
Irrigation Storage Reservoir	436	X	X	X	X	
Irrigation System, Microirrigation	441		X	X		
Irrigation System, Sprinkler	442		X	X		
Irrigation System, Tailwater Recovery	447		X	X		
Irrigation Water Conveyance, Steel Pipeline	430	X	X	X	X	X
Land Clearing	460			X	X	X
Land Smoothing	466		X	X		
Lined Waterway or Outlet	468	X	X	X	X	
Mulching	484		X			
Obstruction Removal	500	X	X	X		
Open Channel	582	X	X	X	X	X
Pest Management	595		X	X	X	X
Pipeline	516			X		
Prescribed Forestry	409				X	X
Prescribed Grazing	528			X		
Pumping Plant	533	X	X	X		
Recreation Trail and Walkway	568				X	X
Restoration and Management of Rare or Declining Habitats	643			X	X	X
Riparian Herbaceous Cover	390		X			

Practice Name	Practice Code	Common Landuse for Application				
		Head-quarters	Crop-land	Pasture	Forest	Wildlife
Row Arrangement	557		X			
Sediment Basin	350	X	X	X	X	
Shallow Water Development and Management	646			X	X	X
Solid/Liquid Waste Separation Facility	632	X				
Spring Development	574			X		
Streambank and Shoreline Protection	580	X	X	X	X	X
Stream Crossing	578		X	X	X	
Stream Habitat Improvement and Management	395		X	X	X	X
Stripcropping	585		X			
Structure for Water Control	587		X	X	X	X
Subsurface Drain	606	X	X	X		
Surface Drainage, Field Ditch	607	X	X	X		
Surface Drainage, Main or Lateral	608	X	X	X		
Tree/Shrub Pruning	660		X	X	X	X
Underground Outlet	620	X	X	X		
Upland Wildlife Habitat Management	645			X	X	X
Waste Treatment	629	X				
Wastewater Treatment Strip	635	X				
Water and Sediment Control Basin	638	X	X	X	X	
Water Well	642	X	X	X		
Wetland Enhancement	659		X	X	X	X
Windbreak/Shelterbelt Establishment or Renovation	380	X	X	X		X

## APPENDIX F

### NETWORK DIAGRAMS

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(continued)

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\* Modified from the network diagram in the Programmatic Environmental Assessment for EQIP to reflect regional use and conditions. See [http://www.nrcs.usda.gov/programs/Env\\_Assess/EQIP/EQIP.html](http://www.nrcs.usda.gov/programs/Env_Assess/EQIP/EQIP.html) for original diagrams.

<u>Practice</u>	<u>Page</u>
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<sup>□</sup> Addition to the network diagram for Pest Management in the Programmatic Environmental Assessment for EQIP, modified specifically to include treatment of invasive species.

See [http://www.nrcs.usda.gov/programs/Env\\_Assess/EQIP/EQIP.html](http://www.nrcs.usda.gov/programs/Env_Assess/EQIP/EQIP.html) for original diagram regarding treatment of other resource concerns.

\* Modified from the network diagram in the Programmatic Environmental Assessment for EQIP to reflect regional use and conditions. See [http://www.nrcs.usda.gov/programs/Env\\_Assess/EQIP/EQIP.html](http://www.nrcs.usda.gov/programs/Env_Assess/EQIP/EQIP.html) for original diagrams.

## ACCESS ROAD

### PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 560



#### ACCESS ROAD

Access roads are travel-ways for equipment and vehicles constructed as part of a conservation plan.

#### PRACTICE INFORMATION

Access roads are installed to provide a fixed route for vehicular travel for resource management activities while protecting the soil, water, air, fish, wildlife and other adjacent natural resources. Access roads range from seasonal use roads, designed for low speed and rough driving conditions, to all-weather roads heavily used by the public and designed with safety as a high priority.

Access roads are designed to serve the enterprise or planned use with the expected vehicular or equipment traffic. The type of vehicle or equipment, speed, loads, soil, climatic, and other conditions under which

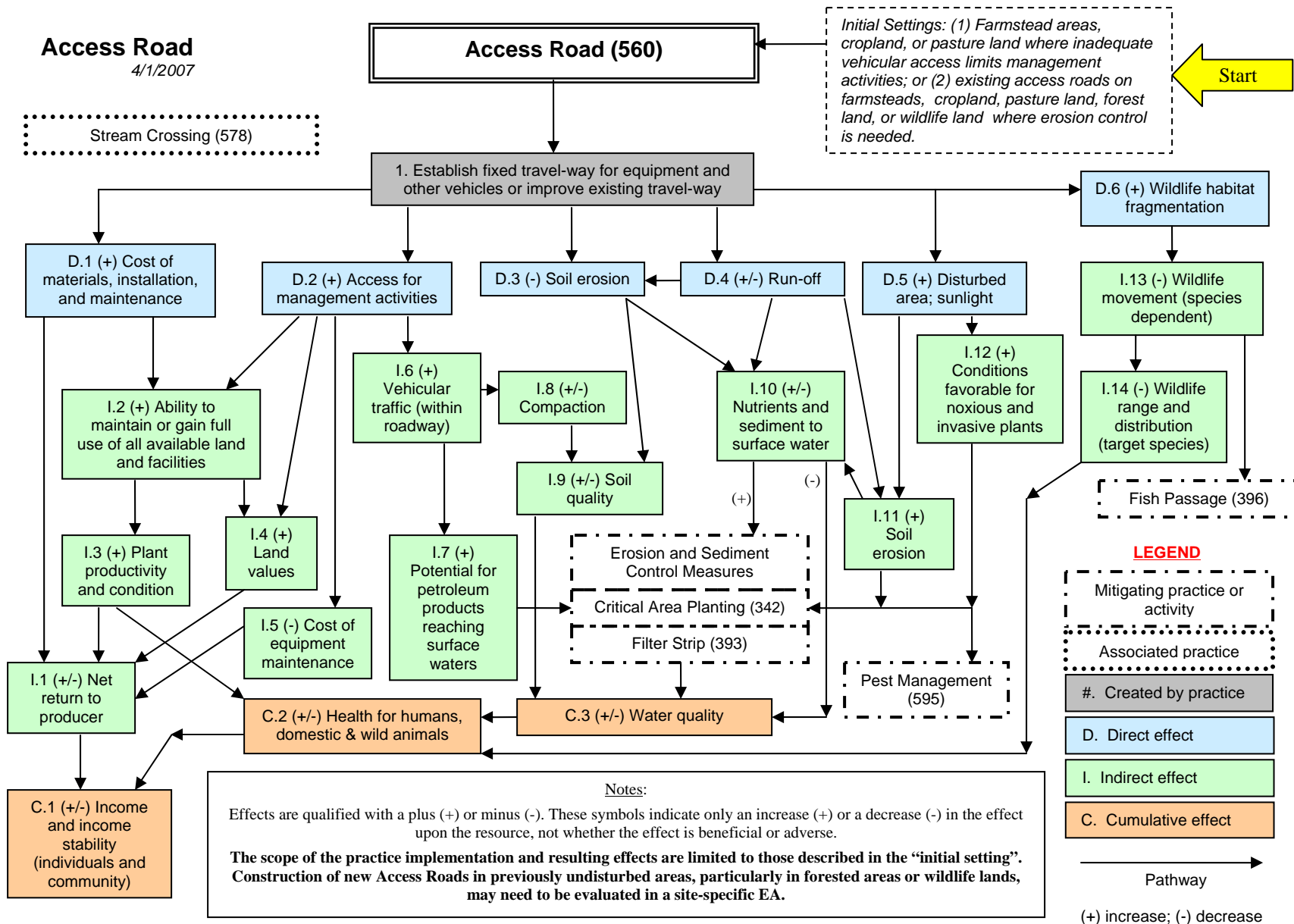
vehicles and equipment are expected to operate must be considered. Planned work must also comply with all Federal, state and local laws and regulations. Where general public use is anticipated, roads must be designed to meet applicable Federal, state and local criteria.

#### COMMON ASSOCIATED PRACTICES

Access roads are applied as part of Conservation Management Systems on various landuses, including headquarters areas, cropland, pasture, and forest land. The practices associated with access roads will vary by land use but may include Stream Crossings, Critical Area Planting, Fish Passage, and various practices associated with runoff and erosion control.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.



# ANAEROBIC DIGESTER, CONTROLLED TEMPERATURE

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 313



### ANAEROBIC DIGESTER, CONTROLLED TEMPERATURE

A Controlled Temperature Anaerobic Digester is a managed temperature waste treatment facility.

### PRACTICE INFORMATION

A Controlled Temperature Anaerobic Digester biologically treats waste as a component of an agricultural waste management system. It can be used to:

- Produce biogas for energy production,
- Reduce odors,
- Reduce greenhouse gas emissions,
- Reduce pathogens, and
- Improve nutrient management.

Design criteria for this practice include: site location, digester volume and retention time, flow rates, heating system, methane yield, 12-month energy budget, and process control and monitoring. An operation and maintenance plan is developed specifically for each system.

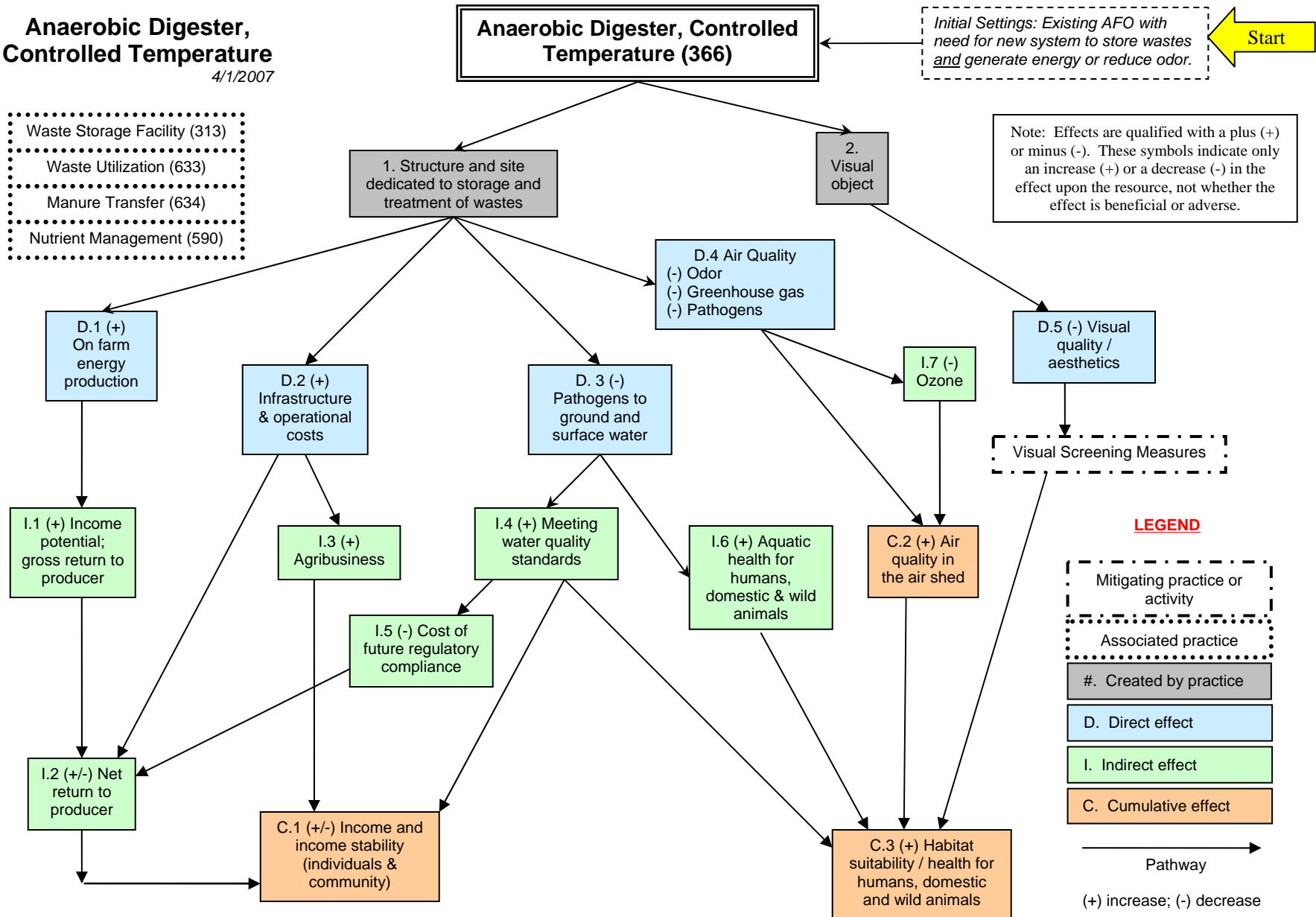
### COMMON ASSOCIATED PRACTICES

This practice is commonly applied as part of a Conservation Management System with a Waste Storage Facility, Waste Utilization, Manure Transfer Critical Area Planting, Nutrient Management, and other practices. Visual screening measures may also be used where aesthetics are a concern.

Refer to the practice standard in the local Field Office Technical Guide and associated practice specifications for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Anaerobic Digester, Controlled Temperature**  
4/1/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# BRUSH MANAGEMENT

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 314



### BRUSH MANAGEMENT

Brush management is the removal, reduction, or manipulation of tree and shrub species.

### PRACTICE INFORMATION

Brush Management is designed to achieve the optimum level of control of the target woody species and protection of the desired species. This is accomplished by mechanical, chemical, biological, or a combination of these techniques. The practice is also planned and applied to meet the habitat requirements of fish and wildlife.

Brush Management is applied to accomplish one or more of the following:

1. Restore natural plant community balance;
2. Create the desired plant community;
3. Reduce competition for space, moisture and sunlight to favor the desired species;
4. Manage noxious woody plants;

5. Restore vegetation to control erosion and sedimentation, improve water quality, and enhance stream flow;
6. Maintain or enhance wildlife habitat including habitat for threatened and endangered species;
7. Improve forage accessibility, quality, and quantity for domestic and wild animals;
8. Protect life and property from wildfire; and
9. Improve visibility and access for handling livestock.

### COMMON ASSOCIATED PRACTICES

Brush Management is commonly used in a Conservation Management System with the following practices:

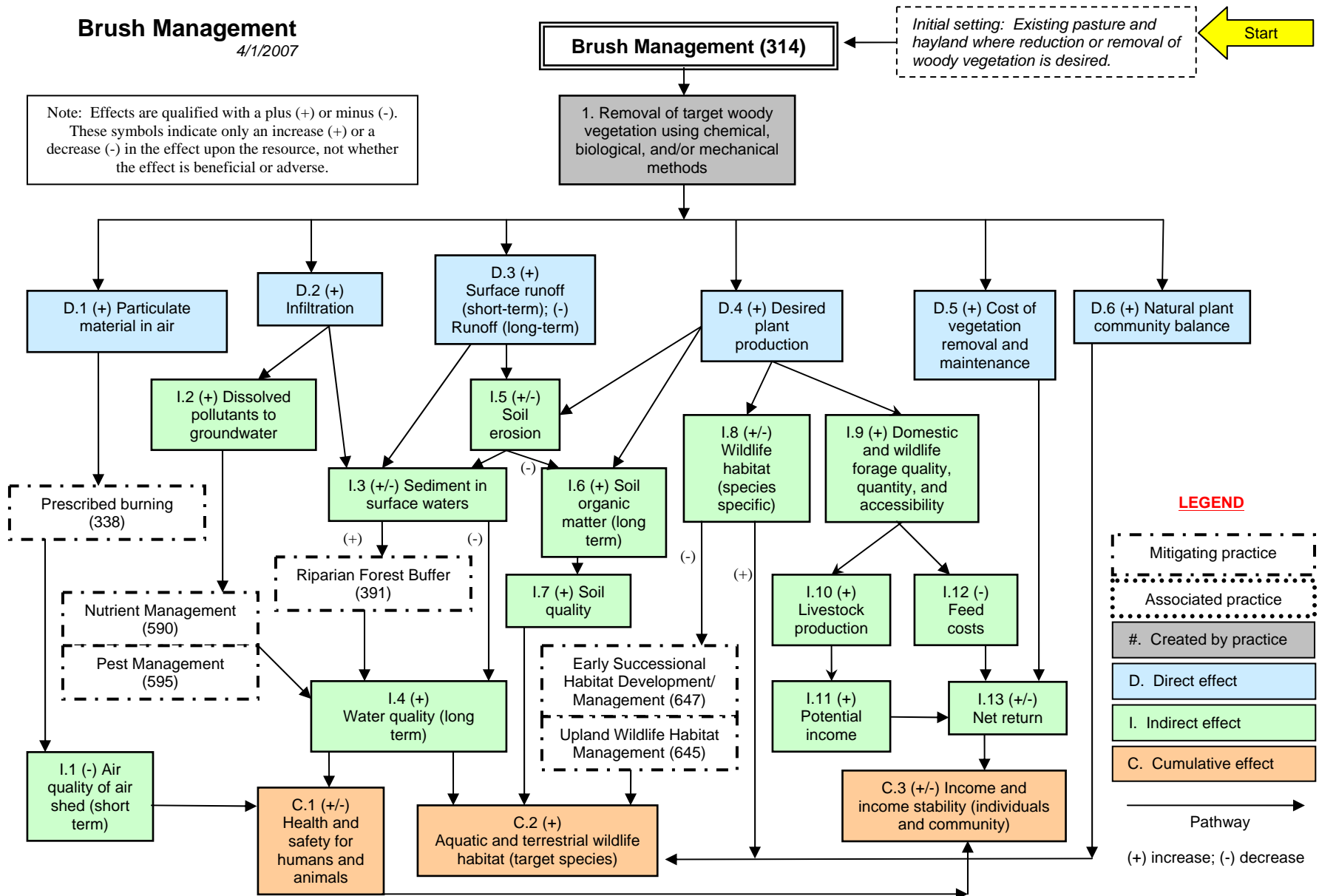
- Pest Management,
- Prescribed Grazing.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# Brush Management

4/1/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# BRUSH MANAGEMENT (BLUEBERRY PRODUCTION)

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 314



### BRUSH MANAGEMENT

Brush management is removal, reduction, or manipulation of tree and shrub species.

### PRACTICE INFORMATION

This is a multipurpose practice applied on blueberry land where tree and/or shrub species are competing with blueberry species.

The brush management practice is designed to achieve the optimum level of control of the target woody species and protection of the desired species. This is accomplished by mechanical, chemical, biological, or a combination of these techniques. The practice is also planned and applied to meet the habitat requirements of fish and wildlife.

Brush Management is applied to accomplish one or more of the following: restore natural plant community balance; create the desired plant community; reduce competition for

space, moisture and sunlight to favor the desired species; manage noxious woody plants; restore vegetation to control erosion and sedimentation; improve air quality; improve water quality; enhance stream flow; and maintain or enhance wildlife habitat including habitat for threatened and endangered species.

### COMMON ASSOCIATED PRACTICES

Brush Management is commonly used in a Conservation Management System with the following practices:

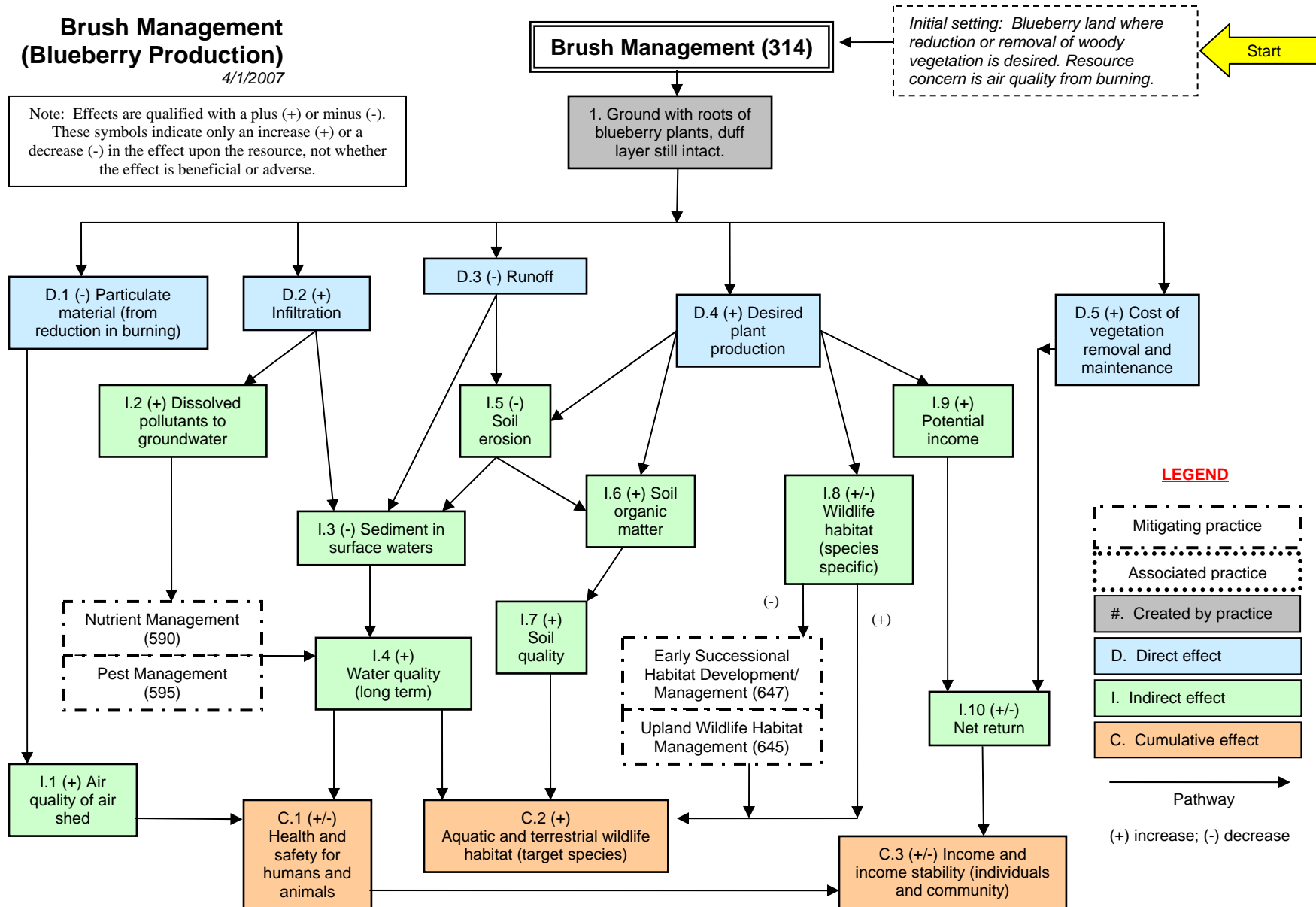
- Pest Management,
- Nutrient Management,
- Atmospheric Resource Quality Management.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Brush Management  
(Blueberry Production)**  
4/1/2007

Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# CONSERVATION COVER

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 327



### CONSERVATION COVER

Conservation Cover is establishing and maintaining perennial vegetative cover to protect soil and water resources on land retired from agricultural production or other lands needing permanent protective cover that will not be used for forage production.

### PRACTICE INFORMATION

The purposes of this practice include:

- Reduced soil erosion and sedimentation,
- Enhancement of wildlife habitat, and
- Improved water quality.

Conservation cover applies on land to be retired from agricultural production and on other lands needing permanent protective cover. It does not apply to plantings for

forage production or to critical area plantings.

### COMMON ASSOCIATED PRACTICES

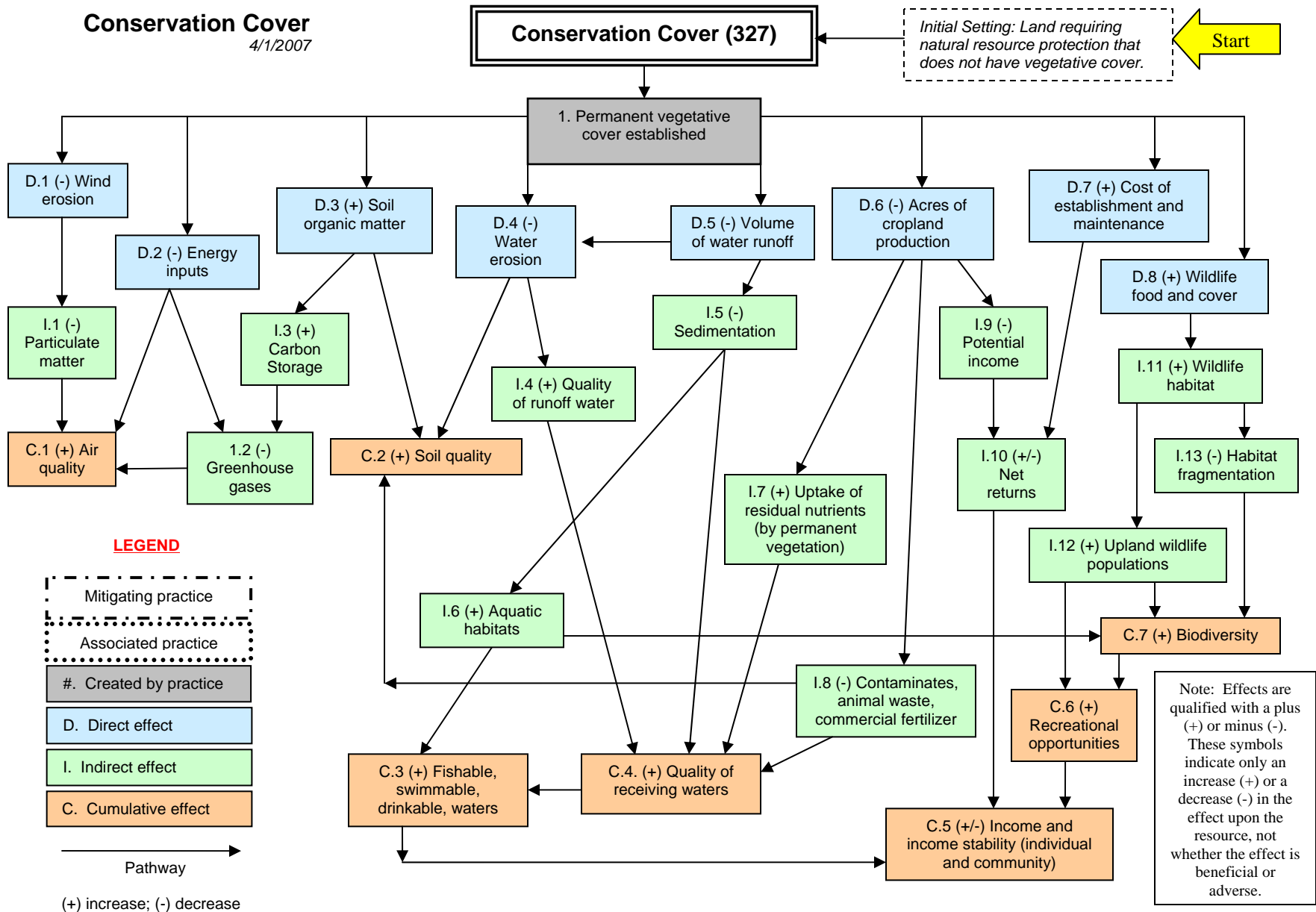
Conservation cover is commonly used in a Conservation Management System with the following practices:

- Brush Management (314),
- Critical Area Planting (342),
- Fence (382),
- Tree and Shrub Establishment (612),
- Upland Wildlife Habitat Management (645),
- Use Exclusion (472).

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Conservation Cover**  
4/1/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.



# CONTOUR ORCHARD AND OTHER FRUIT AREAS

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 331



## CONTOUR ORCHARD AND OTHER FRUIT AREAS

Contour orchard and other fruit area is the practice of planting orchards, vineyards, or small fruit and nut crops so that all cultural operations are done on the contour.

### PRACTICE INFORMATION

This practice is used on sloping land to conserve and protect soil, water, and related natural resources. Contouring orchards and vineyards is especially helpful in fields where permanent cover has not been established between the rows of plants. Contouring decreases surface runoff, increases infiltration of moisture, and reduces soil erosion. The practice also benefits equipment operation, improves aesthetics, and reduces pollution hazards.

Planting orchards and fruit areas on the contour generally requires a bench or terrace to be constructed to provide access to the growing trees or shrubs.

### COMMON ASSOCIATED PRACTICES

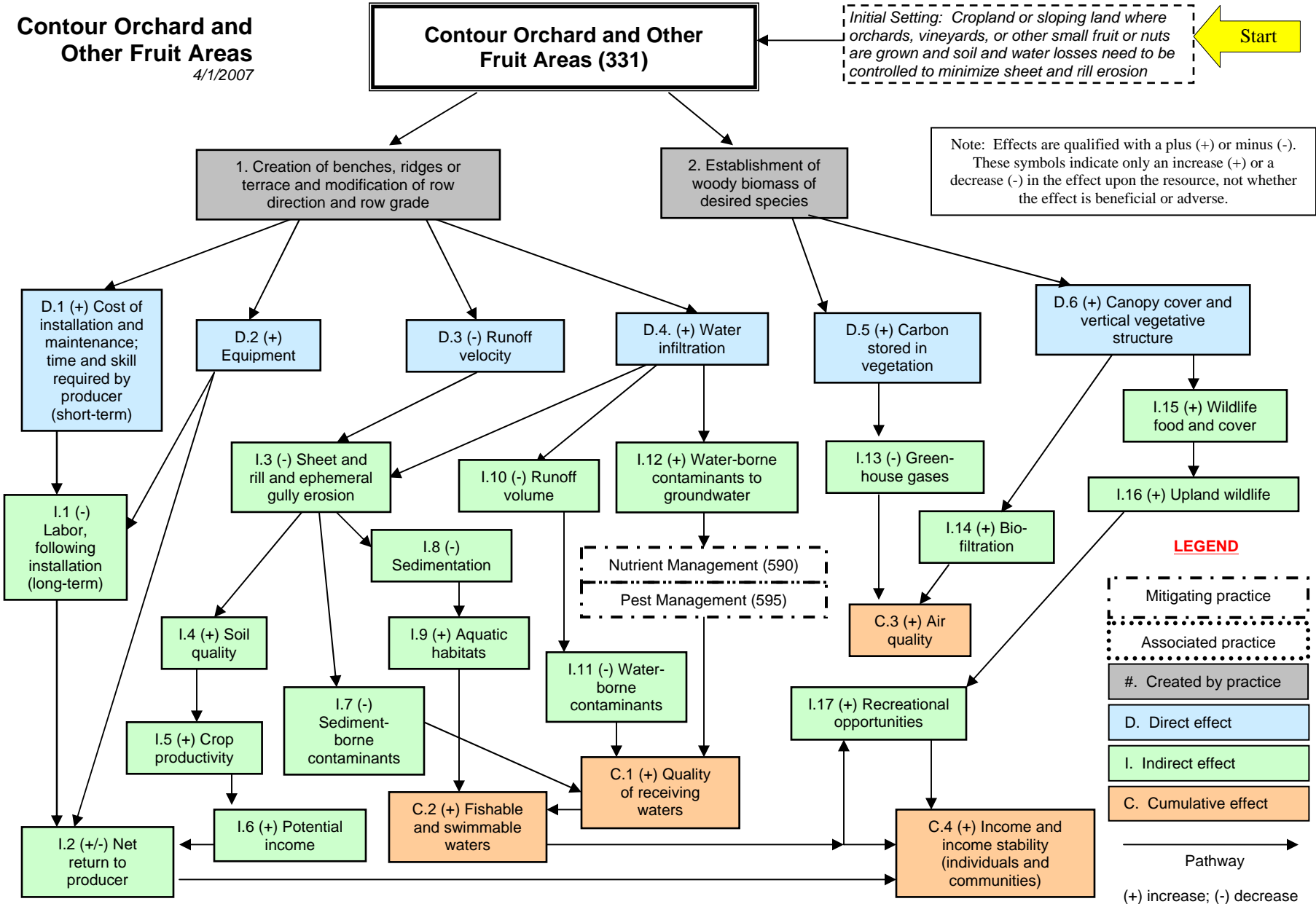
Contour orchard and other fruit areas are commonly used in Conservation Management Systems with Access Road, Diversions, Grassed Waterways, Underground Outlets, Conservation Cover, Nutrient Management, Pest Management, and other conservation practices

Refer to the practice standard in the local NRCS Field Office Technical Guide and associated specifications and design criteria for more information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Contour Orchard and Other Fruit Areas**  
4/1/2007

*Initial Setting: Cropland or sloping land where orchards, vineyards, or other small fruit or nuts are grown and soil and water losses need to be controlled to minimize sheet and rill erosion*



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# DEEP TILLAGE

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 324



### DEEP TILLAGE

Deep tillage means performing tillage operations below the normal tillage depth to modify the physical or chemical properties of a soil. It includes tillage operations commonly referred to as deep plowing, subsoiling, ripping, or row-till, performed from time to time below the normal tillage depth.

### PRACTICE INFORMATION

Deep tillage is conducted on land having adverse soil conditions that inhibit plant growth, such as compacted layers formed by field operations, restrictive layers such as claypans, overwash, or deposits from wind and water erosion or flooding, or contaminants in the root zone.

The soil moisture content is very important factor to consider when performing deep tillage operations. Soil moisture should be

less than 30 percent of field capacity at the maximum depth of tillage.

### COMMON ASSOCIATED PRACTICES

Transport of sediment-borne pollutants off-site can be reduced when this practice is used in a Conservation Management System. On cropland, deep tillage is commonly used with Conservation Crop Rotation, Residue Management, Contour Farming, Irrigation Water Management, Cover Crops, Nutrient Management, Pest Management, and other conservation practices. On grazing lands, deep tillage may be used with Prescribed Grazing and other pasture management practices.

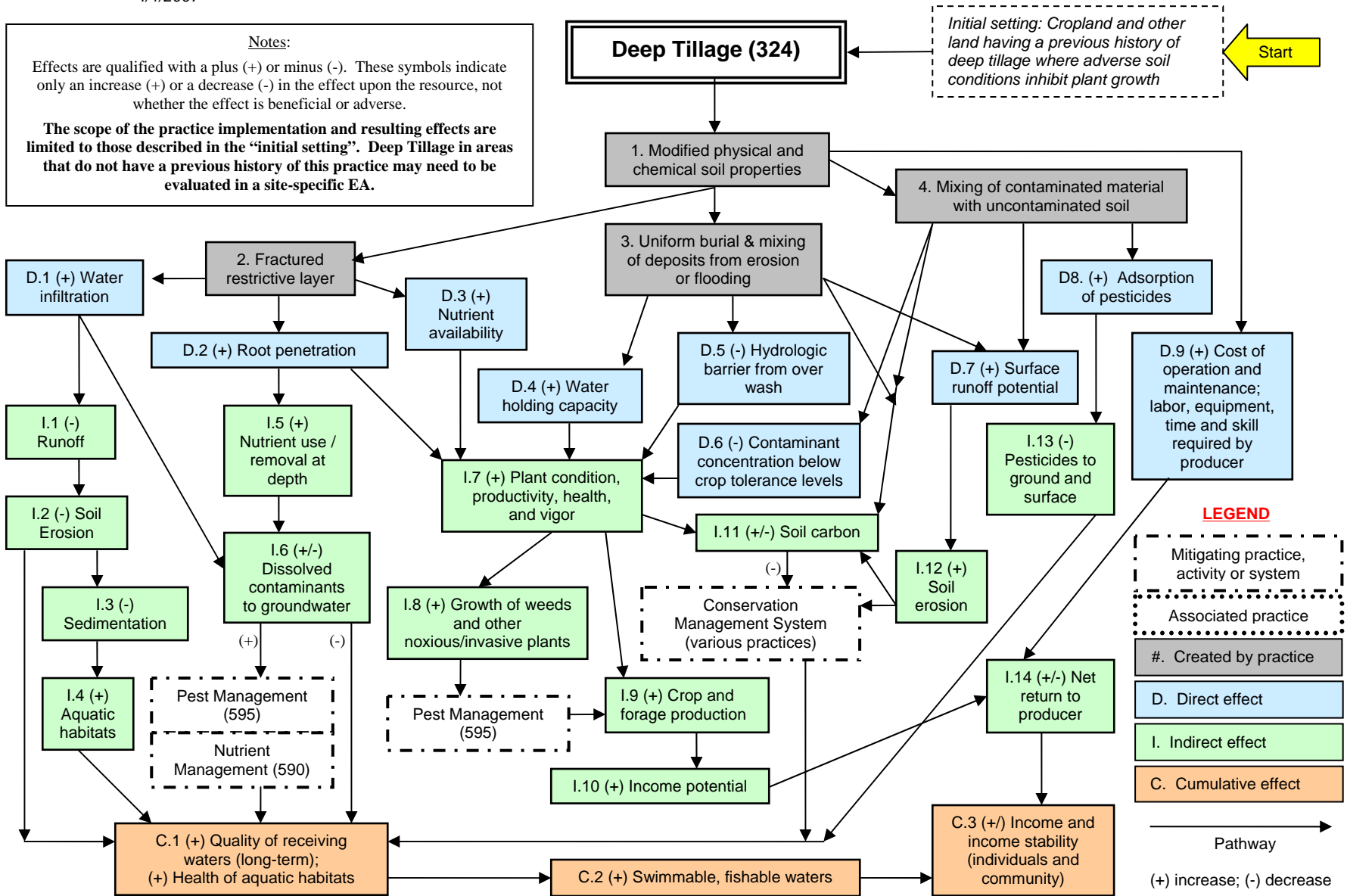
Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# Deep Tillage

4/1/2007

Notes:  
 Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.  
**The scope of the practice implementation and resulting effects are limited to those described in the “initial setting”. Deep Tillage in areas that do not have a previous history of this practice may need to be evaluated in a site-specific EA.**



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# DIKE

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 356



### PRACTICE NAME

A dike is an embankment constructed of earthen or other suitable material to protect land against overflow or to regulate water.

### PRACTICE INFORMATION

Dikes or levees can be used where the control of water level is desired. They are used to prevent or reduce flood damage to people and property, for flow control in conjunction with floodways, to impound or regulate water for fish and wildlife management, or to manage water for cranberry production.

Dikes for cranberry water management include perimeter and interior dikes to temporarily impound water for harvesting, trash removal, pest control, winter flooding or other management purposes.

Dikes are used to prevent wetlands and to form wetlands. The formed areas may be fresh, brackish or saltwater wetlands. In tidal areas dikes are used to stop saltwater intrusion, and to increase the hydraulic head of fresh water which will force intruded saltwater out the aquifer.

