UNIVERSITY OF CALIFORNIA COOPERATIVE EXTENSION
AGRICULTURAL WATER QUALITY RESEARCH & EDUCATION
SAN DIEGO COUNTY

SELF ASSESSMENT: ANIMAL AGRICULTURE


Ag Water Quality

WATER SCHOOL



http://ucanr.org/agwaterquality

Introduction

Agriculture is under increasing scrutiny for its contributions to nonpoint source pollution. Nonpoint source (NPS) pollution, unlike pollution from industrial and sewage treatment plants, comes from many diffuse sources. As runoff moves, it picks up and carries away natural and human-made pollutants, finally depositing them into lakes, rivers, wetlands, coastal waters, and groundwater. Although agriculture is not the only source, runoff from agricultural properties may contain contaminant levels that exceed water quality standards. Certain management practices can contribute to nonpoint source pollution in the form of excess sediments, nutrients, salts, pesticides, or pathogenic organisms. In San Diego County, the storm water permit adopted in 2001 has created new requirements for runoff entering the storm drain system. These new requirements affect many different types of businesses, including agriculture.

San Diego County's storm water permit specifically requires the county and cities to inspect greenhouses and nurseries for storm water violations. *Other types of agriculture are not exempt from complying with water quality regulations. However, at this time they will not be regularly inspected for storm water violations.*

Instructions

This self-assessment provides a basis for assessing runoff and nonpoint source pollution potential from animal agriculture operations. Runoff and nonpoint source pollution management on any agricultural property will involve a combination of practices. Not every property will have the same issues or utilize the same Best Management Practices to address them.

The self-assessment questions are divided into the following categories:

A. Property Management
B. Road Management & Erosion Control
C. Water Use Practices
D. Manure and Used Bedding and Mortality Management
E. Integrated Pest Management

Each question may be checked "Yes, No, or Not Applicable." *Answering "No" to any question indicates an issue that may need to be assessed or reconsidered as a Best Management Practice.* However, this does not necessarily determine evidence of nonpoint source pollution or violation of storm water regulations. A brief explanation is provided under each question explaining its importance to runoff, nonpoint source pollution, and/or Best Management Practices.

Acknowledgements

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A. Property Management

1. Does all non-storm runoff water, including irrigation water, remain on the property? ***All dry weather runoff is prohibited from entering the storm drain system, which includes street gutters, public waterways, and other conveyances that drain to public waters. Discharging dry weather runoff onto neighboring properties is not allowed unless done with consent. Dry weather runoff may also not be discharged onto public streets/ roads.***	☐ Yes ☐ No ☐ N/A ☐ public street/road ☐ storm drain ☐ surface waters ☐ neighbor property
2. Is the property located away from public waterways, including; streams, rivers, lakes, lagoons, wetlands, and bays? ***A higher potential to pollute exists when public water bodies are located directly on or adjacent to a growing operation. In addition, commercial operations near public water bodies designated as "impaired" under Clean Water Act section 303(d), or regulated under a "total maximum daily load" (TMDL) requirement may have more stringent requirements.***	☐ Yes ☐ No ☐ N/A
3. Has the location of all drainage pipes/ditches and their outfalls been determined? **Are storm drain ditches designated with signs (*e.g., No Dumping)*?** **Is buffer/filter vegetation located between production areas and storm drains?** ***Growers must be aware of all drainage pipes and ditches on their properties and know where they drain. Designating storm drains and ditches with signs to prevent dumping is encouraged but not required. The regulatory community is looking to detect and disconnect illicit connections to the storm drain system. A storm drain must only convey wet weather runoff. Buffer/filter vegetation can help absorb both dry and wet weather runoff.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
4. Are outdoor driveways, parking areas, and loading areas periodically cleaned for debris, vehicle residues, and other contaminants? **If wet cleaned, does all runoff remain on the property?** ***Periodic dry cleaning is recommended to prevent debris from washing into the storm drain system during wet weather. Driveways, parking areas, and loading/packing areas may contain contaminants from vehicle fluids and emissions. Oil and other vehicle fluid spills must be cleaned up. Wash runoff may not leave the property. Dry cleaning methods are recommended to avoid creating runoff, and dust control practices also must not create runoff.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A