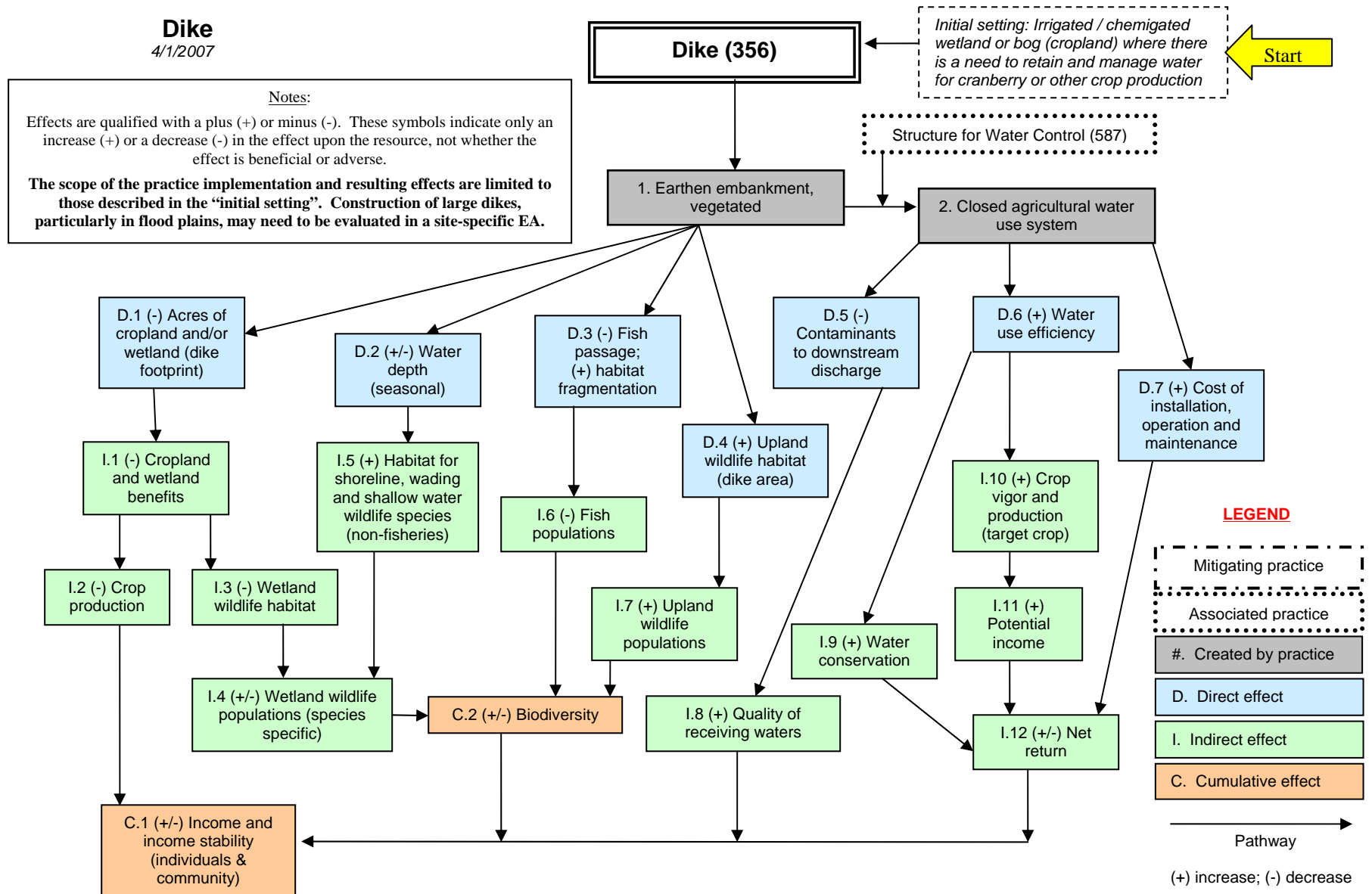
### COMMON ASSOCIATED PRACTICES

Dikes are commonly used in a Conservation Management System with the following practices:

- Structure for Water Control,
- Land Smoothing,
- Irrigation Water Management,
- Nutrient Management,
- Pest Management.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.



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# EARLY SUCCESSIONAL HABITAT DEVELOPMENT/MANAGEMENT

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 647



### EARLY SUCCESSIONAL HABITAT DEVELOPMENT/MANAGEMENT

Early successional habitat development/management is the removal, reduction, or manipulation of plant communities to benefit wildlife or other natural communities dependent upon an early stage of plant succession.

### PRACTICE INFORMATION

This practice can be applied on a variety of land uses to increase plant community diversity and provide habitat for early successional species. This is usually accomplished by periodic vegetative disturbance, which may be mechanical, chemical, biological, or a combination of these techniques. Early successional habitat development and management is applied to accomplish one or more of the following:

- Create the desired plant community;
- Reduce competition for space, moisture and sunlight to favor the desired species;

- Manage noxious woody plants;
- Restore vegetation to control erosion and sedimentation, improve water quality, and enhance stream flow;
- Maintain or enhance wildlife habitat including habitat for threatened and endangered species;
- Improve forage accessibility, quality, and quantity for domestic and wild animals; and
- Protect life and property from wildfire.

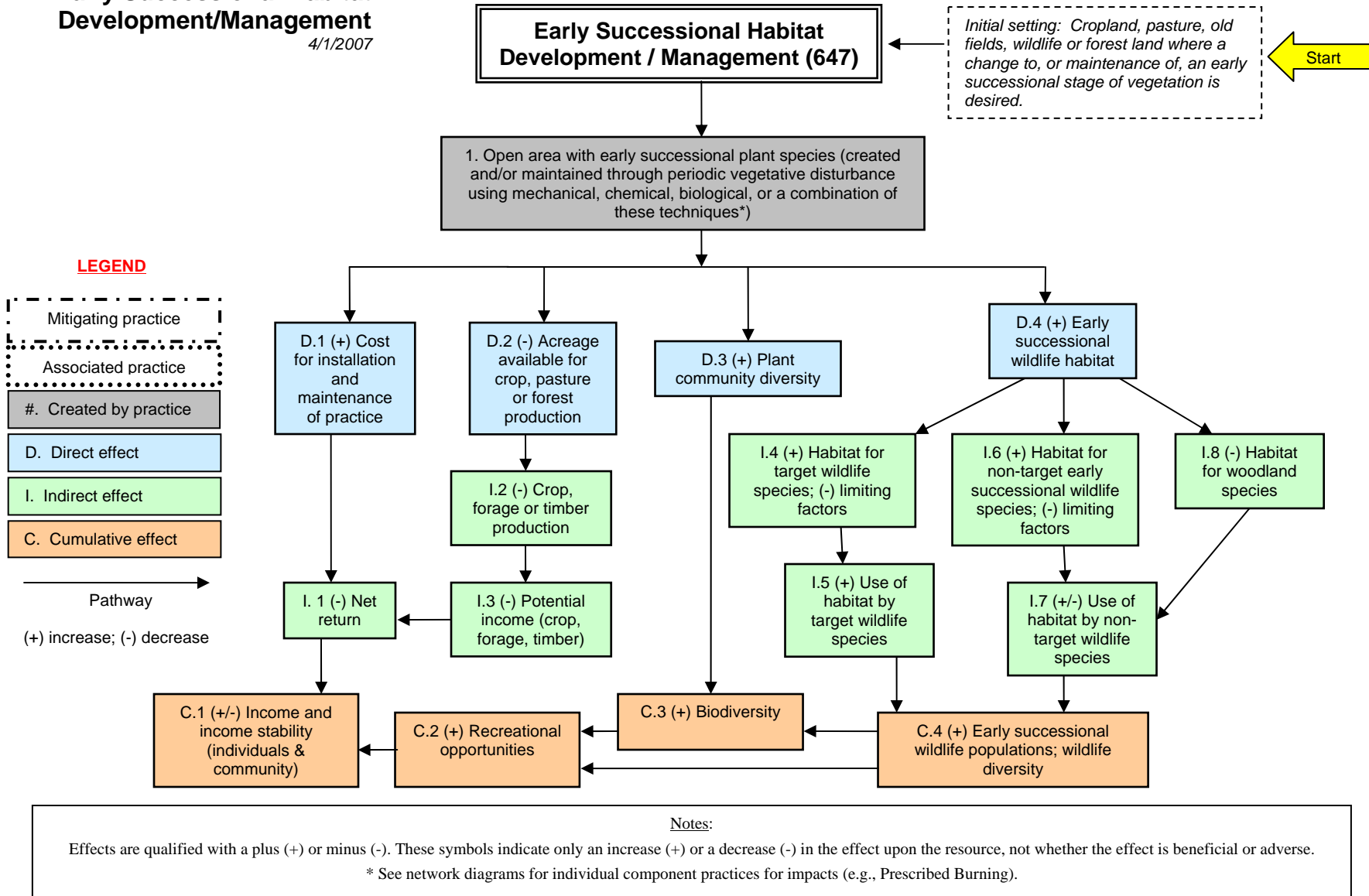
### COMMON ASSOCIATED PRACTICES

Early successional habitat development/management is commonly used in a Conservation Management System with the following practices: Field Borders, Forage Harvest Management, Land Clearing, Pest Management, Tree and Shrub Planting, and Upland Wildlife Habitat Management.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Early Successional Habitat Development/Management**  
4/1/2007



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# FENCE

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 382



### FENCE

A fence is a constructed barrier to livestock, wildlife, or people

### PRACTICE INFORMATION

This practice may be applied to any area where livestock and/or wildlife control is needed, or where access to people is to be regulated.

A wide variety of types of fencing has developed. However, fencing material and construction quality is always designed and installed to assure the fence will meet the intended purpose and longevity requirements of the project.

The standard fence is constructed of either barbed or smooth wire suspended by posts with support structures. Other types include woven wire for small animals, electric fence as a cost efficient alternative, and suspension fences which are designed with heavy but widely-spaced posts and support structures. Designs for most types of fences are available at the local NRCS field office.

Things to consider when planning a fence include the following:

1. For ease of maintenance, avoidance of as much irregular terrain as possible;
2. Wildlife movement needs;
3. State and local laws that may apply to boundary fences;
4. Livestock handling, watering and feeding requirements;
5. Soil erosion potential and feasibility of fence construction when planning fences on steep or irregular terrain.

### COMMON ASSOCIATED PRACTICES

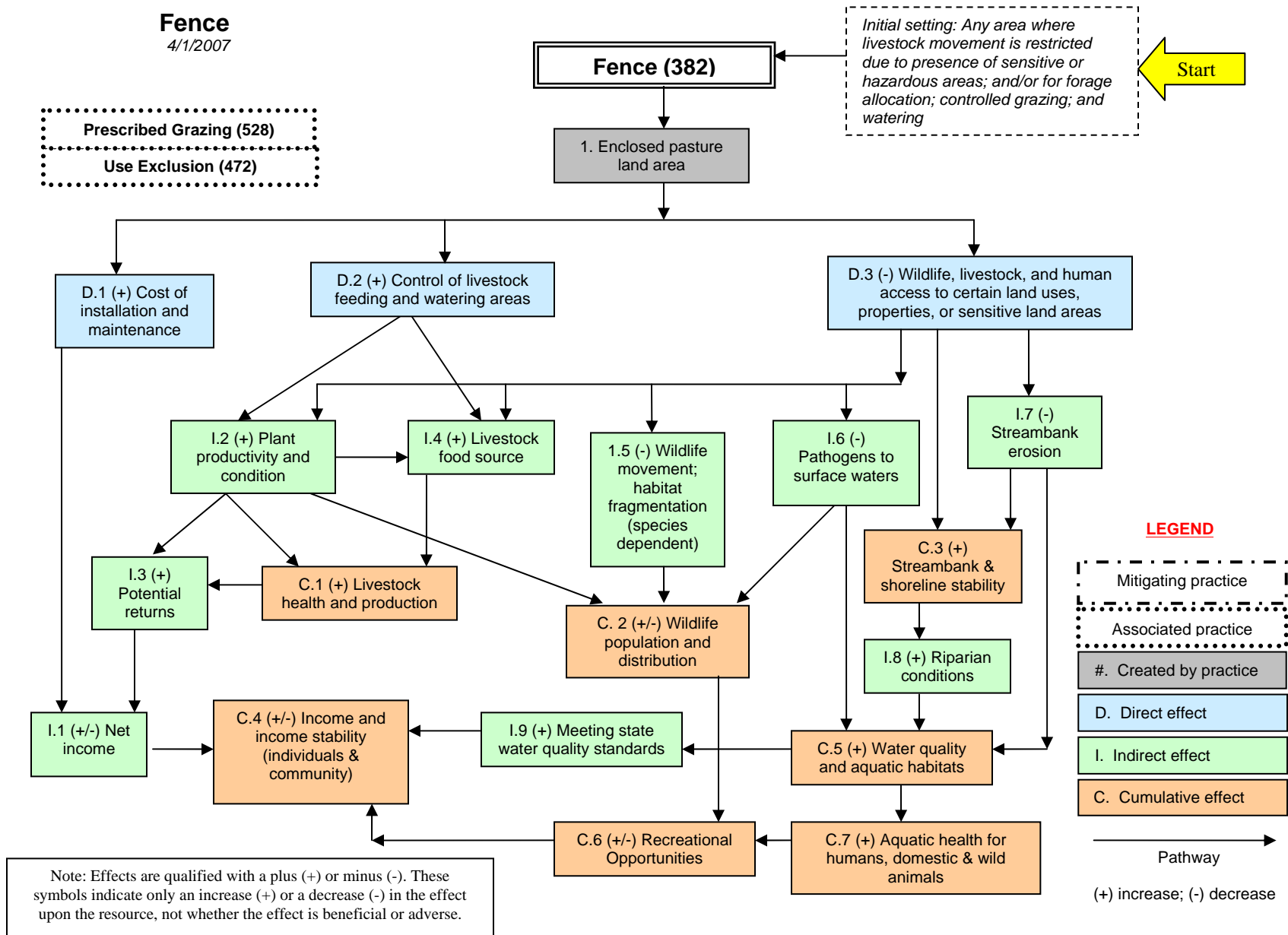
Fence is commonly used in a Conservation Management System with the following practices:

- Prescribed Grazing,
- Use Exclusion.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Fence**  
4/1/2007



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# FIELD BORDER

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 386



### FIELD BORDER

Field borders are strips of permanent vegetation established at the edge or around the perimeter of a field.

### PRACTICE INFORMATION

This practice can be used in at the edges of cropland fields, on recreation land or other land uses where agronomic crops are grown. Field borders can:

- Connect grassed waterways, riparian forest buffers, other vegetated areas and buffers, for ease of maintenance, harvest, and/or wildlife use;
- Establish a setback for other conservation practices;
- Protect field edges used for equipment turning, loading and unloading, and travel lanes; and
- Control competition by woody vegetation from adjacent areas.

Field borders are multi-purpose practices that will serve one or more of the following functions:

1. Reduce wind and water erosion;
2. Protect soil and water quality;
3. Assist in management of harmful insect populations;
4. Provide wildlife food and cover;
5. Provide tree or shrub products;
6. Increase carbon storage in biomass and soils; and
7. Improve air quality.

### COMMON ASSOCIATE PRACTICES

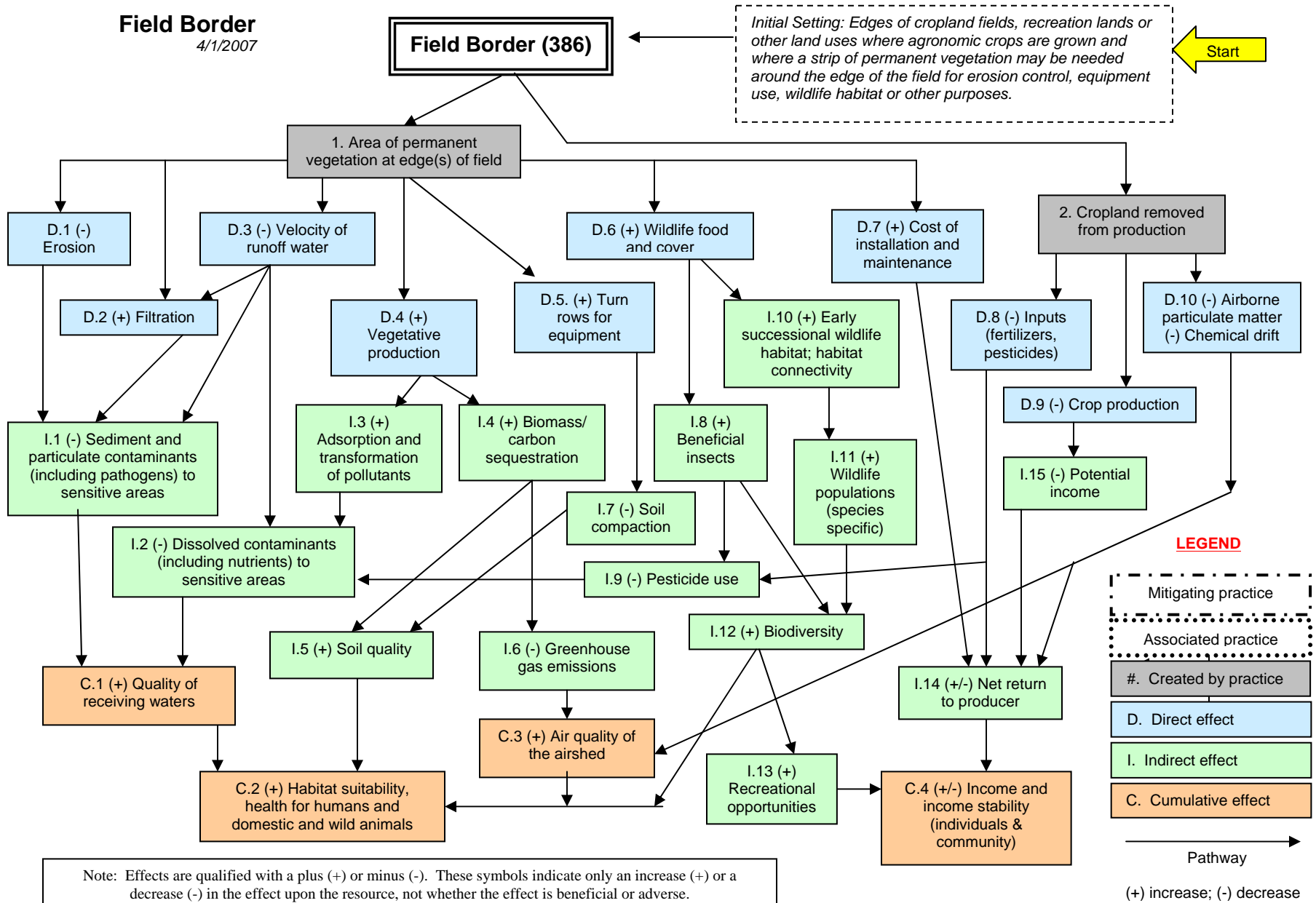
Field borders are often used in a Conservation Management System conjunction with:

- Any form of tillage utilizing residue management;
- Conservation Crop Rotations;
- Early Successional Habitat Development/Management; and
- Upland or Wetland Wildlife Habitat Management

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

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**Field Border**  
4/1/2007



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# FIREBREAK

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 394



Photo by Steve Nix. Citation credit: <http://forestry.about.com/od/fireinforests/ig/wildfire-/The-Fire-Break.htm>

### FIREBREAK

A permanent or temporary strip of bare or vegetated ground designed to allow for the removal and management of fuel to prevent the progress of forest fires and provide access to inner areas of the forest to fight such fires.

### PRACTICE INFORMATION

This is best designed with a qualified/certified forester. It is applied on forest land where protection from fire is needed or prescribed burning is recommended.

The vegetation in the firebreak should be fire-resistant and non-invasive. An alternative is to maintain the firebreak as bare ground.

The firebreaks need to be of sufficient length and width to contain a possible fire. Knowledge of forest fire history and behavior is helpful in locating the break.

Erosion control measures must be incorporated into the design where the firebreaks will be installed on sloping ground. Vehicle access should be limited as much as possible to prevent damage to the firebreak that would hinder access during emergencies.

### COMMON ASSOCIATED PRACTICES

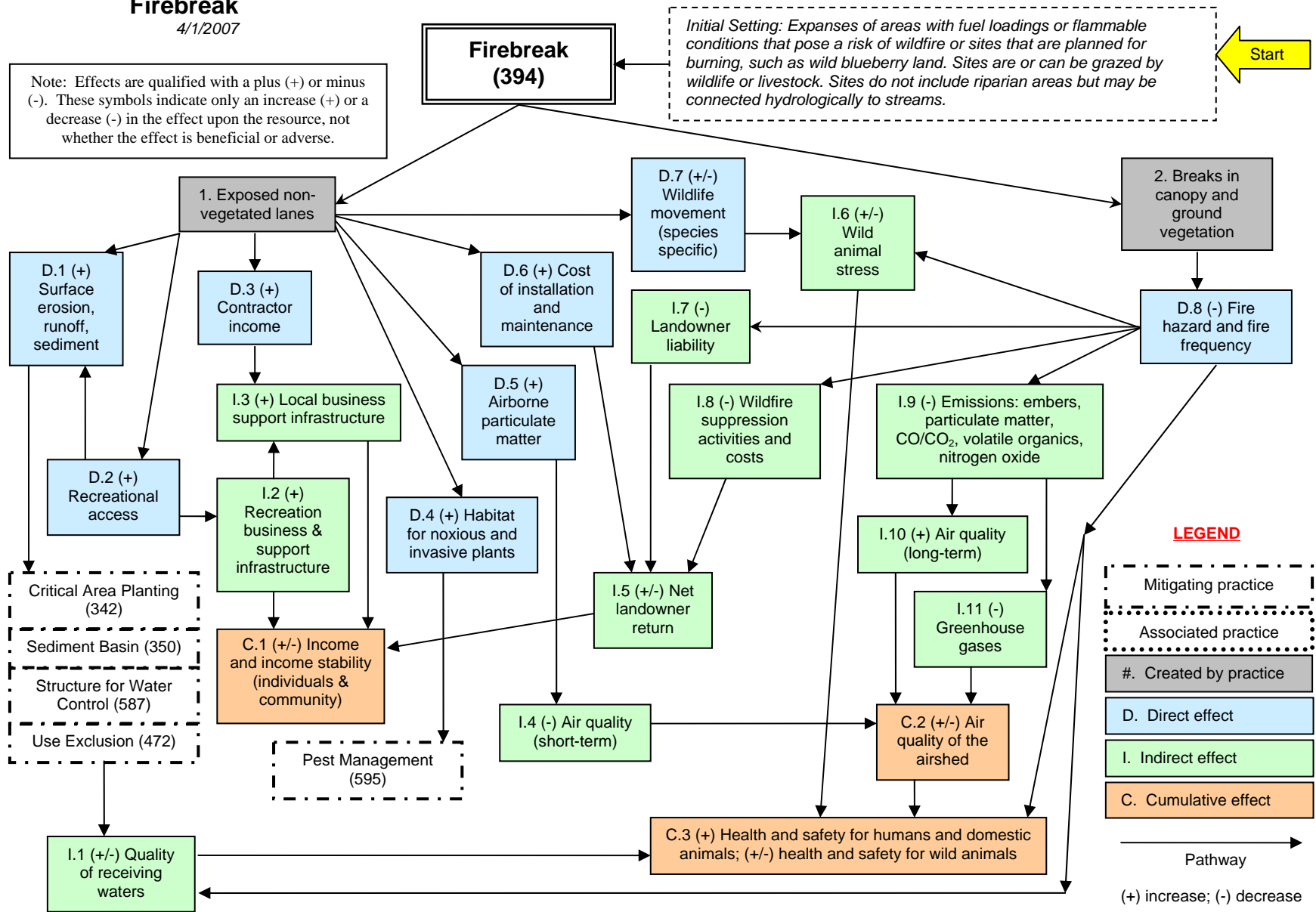
Firebreaks are commonly used in a Conservation Management System with the following practices:

- Prescribed Burning;
- Forest Trails and Landings;
- Forest Stand Improvement;
- Tree and Shrub Planting.

For more information refer to the practice standard in the NRCS Field Office Technical Guide and associated specifications and design criteria.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Firebreak**  
4/1/2007



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# FISH PASSAGE

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 396



### FISH PASSAGE

Fish Passage is the modification or removal of barriers that restrict or prevent movement or migration of fish. A fish passage allows fish to move upstream and downstream.

### PRACTICE INFORMATION

The purpose of this practice is to allow upstream and downstream movement of fish past barriers where feasible or desirable.

This practice applies to all rivers, streams, and outlets of ponds or lakes where barriers impede desired fish passage. Modification or removal of barriers, particularly on large river systems, may significantly affect hydrology, for example by creating impoundments or increasing seasonal inundation in the

floodplain. The context and intensity of these impacts must be considered when planning any project involving a fish passage.

### COMMON ASSOCIATED PRACTICES

Fish Passage is commonly used in a Conservation Management System with the following practices:

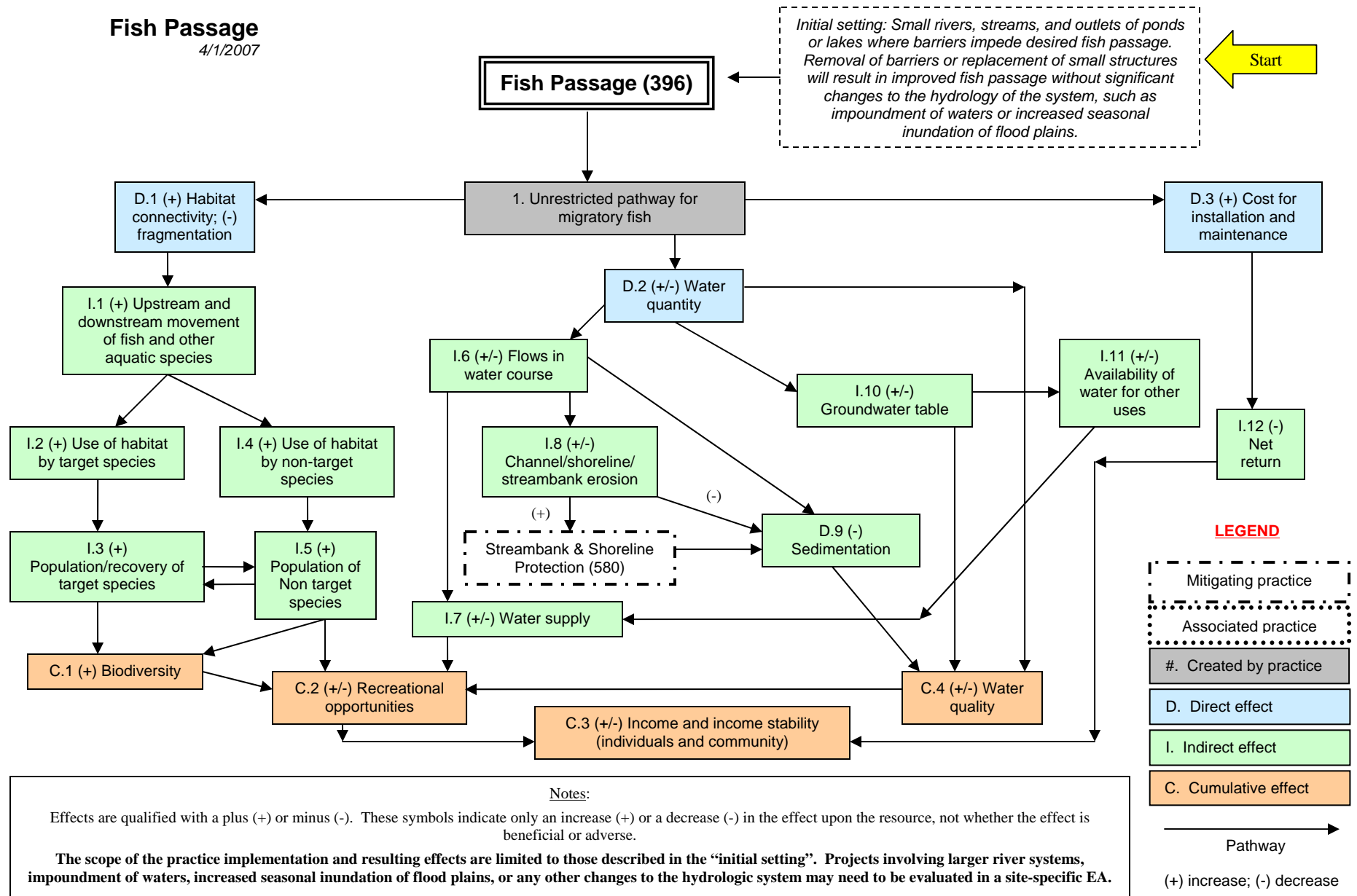
- Obstruction Removal,
- Riparian Buffer,
- Streambank and Shoreline Protection,
- Stream Habitat Improvement and Management.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

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# Fish Passage

4/1/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.



# FOREST STAND IMPROVEMENT

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 666



### FOREST STAND IMPROVEMENT

Forest Stand Improvement involves the manipulation of forest species composition, stand structure and stocking by cutting or killing selected trees and/or understory vegetation.

### PRACTICE INFORMATION

This practice is applied on forest land where competing vegetation hinders development and stocking of preferred tree and understory species. Preferred species are retained to achieve the intended purpose. The primary purpose of Forest Stand Improvement is to increase the quantity and quality of the forest products that can be realized in a stand through silvicultural activities such as thinning, pruning or the removal of undesirable species. Such activities enable the harvesting of forest products and help stand regeneration. The practice can also improve forest health and help to restore natural plant communities.

Implementation of the practice requires that the harvest-regeneration strategy will be identified for all planned forest improvements. This is best done with a qualified/certified forester.

### COMMON ASSOCIATED PRACTICES

Forest Stand Improvement is commonly used in a Conservation Management System with the following practices:

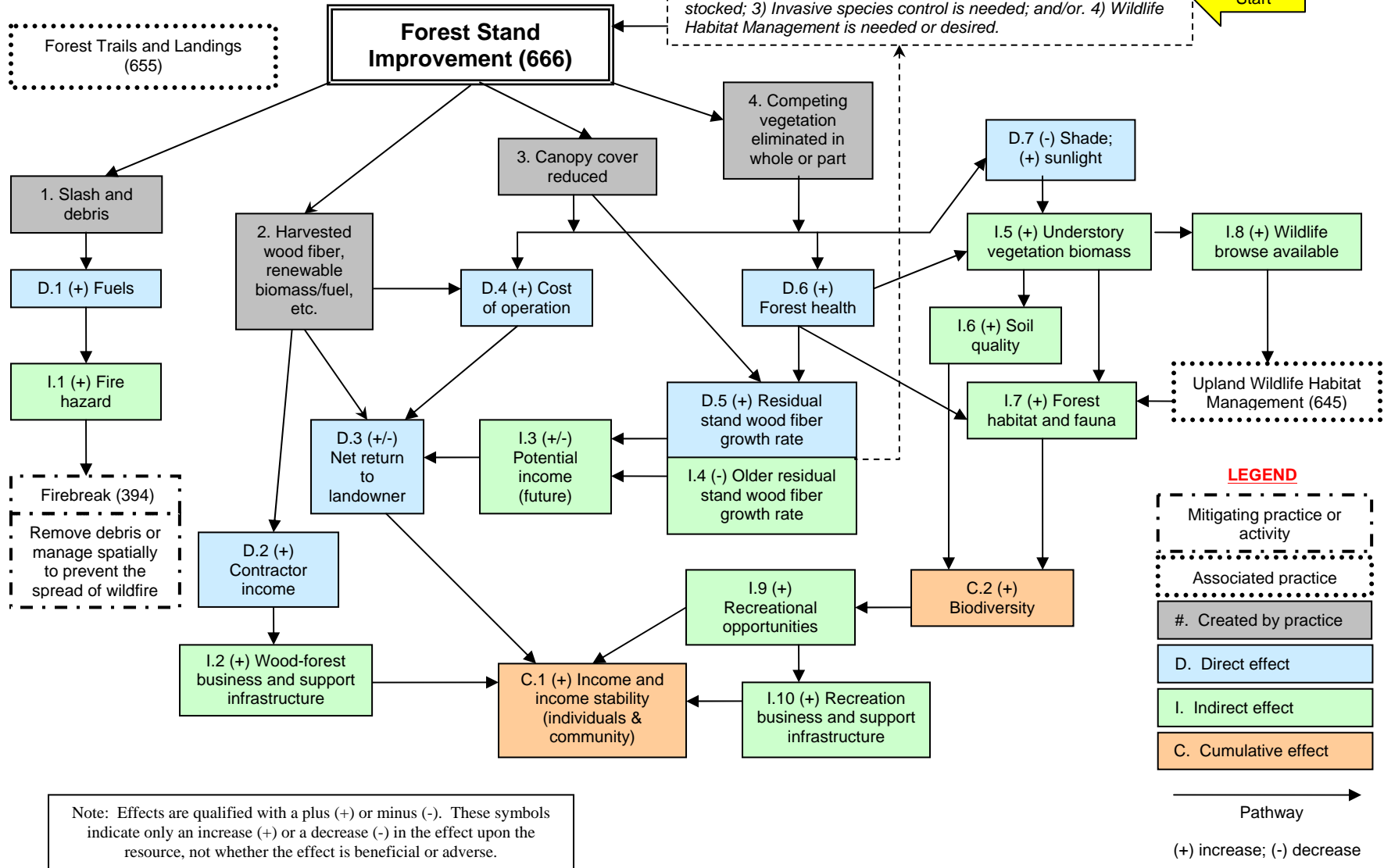
- Forest Trails and Landings,
- Firebreak,
- Early Successional Habitat Development and Management,
- Upland Wildlife Habitat Management.

Refer to the practice standard in the NRCS Field Office Technical Guide and associated specifications and design criteria for more information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# Forest Stand Improvement

4/1/2007



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# FOREST TRAILS AND LANDINGS

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 655



### FOREST TRAILS AND LANDINGS

A Forest Trail or Landing is a temporary or infrequently used route, path or cleared area within a forest.

#### PRACTICE INFORMATION

Forest Trails and Landings are installed and/or maintained for infrequent access to conduct management activities, such as Forest Stand Improvement, pruning, fire suppression, or harvest of forest products. The conservation objective is to allow suitable access while minimizing onsite and offsite damage to other natural resources.

Planning and application of this practice requires the following considerations:

1. Timing and use of equipment to maintain site productivity is maintained and minimize soil disturbance;
2. Management of slash, debris and vegetative material left onsite so as not to present an unacceptable fire or pest hazard.

3. Proper design of water bars, dips and other drainage measures;
4. Seeding of trails and landings for erosion control;
5. Planting of vegetation that provides wildlife food and cover;
6. Location of trails and landings to preserve aesthetic qualities of the area.
7. Periodic removal of refuge and garbage; and
8. Closing the trails after the management activity to help control erosion and reduce maintenance costs.

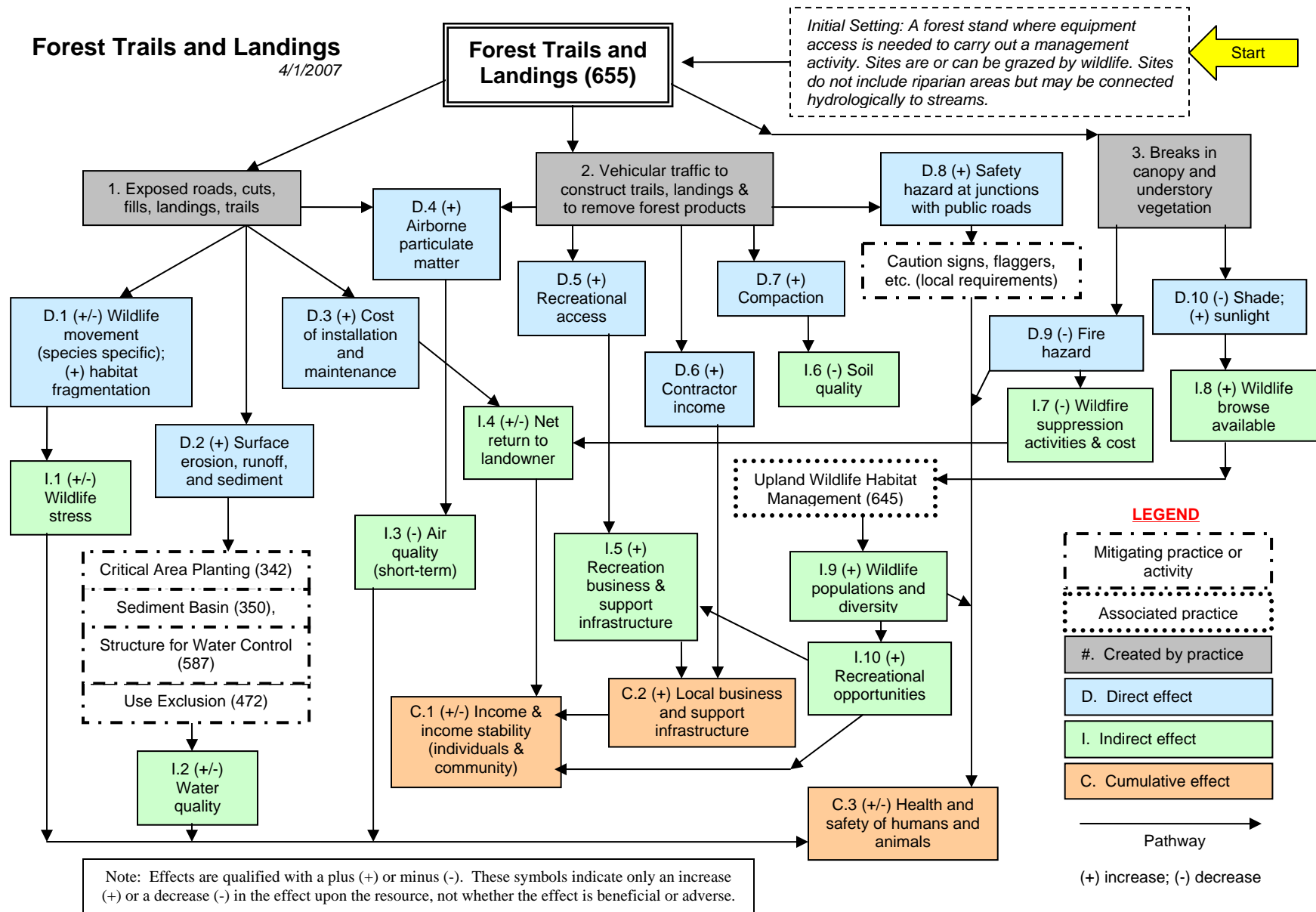
#### COMMON ASSOCIATED PRACTICES

Forest Trails and Landings is commonly used in a Conservation Management System with other forest management practices such as Forest Stand Improvement, Tree and Shrub Pruning, Firebreak, Upland Wildlife Habitat Management, and others.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Forest Trails and Landings**  
4/1/2007



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# HEAVY USE AREA PROTECTION

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 561



### HEAVY USE AREA PROTECTION

Heavy use area protection is the establishment of a stable surface with suitable materials and any needed structures to protect areas heavily impacted by livestock, vehicles or development.

### PRACTICE INFORMATION

Heavy use area protection is a practice usually applied on agricultural land or developed land used intensively by livestock, vehicles, and people. Treatment provided by this practice is primarily for erosion control but also addresses other types of natural resource degradation including aesthetics.

The prescribed surface treatment is designed to accommodate the specific type of traffic expected to occur. Surface treatment may

involve pavement for vehicle traffic, or vegetation may provide sufficient protection for people and animal traffic.

Impermeable surfaces such as pavement increase runoff. Therefore, provision for drainage is always considered when planning this practice.

### COMMON ASSOCIATED PRACTICES

The practice is commonly used in a Conservation Management System with practices such as Prescribed Grazing, Nutrient Management, Waste Storage Facility, Roof Runoff Structure, Wastewater Treatment Strip, Filter Strip, and others.

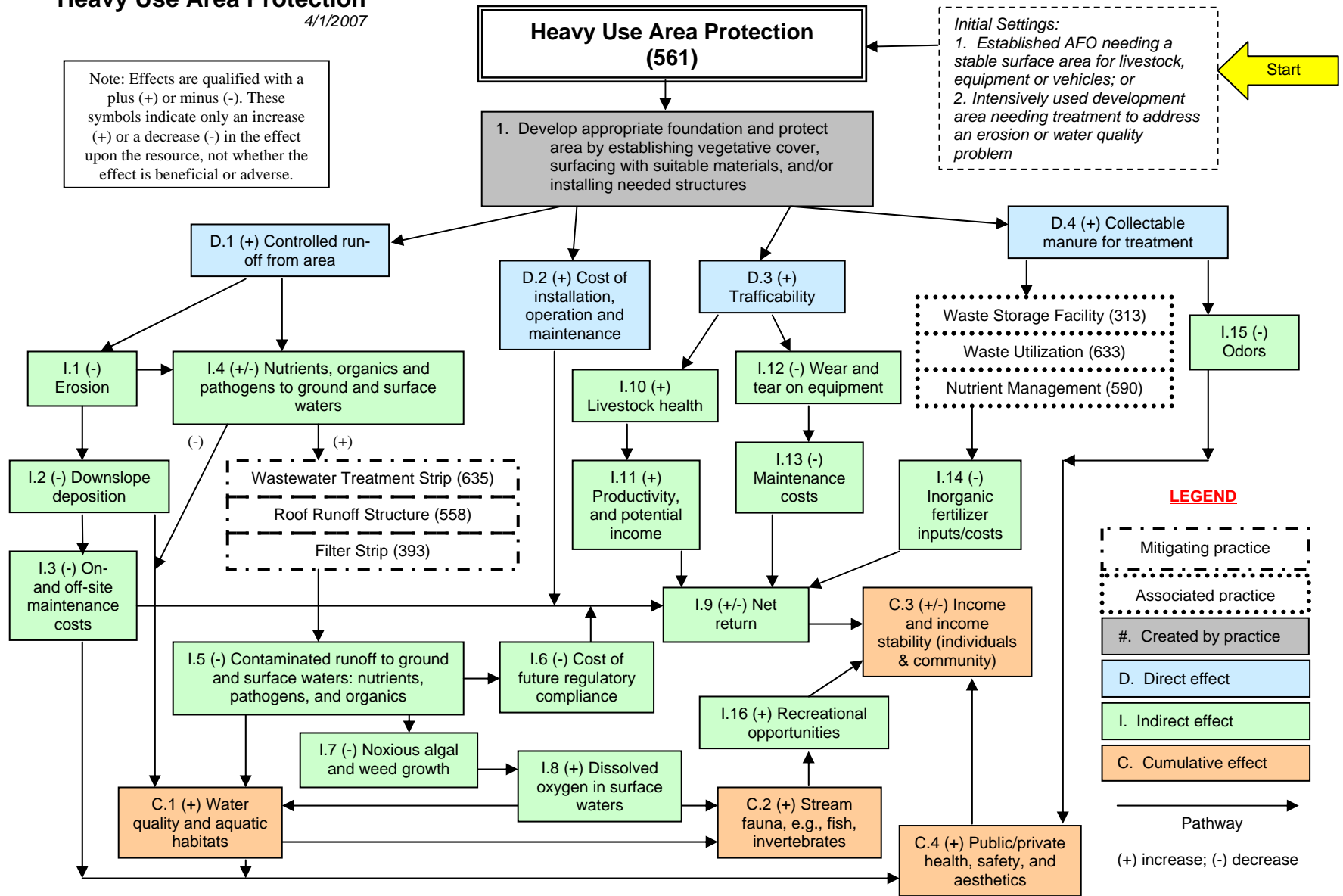
Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# Heavy Use Area Protection

4/1/2007

Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.



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# HEDGEROW PLANTING

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 422



### HEDGEROW PLANTING

Hedgerows are dense woody vegetation planted in a linear design to achieve a natural resource conservation purpose.

### PRACTICE INFORMATION

Hedgerow Plantings are established to provide food, cover and corridors for terrestrial wildlife, food and cover for aquatic organisms that live in watercourses, intercept airborne particulate matter, reduce chemical drift and odor movement, provide screens and barriers to dust and noise, and improve landscape appearance.

Hedgerows containing a mixture of native shrubs and small trees provide the greatest

environmental benefits. It is important to consider the amount of shading a hedgerow will provide at maturity. Shading may impact growth of adjacent plants, microclimate, and aesthetics.

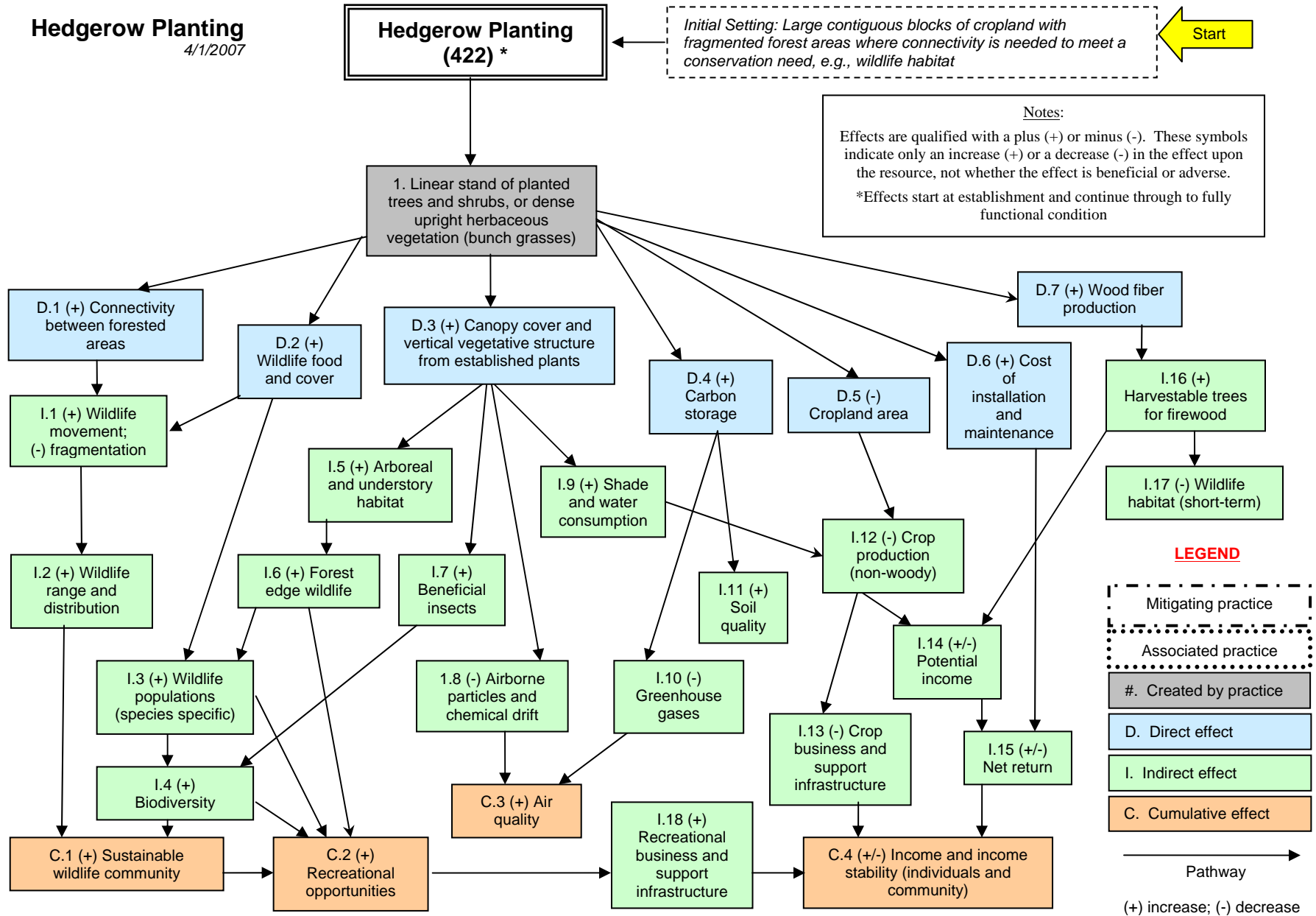
### COMMON ASSOCIATED PRACTICES

Hedgerows are commonly used in Conservation Management Systems with Tree Planting, Upland Wildlife Habitat Management, and other conservation practices, depending upon the purpose for the practice.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

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**Hedgerow Planting**  
4/1/2007



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# HERBACEOUS WIND BARRIERS

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 603



### HERBACEOUS WIND BARRIERS

Herbaceous Wind Barriers are rows or narrow strips of upright, perennial vegetation established across the prevailing wind direction.

#### PRACTICE INFORMATION

This practice is normally applied on cropland. The primary purpose is to reduce soil erosion generation from wind. The practice also protects growing crops from damage from wind-borne soil particles and may be used with other crop management practices to further reduce erosion, build soil quality, and improve yields. Herbaceous wind barriers also help in the management of snow distribution for plant available soil moisture and provide wildlife food and cover.

Installation of the practice requires that the vegetation be stiff and be resistant to lodging during inclement weather/seasons. The plant material must also have good leaf retention and not pose a competitive threat to adjacent crops.

Installation requires careful analysis of the predominant wind direction during the most susceptible time for wind erosion and crop damage. This will determine the alignment of the strips. As such, field shape, size, crop types, and machinery types and size are important considerations in planning

#### COMMON ASSOCIATED PRACTICES

Herbaceous Wind Barriers are commonly used in a Conservation Management System with the following practices:

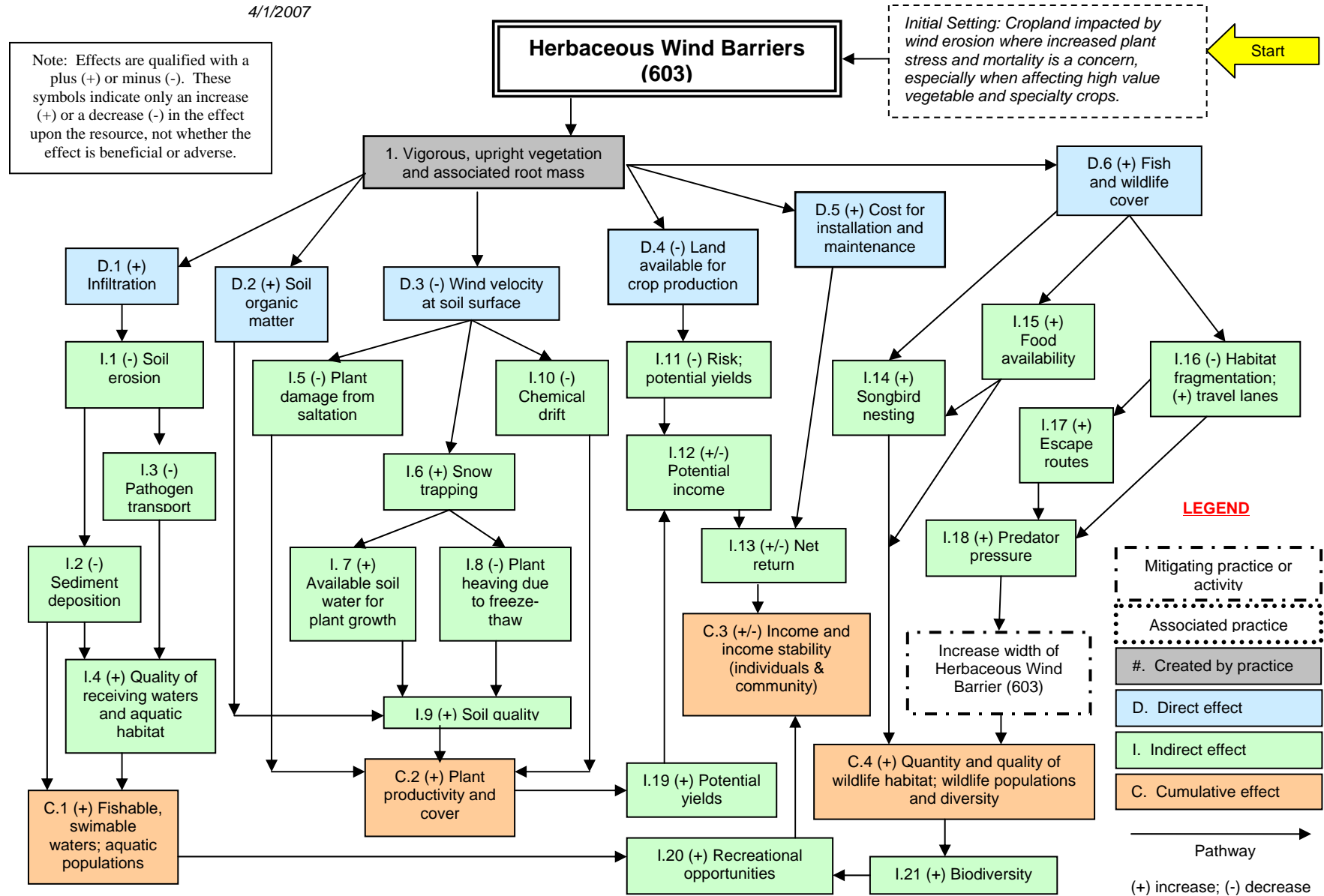
- Conservation Cropping Sequence,
- Cover Crop,
- Residue Management (any type),
- Upland Wildlife Habitat Management.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

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# Herbaceous Wind Barriers

4/1/2007



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# IRRIGATION STORAGE RESERVOIR

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 436



### IRRIGATION STORAGE RESERVOIR

An Irrigation Storage Reservoir is a water storage structure made by constructing a dam, embankment or pit.

### PRACTICE INFORMATION

The purpose of Irrigation Storage Reservoirs is to conserve water by holding it in storage until it is used to meet crop irrigation requirements, and on cranberries for flooding and debris flushing. It is used on cropland where there is insufficient water supply to meet the irrigation requirements for part or all of the irrigation season, where water is available for storage from surface runoff, stream flow, or a subsurface source, and where a suitable site is available for the reservoir.

Planning consideration is given to short-term and construction-related effects; effects on the water budget; downstream flows or aquifers that would affect other water uses or have

undesirable environmental, social or economic effects; erosion, sediment, soluble contaminants and contaminants attached to sediment in runoff; water temperature changes downstream that could affect aquatic and wildlife communities; wetlands or water-related wildlife habitats; and cultural resources.

### COMMON ASSOCIATED PRACTICES

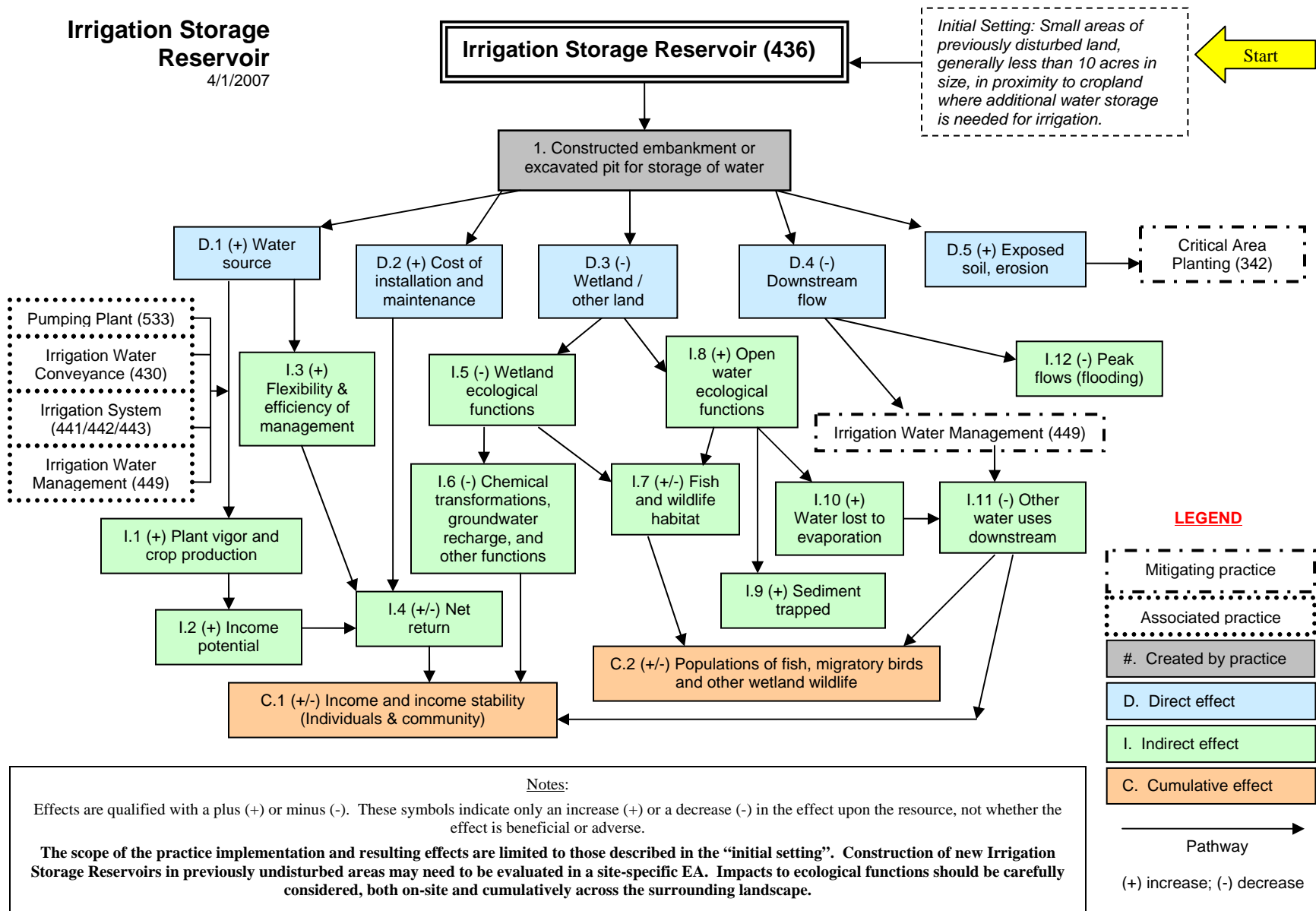
This practice is commonly used in a Conservation Management System with the following practices

- Pumping Plant,
- Irrigation Water Conveyance,
- Irrigation System,
- Irrigation Water Management.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Irrigation Storage Reservoir**  
4/1/2007



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# IRRIGATION SYSTEM, MICROIRRIGATION

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 441



### MICROIRRIGATION

A Microirrigation System, also known as drip or trickle irrigation, is used for distribution of water directly to the plant root zone by means of surface or subsurface applicators.

### PRACTICE INFORMATION

Microirrigation systems may be installed as part of a Conservation Management System to efficiently and uniformly apply irrigation water and/or chemicals directly to the plant root zone to maintain soil moisture for optimum plant growth, without excessive water loss, erosion, reduction in water quality, or salt accumulation.

Microirrigation is suited to orchards, vineyards, row crops, windbreaks, greenhouse crops, residential and commercial landscape systems. These systems can be used on steep slopes where other methods would cause excessive erosion or on areas where other application devices interfere with cultural operations.

Microirrigation can influence runoff and deep percolation by raising the soil moisture level and decreasing available soil water storage capacity. The movement of dissolved substances below the root zone may affect groundwater quality. As with all irrigation, there may be effects to downstream flows or aquifers and the amount of water available for other water uses.

### COMMON ASSOCIATED PRACTICES

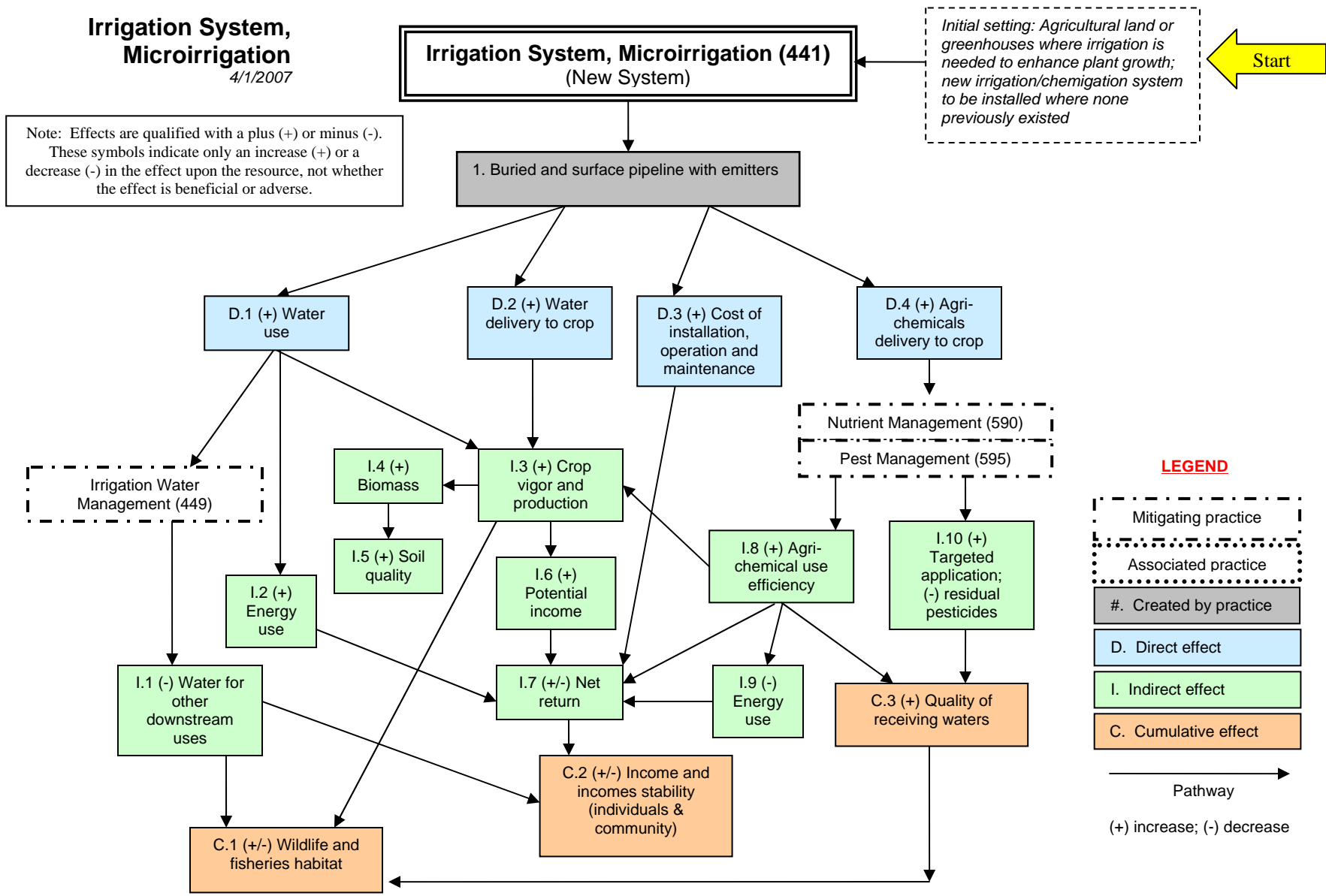
The practice is commonly used in a Conservation Management System with the following practices:

- Water Well (642)
- Irrigation Storage Reservoir (436)
- Pumping Plant (536)
- Irrigation Water Conveyance (430)
- Irrigation Water Management (449)

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

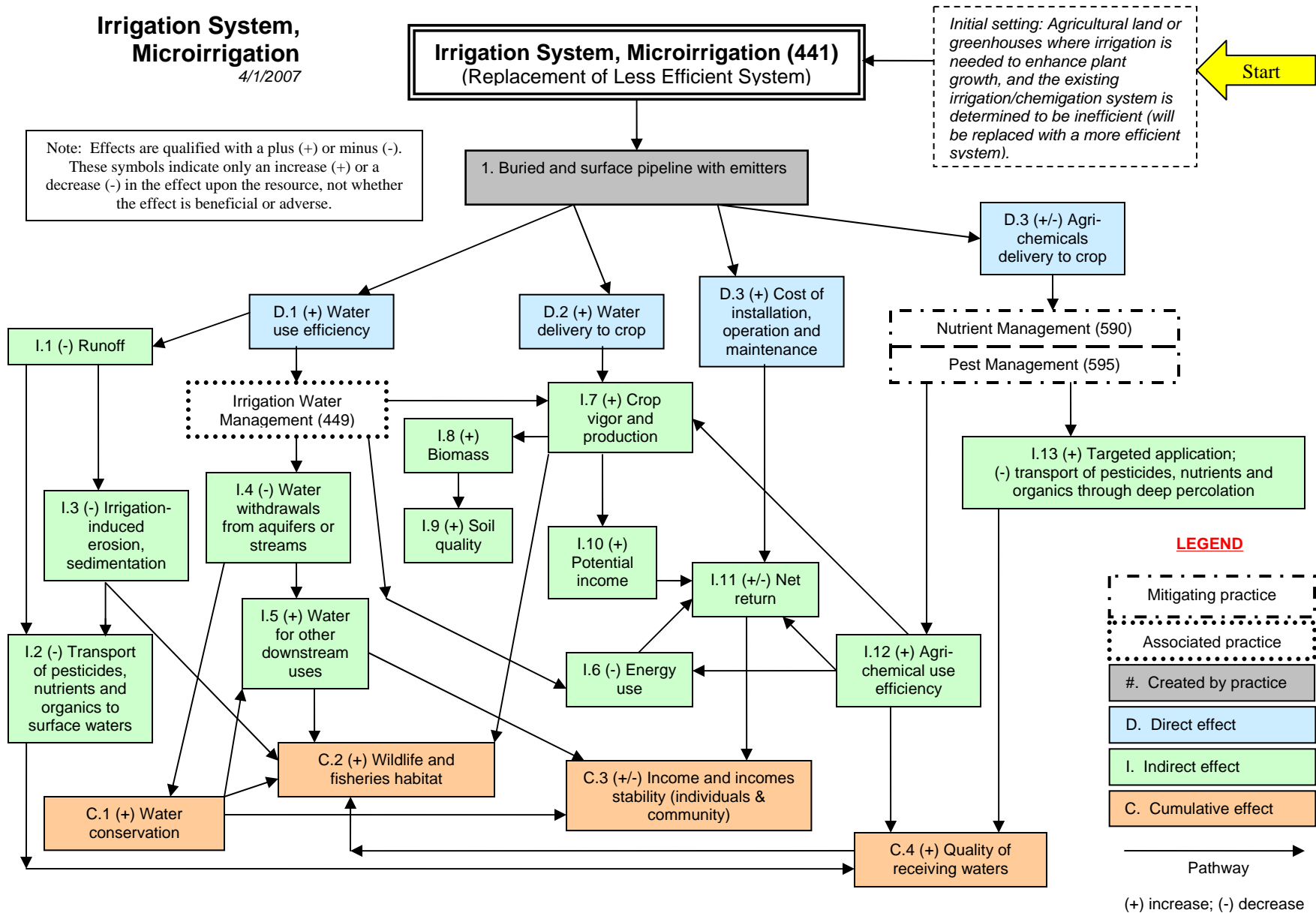
The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Irrigation System, Microirrigation**  
4/1/2007



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**Irrigation System, Microirrigation**  
4/1/2007



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# IRRIGATION SYSTEM, SPRINKLER

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 442



### SPRINKLER IRRIGATION SYSTEM

An irrigation system in which all necessary equipment and facilities are installed for efficiently applying water by means of nozzles operated under pressure.

### PRACTICE INFORMATION

Sprinkler irrigation systems are used to achieve one or more of the following purposes:

- Efficient and uniform application of irrigation water to maintain adequate soil water for plant growth and production without causing excessive water loss, erosion, or water quality impairment;
- Control of and/or modification of climate;
- Application of chemicals, nutrients and/or waste water;
- Reduction of particulate matter emissions to improve air quality.

Common sprinkler systems applied in New England include fixed solid-set, big gun, periodic move, and traveling sprinkler systems. Application rate and depth of application are based on the specific soils and crops. Runoff, translocation, and deep percolation are minimized. Distribution patterns, spacing and operating pressure control the application rate. Systems used for chemigation or fertigation must meet industry accepted washoff and total rinse-out times.

### COMMON ASSOCIATED PRACTICES

The practice is commonly used in a Conservation Management System with the following practices:

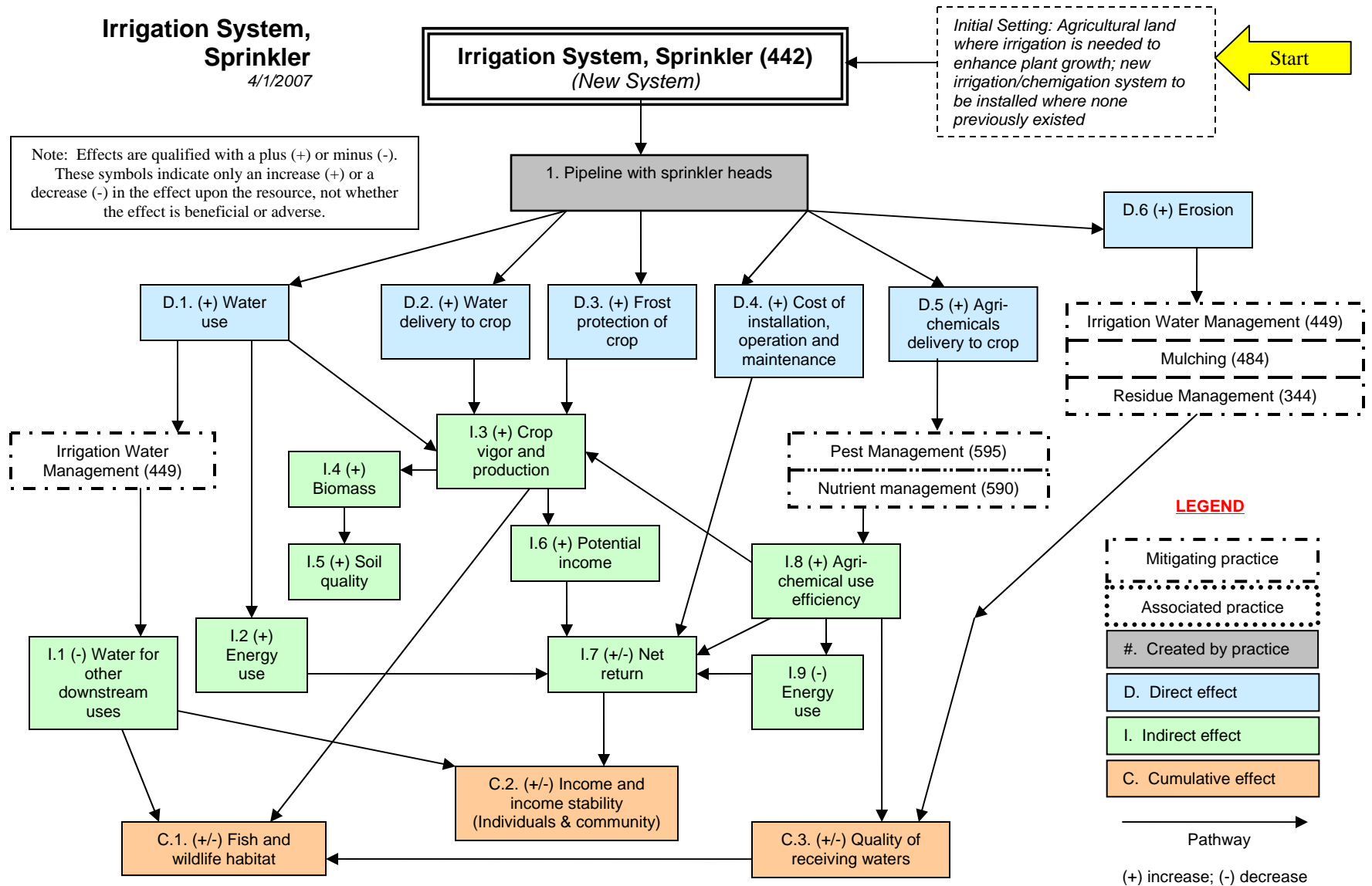
- Irrigation Water Conveyance,
- Irrigation Water Management.

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**Irrigation System, Sprinkler**  
4/1/2007



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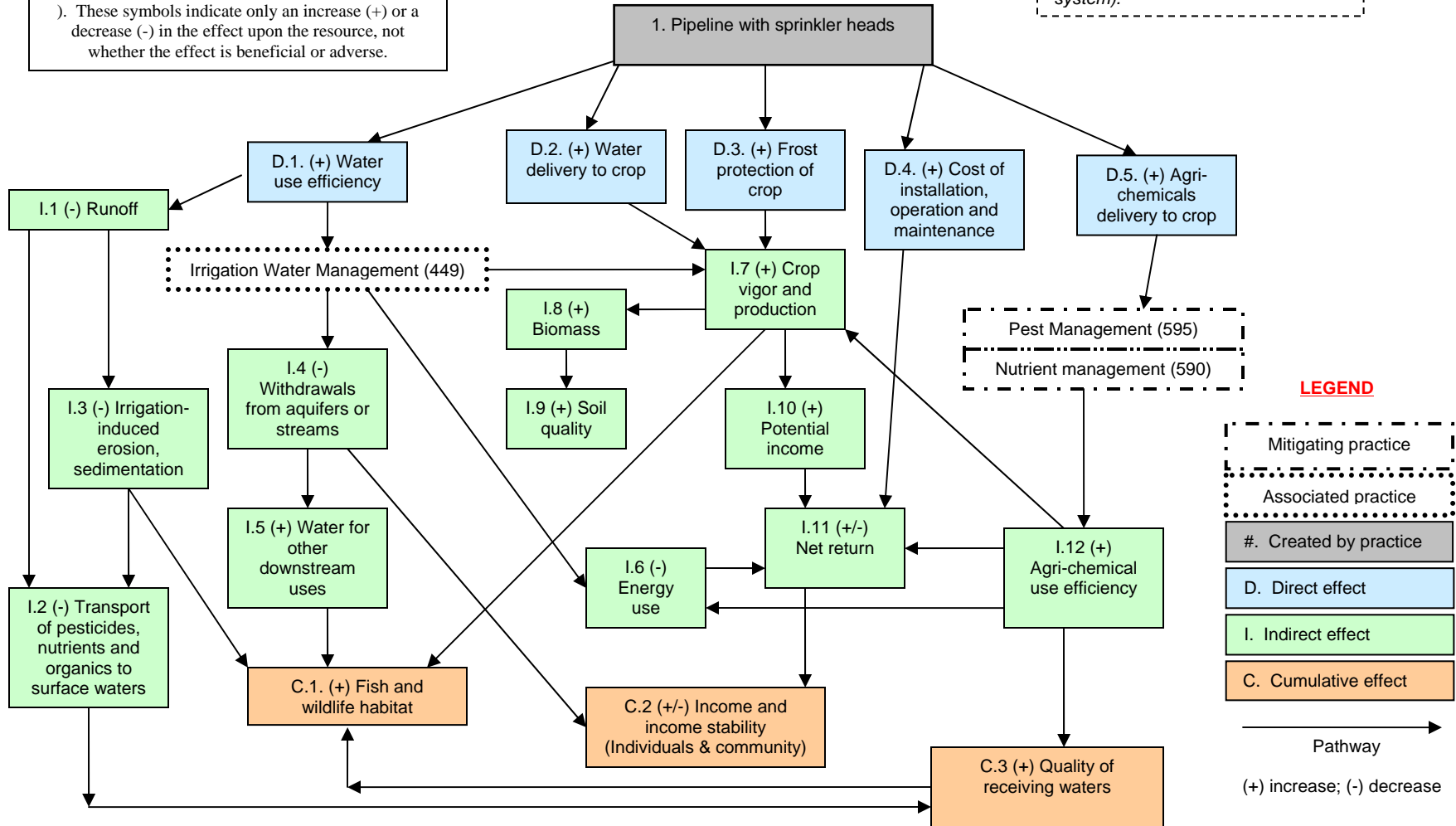
**Irrigation System, Sprinkler**  
4/1/2007

**Irrigation System, Sprinkler (442)**  
(Replacement of Existing System)

Initial Setting: Initial setting: Agricultural land where irrigation is needed to enhance plant growth, and the existing irrigation/ chemigation system is determined to be inefficient (will be replaced with a more efficient system).



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# IRRIGATION SYSTEM, TAILWATER RECOVERY

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 447



### TAILWATER RECOVERY

An Irrigation Tailwater Recovery System is an irrigation system in which all facilities utilized for the collection, storage, and transportation of irrigation tailwater for reuse have been installed.

### PRACTICE INFORMATION

Tailwater recovery involves the collection of recoverable irrigation runoff flows and is applied to conserve irrigation water supplies and/or improve offsite water quality. It applies to systems where recoverable irrigation runoff flows can be anticipated under current or expected management practices.

Facilities are needed to store the collected water and to convey water from the storage facility to a point of entry back into the irrigation system. Additional storage may be required to provide adequate retention time for the breakdown of chemicals in the runoff waters or to provide for sediment deposition.

Allowable retention times are specific to the particular chemical used.

Seepage from a storage facility is controlled through natural soil or commercial liners, soil additives or other approved methods when chemical-laden waters are stored. Protection of system components from storm events and excessive sedimentation are also considered in the planning and design of a system.

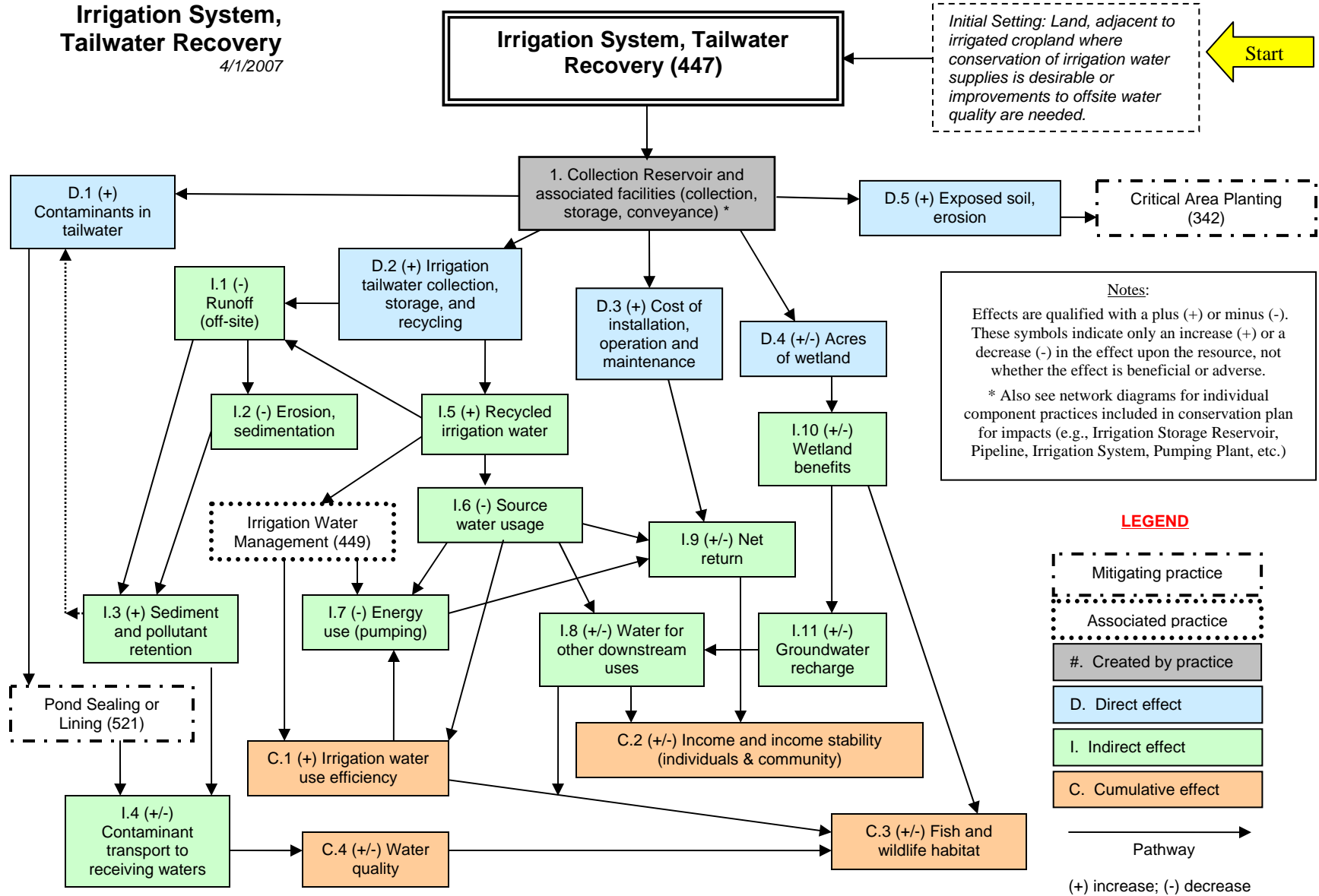
### COMMON ASSOCIATED PRACTICES

The practice is commonly used in a Conservation Management System with practices such as Pumping Plant, Irrigation Water Conveyance, Pond Sealing or Lining, and Irrigation Water Management.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

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**Irrigation System, Tailwater Recovery**  
4/1/2007



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# IRRIGATION WATER CONVEYANCE, STEEL PIPELINE

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 430FF



## IRRIGATION WATER CONVEYANCE, STEEL PIPELINE

Irrigation Water Conveyance is a pipeline and associated appurtenances installed as an integral part of an irrigation system.