5. In landscaped areas, are irrigation, fertilization, and pest management properly managed to avoid contaminated runoff? **Are all *non-production* areas managed to prevent erosion?** ***Landscaped areas must not create runoff. Highly erodible areas should be managed with appropriate vegetation or other means to avoid contributing sediments to runoff. Non-production areas may be appropriate for reuse of collected irrigation runoff or constructing collection ponds.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
6. Is roof runoff diverted from flowing across contaminated areas such as animal holding areas, parking areas, loading areas and areas where manure is stored? **Is roof runoff directed into pervious areas (e.g., gravel, landscaping) or collection ponds?** ***Roof runoff should not be directed to flow across areas where contaminants will be picked up and washed into the storm drain. If possible, roof runoff should be directed to flow into pervious areas where it can be absorbed or collected.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
7. Are fuel tanks/nozzles checked and maintained to prevent leaks? **Are fuel tanks located away from waterways, drainage ditches, and storm drains?** **Are fuel tanks equipped with secondary containment to capture spills?** ***A small amount of petroleum product can contaminate a large body of water. Locating fuel tanks away from surface waters, drainage ditches, and storm drains minimizes risk of spills into water bodies. Secondary containment provides a method to contain spills in the event of an accidental leak.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
8. Are vehicles/trucks/tractors regularly maintained to detect and prevent fluid leaks? **Are vehicle spills and leaks immediately and properly cleaned up?** **Are collected fluids and solid waste from maintenance properly disposed (e.g., oil, antifreeze, batteries)?** **Are maintenance/storage areas located away from waterways, drainage ditches, and storm drains?** **Are maintenance/storage areas cleaned periodically to avoid oil/grease buildup?** **Does wash water runoff remain on the property?** ***Vehicles/trucks/tractors use numerous fluids that are very toxic to the environment. Wash runoff may not leave the property. Washing activities should be done over pervious areas (gravel, landscaping) where runoff will soak into the ground.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A

9. Are spill clean-up materials and equipment available for all potential types and sizes of spills? **Have all employees been trained in proper procedures for managing spills?** ***Preparedness for spills can eliminate or minimize runoff of harmful substances into the storm drain in the event of an accident. Basic spill materials include: adequate amount of absorbent material (e.g., kitty litter), broom and dustpan, chemically resistant gloves, and a large labeled container to dispose of contaminated absorbent material.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
10. Is the property kept clean and free of solid waste and debris (other than manure)? **Are adequate numbers of waste containers with lids available and is waste collected regularly to avoid overflow?** **Are waste containers checked frequently for leaks?** **Are waste containers located away from waterways, drainage ditches and storm drains?** ***Solid waste and debris can clog storm drains and cause fatalities for marine life through strangulation or ingestion. Solid waste and debris also creates an unsightly mess in waterways and on beaches.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
11. Are retired vehicles, equipment, and storage tanks/drums either removed from the property or drained of fluids? ***Materials stockpiled outdoors should be properly located and covered to prevent wet weather washing into the storm drain system. Retired vehicles, equipment, and storage tanks/drums often contain hazardous materials and should either be removed from the property or drained of fluids to prevent accidental leaks and spills.***	☐ Yes ☐ No ☐ N/A
12. Are pesticides, medications, fertilizers and other chemical products stored in closed, labeled containers, under cover and off the ground? **Are pesticides, medications, fertilizers, and other chemical products and containers disposed according to label directions and all applicable regulations?** ***Pesticides, medications, fertilizers, and other chemical products and their containers must be properly stored and disposed to prevent spills and wet weather washing into the storm drain system.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A

13. Are adequate restrooms or portable sanitation available? **Are restroom toilets, floor, and sink drains properly hooked up to the municipal sewer or a septic system?** **Is portable sanitation located away from waterways, drainage ditches, and storm drains?** **Is portable sanitation regularly maintained?** **Are septic systems and leach fields properly maintained?** ***Properly maintained restrooms and portable sanitation are necessary to prevent human waste and sewage from entering the storm drain system or contaminating groundwater. Human waste contains fecal coliforms, which are monitored by county officials to determine beach closures.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
14. Has a record-keeping system for water quality issues been started and maintained? ***Record-keeping helps to document management practices A record-keeping system is available from UC Cooperative Extension – County of San Diego at http://cesandiego.ucdavis.edu. Click on "Ag Water Quality Program", then "Grower Resources."***	☐ Yes ☐ No ☐ N/A

B. Road Management & Erosion Control

1. Are new roads and trails properly permitted? **In road and trail design, are excessive slopes avoided?** **In road and trail construction, are exposed soils seeded and mulched to establish vegetation before winter rains?** ***To avoid future complications with regulatory agencies, it is necessary to comply with all grading regulations. This may require the submission of an engineering plan for the roads and trails along with specifications and an environmental assessment. Roads and trails that are properly designed, constructed, and maintained will avoid long-term costs of erosion and grading. Exposed soils are subject to erosion losses during winter rains. Sediments are a contaminant in waterways.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A