### PRACTICE INFORMATION

The purpose of this practice is to reduce erosion, conserve water, and protect water quality. Underground pipelines serve as an integral part of the irrigation water distribution system, and significantly improve the overall efficiency of the system.

Steel tubing underground pipelines are acceptable for irrigation water conveyance. This practice requires proper design and installation to function properly. The pipe must be coated with plastic tape on the exterior surfaces. The interior surface will be subject to excessive pitting if high levels of copper are present in the water. In addition, if other types of metal are joined to the Steel pipe, the metal must be separated with rubber or plastic insulators to reduce galvanic corrosion.

These pipelines may have vents open to the atmosphere, or sealed pressure-relief valves and/or air-and-vacuum-relief valves to properly vent the system.

### COMMON ASSOCIATED PRACTICES

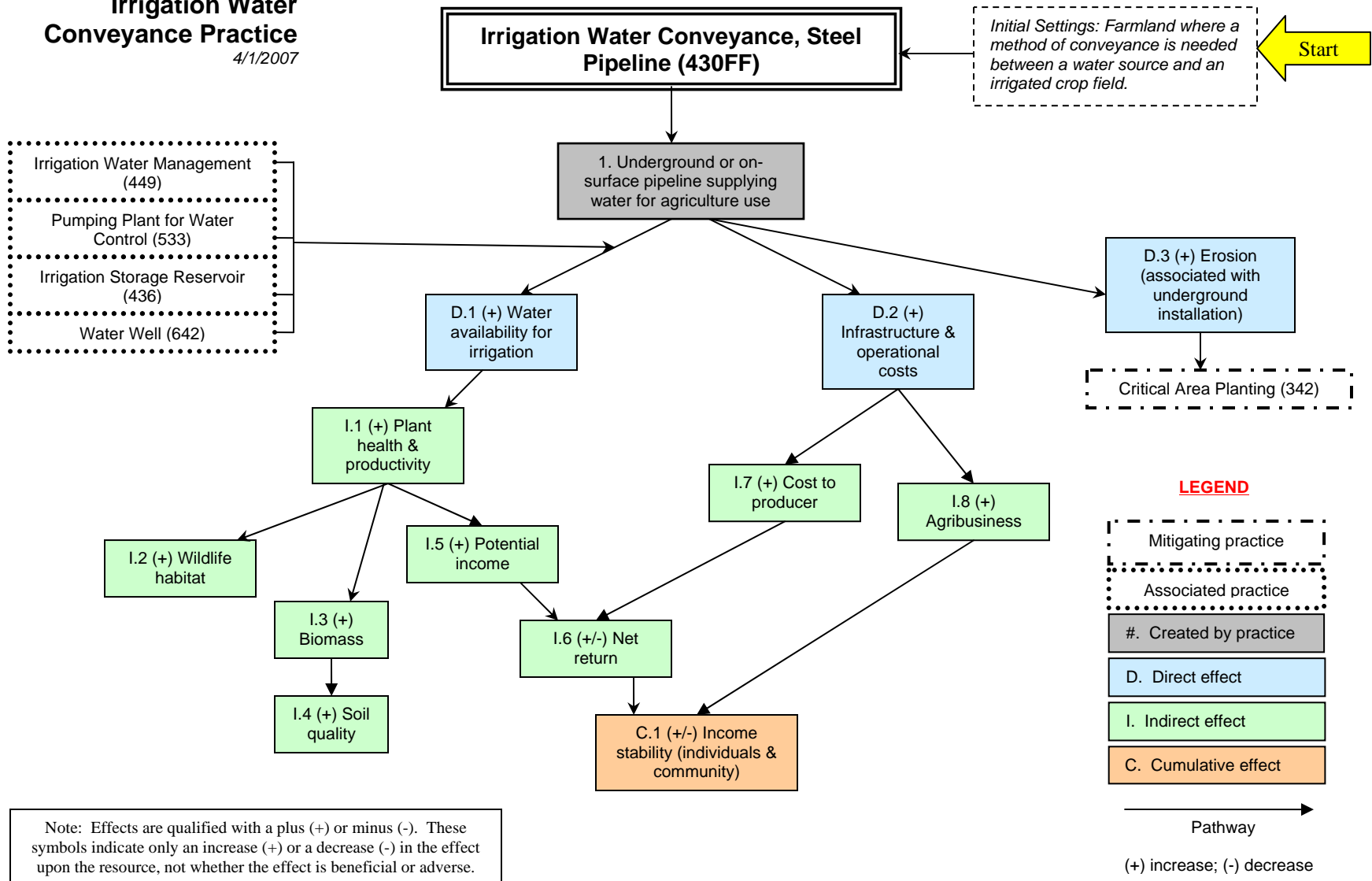
The practice is commonly used in a Conservation Management System with the following practices:

- Irrigation Water Management,
- Pumping Plant for Water Control,
- Irrigation System, Micro-irrigation,
- Irrigation System, Sprinkler,
- Irrigation Storage Reservoir,
- Water Well.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

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**Irrigation Water Conveyance Practice**  
4/1/2007



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# LAND CLEARING

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 460



### LAND CLEARING

Land clearing is removing trees, stumps, and other vegetation to allow needed land use adjustments and improvements in the interest of conservation. Land clearing is used to prepare land for the establishment of habitat for wildlife species.

### PRACTICE INFORMATION

This practice applies to wooded areas where the removal of trees, stumps, brush, and other vegetation is needed to establish, re-establish or maintain desired habitat for wildlife.

**This practice *is not* for purposes of clearing, filling, and/or draining wetlands for the purpose of growing commodity crops or any other purpose.**

An undisturbed area at least 50-feet wide will be left between the area being cleared and all wetlands, water bodies, and perennial streams. Temporary vegetation should be established as necessary until the planned

land use is in place. Avoid clearing when soil moisture conditions are high to reduce compaction.

### COMMON ASSOCIATED PRACTICES

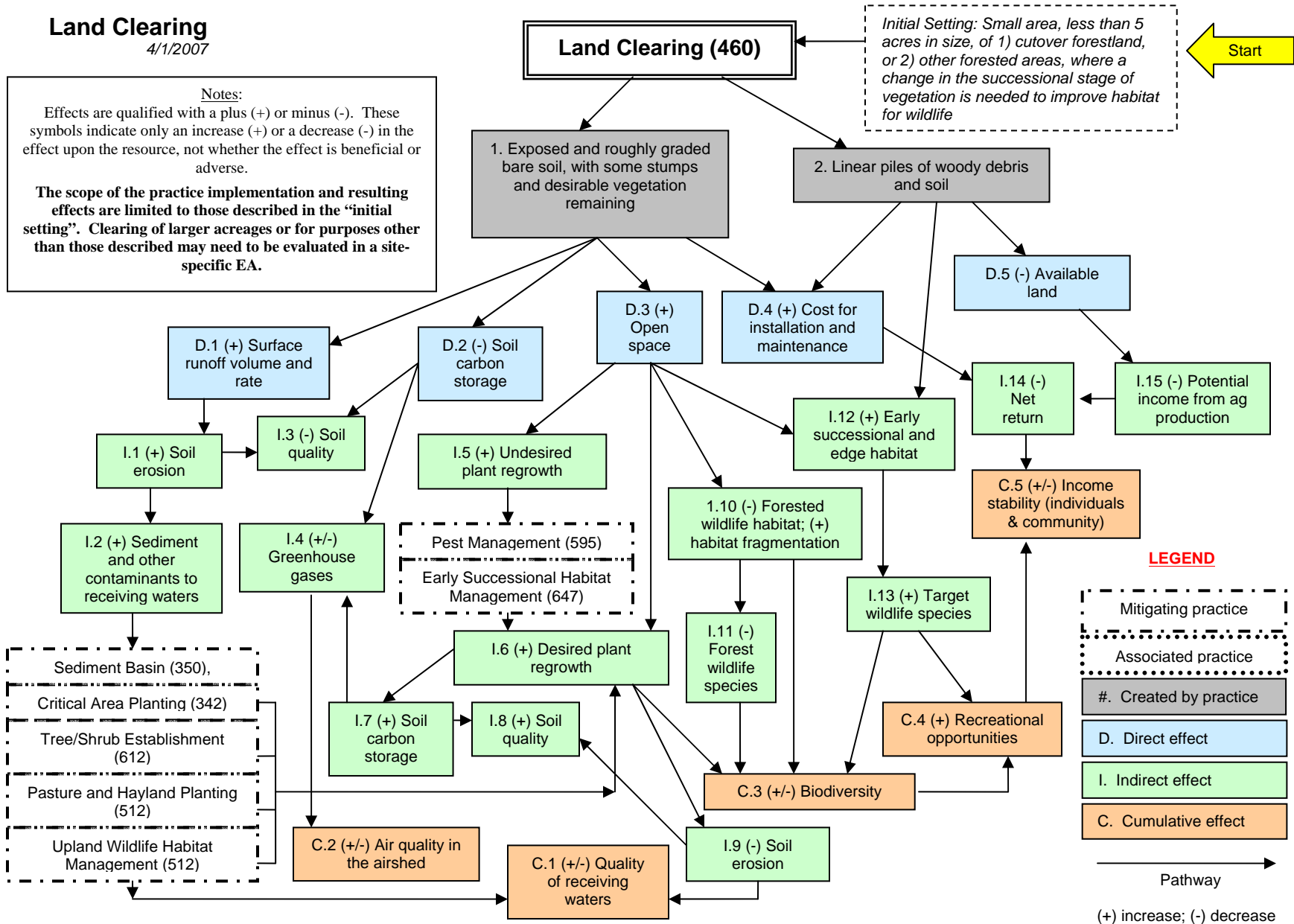
Land Clearing is commonly used in a Conservation Management System with the following practices:

- Brush Management,
- Obstruction Removal,
- Restoration and Management of Declining Habitats,
- Upland Wildlife Habitat Management
- Early Successional Habitat Development and Management,
- Forest Stand Improvement,
- Forest Trails and Landings.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

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**Land Clearing**  
4/1/2007



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# LAND SMOOTHING

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 466



### LAND SMOOTHING

Land smoothing is removing irregularities on the land surface.

### PRACTICE INFORMATION

Land smoothing is used to improve surface drainage, provide for more uniform cultivation, and improve equipment operation and efficiency.

For cranberry bogs, land smoothing is used to construct a more level bog to reduce the amount of flooding water needed for cranberry production. It applies where leveling is included in an overall irrigation water management plan, and where it will reduce the amount of water required to adequately flood the bog for

harvesting, trash removal, winter protection, pest control, or other purposes.

### COMMON ASSOCIATED PRACTICES

The practice is commonly used in a Conservation Management System with the following practices:

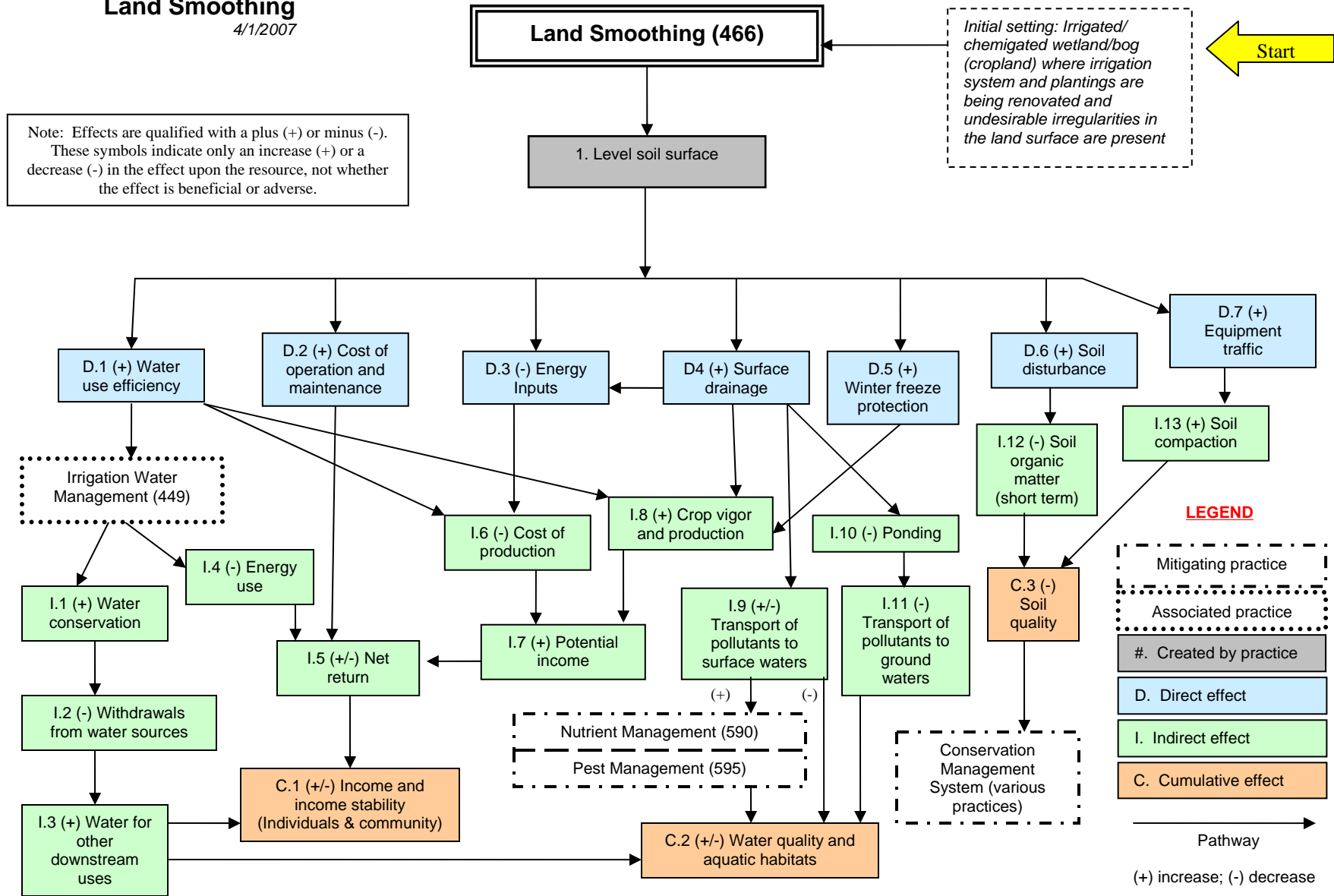
- Dike,
- Structure for Water Control,
- Irrigation Water Management.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# Land Smoothing

4/1/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# LINED WATERWAY OR OUTLET

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 468



### LINED WATERWAY OR OUTLET

A Lined Waterway or Outlet has an erosion-resistant lining of concrete, stone, or other permanent material. The lined section extends up the side slopes to a designed depth. The earth above the permanent lining may be vegetated or otherwise protected for safe water disposal.

### PRACTICE INFORMATION

Lined waterways or outlets are constructed to convey runoff in areas having concentrated runoff, steep grades, wetness, prolonged base flow, seepage or piping and where lining is needed to control erosion. Lined waterways can be used where limited space is available for the design width, which requires higher velocities and lining. Lined waterways can also be used where soils are highly erosive or other soil or climatic conditions preclude using vegetation only.

Important wildlife habitat, such as woody cover

or wetlands, should be avoided or protected if possible when siting the lined waterway. If trees and shrubs are incorporated, they should be retained or planted in the periphery of the grassed portion of the lined waterways so they do not interfere with hydraulic functions and roots do not damage the lined portion of the waterway. Mid- or tall bunch grasses and perennial forbs may also be planted along waterway margins to improve wildlife habitat. Waterways with these wildlife features are more beneficial when connecting other habitat types; e.g., riparian areas, wooded tracts and wetlands.

### COMMON ASSOCIATED PRACTICES

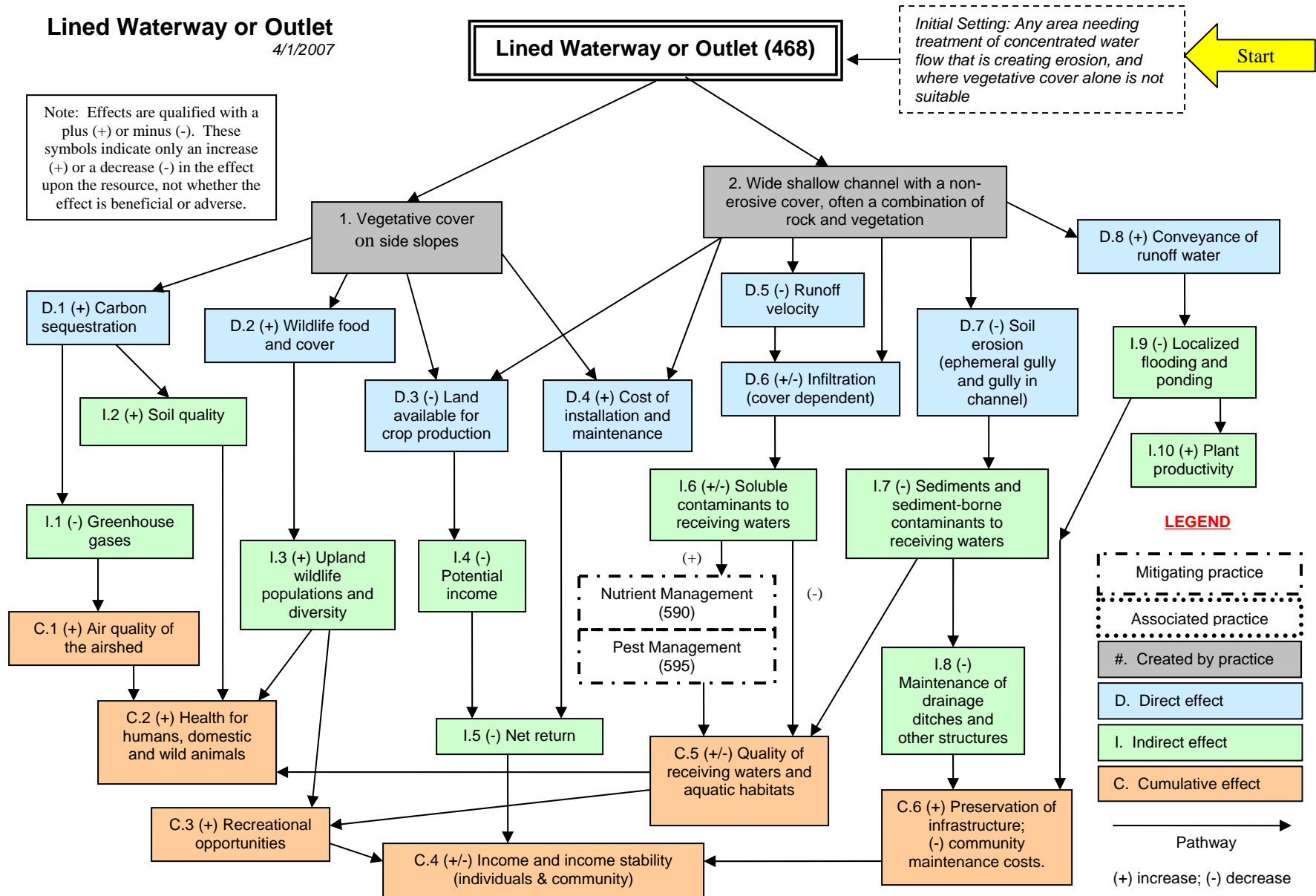
Lined Waterways or Outlets are commonly used in a Conservation Management Systems with practices such as Grade Stabilization Structures, Diversions, and Terraces.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Lined Waterway or Outlet**

4/1/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

## MULCHING (with Organic Materials)

### PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 484



### MULCHING

Mulching is applying a protective cover of plant residues or other suitable material not produced on the site to the soil surface.

### PRACTICE INFORMATION

Mulching is used to help control soil erosion, protect crops, conserve moisture, moderate soil temperature, prevent soil compaction and crusting, reduce runoff, and suppress growth of weeds. The practice is utilized on sites subject to erosion and high runoff rates that need the additional protection from material brought in from off the site. The material may be manufactured and commercially available, or it may be hay or crop residues hauled to the site and applied. Selection of materials is dependent upon site condition and the availability of materials.

This is a high input practice used primarily on construction sites. However, the practice is often used in production of specialty crops including grapes, other fruits, and vegetables.

### COMMON ASSOCIATED PRACTICES

Mulching is often used in conjunction with other practices. It is commonly used in Conservation Management Systems with a new vegetative seeding, Critical Area Planting, Nutrient Management, Pest Management, Irrigation Water Management, and Contour Farming.

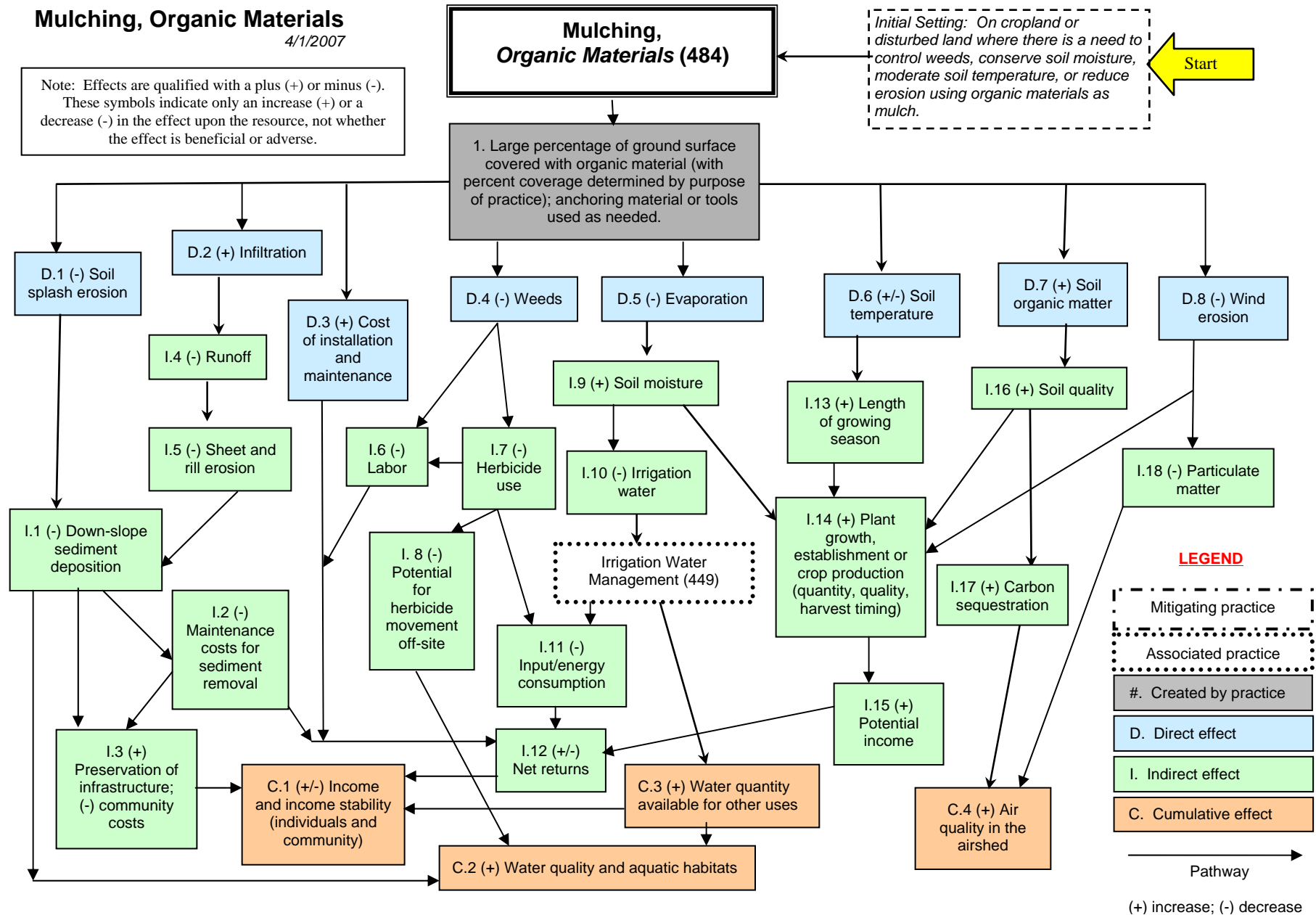
Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# Mulching, Organic Materials

4/1/2007

Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

## MULCHING (with Plastic)

### PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 484



### MULCHING

Mulching is applying a protective cover of plant residues or other suitable material not produced on the site to the soil surface.

### PRACTICE INFORMATION

Mulching is used to help control soil erosion, protect crops, conserve moisture, moderate soil temperature, prevent soil compaction and crusting, reduce runoff, and suppress growth of weeds. The practice is utilized on sites subject to erosion and high runoff rates that need the additional protection from material brought in from off the site. The material may be manufactured and commercially available, such as plastics or fabrics. Selection of materials is dependent upon site condition and the availability of materials. Manufactured mulches should be applied according to the manufacturer's specifications.

Mulching is a high input practice used primarily on construction sites. However, plastic and fabric mulches are often used on cropland in the production of specialty crops including grapes, other fruits, and vegetables.

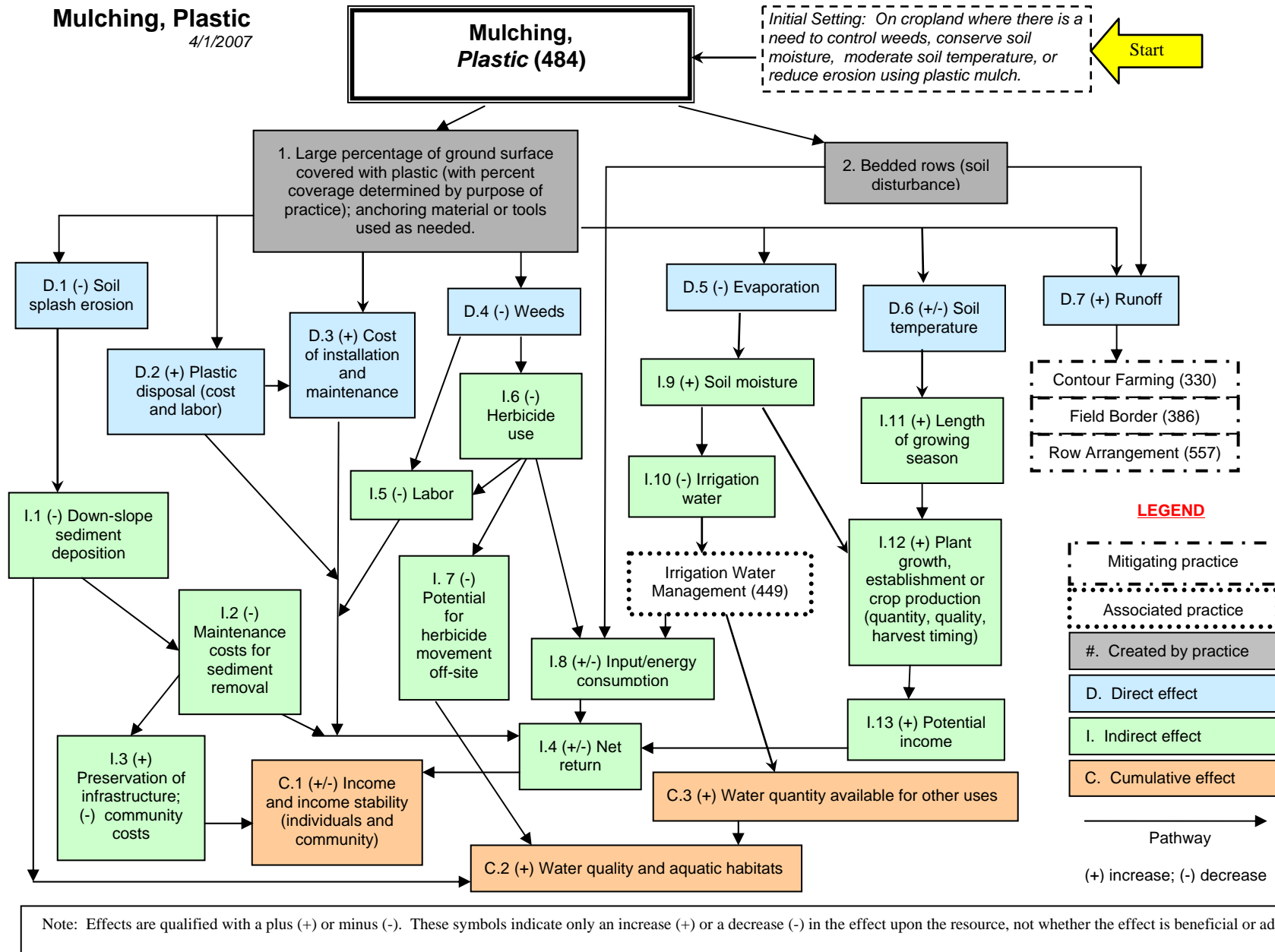
### COMMON ASSOCIATED PRACTICES

Mulching is often used in conjunction with other practices. It is commonly used in Conservation Management Systems with a new vegetative seeding, Critical Area Planting, Nutrient Management, Pest Management, Irrigation Water Management, and Contour Farming.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Mulching, Plastic**  
4/1/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.



# OBSTRUCTION REMOVAL

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 500



### OBSTRUCTION REMOVAL

Obstruction Removal is the removal and disposal of unwanted, buildings, structures, vegetation, landscape features, and other materials.

### PRACTICE INFORMATION

This practice applies to land where existing obstructions interfere with planned use and development described in the landowner's conservation plan.

The purpose of this practice is the safe removal and disposal of unwanted obstructions and materials in order to apply conservation practices or facilitate planned use of abandoned mine lands, farms, ranches, construction sites, and recreation areas.

Obstruction removal must be planned, designed, and carried out to meet all federal, state, and local laws and regulations.

Appropriate erosion control practices must be applied on disturbed areas. Debris such as broken concrete and masonry, structural steel and wood, stones, stumps, slash, and sterile or toxic soil will be disposed of so that they will not impede subsequent work or cause damage offsite. Disposal may be by burning, burying, or removing to an approved landfill in an environmentally acceptable manner.

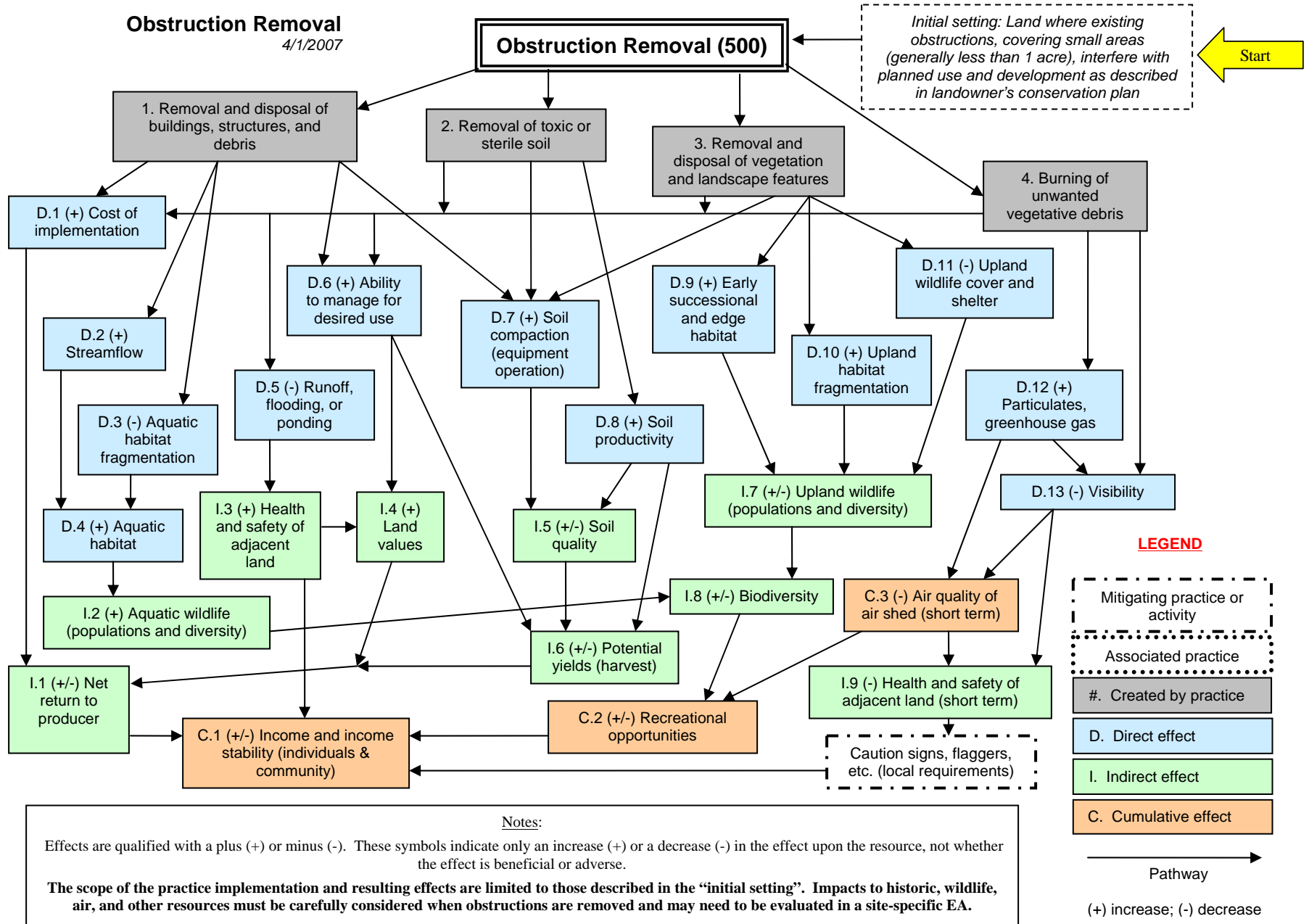
### COMMON ASSOCIATED PRACTICES

Obstruction Removal is commonly used in a Conservation Management System with practices such as Access Road, Conservation Cover, Critical Area Planting, Fish Passage, Pipeline, Tree/Shrub Establishment, Pasture and Hayland Planting, and Irrigation Systems.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Obstruction Removal**  
4/1/2007



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# OPEN CHANNEL

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 582



### OPEN CHANNEL

Open channel is the construction or improvement of a channel, either natural or artificial, in which water flows with a free surface.

### PRACTICE INFORMATION

This practice is designed to provide discharge capacity required for flood prevention, drainage, or other authorized water management purposes. It is used in New England primarily for by-pass canals to protect streams that flow through cranberry bogs. Stream flow is temporarily diverted around the bog through a series of dikes, water control structures and open channel so the bog can be managed as a closed system, capable of containing pesticides and other agri-chemicals for their required holding times for water pollution control.

This practice applies to earthen channel construction or modification where stability requirements can be met, an adequate outlet for

the modified channel reach is available for discharge by gravity flow or pumping, and excavation or other channel work does not cause significant erosion, flooding or sedimentation. The impact of the proposed construction on water quality, fish and wildlife habitat, forest resources, and quality of the landscape must be evaluated, and the techniques and measures necessary to overcome any undesirable effects must be included as part of the planned work,

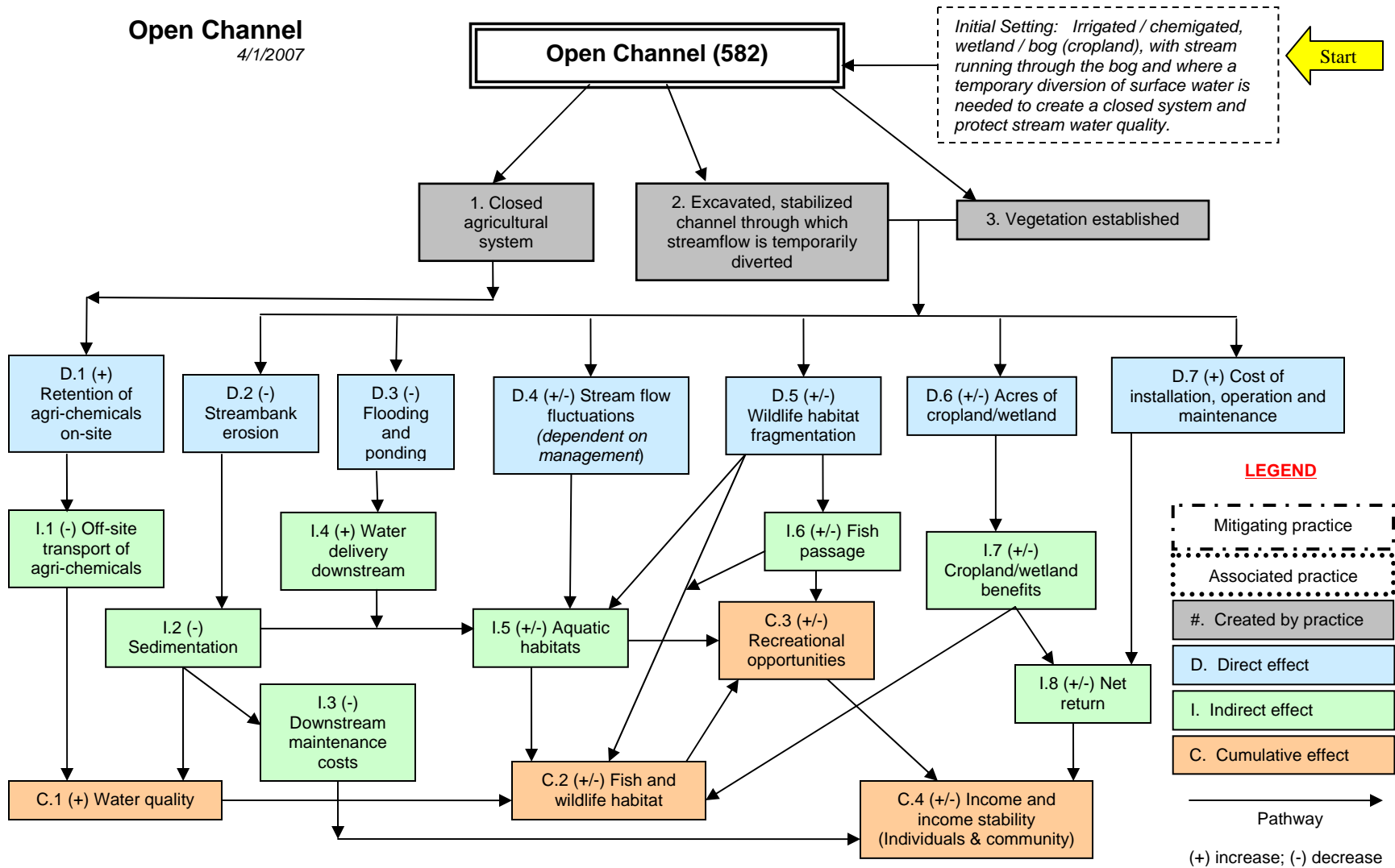
### COMMON ASSOCIATED PRACTICES

The practice is commonly used in a Conservation Management System with Dikes and Structures for Water Control.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Open Channel**  
4/1/2007



Notes:

Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse. **The scope of the practice implementation and resulting effects are limited to those described in the “initial setting”. Effects are described for temporary diversion of surface waters only. Creation of an Open Channel for permanent stream relocation may need to be evaluated in a site-specific EA.**

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# PEST MANAGEMENT – CONTROL OF INVASIVE SPECIES

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 595



### PEST MANAGEMENT - INVASIVES

Pest Management includes the management and control of non-native invasive plants to reduce adverse effects on plant growth, crop production, wildlife habitat, and other natural resources.

### PRACTICE INFORMATION

Pest Management is applied to enhance the quantity and quality of commodities and/or minimize negative impacts of pest control on soil resources, water resources, air resources, plant resources, animal resources, and/or humans. It can be used for the control of invasive species to achieve these objectives. An invasive species is not native to a particular ecosystem. These species generally spread readily and are difficult to control.

Control of invasive plants includes appropriate cultural, biological, and chemical methods, and combinations of these. It is important to learn about life cycles and alternative control techniques when dealing with these difficult

species. As with any chemicals, users should always follow label instructions when applying pesticides.

### COMMON ASSOCIATED PRACTICES

Pest Management is commonly used in a Conservation Management System on various land uses with practices such as:

- Upland Wildlife Habitat Management,
- Wetland Wildlife Habitat Management,
- Brush Management,
- Early Successional Habitat Management,
- Conservation Crop Rotation,
- Cover Crop,
- Nutrient Management,
- Filter Strip,
- Field Border,
- Riparian Forest Buffer.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Pest Management,  
Invasive Species**  
4/1/2007

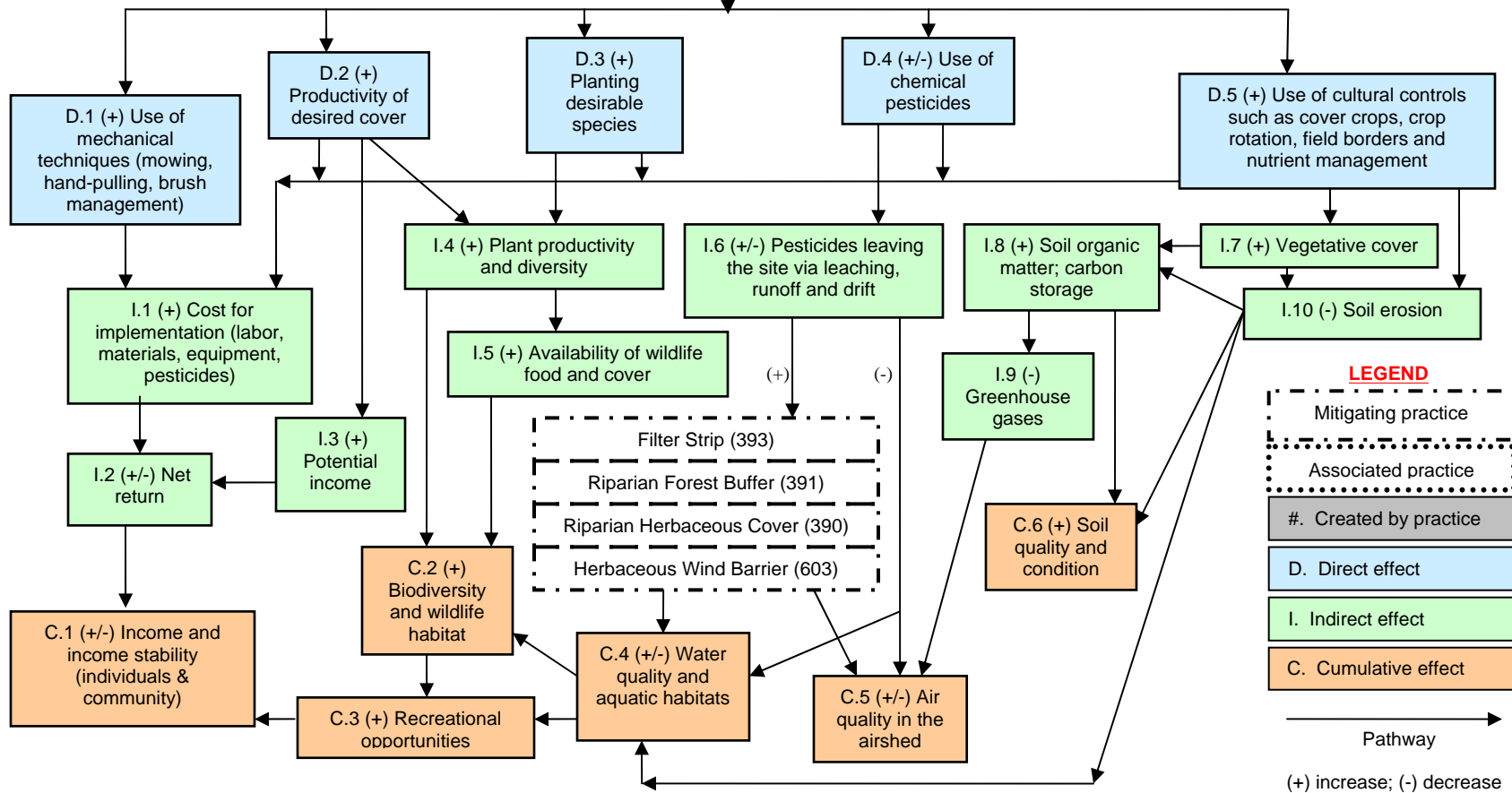
**Pest Management,  
Control of Invasive  
Species (595)**

*Initial Setting: Any land use where presence of invasive species is a resource concern.*



1. Pest management plan alternatives selected and applied by producer to manage target invasive species.

Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.



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# PIPELINE

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 516



### PIPELINE

A Pipeline is used to convey water for livestock, recreation or wildlife.

### PRACTICE INFORMATION

The practice is applicable where water needs to be piped to another location(s) for management purposes, to conserve the supply, or for reasons of sanitation.

The purpose of a Pipeline is simply to convey water from the source of supply to the point(s) of use. The objective is usually to decentralize the location of drinking or water storage facilities.

Pipelines installed under this practice are generally for livestock management purposes. A single water source can provide livestock water to several locations and be very effective

in improving management of a grazing unit. Pipelines are also used on recreation and wildlife lands to provide or distribute drinking water facilities for humans as well as wildlife.

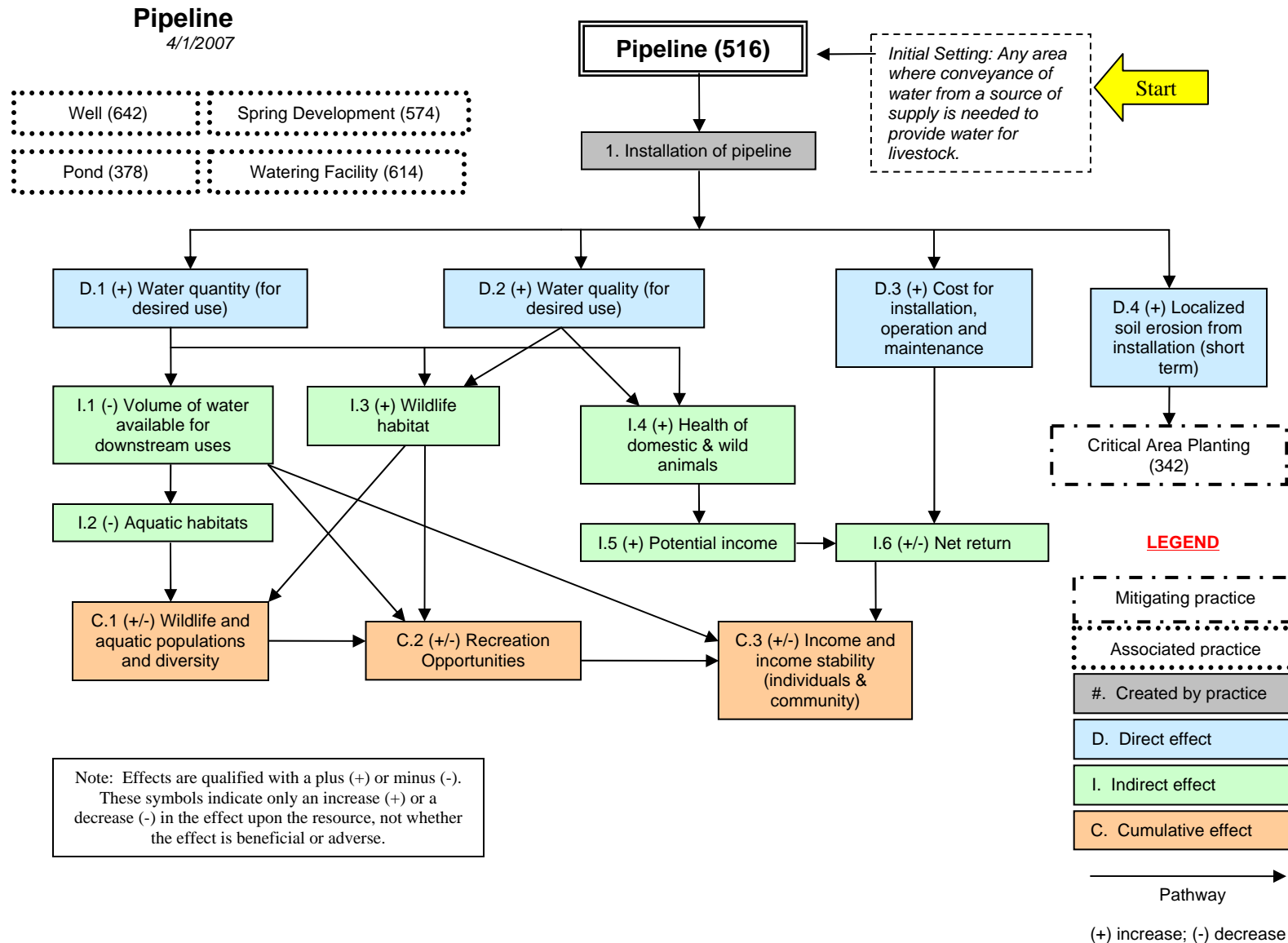
### COMMON ASSOCIATED PRACTICES

Pipelines are commonly used in Conservation Management Systems with the following practices:

- Animal Trail and Walkway,
- Prescribed Grazing,
- Watering Facility,
- Water Well.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.



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# PRESCRIBED FORESTRY

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 409



### PRESCRIBED FORESTRY

Prescribed Forestry is the management of forested areas for forest health, wood and/or fiber, water, recreation, aesthetics, wildlife habitat, and plant biodiversity.

### PRACTICE INFORMATION

Prescribed forestry activities to achieve the intended purpose(s) are designed according to a specific forest prescription. This prescription addresses the owner's objectives while perpetuating a sustainable forest ecosystem based on ecological parameters such as forest types, soil types, past harvest history, natural community types and successional trends.

The forest prescription often includes the following items.

- Timing and use of equipment for management of the forest area is planned so that site plant productivity is maintained, soil disturbance is held to a minimum and water quality is maintained.

- Slash, debris and vegetative material left onsite do not present an unacceptable fire or pest hazard.
- Trails and landings are maintained to prevent soil erosion and sedimentation problems.
- Consideration is given to planting new vegetation or managing existing vegetation to provide wildlife food and cover.

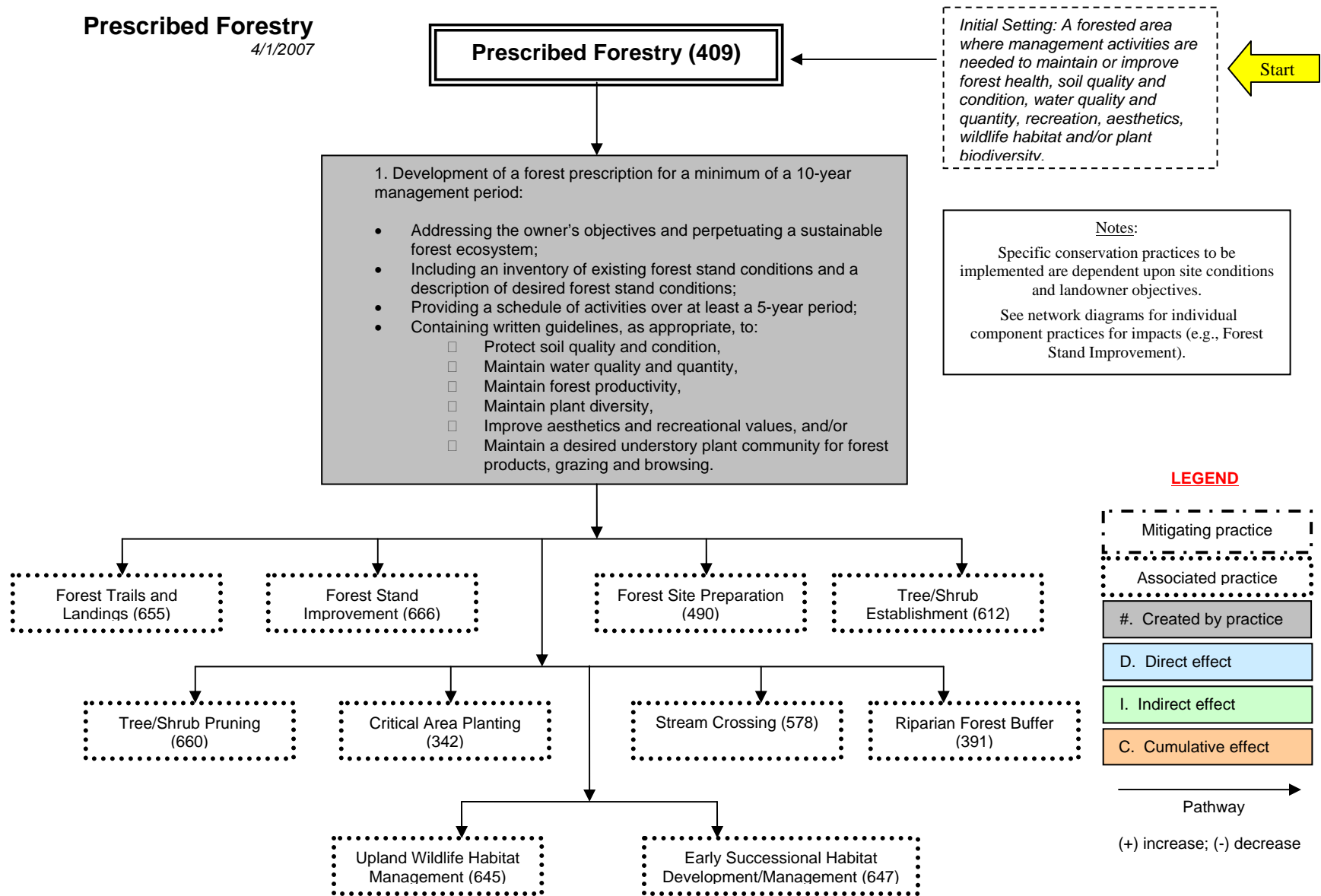
### COMMON ASSOCIATED PRACTICES

Prescribed Forestry is commonly used in a Conservation Management System with the following practices: Forest Trails and Landings, Forest Stand Improvement, Tree/Shrub Establishment, Critical Area Planting, Stream Crossing, Early Successional Habitat Development/Management, and Upland Wildlife Habitat Management.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Prescribed Forestry**  
4/1/2007



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# PRESCRIBED GRAZING

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 528



### PRESCRIBED GRAZING

Prescribed Grazing is the controlled harvest of vegetation with grazing animals, managed with the intent to achieve a specific objective.

### PRACTICE INFORMATION

Prescribed grazing may be applied on all lands where grazing and/or browsing animals are managed. A prescribed grazing schedule is prepared for all fields and pastures to be grazed. Removal of herbage by the grazing animals is in conformity with realistic yield goals, plant growth needs, and management goals. Duration and intensity of grazing is based on desired plant health and expected productivity of the forage species to meet management objectives. In all cases enough vegetation is left to prevent accelerated soil erosion.

Application of this practice manipulates the intensity, frequency, duration, distribution, and season of grazing to:

1. Improve water infiltration and use;

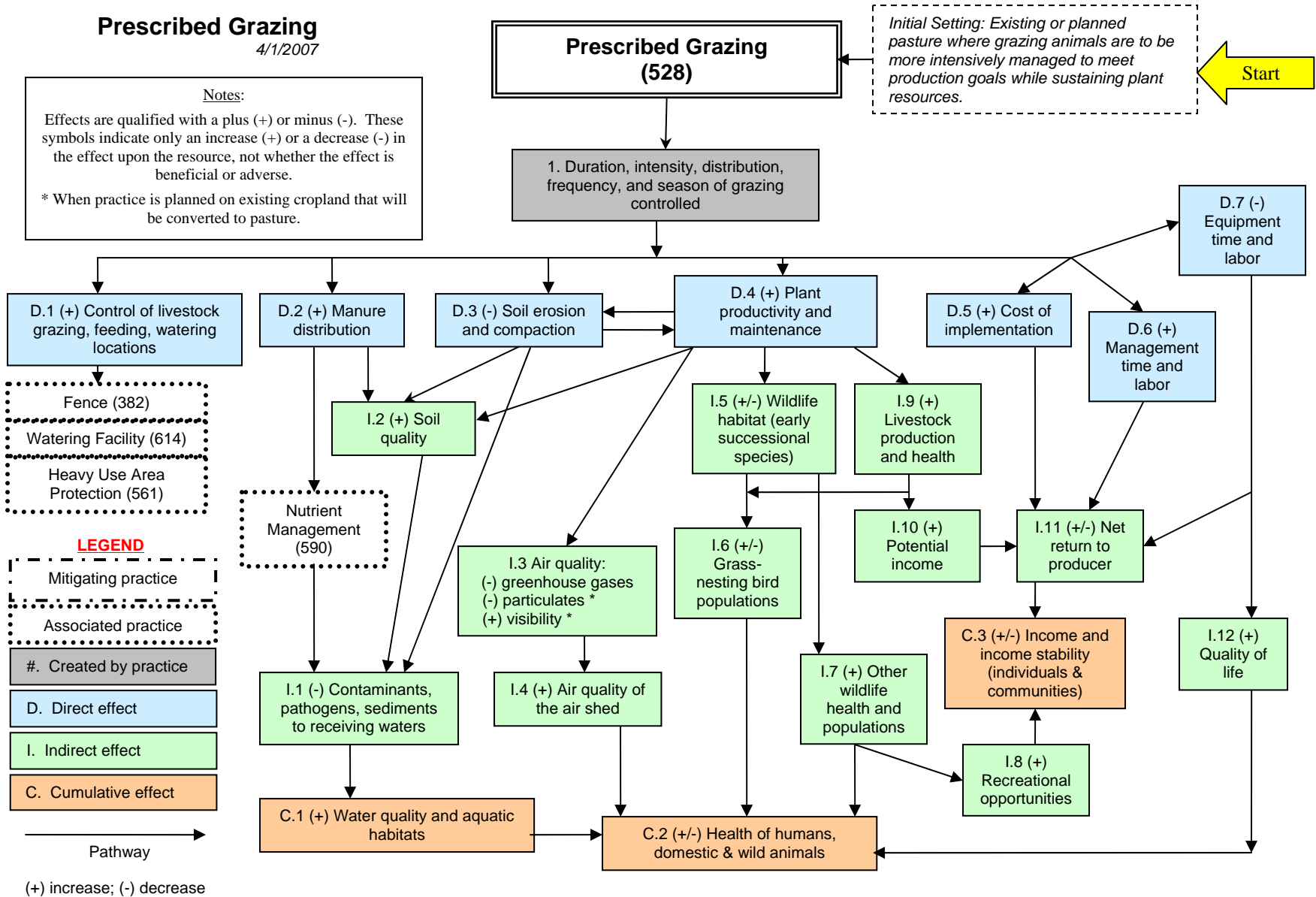
2. Maintain or improve riparian and upland area vegetation;
3. Protect stream banks from erosion;
4. Manage for uniform deposition of manure away from water bodies; and
5. Promote ecologically and economically stable plant communities which meet landowner objectives

### COMMON ASSOCIATED PRACTICES

Prescribed Grazing is commonly used in a Conservation Management System with the following practices: Pasture and Hay Planting, Feed Management, Fence, Watering Facility, Heavy Use Area Protection, Pipeline, Well, Pond, Spring Development, Nutrient Management, Pest Management, Use Exclusion, Animal Trails and Walkways, and Stream Crossing.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

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# PUMPING PLANT

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 533



### PUMPING PLANT

A Pumping Plant is a facility installed to transfer water for a conservation need.

### PRACTICE INFORMATION

Pumping plants provide a dependable water source or disposal facility for water management. This practice applies wherever water must be pumped to accomplish a conservation objective, which may include but is not limited to:

- Water supply for irrigation, recreation, livestock or wildlife;
- Maintenance of critical water levels in swamps, marshes, open water, or for newly constructed wetlands and ponds;
- Transfer of wastewater for utilization as part of a waste management system;

- Facilitation of drainage by the removal of surface runoff or ground water.

### COMMON ASSOCIATED PRACTICES

The practice is commonly used in a Conservation Management System with the following practices:

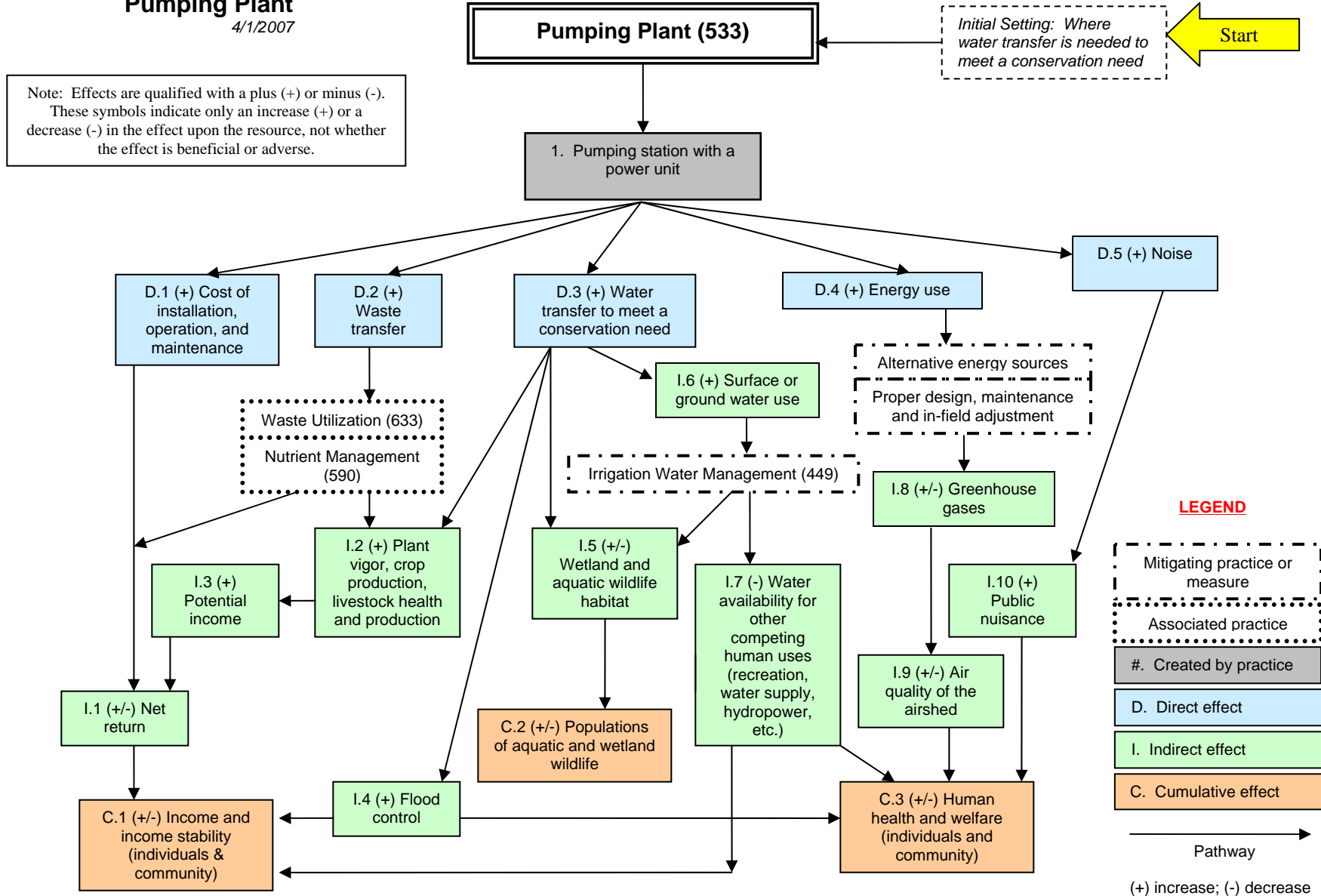
- Irrigation Water Conveyance,
- Irrigation System,
- Pipeline,
- Watering Facility,
- Manure Transfer.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# Pumping Plant

4/1/2007



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# RECREATION TRAIL AND WALKWAY

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 568



### RECREATION TRAIL AND WALKWAY

Recreation Trails and Walkways are pathways prepared especially for pedestrian, equestrian, and cycle travel.

### PRACTICE INFORMATION

Recreation trails and walkways are prepared paths, trails, and walkways that are needed for effective and safe use of a recreation resources.

Recreation trail and walkways are designed to save and maintain key trees and other vegetation having scenic value, providing shade, reducing erosion and runoff, providing dens and food for wildlife, or adding to the visual quality of the area. Sustained grades are dictated by good judgment for the purpose intended, considering the topography, but must not exceed 10 percent. Where general public use is anticipated, roads are designed to meet applicable federal, state and local criteria.

Walkways and trails are constructed to a planned guide and cross section. All drainage structures and surfacing is installed according to plans and detailed specifications. Safety features, including signs and guardrails, safety fences at key locations, and removal of existing fences, must be included according to the plans. Construction operations are carried out in such a manner that erosion and air and water pollution are minimized and held within legal limits.

### COMMON ASSOCIATED PRACTICES

Recreation Trails and Walkways are commonly used in Conservation Management Systems with the following practices:

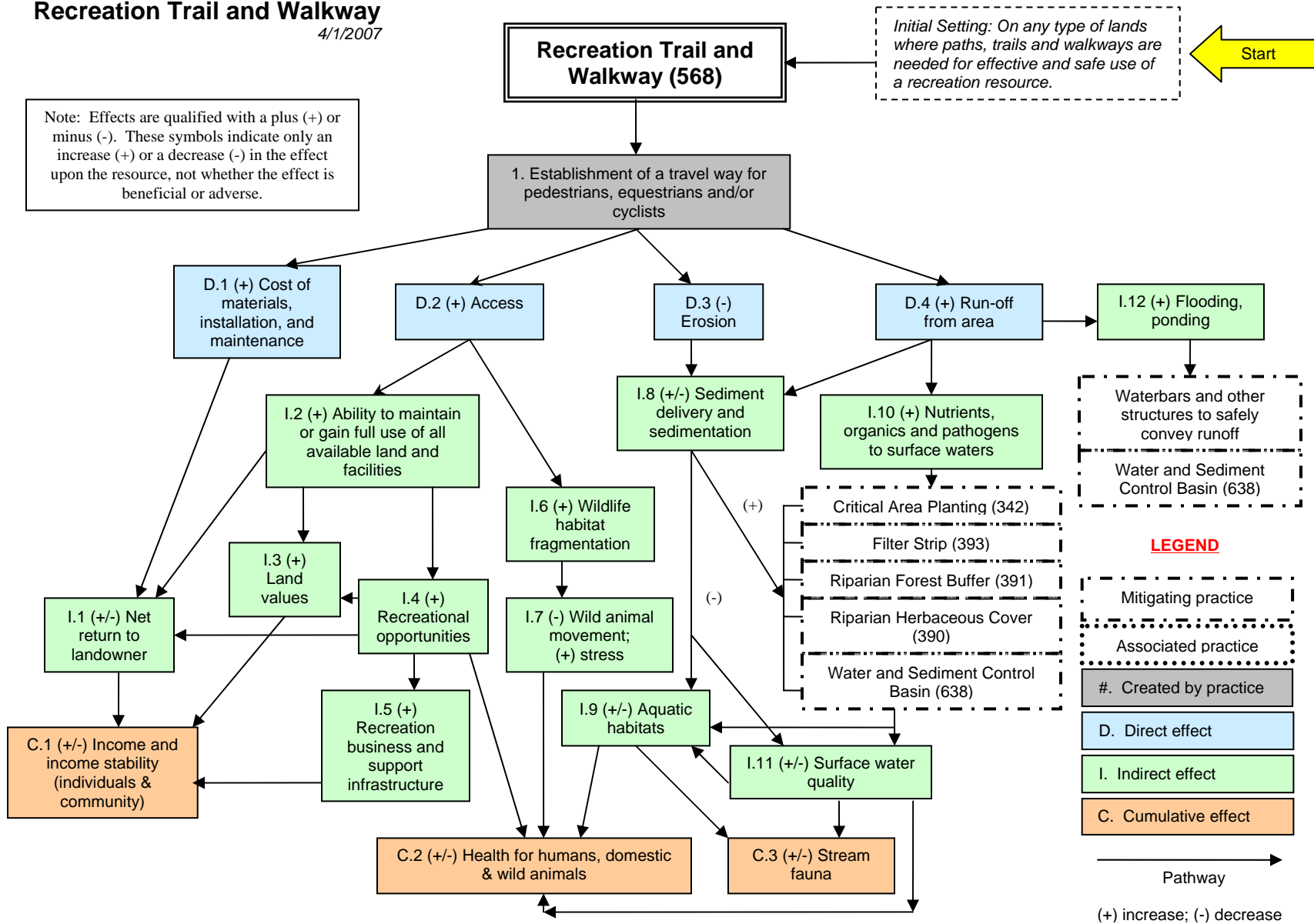
- Upland Wildlife Habitat Management,
- Wetland Wildlife Habitat Management,
- Use Exclusion.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

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# Recreation Trail and Walkway

4/1/2007



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# RESTORATION AND MANAGEMENT OF RARE OR DECLINING HABITATS

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 643



### RESTORATION AND MANAGEMENT OF RARE OR DECLINING HABITATS

Restoration and Management of Rare or Declining Habitats is the re-creation and conservation of rare or declining native vegetated communities and their associated wildlife species.

#### PRACTICE INFORMATION

This practice applies to any landscape which once supported or currently supports the habitat to be restored or managed.

The purposes of this practice are to:

- Restore land or aquatic habitats degraded by human activity,
- Provide habitat for rare and declining wildlife species by restoring and conserving native plant communities,
- Increase native plant community diversity, and
- Manage unique or declining native habitats.

(Note: NRCS uses the term “wildlife” to include all animals, terrestrial and aquatic).

#### COMMON ASSOCIATED PRACTICES

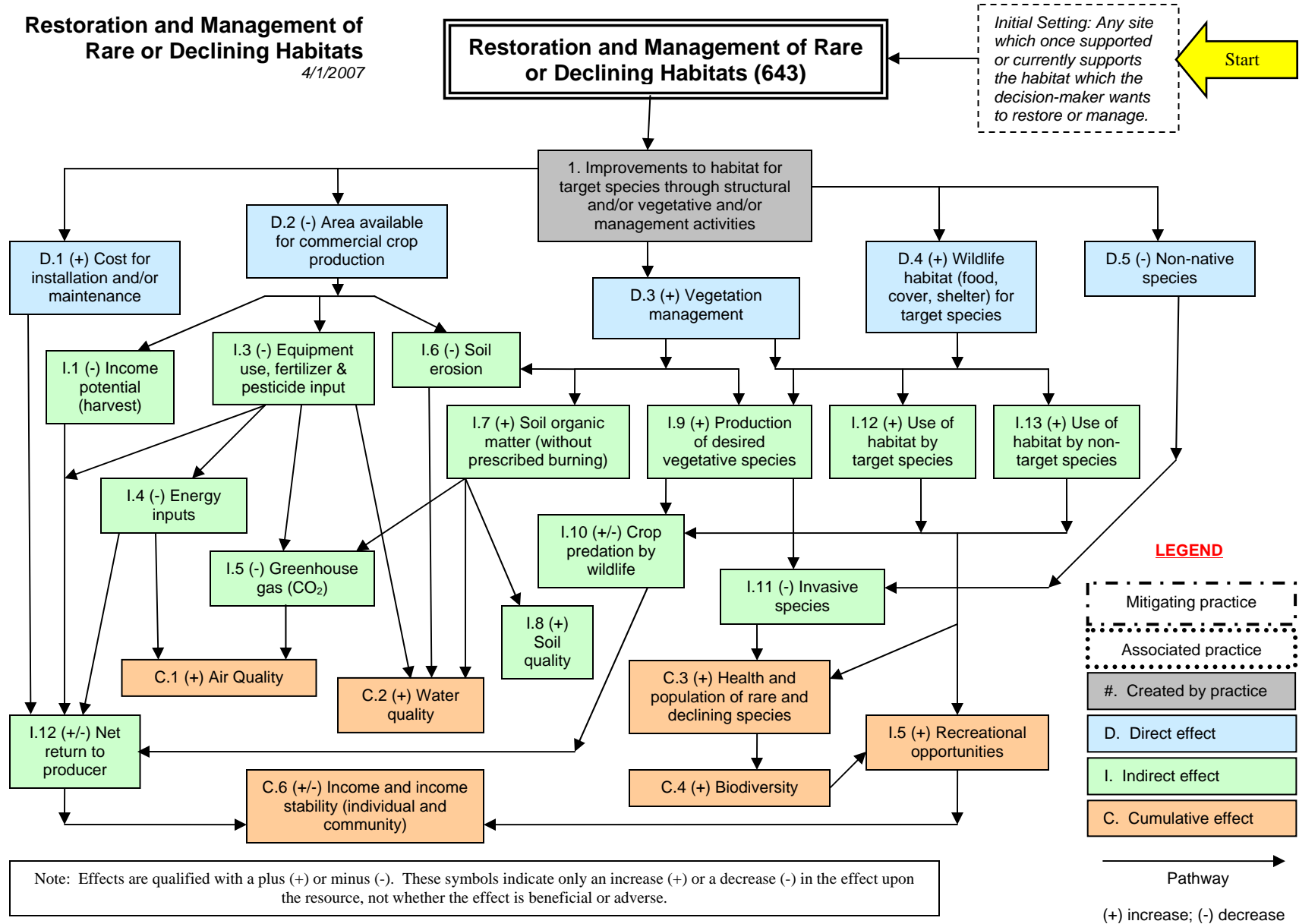
Restoration and Management of Rare or Declining Habitats is commonly used in a Conservation Management System with the following practices:

- Animal Trails and Walkways,
- Brush Management,
- Conservation Cover,
- Early Successional Habitat Development/Management,
- Tree and Shrub Establishment,
- Prescribed Burning,
- Wildlife Upland Habitat Management,
- Wetland Wildlife Habitat Management.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

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**Restoration and Management of Rare or Declining Habitats**  
4/1/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# RIPARIAN HERBACEOUS COVER

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 390



### RIPARIAN HERBACEOUS COVER

Riparian herbaceous cover is establishment and maintenance of grasses, grass-like plants and forbs that are tolerant of intermittent flooding or saturated soils and that are established or managed in the transitional zone between terrestrial and aquatic habitats.

### PRACTICE INFORMATION

This practice is used on lands along water courses or at the boundary of water bodies or wetlands where: the natural or desired plant community is dominated by herbaceous vegetation; the ecosystem has been disturbed and the natural plant community is missing, changed or has been converted to agricultural crops, lawns or other high maintenance vegetation; or invasive species dominate.

The purpose(s) of this practice include:

- Provision of food, shelter, shading substrate, access to adjacent habitats, nursery habitat and pathways for

movement by resident and non-resident aquatic, semi-aquatic and terrestrial organisms;

- Improvement and protection of water quality;
- Stabilization of stream banks and shorelines; and
- Increased net carbon storage in the biomass and soil.