2. Are waterbreaks (or waterbars) utilized on roads and trails with gradients exceeding 8%? **Are earthen waterbreaks properly sized (6 in. above and 6 in. below the road or trail surface)?** **Are waterbreaks placed only where water flow has an outlet?** **Does diverted water from waterbreaks avoid septic fields or waterways?** **Are vegetative filter strips used at the outlet of waterbreaks and culverts to trap sediments?** ***On gradients over 8%, waterbreaks (or waterbars) are effective in diverting accumulated water from the road and trail surface onto a vegetated fill bank or toward a cutback. Diverted flow should not directly enter into waterways. Filter strips are vegetated areas between roads and trails and waterways, and can help trap sediments before they reach waterways. Sediments are a contaminant in waterways.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
3. Is road and trail use restricted during wet weather? **Are roads or trails mulched with materials that will minimize erosion?** **Is excessive maintenance and re-grading avoided?** ***Using roads and trails during wet weather will aggravate erosion and drainage problems. Maintaining culverts will allow water to freely drain. Avoid excessive maintenance to minimize disturbing the soil. Only re-grade to remove deep ruts or damaged areas caused by severe storms.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
4. Are cover crops established or is mulching used for erosion control, on any steep slopes near roads or trails? ***Cover crops consisting of planted annual grasses or natural vegetation help stabilize the soil and prevent erosion within the grove. Mulching can consist of a clean, organic material such as straw or leaf litter for erosion control. Mulching 2-4 inches deep will reduce weed growth, conserve moisture and improve soil tilth. Do not incorporate mulch into the soil.***	☐ Yes ☐ No ☐ N/A

C. Water Use Practices

1. If you irrigate, is irrigation water quality regularly monitored professionally by a lab? **Are water quality records maintained?** ***Regularly testing irrigation water quality is important for maintaining good tree health. Simple equipment can be used to test such parameters as EC, pH, and nitrate-nitrogen. Regularly testing fertigation water is also recommended to monitor fertilizer levels and to ensure injectors are operating properly.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A

2. Do spray patterns of sprinkler systems deliver water uniformly to target areas? ***Spray patterns should be checked to ensure water is being applied only to the growing areas. Water applied past root zone areas or onto roads wastes water and can result in erosion and runoff.***	☐ Yes ☐ No ☐ N/A
3. Has the irrigation system been assessed for worn, outdated, and/or inefficient equipment that can be replaced? **Is appropriate filtration in place for all irrigation equipment?** **Is appropriate pressure regulation in place for all irrigation equipment?** **Is all irrigation equipment regularly checked and repaired for leaks?** **Is all irrigation equipment regularly flushed and managed for clogging?** ***Adapting efficient irrigation technologies can help reduce the amount of runoff. Appropriate filtration will prevent problems associated with clogging, and appropriate pressure regulation will improve uniformity. General maintenance that includes managing leaks and clogging will also improve uniformity and prevent runoff.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
4. Is animal wash water or cooling water diverted so that it does not enter a stream or drainage? ***Wash and cooling water often contain manure, salts, cleaning compounds or other materials that are found on the animals or under the cages. These materials should not enter streams or waterways.***	☐ Yes ☐ No ☐ N/A
5. Is wash water from animal washing diverted away from manure or used bedding stockpiles or other areas where used bedding or manure may be stored? ***Wash water that passes through manure or bedding stockpiles will pick up nitrates, salts and bacteria that will contaminate streams and waterways.***	☐ Yes ☐ No ☐ N/A
6. Are watering devices regularly checked for leaks? **Is water from watering devices diverted away from streams, waterways or stromdrains of any type?** ***One of the most common causes of excess water in confined animal operations is leaky watering devices. This excess water often picks up contaminates as it passes through areas where animals are kept, and can also increase other problems such as fly breeding.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A