### COMMON ASSOCIATED PRACTICES

Riparian Herbaceous Cover is commonly used in a Conservation Management System with other practices such as Conservation Cover, Fence, Use Exclusion, Tree and Shrub Establishment, Wetland Wildlife Habitat Management, Prescribed Grazing, Streambank and Shoreline Protection, Stream Crossing, and Watering Facility.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# Riparian Herbaceous Cover

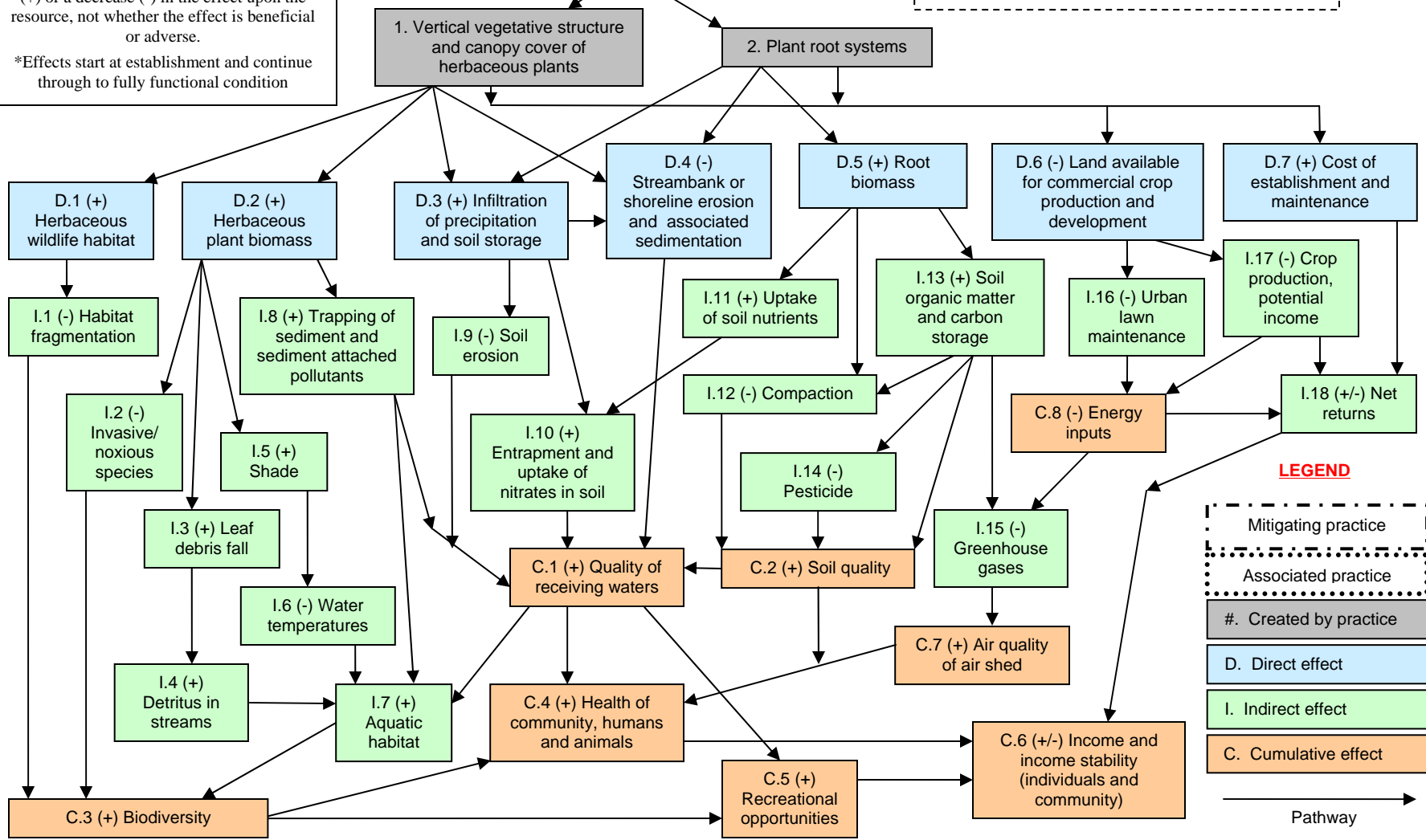
4/1/2007

*Initial setting: Areas adjacent to water courses or bodies where the natural plant community is dominated by herbaceous vegetation and where establishment or maintenance of cover is needed to improve water quality, fishery and wildlife habitat, and/or stabilize the bank or shoreline,*

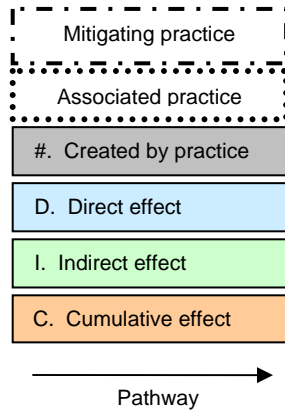


**Notes:**  
Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.  
\*Effects start at establishment and continue through to fully functional condition

## Riparian Herbaceous Cover (390) \*



**LEGEND**



(+) increase; (-) decrease

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# ROW ARRANGEMENT

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 557



### ROW ARRANGEMENT

Row arrangement is a system of crop rows established on planned grades and lengths.

### PRACTICE INFORMATION

The purpose of this practice is to provide adequate drainage, reduce erosion, control runoff water, and permit optimum use of rainfall and irrigation water.

Row arrangement utilizes furrows to slow runoff and allow more moisture to infiltrate the soil. Arranging rows on the contour can increase erosion if the rainfall amount exceeds the ability of the contours to control runoff. Therefore, this practice is usually planned in conjunction with other practices needed for support in the event that runoff exceeds the carrying capacity of the contours.

Local standards and specifications generally cover the following items:

1. Alignment requirements when planned and applied with practices such as terraces, diversions, and contour strips;
2. Alignment requirements when contour farming is applied without protection from supporting practices (see above);
3. Established tolerances for deviation from true contour, row grade and row length.

### COMMON ASSOCIATED PRACTICES

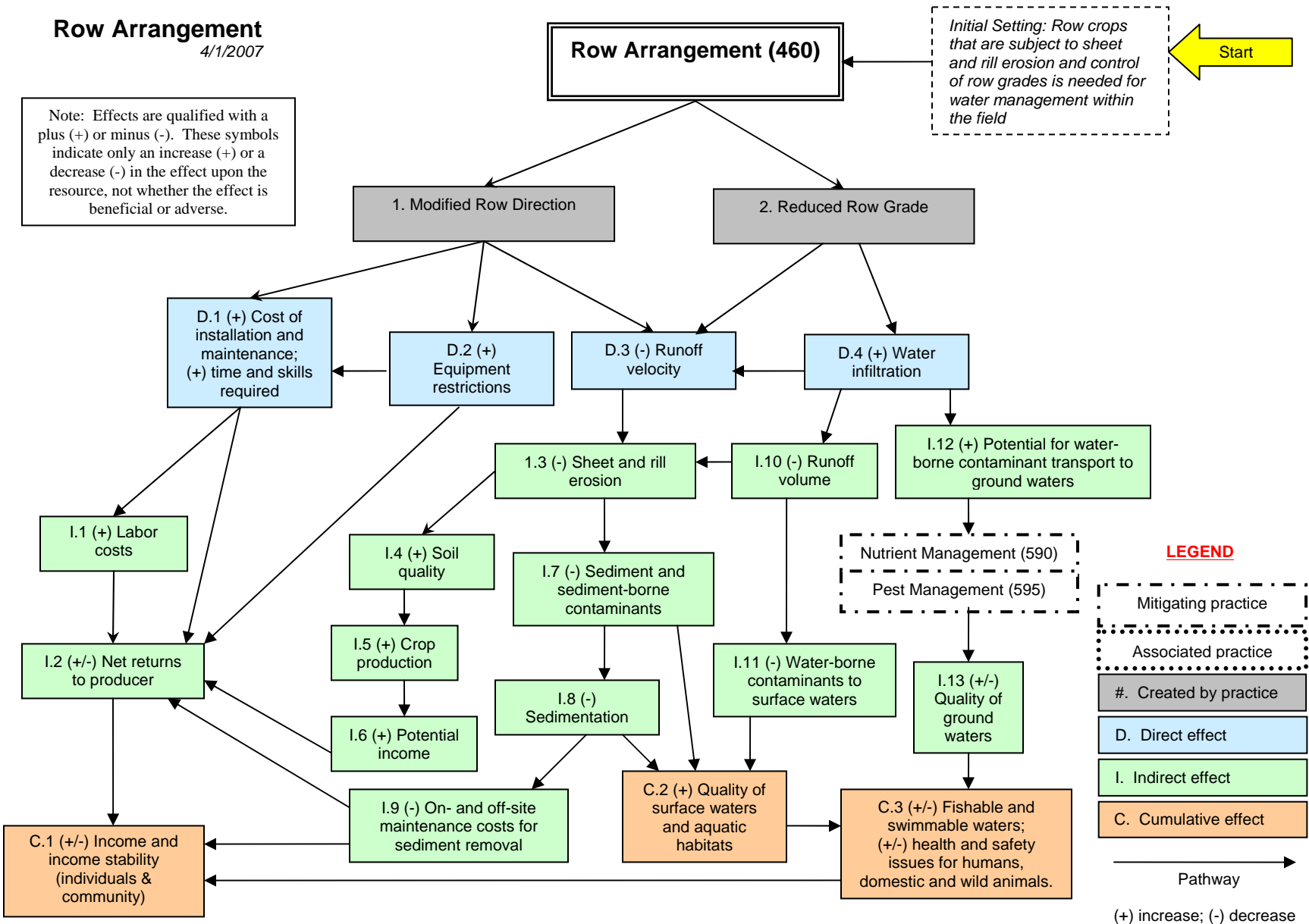
Row Arrangement is commonly used in a Conservation Management System with the following practices:

- Grassed Waterway,
- Underground Outlet,
- Lined Waterway or Outlet,
- Diversion.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Row Arrangement**  
4/1/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# SEDIMENT BASIN

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 350



### SEDIMENT BASIN

A Sediment Basin is a constructed basin designed to collect and store waterborne debris or sediment.

### PRACTICE INFORMATION

Sediment Basins are used where physical conditions, ownership, management, or economics preclude treatment of a sediment source by use of other conservation practices. Sediment basins are often installed on construction or mining sites to protect the natural resources until vegetation or structures are installed to control sources of sediment. Other practices are sometimes needed with a sediment basin to protect natural resources.

The purposes of a Sediment Basin are to:

- Preserve the capacity of reservoirs, culverts, ditches, canals, diversions, waterways, and streams;

- Prevent excessive down-slope deposition;
- Trap sediment originating from construction sites; and
- Reduce or abate damage to natural resources from pollution or deposition of sediment.

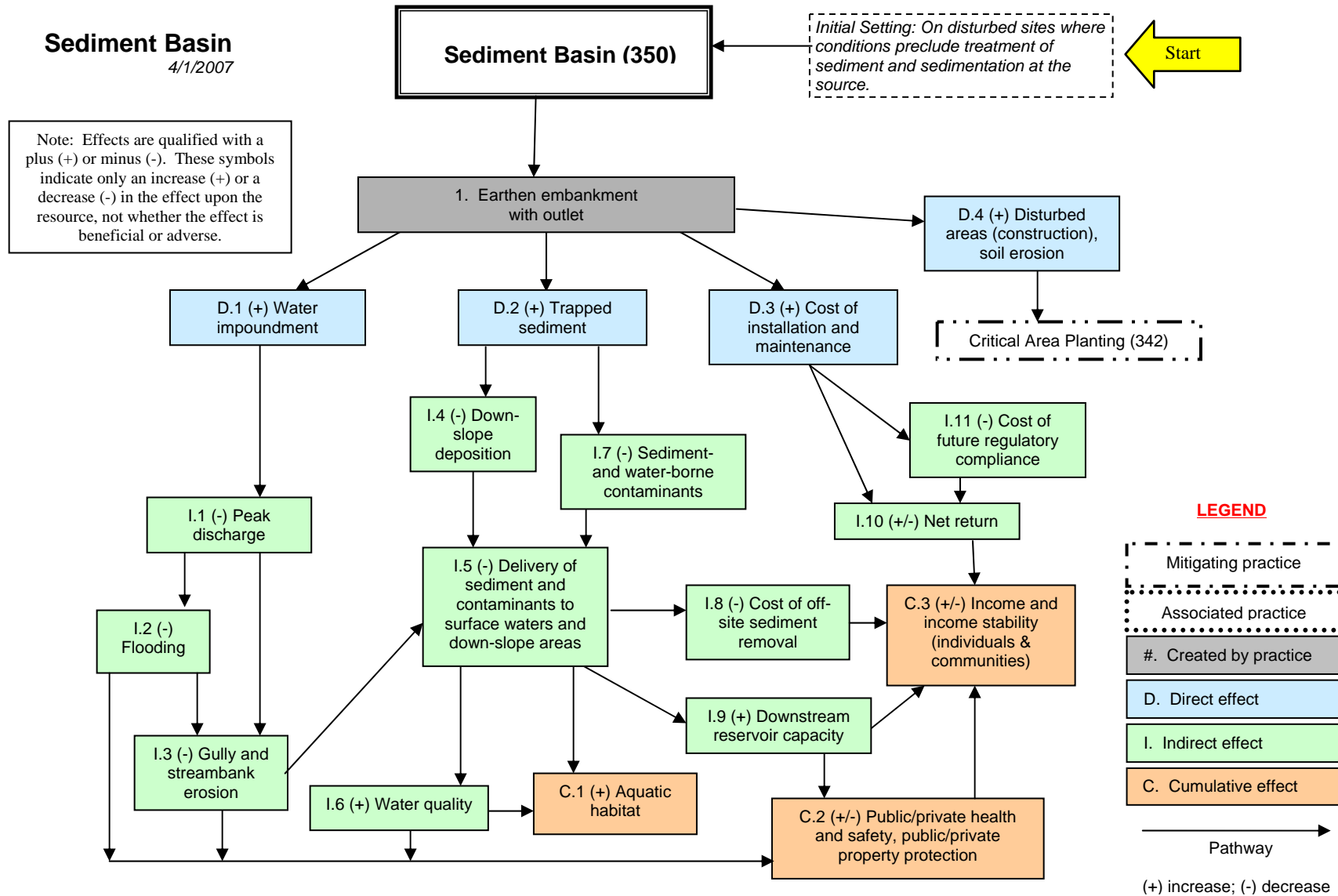
### COMMON ASSOCIATED PRACTICES

Sediment Basins may be component practices of a required storm water management plan and/or erosion and sediment control plan. They are commonly used in Conservation Management Systems with practices such as Critical Area Planting, Mulching, and water control structures.

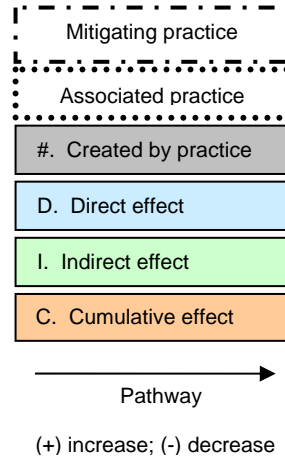
Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Sediment Basin**  
4/1/2007



**LEGEND**



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.



# SHALLOW WATER DEVELOPMENT AND MANAGEMENT

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 646



### SHALLOW WATER DEVELOPMENT AND MANAGEMENT

Shallow Water Development and Management is the inundation of lands to provide habitat for fish and/or wildlife.

### PRACTICE INFORMATION

This practice is applicable to lands where water can be impounded or regulated by diking, excavating, ditching and/or flooding. It can also be used to provide refuge habitats for native fish during high flow periods.

The purpose is to provide habitat for wildlife such as shorebirds, waterfowl, wading birds, mammals, fish, reptiles, amphibians, and other species that require shallow water for at least a part of their life cycle.

Site selection is important to successfully carrying out this practice. Soils must have a low permeability or seasonal high water table. The site must be free of hazardous materials, and the water supply must be adequate to

maintain water levels between 1 to 18 inches in depth over the majority of the area during the inundation period. Operation and maintenance is very important to ensure that this practice functions as intended throughout its expected life.

### COMMON ASSOCIATED PRACTICES

Shallow Water Development and Management is commonly used in a Conservation Management System with the following practices:

- Dike,
- Structure for Water Control
- Irrigation Water Conveyance,
- Pipeline,
- Pond,
- Wetland Wildlife Habitat Management.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

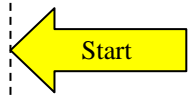
The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# Shallow Water Development and Management

4/1/2007

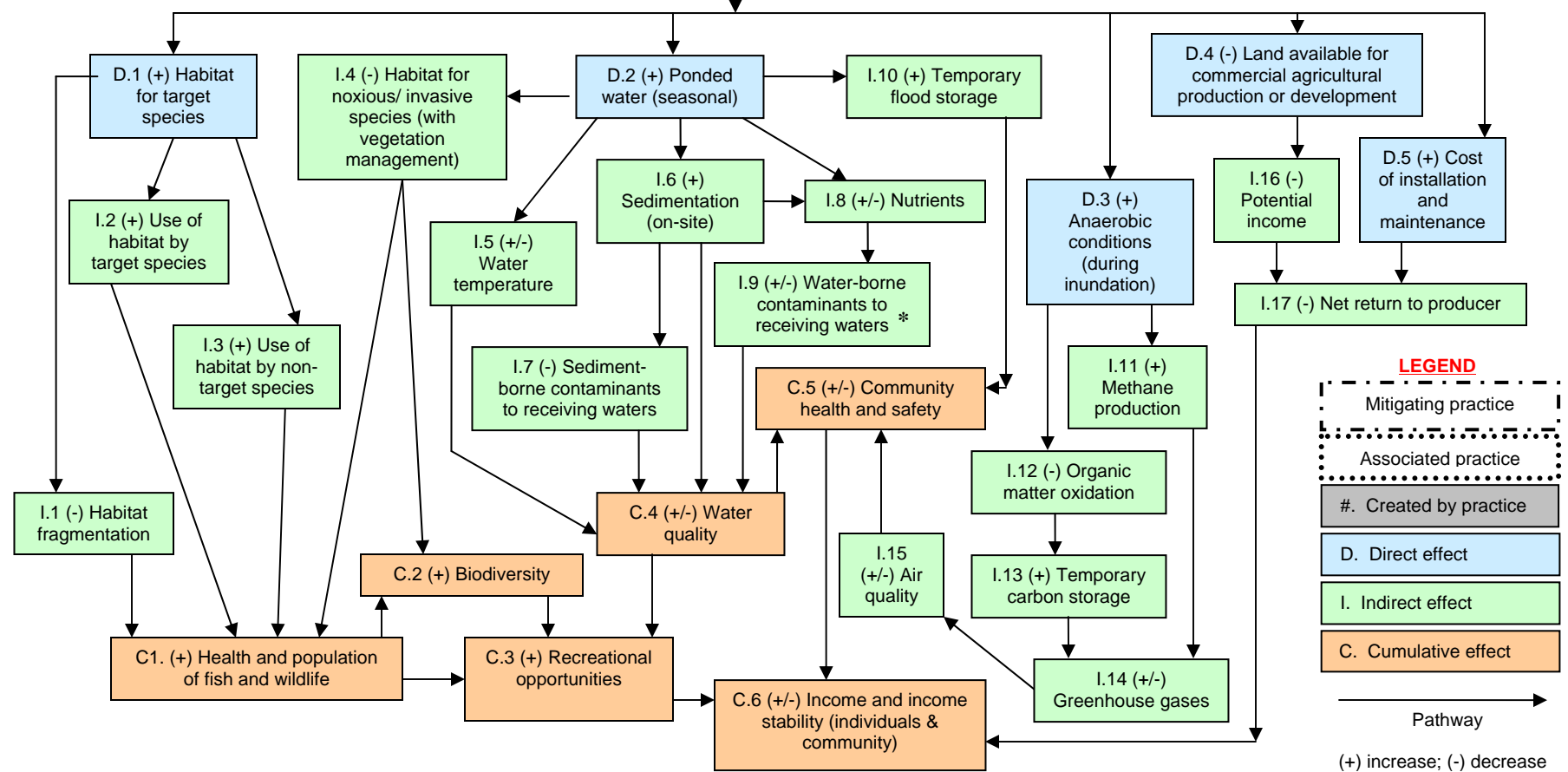
**Notes:**  
 Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.  
 \*Dependent upon proper management of water diversion, retention, and release.

*Initial Setting: Where habitat is needed for wildlife that require shallow water: (1) on lands where water can be impounded or regulated by diking excavating, ditching, and/or flooding; (2) on floodplains area that provide refuge habitats for native fish during high flow periods.*



## Shallow Water Development and Management (646)

1. Inundation of lands to provide habitat and refuge for fish and/or wildlife species that require shallow water for at least a part of their life cycle.



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# SOLID/LIQUID WASTE SEPARATION FACILITY

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 632



## SOLID/LIQUID WASTE SEPARATION FACILITY

A Solid/Liquid Waste Separation Facility is a filtration or screening device, settling tank, basin, or channel installed to separate a portion of solids from a liquid waste stream.

### PRACTICE INFORMATION

The purpose of this practice is to remove solids from the liquid waste stream as a primary treatment process and allow further treatment processes to be applied such as composting and anaerobic digestion. Partially digested feed may be used as a feed supplement or for bedding. Cleaner liquids may better facilitate irrigation techniques.

This practice is part of an agricultural comprehensive nutrient management plan (CNMP) to improve or protect water quality, air quality, livestock health, and meet operation

management objectives. The facility is strategically located in the barnyard area.

Required local, state or federal permits and approvals must be obtained prior to construction of this practice. Minimum separating distances from residences, property lines, water courses and wells must be considered.

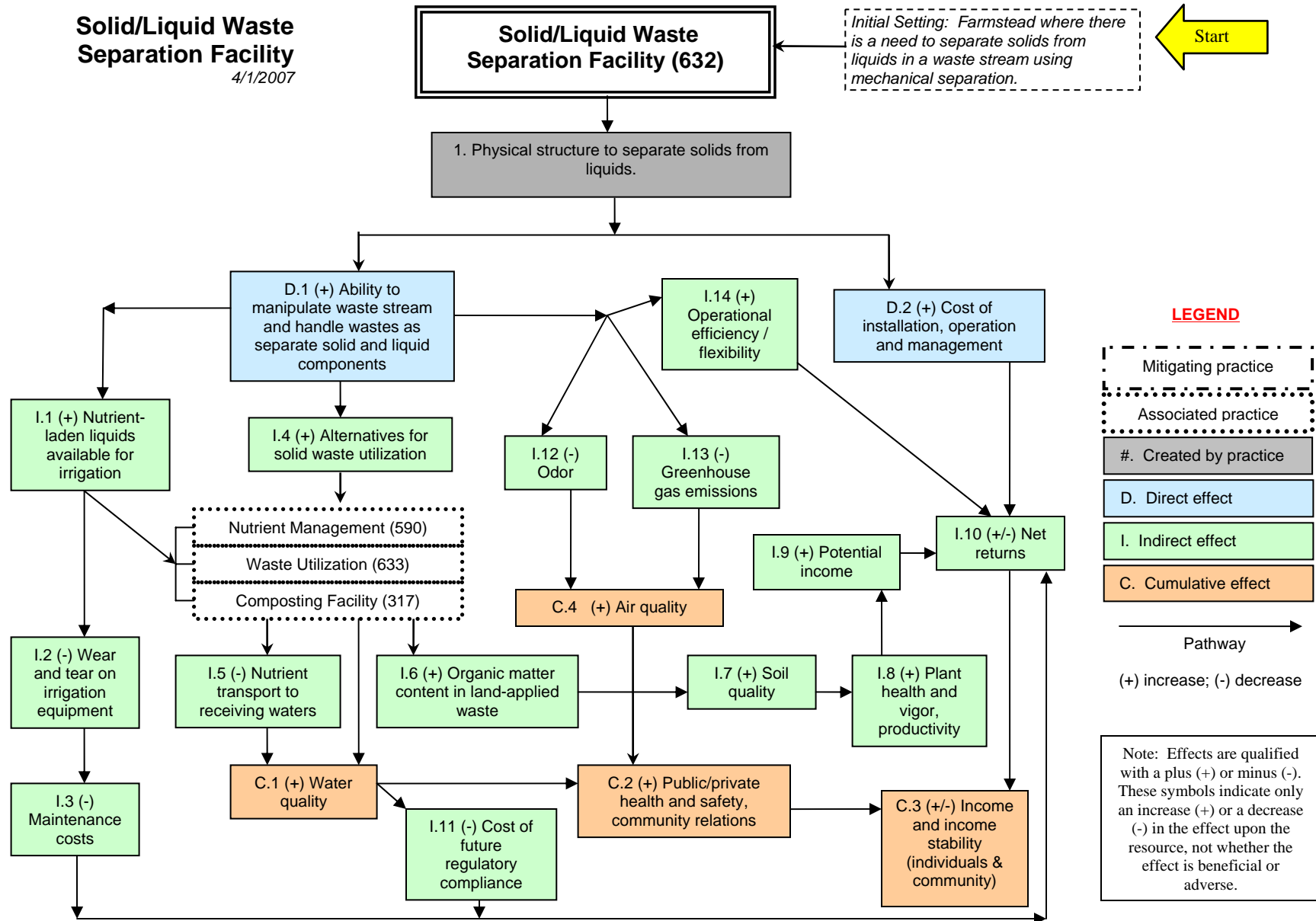
### COMMON ASSOCIATED PRACTICES

The practice is commonly used in a Conservation Management System as part of a CNMP with practices such as Nutrient Management, Composting Facility, Anaerobic Digester, Waste Storage Facility, Waste Utilization, Manure Transfer, and Waste Treatment.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Solid/Liquid Waste Separation Facility**  
4/1/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# SPRING DEVELOPMENT

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 574



### SPRING DEVELOPMENT

Spring Development is improving springs and/or seeps by excavating, cleaning, capping, or providing collection and storage facilities.

### PRACTICE INFORMATION

The purpose of Spring Development is to improve distribution of water for livestock, recreation and wildlife. The practice also applies to irrigation when the quantity and quality of water are suitable for irrigating crops. Spring development involves cleaning and/or enlarging the discharge opening of the spring. Other appurtenances might be needed such as a collection device to channel the water, and a spring box to provide a small amount of storage as well as a sediment trap and connection point for an outlet pipe(s). The outlet pipe(s) may then lead to a storage facility such as a trough or tank.

Prior to Spring Development an investigation of site conditions must be completed, including ecological functions and potential losses to these functions that may occur. Consideration should be given to how diversion of water from the spring may affect streamflow in the watershed and whether the spring can be developed to preserve conditions that support unique habitats in the landscape.

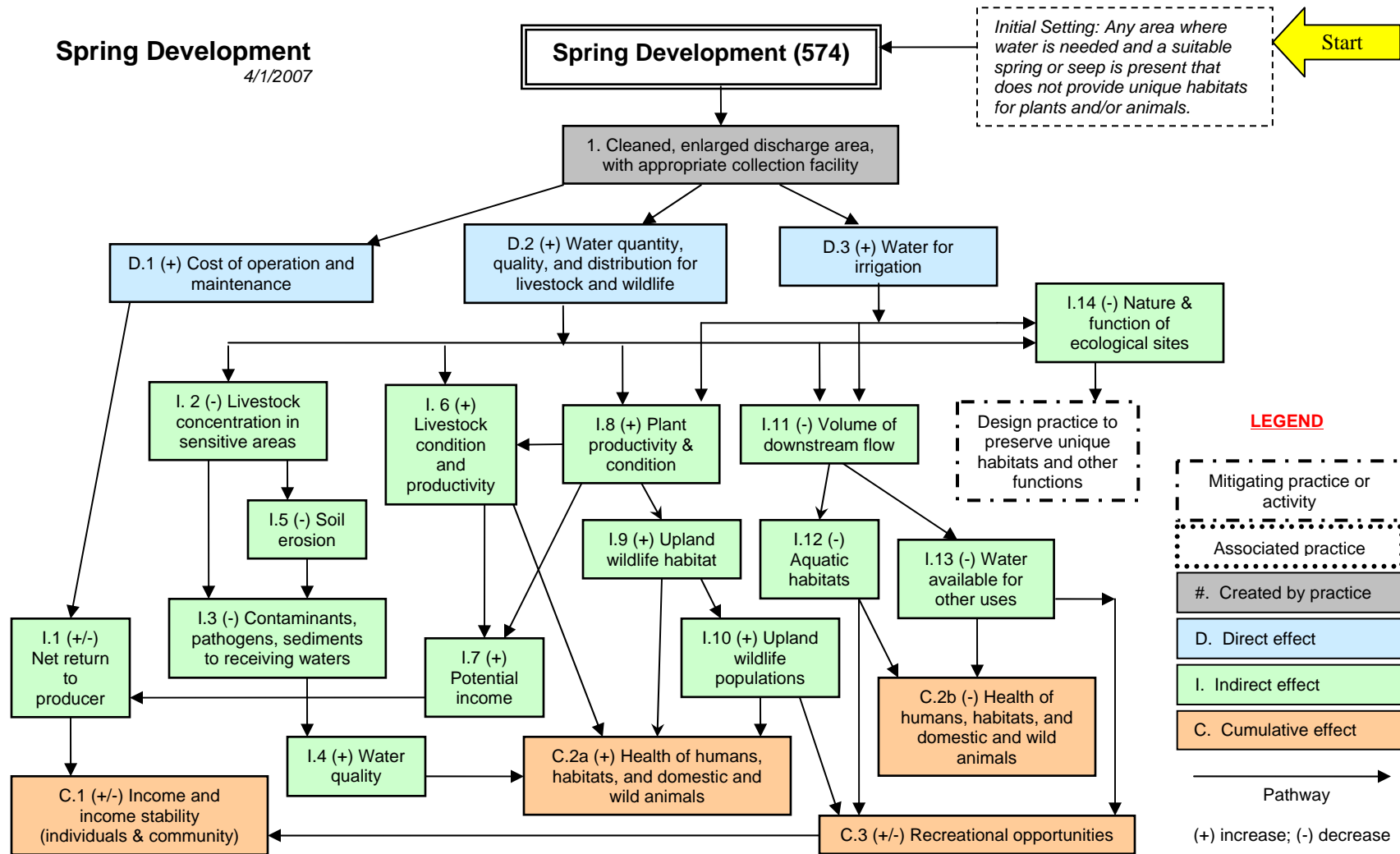
### COMMON ASSOCIATED PRACTICES

Spring Development is commonly used in a Conservation Management System with practices such as Watering Facility, Pipeline, Irrigation Water Management, and Critical Area Treatment.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Spring Development**  
4/1/2007



**LEGEND**

- - - - - Mitigating practice or activity
- · · · · Associated practice
- #. Created by practice
- D. Direct effect
- I. Indirect effect
- C. Cumulative effect
- Pathway
- (+) increase; (-) decrease

**Notes:**  
Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse. **The scope of the practice implementation and resulting effects are limited to those described in the “initial setting”.** If unique habitats supporting plant and animal species exist in a spring to be developed, particularly where there have been numerous disruptions of similar habitats across the landscape, impacts upon the habitat and options for development to preserve unique ecological functions may need to be evaluated in a site-specific EA. Various regulations and policies for the protection of wetlands should also be considered.

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# STREAMBANK AND SHORELINE PROTECTION

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 580



### STREAMBANK AND SHORELINE PROTECTION

Streambank and Shoreline Protection is the stabilization and protection of streambanks, constructed channels, and shorelines of lakes, reservoirs, or estuaries.

### PRACTICE INFORMATION

This practice applies to streambanks of natural or constructed channels and shorelines of lakes, reservoirs, or estuaries where they are susceptible to erosion.

The purpose(s) of this practice include:

- Preventing the loss of land or damage to land uses, or other facilities adjacent to the banks;
- Protecting historical, archeological, and traditional cultural properties, while accommodating the natural fluvial processes within the stream segment and shoreline reach;
- Maintaining the flow or storage capacity of the water body;
- Reducing the off-site or downstream effects of sediment resulting from bank erosion; and

- Improving or enhancing the stream corridor for fish and wildlife habitat, aesthetics, and recreation.

Various materials may be used for protection of streambanks and shorelines. An extensive site assessment must be conducted to determine, among other factors, if the causes of instability are local or systemic in nature. This information is used in selecting the most appropriate treatment to achieve the desired objectives. Treatments must be functional and stable for the design flow and sustainable for higher flow conditions.

### COMMON ASSOCIATED PRACTICES

Streambank and Shoreline Protection is commonly used in a Conservation Management System with various conservation practices, including Riparian Forest Buffer, Riparian Herbaceous Buffer, Critical Area Planting, Fish Passage, Pipeline, Fence, Use Exclusion, and Watering Facility.

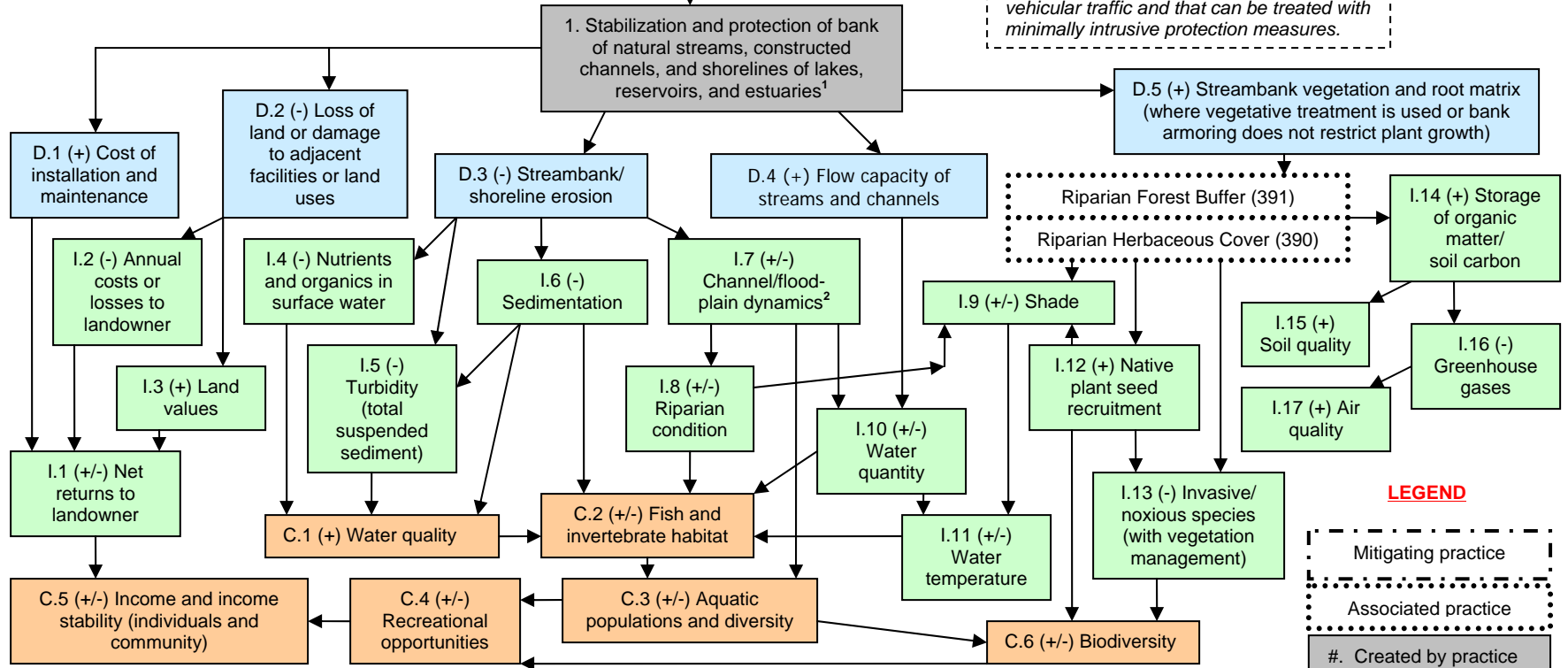
Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Streambank and Shoreline Protection**  
4/1/2007

**Streambank and Shoreline Protection (580)**

*Initial setting: Small, in length or cubic feet, areas of streambanks of natural or constructed channels and shorelines of lakes, reservoirs, or estuaries that are susceptible to erosion from the action of water, ice, debris, livestock, pedestrians, or vehicular traffic and that can be treated with minimally intrusive protection measures.*



**LEGEND**

- Mitigating practice
- Associated practice
- #. Created by practice
- D. Direct effect
- I. Indirect effect
- C. Cumulative effect

→ Pathway

(+) increase; (-) decrease

Notes:

Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

**The scope of the practice implementation and resulting effects are limited to those described in the “initial setting”. Projects involving long lengths of bank or shoreline, structural controls, substantial earth moving and/or fill, or desirited waters may need to be evaluated in a site-specific EA.**

<sup>1</sup> Additional information about potential protection measures and their impacts is available in the EIS for the Emergency Watershed Protection (EWP) Program.

<sup>2</sup> Conventional bank armoring (e.g., rip rap, gabions) may result in decreased (-) channel/floodplain dynamics, and associated impacts, while other less intrusive methods (e.g., stream barbs, stone toes with sloped, vegetated banks) may result in increased (+) channel/floodplain dynamics.

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.



# STREAM CROSSING

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 578



### STREAM CROSSING

A Stream Crossing is a stabilized area or structure constructed across a stream to provide a travel way for people, livestock, equipment, or vehicles.

### PRACTICE INFORMATION

This practice applies to all land uses where an intermittent or perennial watercourse exists and a ford, bridge, or culvert type crossing is desired for livestock, people, and /or equipment.

Stream crossings are located in areas where the streambed is stable or where grade control can be provided to create a stable condition. Avoid sites where channel grade or alignment changes abruptly, excessive seepage or

instability is evident, or where large tributaries enter the stream.

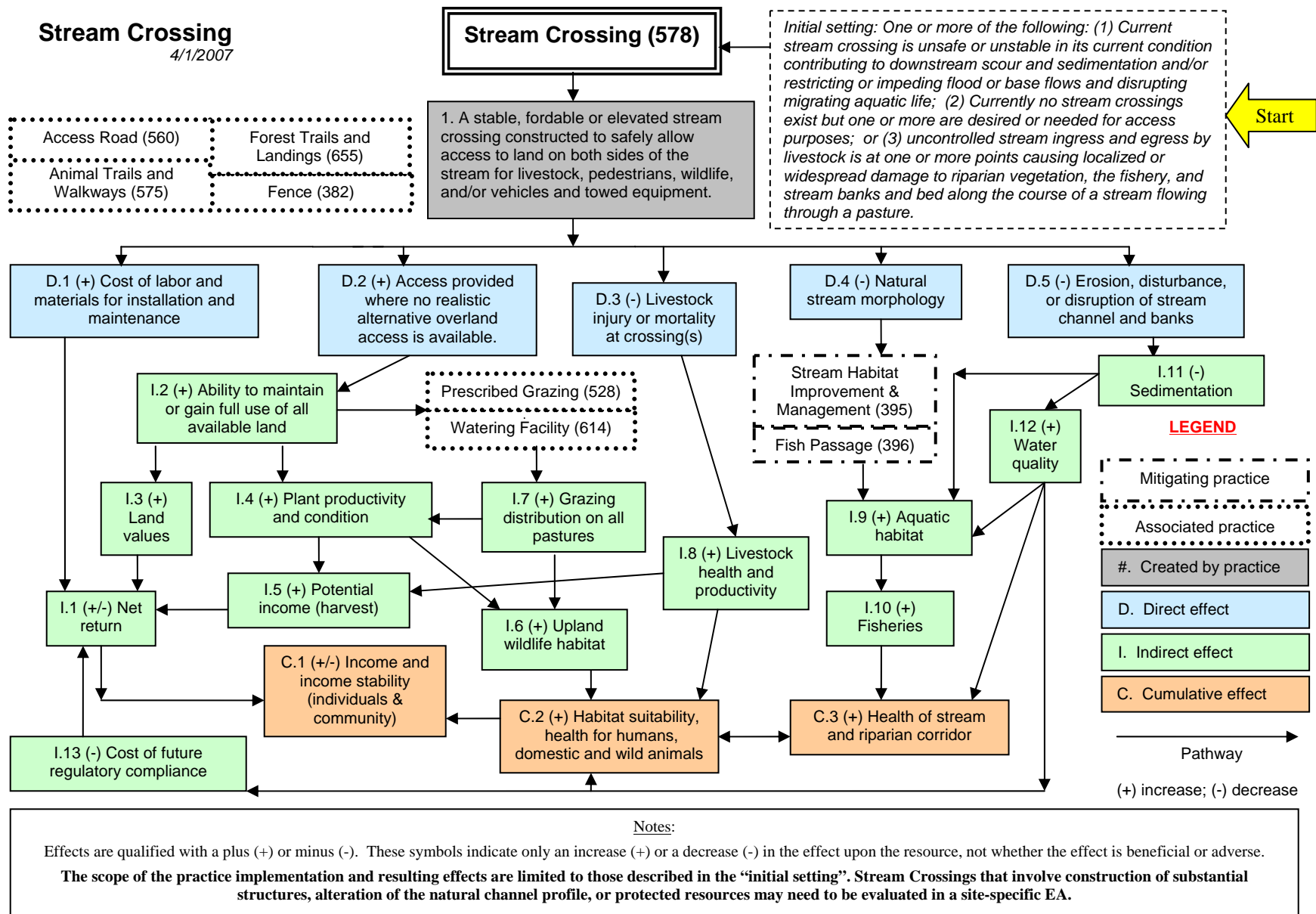
A properly designed and installed stream crossing provides a way for normal passage of water, fish and other aquatic animals within the channel during all seasons of the year.

### COMMON ASSOCIATED PRACTICES

Stream crossings are commonly planned in Conservation Management Systems with a variety of practices, including Critical Area Treatment, Access Road, Forest Trails and Landings, Animal Trails and Walkways, Prescribed Grazing, Watering Facilities, Fencing, and Fish Passages.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

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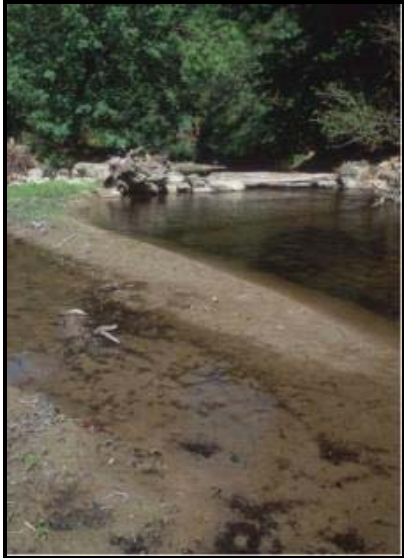


The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# STREAM HABITAT IMPROVEMENT AND MANAGEMENT

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 395



## STREAM HABITAT IMPROVEMENT AND MANAGEMENT

Stream Habitat Improvement and Management is the maintenance, improvement, and restoration of physical, chemical, and biological functions of a stream.

### PRACTICE INFORMATION

This practice applies to streams and their adjoining backwaters, floodplains, associated wetlands and riparian areas where geomorphic conditions or habitat deficiencies limit survival, growth, diversity, and/or reproduction of aquatic species.

The purposes of this practice include providing:

- Suitable habitat for desired aquatic species and diverse aquatic communities; and
- Stream channel and associated riparian conditions that maintain ecological processes and connections of diverse stream habitat types important to aquatic species.

Planned stream habitat improvements will be based on an assessment of watershed, stream and riparian conditions. Riparian corridors adjoining the stream must be managed as well as the in-stream habitat. Establishment of an ecologically self-sustaining stream-riparian system consistent with the watershed conditions and geomorphic setting should be emphasized.

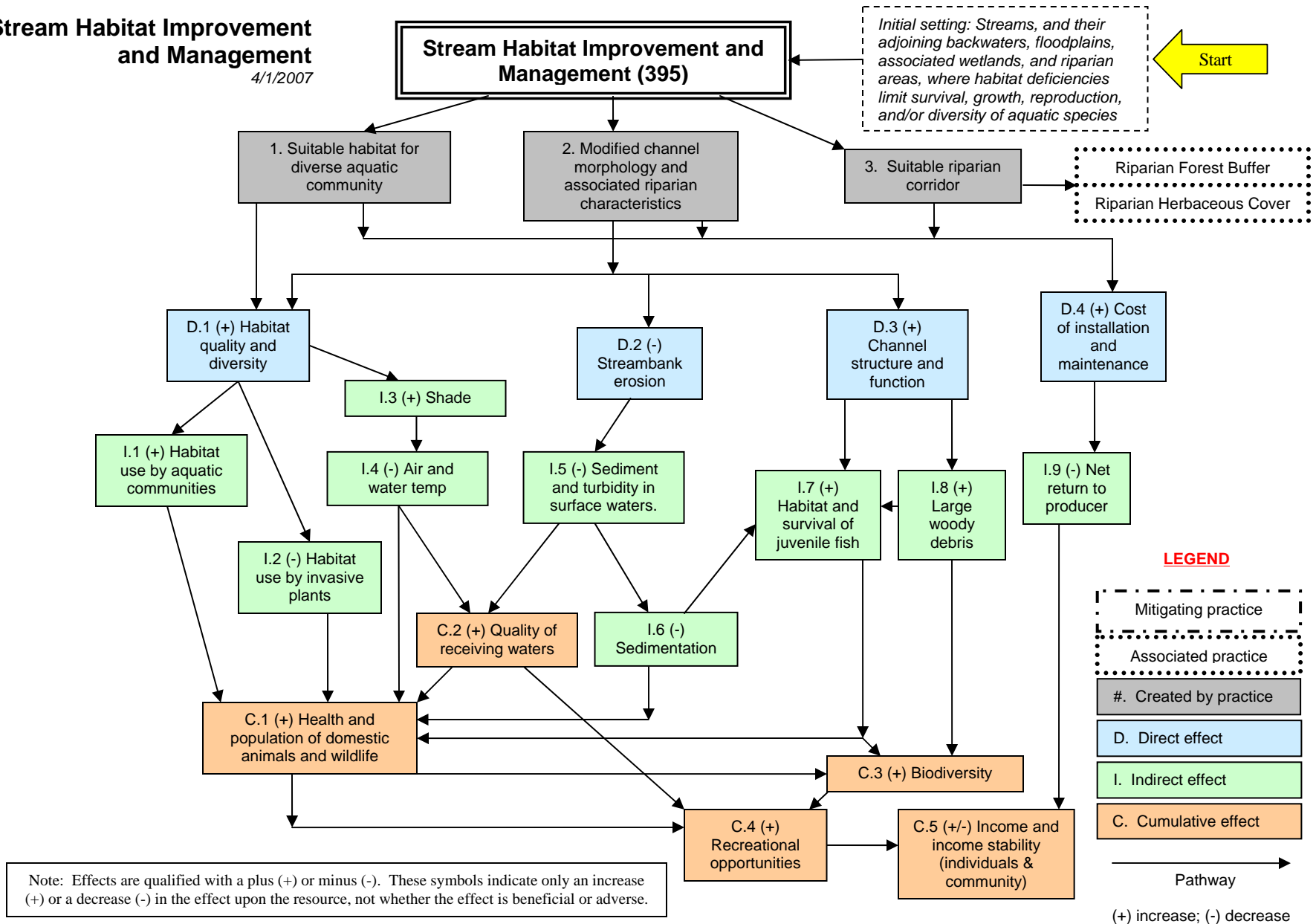
### COMMON ASSOCIATED PRACTICES

Stream Habitat Improvement and Management is commonly used in a Conservation Management System with practices such as Riparian Forest Buffer, Riparian Herbaceous Cover, Fish Passage, Streambank and Shoreline Protection, Animal Trails and Walkways, Fence, and Use Exclusion.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Stream Habitat Improvement and Management**  
4/1/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# STRIPCROPPING

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 585



## STRIPCROPPING

Stripcropping is growing crops in a systematic arrangement of strips in a field to reduce soil erosion, reduce particulate emissions into the air and improve water quality.

## PRACTICE INFORMATION

This practice is used on cropland and certain recreation and wildlife lands where field crops are grown. The crops are arranged so that a strip of grass or close-growing crop is alternated with a clean tilled strip or a strip with less protective cover. Generally the strip widths are equal across the field. On sloping land where sheet and rill erosion are a concern, the strips are laid out on the contour or across the general slope. Where wind erosion is a concern, the strips are laid out as close to perpendicular as possible to the prevailing erosive wind direction.

Stripcropping is a multi-purpose practice that has one or more of the following effects:

1. Reduced sheet and rill erosion;
2. Reduced wind erosion;
3. Increased infiltration, available soil water;
4. Reduced dust emissions into the air;
5. Improved water quality;
6. Improved visual quality of the landscape;
7. Improved wildlife habitat.

## COMMON ASSOCIATED PRACTICES

Stripcropping is commonly planned as part of Conservation Management System with a Conservation Crop Rotation, Nutrient Management, Pest Management, Diversion, Grassed Waterway, Underground Outlet, and other conservation practices

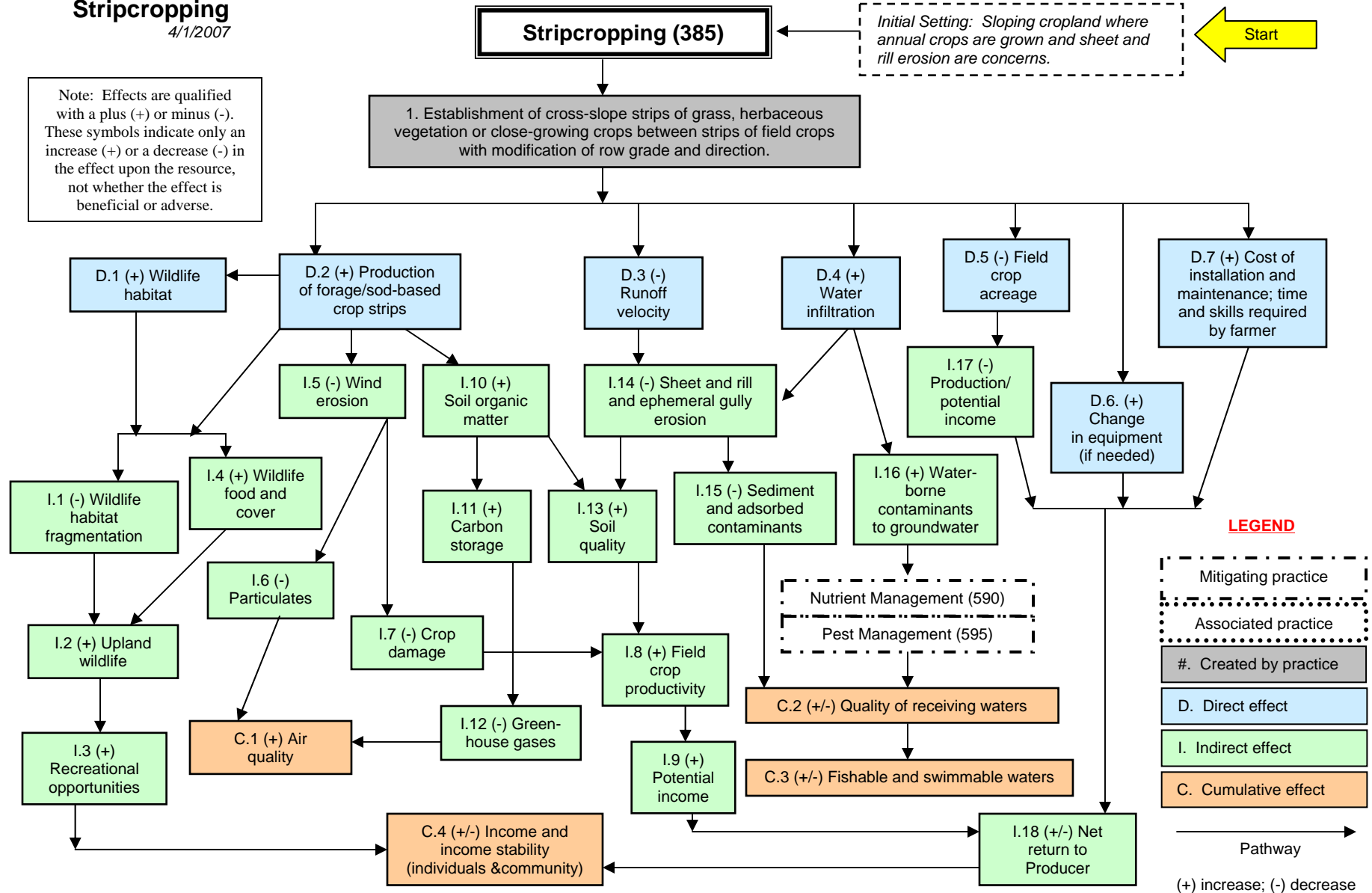
Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Stripcropping**  
4/1/2007

Initial Setting: Sloping cropland where annual crops are grown and sheet and rill erosion are concerns. **Start** →

Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.



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# STRUCTURE FOR WATER CONTROL

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 587



## STRUCTURE FOR WATER CONTROL

A Structure for Water Control is placed in irrigation, drainage, or other water management systems to convey water, control the direction or rate of flow, or maintain water surface elevation.

## PRACTICE INFORMATION

Structures for water control are used to control the stage, discharge, distribution, delivery, or direction of flow of water in open channels or water use areas. They are also used for water quality control, such as sediment reduction or temperature regulation, or for protection of fish and wildlife and other natural resources.

Water control structures are used as outlets on cranberry bogs and irrigation pits to manage the level of water for harvesting, winter flooding, trash removal, pest control or other purposes. When used to control the division of chemigation water, this practice will reduce the amount of suspended chemicals attached to organic material and soil particles entering surface waters. It allows for the

biological treatment of dissolved chemicals when water is detained in the system for the required holding period. Chemicals that remain in the system may be bound up in the soil organic matter; however, soils that are low in organic matter may have a tendency to allow for the leaching of dissolved chemicals into the ground water.

## COMMON ASSOCIATED PRACTICES

The practice is commonly used in Conservation Management Systems with Dikes, Open Channels, Land Smoothing, Shallow Water Management for Wildlife, Wetland Wildlife Habitat Management, Wetland Enhancement, or Wetland Restoration.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowners and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

### Structure for Water Control

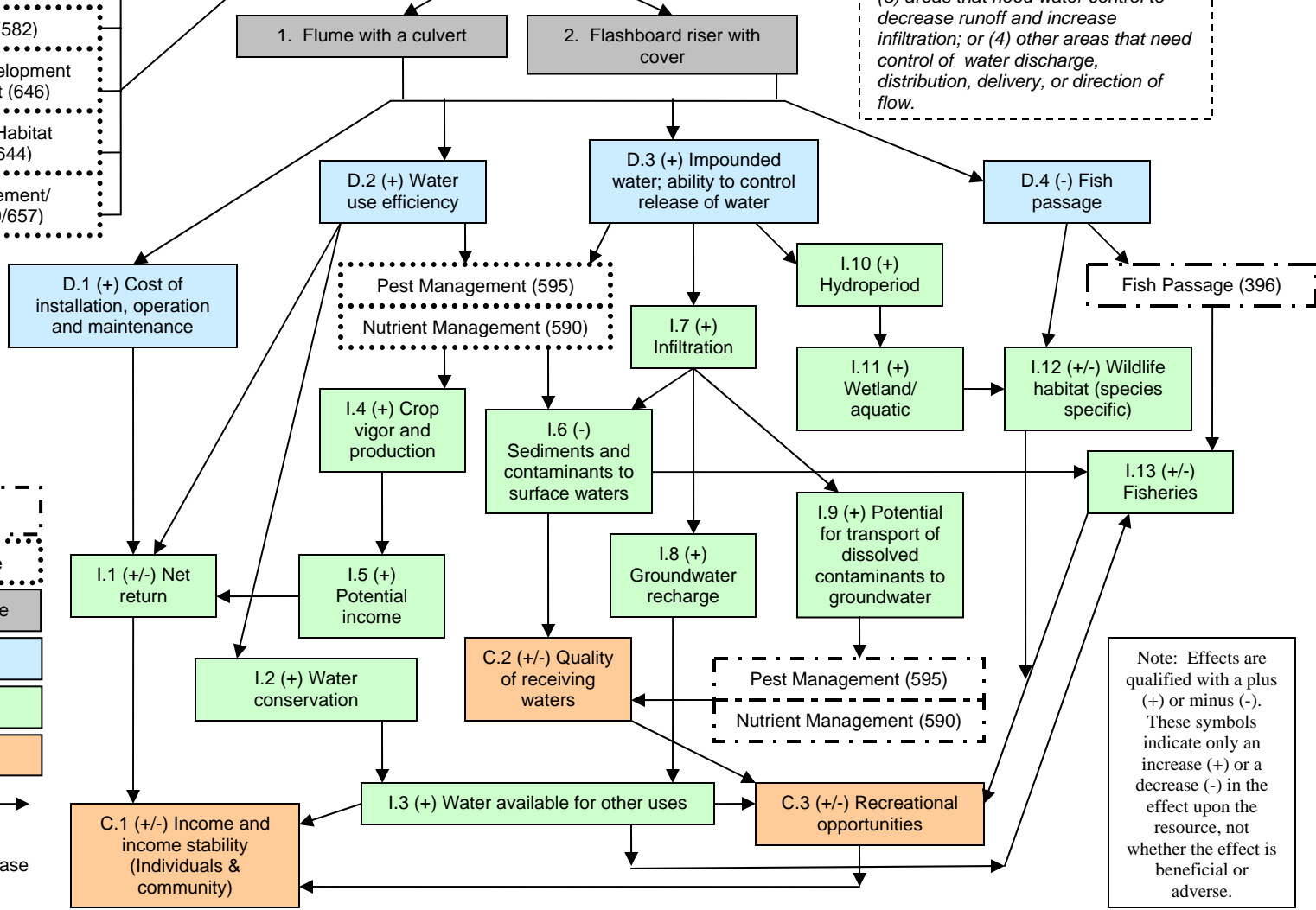
4/1/2007

## Structure for Water Control (587)

Initial setting: (1) Irrigated/chemigated wetland/bog (cropland) where control of water levels is needed; (2) areas where it is desirable to provide shallow water areas to be managed for wildlife; (3) areas that need water control to decrease runoff and increase infiltration; or (4) other areas that need control of water discharge, distribution, delivery, or direction of flow.



- Dike (356)
- Open Channel (582)
- Shallow Water Development and Management (646)
- Wetland Wildlife Habitat Management (644)
- Wetland Enhancement/Restoration (659/657)



**LEGEND**

- - - - - Mitigating practice
- ..... Associated practice
- #. Created by practice
- D. Direct effect
- I. Indirect effect
- C. Cumulative effect
- Pathway
- (+) increase; (-) decrease

Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.

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# SUBSURFACE DRAIN

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 606



### SUBSURFACE DRAIN

A subsurface drain is a conduit, such as corrugated plastic tubing, tile, or pipe, installed beneath the ground surface to collect and/or convey drainage water.

### PRACTICE INFORMATION

The purpose of a subsurface drain is to:

- Improve the environment for vegetation;
- Reduce erosion;
- Improve water quality;
- Regulate ground water and water table flows;
- Collect ground water for beneficial uses;
- Remove water from heavy use areas such as recreation areas, or around buildings; and/or
- Regulate water to control health hazards caused by pests.

Subsurface drainage is used in areas having a high water table where the benefits of lowering the water level are worth the expense. The practice also applies to areas that will benefit from controlling ground water and/or surface runoff. The soil must meet certain suitability requirements and an adequate outlet must be available to assure the drain will function properly.

### COMMON ASSOCIATED PRACTICES

A Subsurface Drain is commonly applied as part of a Conservation Management System with Pest Management, Nutrient Management, Surface Drain (Main or Lateral), Underground Outlet, Critical Area Treatment, Drainage Water Management, and other conservation practices.

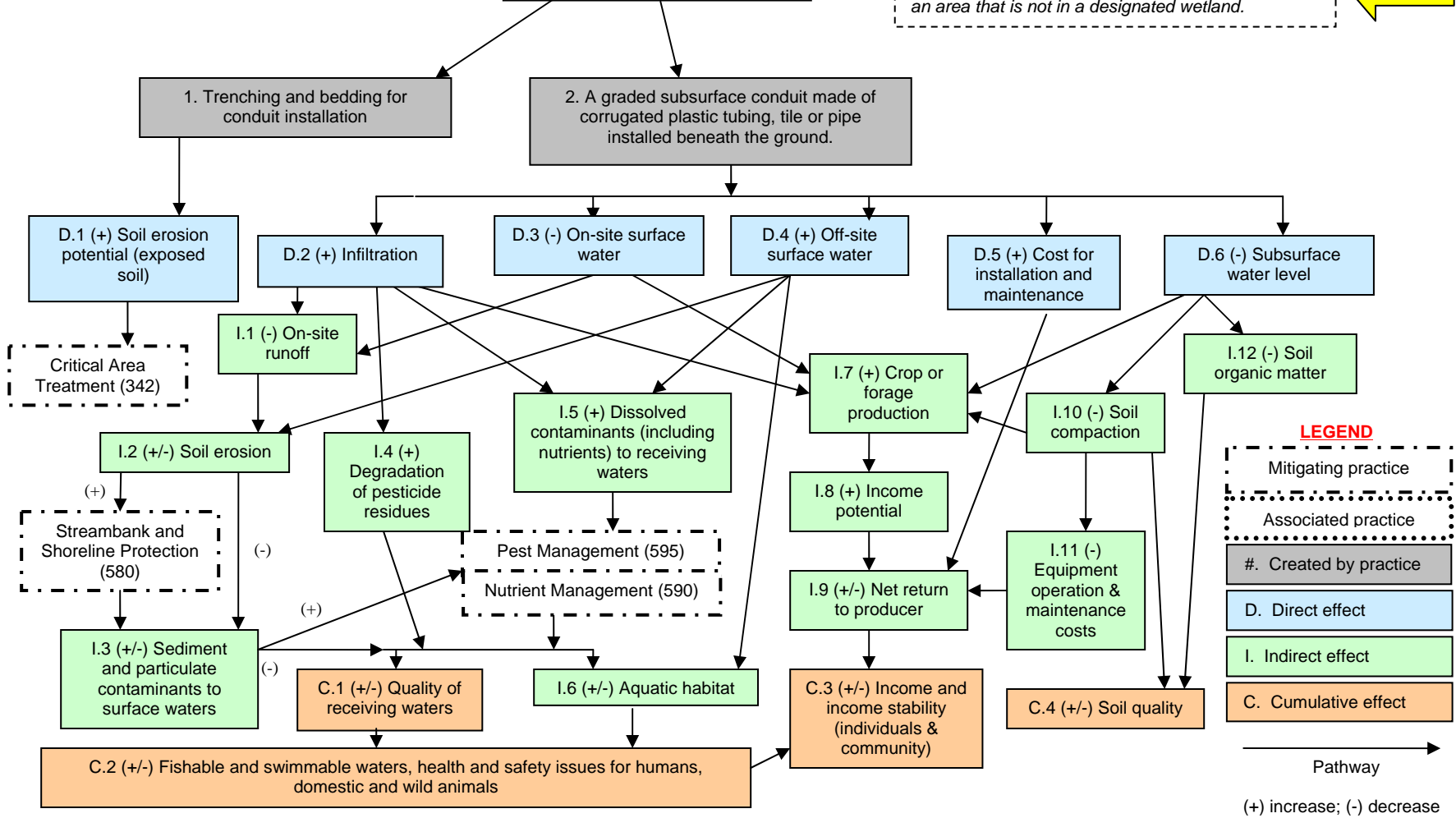
Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Subsurface Drain**  
4/1/2007

**Subsurface Drain (606)**

Initial setting: High water table limiting crop or forage production or otherwise restricting access or use of an area that is not in a designated wetland.



**Notes:**  
Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse. **The scope of the practice implementation and resulting effects are limited to those described in the "initial setting". Any drainage practice has the potential for impacts to receiving aquifers and surface waters. Large drainage projects may need to be evaluated in a site-specific EA.**

The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# **SURFACE DRAINAGE, FIELD DITCH**

## **PRACTICE INTRODUCTION**

USDA, Natural Resources Conservation Service –Practice Code 607



### **SURFACE DRAINAGE, FIELD DITCH**

A Field Ditch installed for surface drainage is a graded ditch for collecting excess surface or subsurface water in a field.

#### **PRACTICE INFORMATION**

The purpose of this practice is to:

- Drain surface depressions;
- Collect or intercept excess surface water, such as sheet flow from natural and graded land surfaces or channel flow from furrows, and carry it to an outlet; or
- Collect excess subsurface water and carry it to an outlet.

Applicable sites are flat or nearly flat and have soils that are slowly permeable or otherwise collect water. Adequate outlets for the

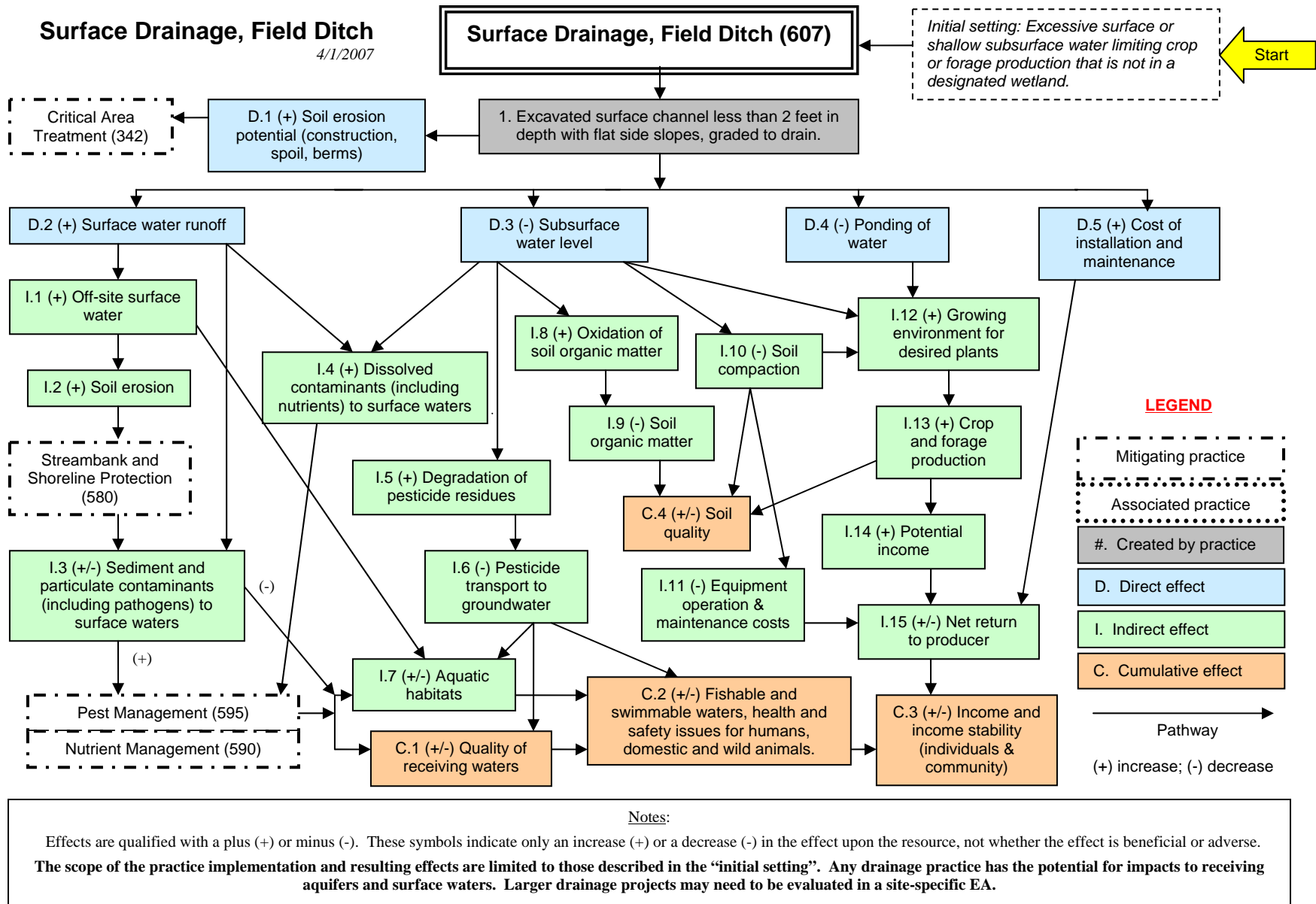
disposal of drainage waters are required. This practice applies to small drainage ditches within a field, but not to main or lateral ditches, or grassed waterways. Compliance with Federal, State, and local laws and regulations is required.

#### **COMMON ASSOCIATED PRACTICES**

Drainage field ditches are planned as integral parts of a drainage system for the field served. They are commonly used in Conservation Management Systems with Surface Drainage, Main or Lateral, Nutrient Management, Pest Management, Diversions, and other conservation practices.

Refer to the practice standard found in the local Field Office Technical Guide and associated job sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.



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# **SURFACE DRAINAGE, MAIN OR LATERAL**

## **PRACTICE INTRODUCTION**

USDA, Natural Resources Conservation Service - Practice Code 608



### **SURFACE DRAINAGE, MAIN OR LATERAL**

A Main or Lateral is an open drainage ditch constructed to a designed size and grade that receives drainage waters from other drainage structures.

#### **PRACTICE INFORMATION**

This practice is used in conjunction with Surface Drainage, Field Ditch, or Subsurface Drain for conveyance and disposal of excess surface and subsurface water and control of groundwater levels.

Sites for this practice are suitable for agriculture and have an outlet for the drainage water by either gravity or pumping. Mains and

laterals are located and designed to serve as integral parts of a surface or sub-surface drainage system that meets conservation and land use needs.

#### **COMMON ASSOCIATED PRACTICES**

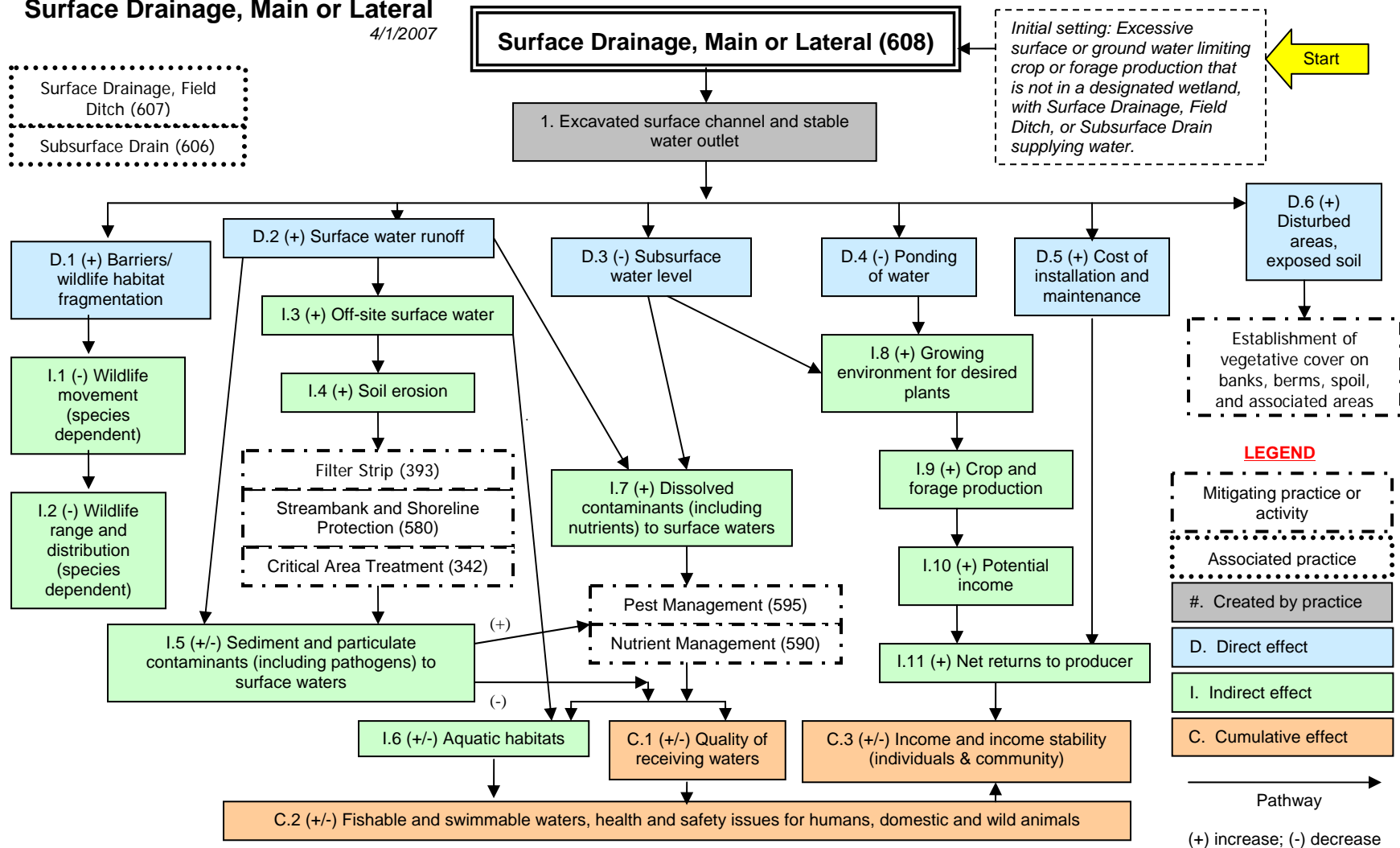
Other practices commonly used in Conservation Management Systems with Mains or Laterals include Surface Drainage, Field Ditch, Subsurface Drain, Channel Vegetation, Nutrient Management, Pest Management, Critical Area Planting, and other conservation practices.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

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# Surface Drainage, Main or Lateral

4/1/2007



**Notes:**

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The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# TREE/SHRUB PRUNING

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 660



Photos credited to Forestry Images: Forest Health, Natural Resources & Silviculture Images <http://www.forestryimages.org/>

### TREE/SHRUB PRUNING

Tree or Shrub Pruning is the removal of all or parts of selected branches from trees and shrubs.

#### PRACTICE INFORMATION

The purpose of the practice is to improve the function, health, appearance, and quality of the plants. Safety is also a reason for pruning trees and shrubs. This practice applies to crop trees of high value as well as trees planted for aesthetics, wildlife, recreation, windbreaks, and other purposes.

The timing of the pruning operation should be appropriate to the growth characteristics of the plants. In addition, nesting and breeding requirements of birds should be considered.

Other wildlife species may or may not be adversely affected by pruning. In urban areas,

special attention must be given to safety precautions.

#### COMMON ASSOCIATED PRACTICES

Tree/Shrub Pruning is commonly used in a Conservation Management System with the following practices:

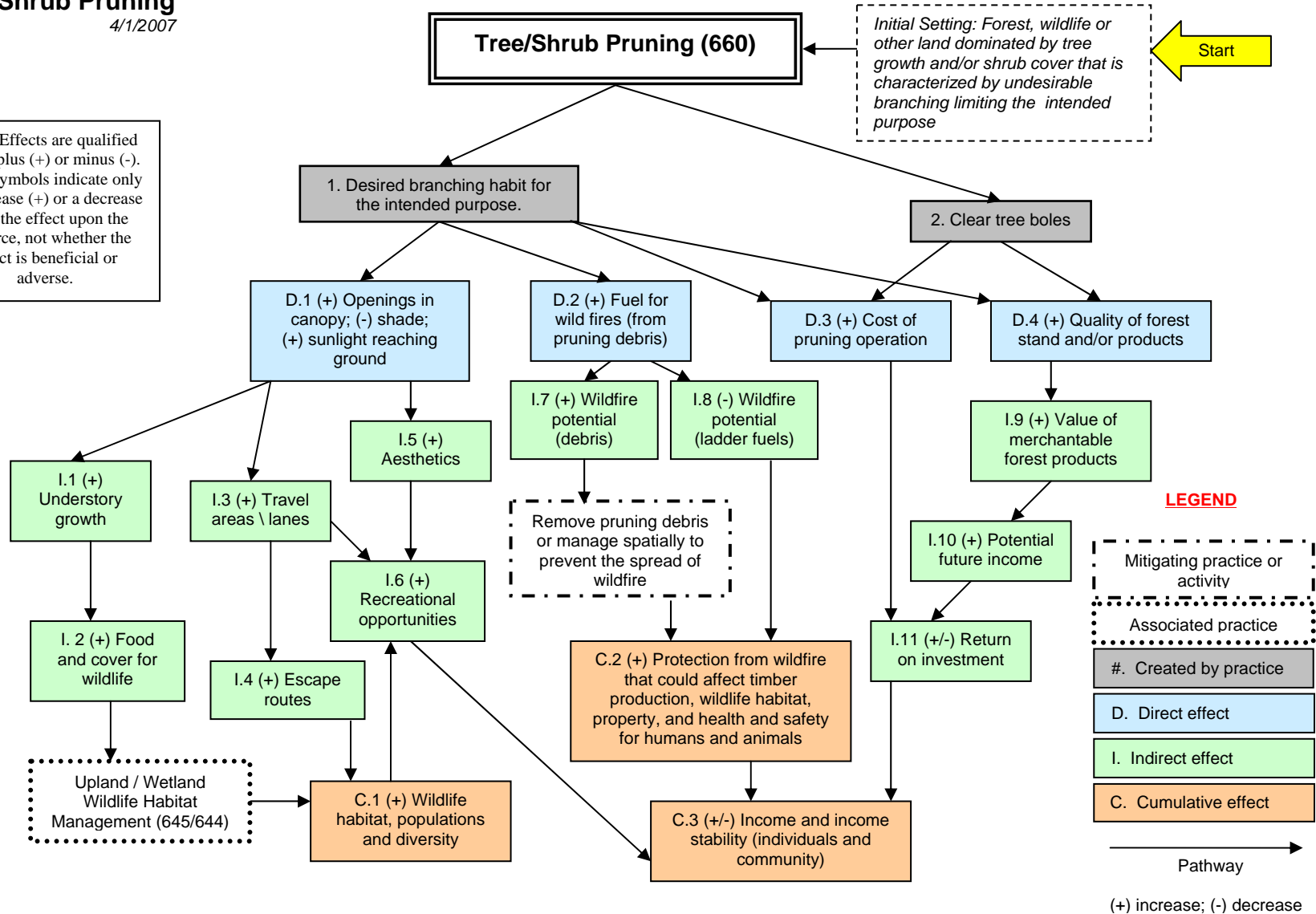
- Forest Stand Improvement,
- Forest Trails and Landings,
- Upland Wildlife Habitat Management,
- Wetland Wildlife Habitat Improvement,
- Early Successional Habitat Development and Management.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Tree/Shrub Pruning (660)**  
4/1/2007

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# UNDERGROUND OUTLET

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service –Practice Code 620



### UNDERGROUND OUTLET

An underground outlet is a conduit installed beneath the surface of the ground to collect surface water and convey it to a suitable outlet.

### PRACTICE INFORMATION

The purpose of the practice is to dispose of excess water from structures such as terraces, diversions, and surface drains without causing damage by erosion or flooding. An underground outlet can be installed when a buried outlet is needed or when surface outlets are impractical because of stability problems, climatic conditions, land use, farmability, or equipment traffic.

The outlet must be sufficiently stable for all anticipated flow conditions and designed for the maximum anticipated water surface. Outlets should not be placed in areas of active erosion.