D. Manure and Used Bedding and Mortality Management

1. Is manure removed from the area where the animals are kept on a regular basis? **Is it removed from the premises on a regular basis?** ***Manure and used bedding should be removed from areas where animals are kept to avoid any problems with water flowing through these areas and picking up contaminates that will eventually reach the waterways. It is best to remove the manure from the premises on a regular basis, particularly in seasons where there is a likelihood of rainfall and contaminated runoff occurring.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
2. Are manure and used bedding stockpiles away from streams, waterways or stormdrains of any type? ***It is not unusual for manure or used bedding to be stockpiled near the edge of a property where streams or waterways may define the property line. While the nuisances associated with manure, such as exposure to flies and odors may be reduced by stockpiling these materials away from the houses and barns, care should be taken to avoid placing manure or used bedding near streams or waterways where contamination is likely to occur.***	☐ Yes ☐ No ☐ N/A
3. In areas where manure or used bedding are stockpiled before use or removal, are areas around the stockpiles bermed to avoid the movement of contaminated water off the area? **Are stockpiles of manure and used bedding covered to avoid runoff issues in a storm event?** ***In a rain event or even with overhead irrigation, contaminated runoff from a manure or bedding stockpile can easily move into a waterway. Berming around the area where the manure is stored, or covering the stockpiles will help to keep any contaminated water contained.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
4. Is any manure drying or other processing being done on site? **Is manure and used bedding being actively composted?** **Is any manure composting being conducted away from the streams or waterways, or have steps been taken to avoid runoff from compost areas from entering the waterways (berm etc.)?** ***Drying before stockpiling will minimize impacts to water quality and other nuisance issues associated with manure. Composting can greatly aid in reducing manure volume, and provides a good end product for horticultural use. Make sure you check with the UC Cooperative Extension office before beginning a manure composting operation. They can assist you in finding the best composting method, and in making sure that you are following all of the appropriate regulations.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A

5. Is animal mortality removed from the premises? **Are smaller animals (poultry) composted along with manure and used bedding?** ***Burying dead animals can cause water quality problems if the decomposing carcass is placed near a waterway. In addition, disease organisms can enter into the waterways from animal mortality. Composting small animals, primarily poultry, is effective as long as the composting is done away from waterways and care is taken to avoid allowing any runoff from the composting material from entering the waterway. It is best to move dead animals off your property with the aid of a rendering service.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A

E. Integrated Pest Management

1. Is your operation regularly monitored for insects and other pests with proper scouting/monitoring methods, including traps and inspections? **Does the decision to use chemical pesticides include scouting/monitoring information?** ***Establishing an ongoing monitoring system will help detect pest infestations early. By regularly inspecting plants, growers can detect troublesome pests while they are still manageable and before major damage is done.*** ***Evaluating pest populations on a regular basis also helps determine the actual need for chemical control, rather than relying on regularly scheduled chemical applications. Reducing the number of applications will lower production costs and reduce the amount of chemical released into the environment.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
2. Are weather conditions, such as fog and rain, considered when scheduling pesticide applications? **Are irrigation schedules considered when scheduling pesticide applications?** ***Schedule applications to avoid pesticide leaching and runoff.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
3. Is professional assistance used to identify unknown pathogens, insects or disease problems? ***Different pests and diseases can have similar symptoms. Accurately diagnosing a problem may sometimes require professional assistance.***	☐ Yes ☐ No ☐ N/A
4. Are low-toxicity and/or non-toxic chemicals selected for pest control whenever possible? ***Using less toxic materials reduces risk of pollution. Always read and follow label directions.***	☐ Yes ☐ No ☐ N/A

5. Are pesticides applied only according to the label? **Are improved application techniques used whenever possible?** **Is chemical spray equipment calibrated to ensure accurate application rates?** ***It is illegal to use a chemical product in a manner inconsistent with the label, and this may also pose additional water quality risks. Adopt improved application technology where available, registered and legal, to reduce the amount of chemicals applied and to maximize effectiveness.***	☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A ☐ Yes ☐ No ☐ N/A
6. Are biological controls integrated into your pest management strategy when possible and where effective? ***The use of natural predators or parasites to keep harmful pests in check can be highly effective in combination with good management practices and judicious use of chemical agents.***	☐ Yes ☐ No ☐ N/A
7. Is ant control practiced? ***Controlling ants will in turn help to control other pests by allowing parasites and predators to be active. Control methods can include judicious use of chemical pesticides. All pesticides should be handled carefully and according to label instructions.***	☐ Yes ☐ No ☐ N/A
8. Are gophers and squirrels managed? ***In addition to posing a danger to certain animals, gophers and squirrels can create channels that carry water and cause erosion, allowing sediments to enter waterways. Traps and poison bait can be used to manage their populations.***	☐ Yes ☐ No ☐ N/A

Additional Assistance

Additional assistance is available from UC Cooperative Extension – County of San Diego. Please call 858-694-2845.