### COMMON ASSOCIATED PRACTICES

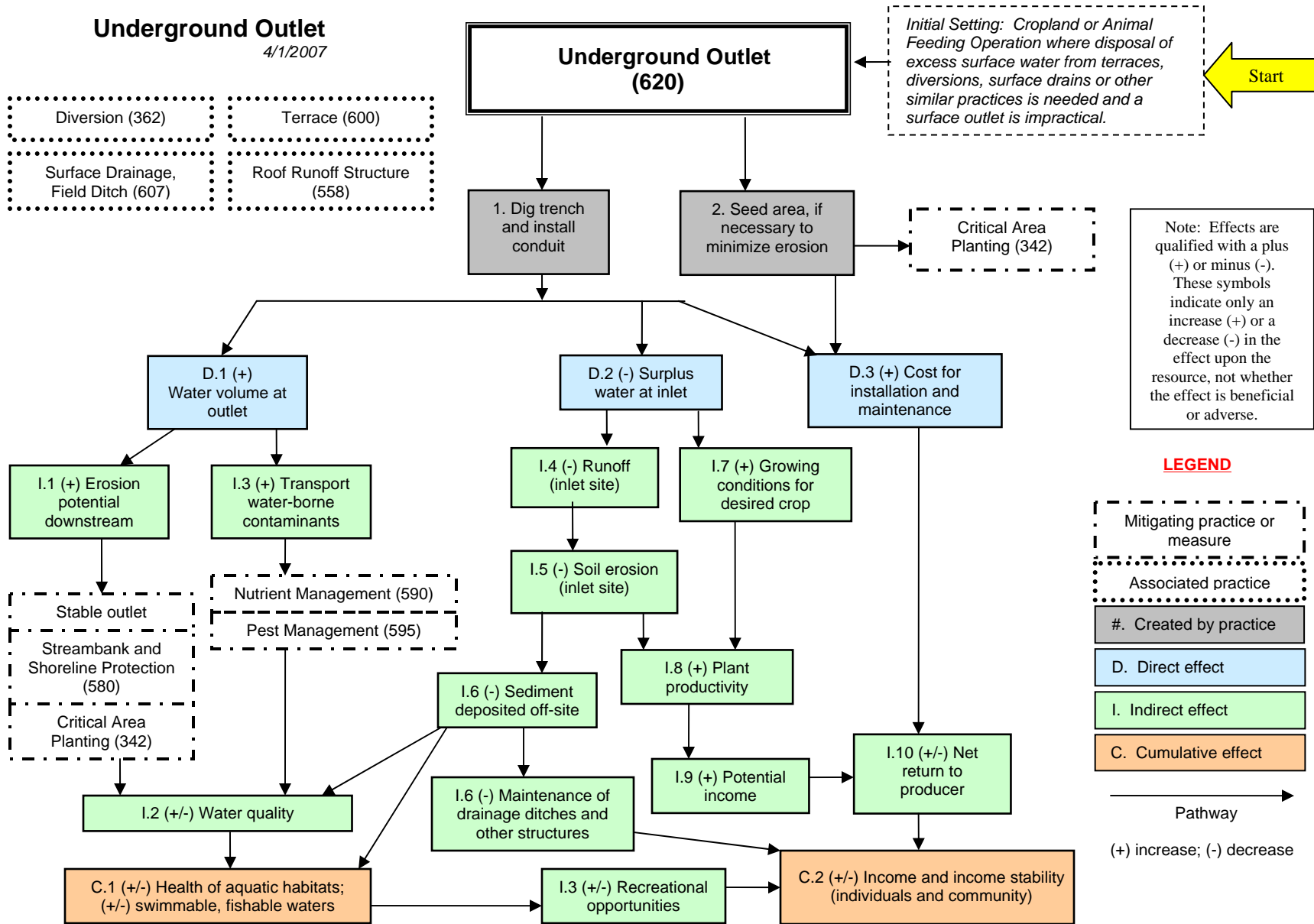
Underground outlets are commonly used in Conservation Management Systems with Filter Strips, Diversions, Surface Drains (Field Ditch and Main or Lateral), Roof Runoff Structure, Terraces, Nutrient Management, Pest Management, and other conservation practices.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications for further information.

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### Underground Outlet

4/1/2007



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# UPLAND WILDLIFE HABITAT MANAGEMENT

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 645



### UPLAND WILDLIFE HABITAT MANAGEMENT

Upland Wildlife Habitat Management is creating, maintaining, or enhancing areas to provide food, cover and habitat connectivity for upland wildlife.

#### PRACTICE INFORMATION

The population dynamics of wildlife are highly dependent on food, water, and cover. The purpose of this practice is to treat habitat concerns identified during the NRCS conservation planning process to enable movement, or provide shelter, cover and food to sustain wild animals that inhabit uplands during a portion of their life cycle. The practice applies to all areas where a need to improve upland wildlife habitat has been identified.

Upland Wildlife Habitat Management usually involves the establishment or manipulation of vegetative communities. Common activities include planting permanent or seasonal vegetation, disking strips within existing

vegetation, mowing, burning, and herbicide treatments.

#### COMMON ASSOCIATED PRACTICES

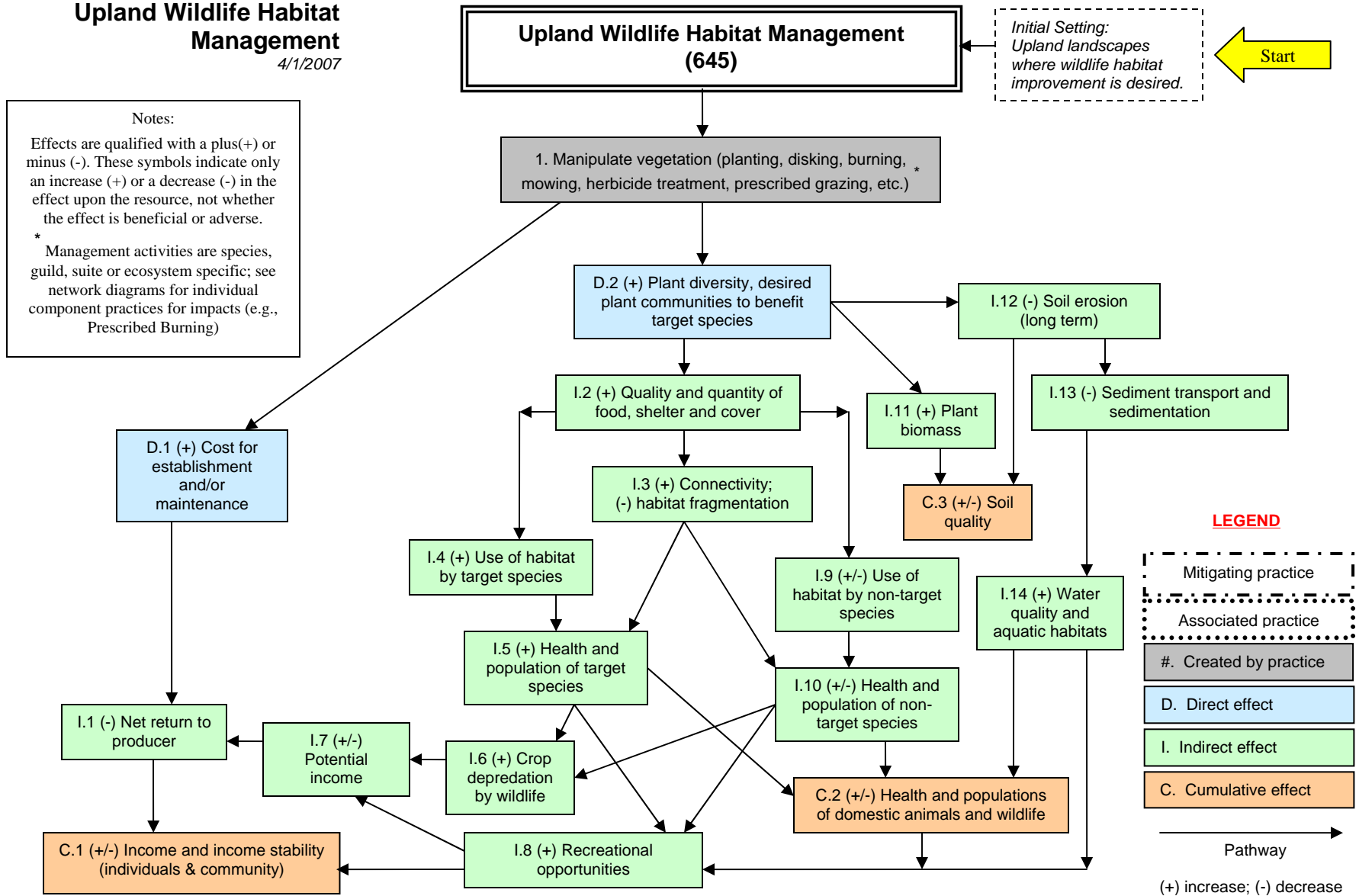
Upland Wildlife Habitat Management is commonly used in Conservation Management Systems with one or more of the following component practices:

- Prescribed Burning,
- Prescribed Grazing,
- Brush Management,
- Tree/Shrub Establishment,
- Forest Stand Improvement,
- Early Successional Habitat Development / Management,
- Use Exclusion,
- Field Border.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

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**Upland Wildlife Habitat Management**  
4/1/2007



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# WASTE TREATMENT

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 629



### WASTE TREATMENT

Waste Treatment is the mechanical, chemical, or biological treatment of agricultural waste.

### PRACTICE INFORMATION

The purpose of the practice is to change the form or composition of waste as part of an agricultural waste management system. The composition or form of the waste is modified to provide additional utilization alternatives. This includes: the separation of liquids and solids (e.g., milk room waste) for further processing or for effective transport and subsequent utilization or treatment in a subsurface drain field; the dilution of raw agricultural waste (e.g., silage leachate), which contains excess or unavailable nutrients for land application based on crop utilization requirements. Value added by-

products can be produced to offset treatment costs. Planned mitigating practices include Pest Management, Nutrient Management, and Waste Utilization.

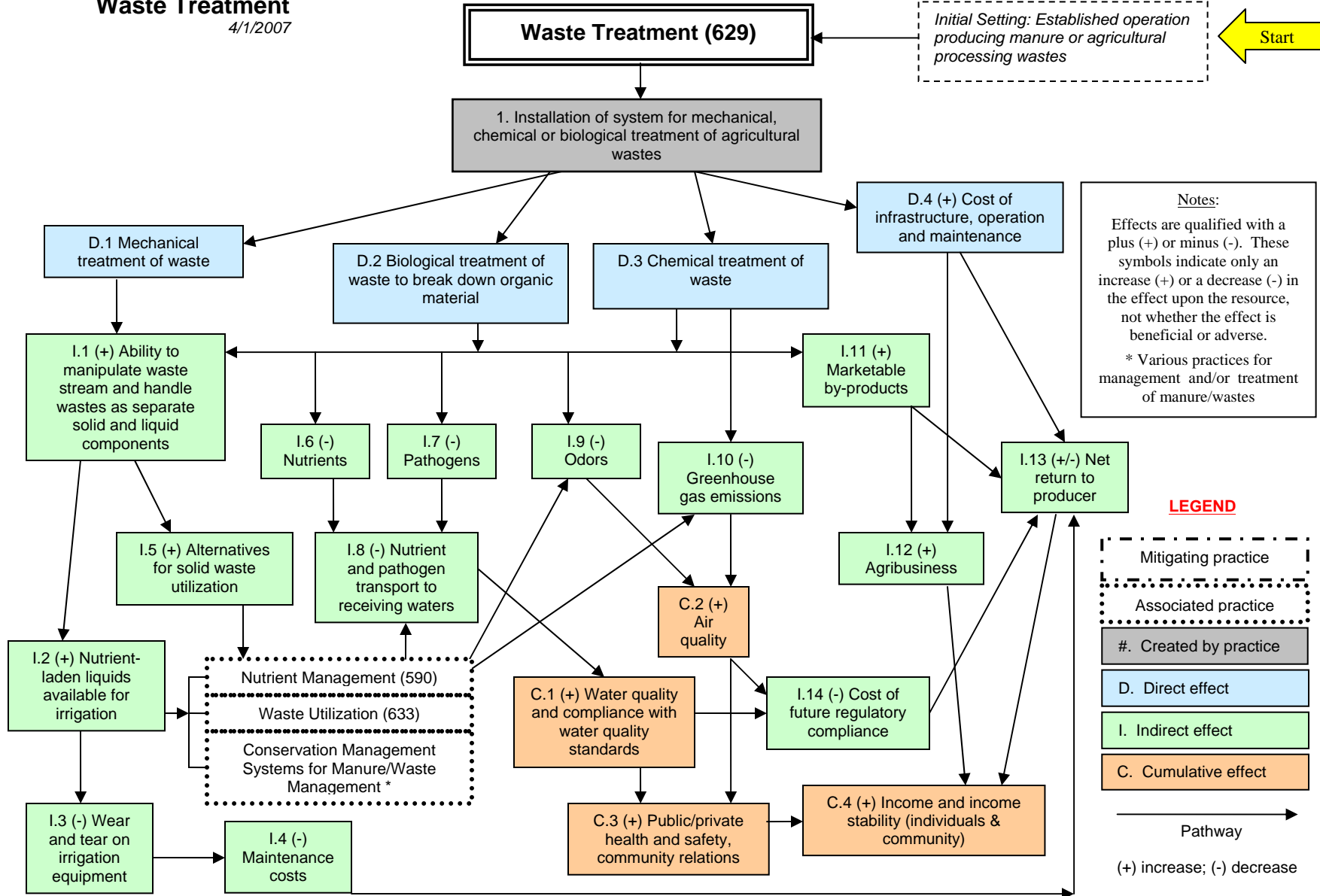
### COMMON ASSOCIATED PRACTICES

The practice is commonly used in a Conservation Management System with the following practices: Waste Storage Facility, Waste Treatment Lagoon, Manure Transfer, Subsurface Drain, Heavy Use Area and Wastewater Treatment Strip.

Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

The following page identifies the effects expected to occur when this practice is applied. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

**Waste Treatment**  
4/1/2007



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# WASTEWATER TREATMENT STRIP

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service –Practice Code 635



### WASTEWATER TREATMENT STRIP

A Wastewater Treatment Strip is a component of an agricultural waste management system consisting of a strip or area of herbaceous vegetation for the treatment of contaminated runoff.

### PRACTICE INFORMATION

This practice is used to improve water quality by reducing loading of nutrients, organics, pathogens, and other contaminants associated with animal manure and other wastes and wastewater by treating agricultural wastewater and runoff from livestock holding areas. More than one treatment strip may be needed.

In order for the wastewater treatment strip to work properly, discharge to and through it must be sheet flow. Some means, such as a ditch, curb, or gated pipe, is provided to disperse concentrated flow and ensure sheet

flow across the width of the treatment strip. Permanent herbaceous vegetation, consisting of a single species or a mixture of grasses, legumes and/or other forbs adapted to the soil and climate, is established in the treatment strip. The Wastewater Treatment Strip must receive regular maintenance for it to operate as planned.

### COMMON ASSOCIATED PRACTICES

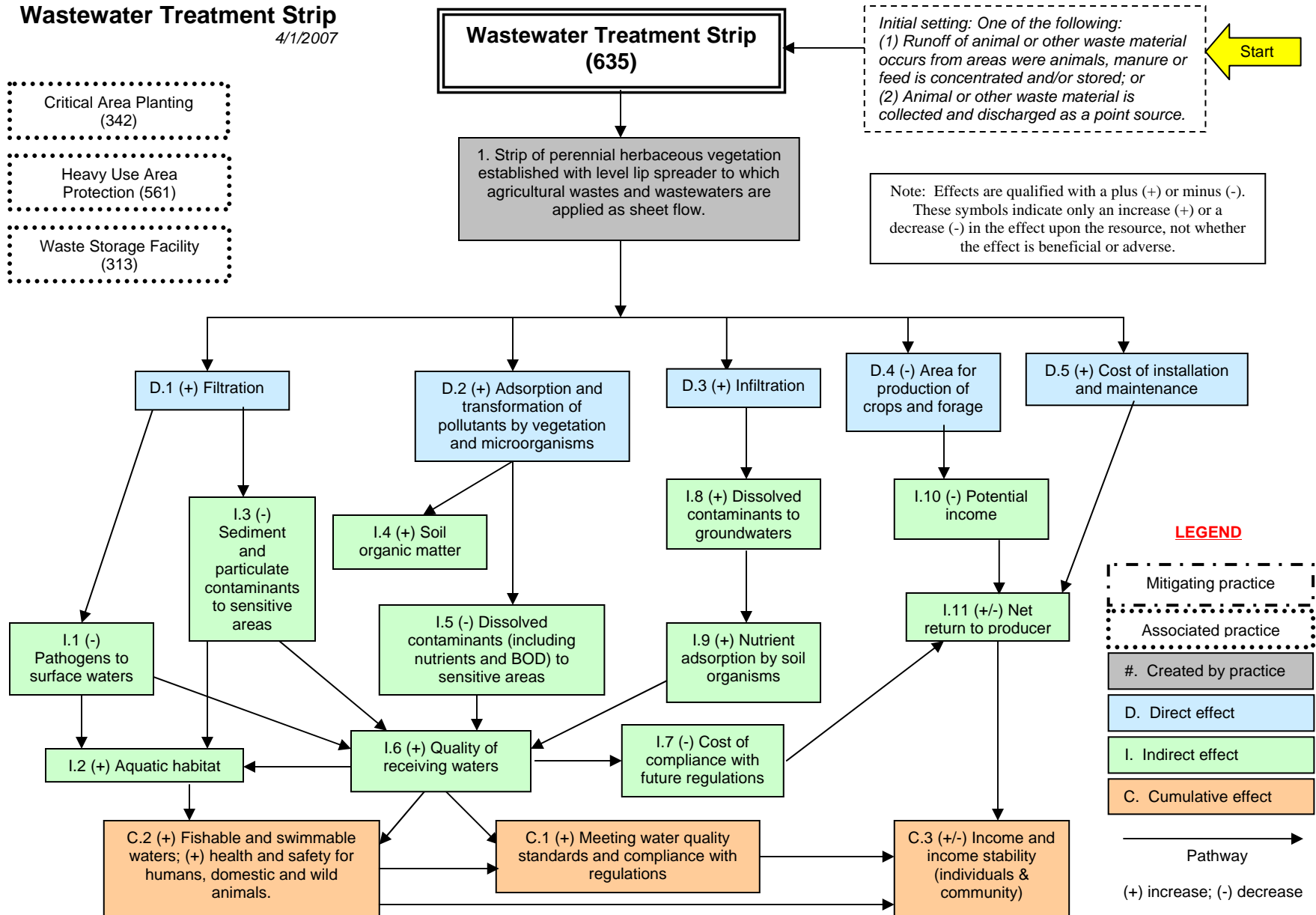
A Wastewater Treatment Strip is commonly planned as part of Conservation Management System with a Waste Storage Facility, Waste Utilization, Heavy Use Area Protection, Critical Area Planting, Nutrient Management, Solid/Liquid Separation Facility and other conservation practices.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

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# Wastewater Treatment Strip

4/1/2007



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# WATER AND SEDIMENT CONTROL BASIN

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Code 638



### WATER AND SEDIMENT CONTROL BASIN

A Water and Sediment Control Basin is an earthen embankment or combination ridge and channel constructed across the slope and minor water courses to form a sediment trap and water detention basin.

### PRACTICE INFORMATION

The purpose of this practice is to improve the farmability of sloping land, reduce erosion, trap sediment, reduce and manage runoff, and improve water quality. This practice applies to sites where:

1. The topography is generally irregular or undulating;
2. Water concentrates and causes gullies to form;
3. Sheet and rill erosion can be controlled by other conservation practices;
4. Runoff and sediment are causing damage to land, crops, water, and/or facilities;
5. Soil and site conditions are suitable;
6. Adequate outlets can be provided for disposal of runoff water.

Water and Sediment Control Basins are generally installed on land that is relatively steep and undulating where past erosion has caused channels to form, permanently altering the terrain. Therefore, contour farming, stripcropping, terraces and other practices that involve farming on the contour may not be suitable on fields where this practice is used.

### COMMON ASSOCIATED PRACTICES

Sheet and rill erosion may continue to be a problem following installation of Water and Sediment Control Basins. Additional practices are needed to protect the sloping upland areas of the fields. Water and Sediment Control Basins are commonly used in Conservation Management Systems with practices such as Crop Rotation, Conservation Tillage, and Cover Crops to reduce sheet and rill erosion, as well as Critical Area Planting, Filter Strip, and Nutrient Management to protect down-slope water quality.

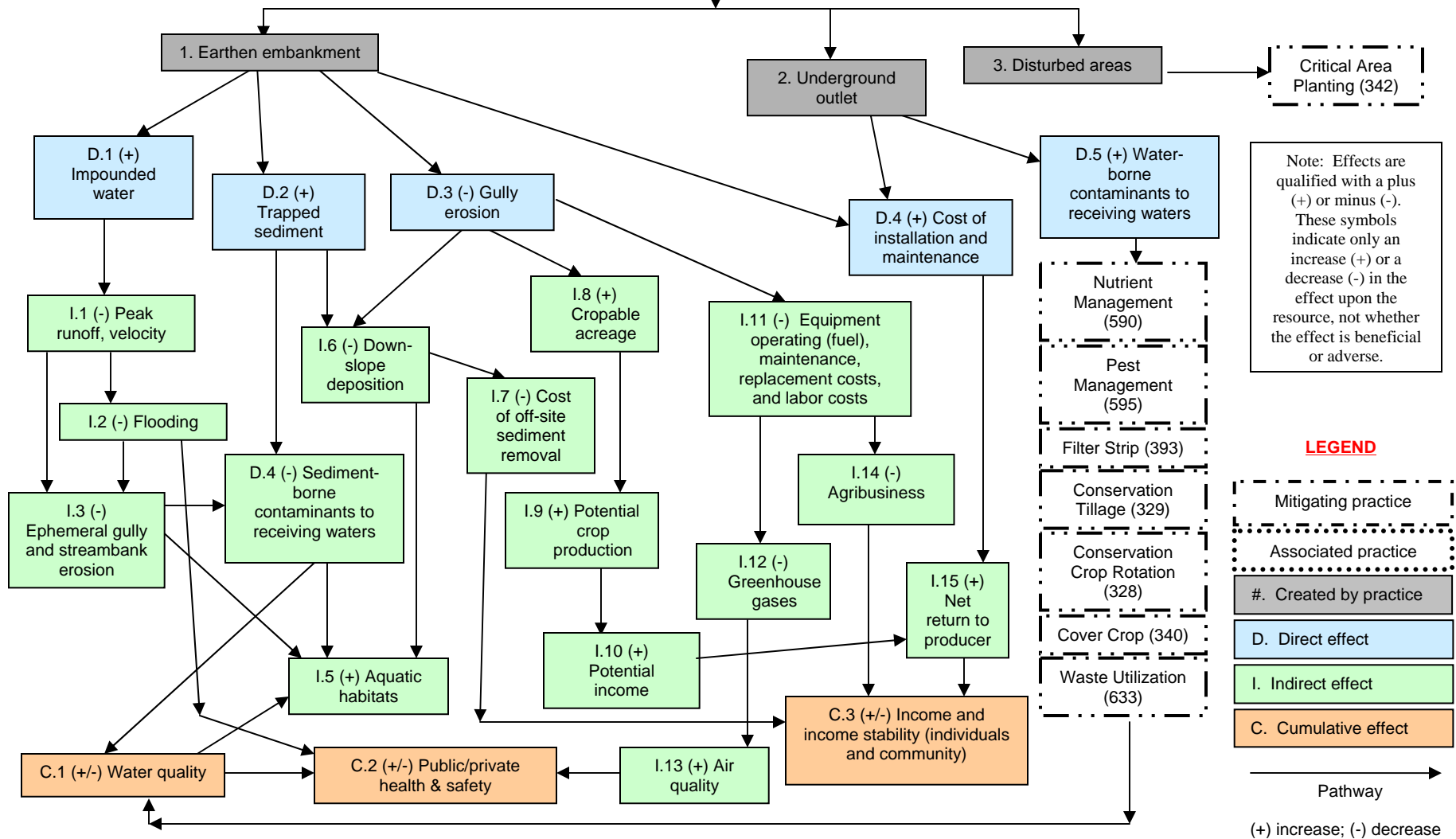
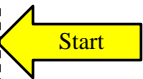
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**Water and Sediment Control Basin**  
4/1/2007

**Water and Sediment Control Basin (638)**

*Initial Setting: On farmland where water courses or excessive gully erosion is causing damage to the field, other resources or improvements.*



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# WATER WELL

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 642



### WATER WELL

A Water Well is a hole drilled, dug, driven, bored, jetted or otherwise constructed to an aquifer to provide water for livestock, wildlife, irrigation, human, and other uses.

### PRACTICE INFORMATION

This practice applies on all sites where the underground supply of water is sufficient in quantity and quality for the intended purpose. Monitoring or observation wells or wells installed for injection purposes are not included.

This practice requires proper design and installation to function properly. If practicable, wells should be located in higher ground and up gradient from sources of contamination or flooding. The potential for adverse interference with existing nearby production wells should be evaluated in planning. Other concerns that should be considered in planning include the

potential for groundwater overdraft, the long-term safe yield of the aquifer, and potential effects of installation and operation of the well on cultural, historical, archeological, or scientific resources at or near the site.

### COMMON ASSOCIATED PRACTICES

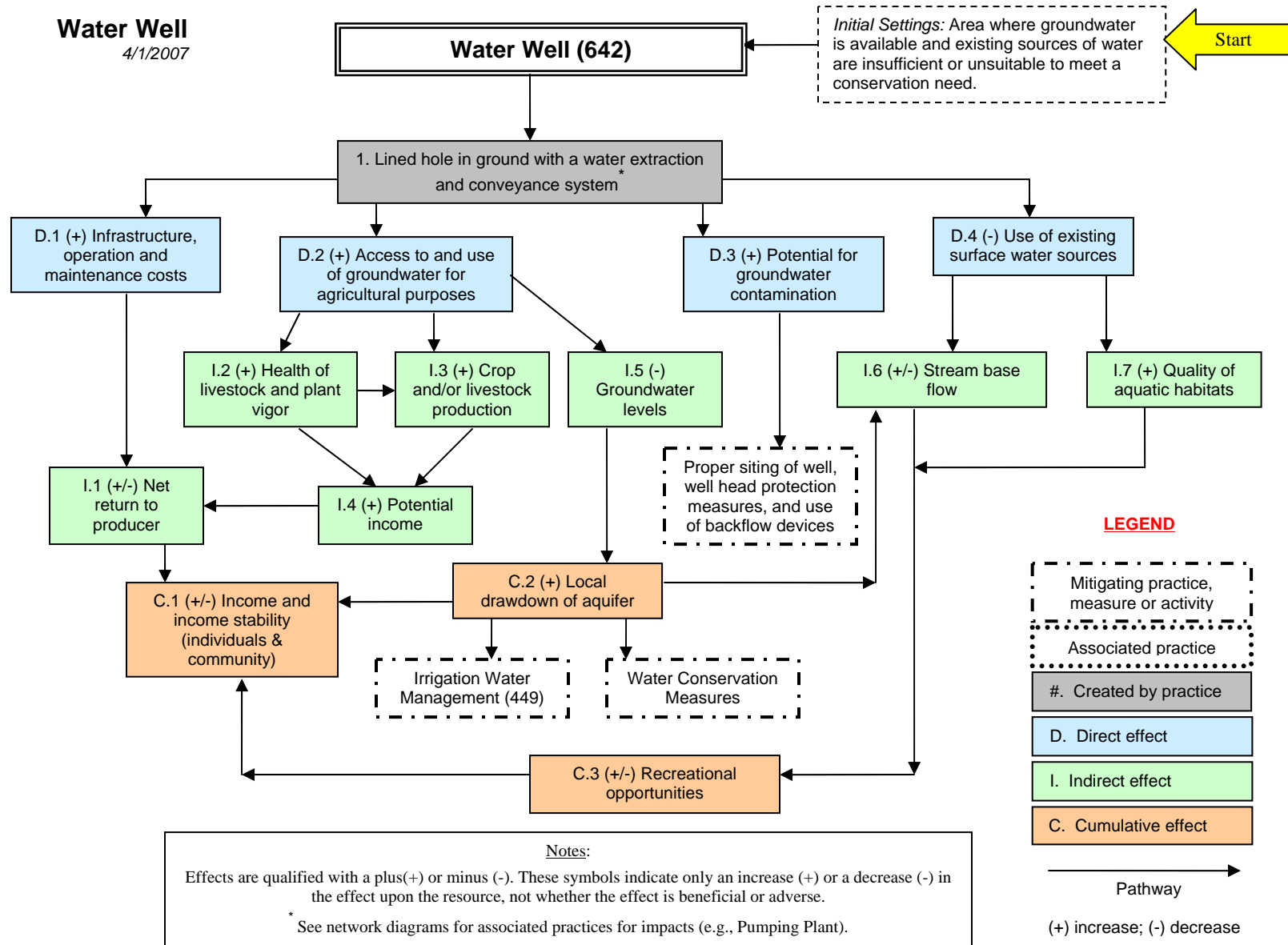
Once a well has been installed, a distribution system, watering system, and/or irrigation system are usually needed. Wells are commonly used in a Conservation Management Systems with the following practices:

- Pumping Plant,
- Pipeline,
- Watering Facility,
- Irrigation System.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

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**Water Well**  
4/1/2007



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# WETLAND ENHANCEMENT

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service - Practice Code 659



## WETLAND ENHANCEMENT

Wetland Enhancement is the rehabilitation or re-establishment of a degraded wetland, and/or the modification of an existing wetland to favor specific wetland functions.

## PRACTICE INFORMATION

This practice applies on any degraded or non-degraded existing wetland where the objective is specifically to enhance selected wetland functions. This practice is not used on degraded wetlands when the soils, hydrology, vegetative community, and biological habitat are returned to original conditions or where a wetland is created on a site that historically was not a wetland.

The purpose of this practice is to provide specific wetland conditions by:

1. Hydrologic enhancement (depth duration and season of inundation, and/or duration

and season of soil saturation); and/or

2. Vegetative enhancement (including the removal of undesired species, and/or seeding or planting of desired species).

Native vegetative species should be used in the enhancement whenever possible. Manipulation of water levels can be used to control unwanted vegetation. Haying or grazing can also be used to manage vegetation.

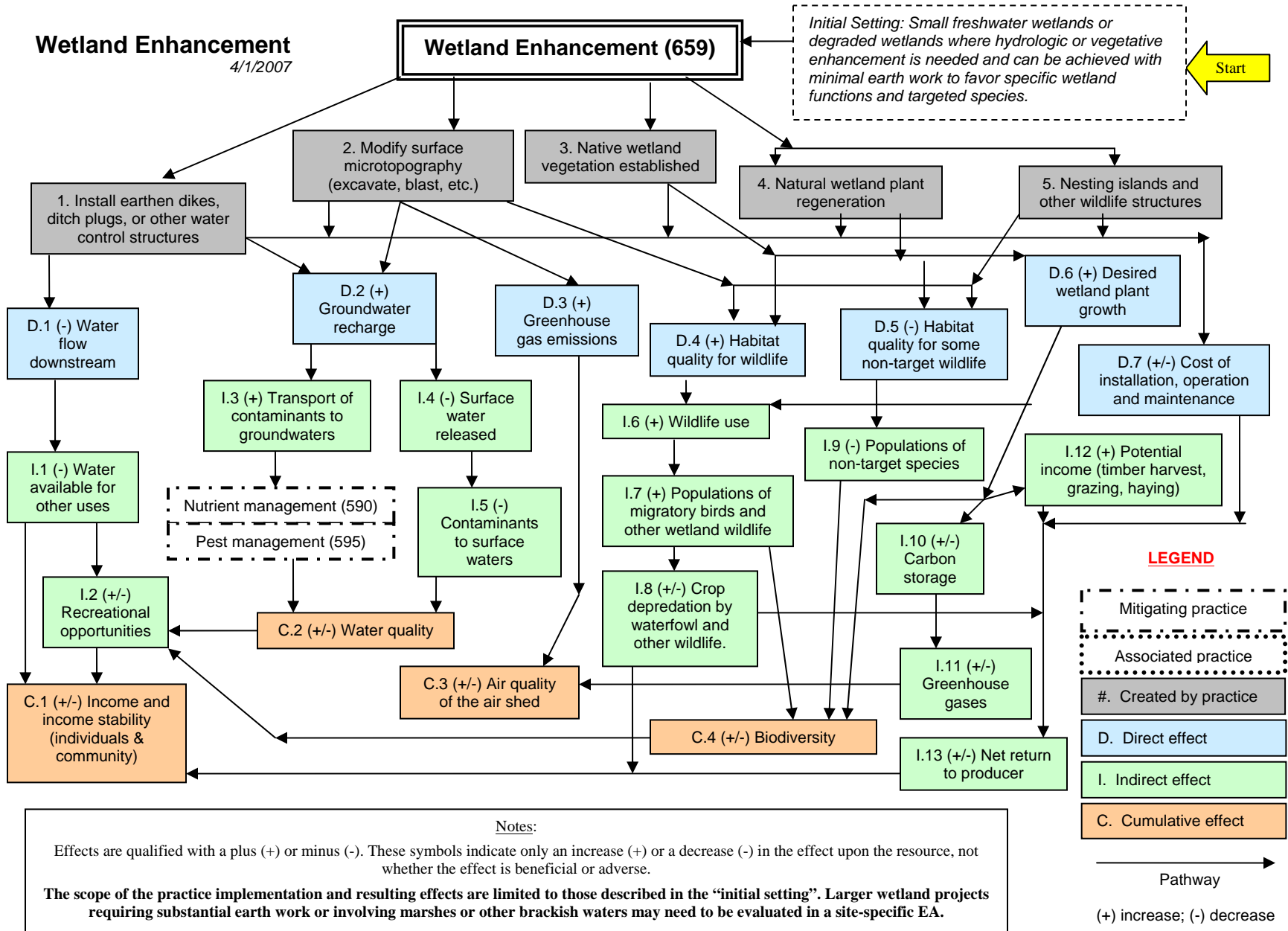
## COMMON ASSOCIATED PRACTICES

Wetland Enhancement is commonly used in a Conservation Management System with the following practices: Dike, Structure for Water Control, Fence, Fish Passage, Pipeline, Pond, and Use Exclusion.

Refer to the practice standard in the local Field Office Technical Guide and associated Job Sheets for further information.

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**Wetland Enhancement**  
4/1/2007



The diagram above identifies the effects expected to occur when this practice is applied according to NRCS practice standards and specifications. These effects are subjective and somewhat dependent on variables such as climate, terrain, soil, etc. All appropriate local, State, Tribal, and Federal permits and approvals are the responsibility of the landowner and are presumed to have been obtained. All income changes are partially dependent upon market fluctuations which are independent of the conservation practices. Users are cautioned that these effects are estimates that may or may not apply to a specific site.

# WINBREAK/SHELTERBELT ESTABLISHMENT or RENOVATION

## PRACTICE INTRODUCTION

USDA, Natural Resources Conservation Service – Practice Codes 380 and 650



### WINDBREAK/SHELTERBELT ESTABLISHMENT or RENOVATION

Windbreaks or Shelterbelts are single to multiple rows of trees and possibly shrubs planted in a linear fashion. They are established upwind of the areas to be protected.

#### PRACTICE INFORMATION

Windbreaks and shelterbelts are primarily used to reduce soil erosion from wind, to protect crops, livestock areas, and farmsteads from wind and related temperature effects, to help control snow deposition and trapping, and to help improve air quality by reducing and intercepting drifting chemicals and odors produced from livestock farms.

Windbreak/Shelterbelt Establishment involves the planting of vegetation to serve the purposes noted above. The effectiveness of a windbreak or shelterbelt is dependent on the height of the mature plants. Therefore, it may take 20 years or more for the practice to become fully functional.

Windbreak/Shelterbelt Renovation involves widening, partial replanting, removing, and

replacing selected trees and shrubs to improve an existing windbreak or shelterbelt. A period of years may also be needed for proper renovation.

These practices can be applied in any area where there is sufficient linear length to establish the windbreak on the lee side of the area to be protected. It is important during planning to consider the dominant wind direction during weather events that cause damage.

#### COMMON ASSOCIATED PRACTICES

Windbreaks and shelterbelts are commonly used in a Conservation Management System with practices such as: Conservation Crop Rotation, Cover Crop, Residue Management, Tree/Shrub Planting, and Upland Wildlife Habitat Management.

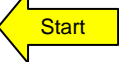
Refer to the practice standard in the local Field Office Technical Guide and associated specifications and Job Sheets for further information.

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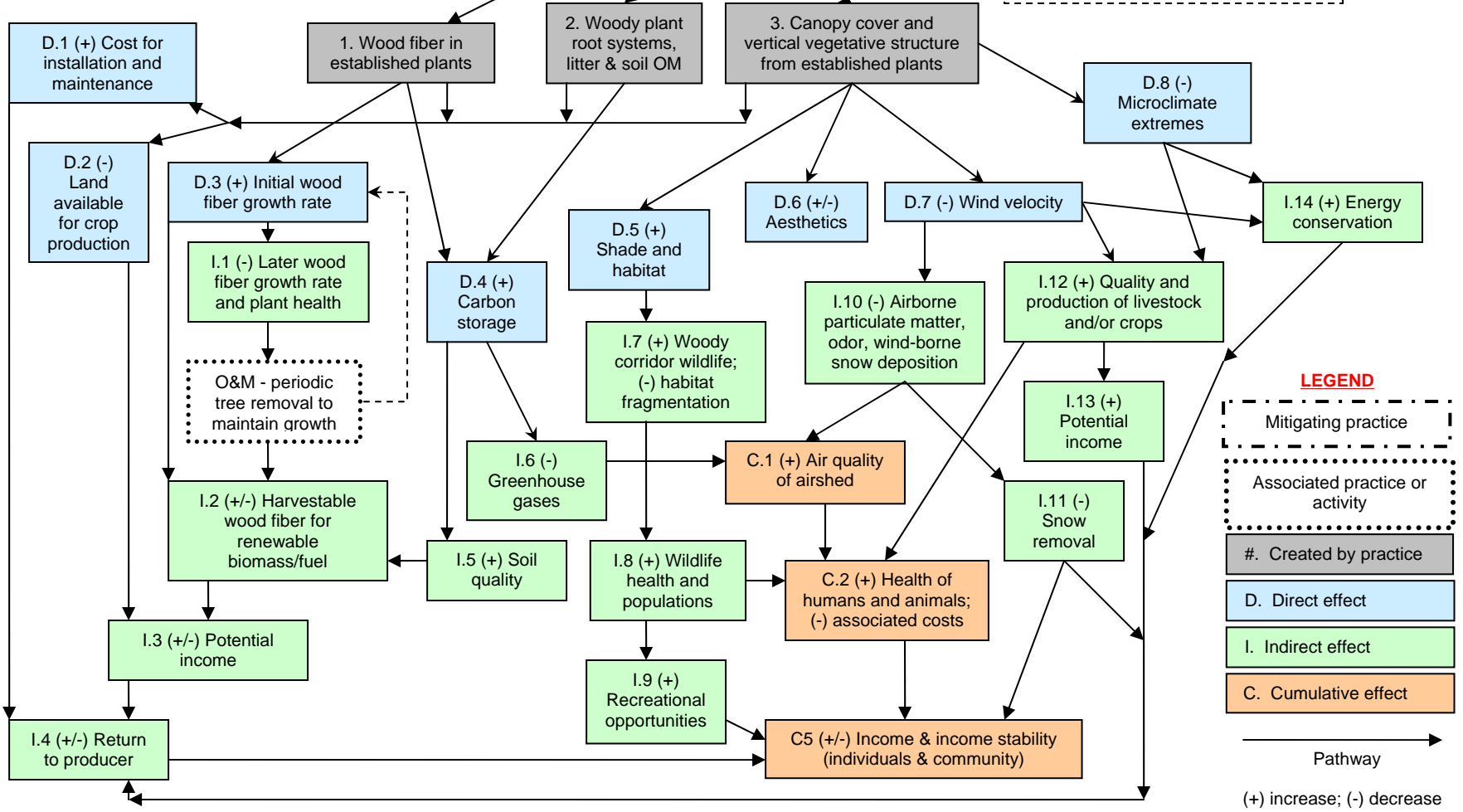
**Windbreak/Shelterbelt Establishment or Renovation**  
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**Windbreak/Shelterbelt Establishment (380), Windbreak/Shelter-belt Renovation (650)**

*Initial Setting: (1) Cropland, forage land, AFO, or urban area where odor, snow drift, animal and human stress related to wind or temperature, and energy consumption are concerns; (2) Existing decadent windbreaks/shelterbelts which have little or no functionality for intended purposes.*



Note: Effects are qualified with a plus (+) or minus (-). These symbols indicate only an increase (+) or a decrease (-) in the effect upon the resource, not whether the effect is beneficial or adverse.



**LEGEND**

- - - - - Mitigating practice
- ..... Associated practice or activity
- #. Created by practice
- D. Direct effect
- I. Indirect effect
- C. Cumulative effect
- Pathway
- (+) increase; (-) decrease

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