FOIA Number: 2013-0661-F
(3)

FOIA MARKER

This is not a textual record. This is used as an administrative marker by the William J. Clinton Presidential Library Staff.

Collection/Record Group: Clinton Presidential Records

Subgroup/Office of Origin: Americorps

Series/Staff Member: General Files

Subseries:

OA/ID Number: 24228

FolderID:

Folder Title:
[AmeriCorps - Water Quality - "Simply The Facts On…"] [loose]

Stack:	Row:	Section:	Shelf:	Position:
S	66	1	4	3

SIMPLY THE FACTS ON
Total Ammonia

Date	Station	Reading

DEFINITION

Total ammonia is a measure of unionized and ionized ammonia in a sample of water. The degree of its toxicity changes with pH, temperature, and salinity. Organic nitrogen comes from all organic material such as manure, plants, dead animals, and fertilizers. Ammonia is a by-product of the decomposition of organic nitrogen. **Total Ammonia** (NH_3+NH_4+) is the amount monitored in creeks and ponds. It is from this measurement that the concentration of toxic unionized ammonia (NH_3) is calculated. Unionized ammonia (NH_3) is the toxic form that kills fish and aquatic life. (See unionized ammonia fact sheet) Monitoring is measured in parts per million (ppm) or mg/l.

WATER MONITORING • Total Ammonia

GOOD

Below 1 ppm
- Management practices are sufficient

CAUTION

1 ppm <-> 5 ppm
- Nutrients entering surface water
- Evaluate waste management system

DANGER

Above 5 ppm
- Immediate action necessary!

AMMONIA SOURCES

Runoff from enclosed confined facilities (i.e., loafing barn). Runoff from silage storage areas. Runoff from open confined areas (i.e., corrals, feedlots). Runoff from manure storage areas. Facilities waste water. Runoff from over-fertilization. unoff from overstocked pastures. Animals in the creek.

AmeriCorps &
United States Department of Agriculture
Natural Resources Conservation Service
(formerly Soil Conservation Service)

1301 Redwood Way, Ste 170
Petaluma, CA 94954
(707) 794-1242

For Water Quality Information contact:
Natural Resources Conservation Service
Regional Water Quality Control Board
California Department of Fish & Game
UC Cooperative Extension

6/95

SIMPLY THE FACTS on
Unionized Ammonia

DEFINITION **Unionized ammonia** (NH_3) is sometimes referred to as toxic ammonia and is the form which is harmful to fish and aquatic life. The toxicity level of unionized ammonia is directly affected by pH and temperature. The higher the pH and temperature of the water, the higher the proportion of total ammonia that exist in the toxic form. **Unionized ammonia** is what the California Department of Fish and Game and the Regional Water Quality Control Board regulate under the federal Clean Water Act. Measurements are derived from calculations using the pH, temperature, and total ammonia (NH_3 + NH_4+) content in the water. Monitoring is measured in parts per million (ppm) or mg/l.

Date	Station	Reading

WATER MONITORING • Unionized Ammonia (NH_3)

GOOD

0 - 0.025 ppm
- Management practices are sufficient

DANGER

0.025 ppm & Above
- Nutrients entering surface water
- Immediate action necessary!

POSSIBLE SOURCES Unvegetated streambanks have higher water temperatures. Runoff from enclosed confined facilities (i.e., loafing barns). Runoff from silage storage areas. Runoff from open confined areas (i.e., corrals, feedlots). Runoff from manure storage areas. Facilities waste water. Runoff from over-fertilization. Runoff from overstocked pastures. Animals in the creek.

AmeriCorps &
United States Department of Agriculture
Natural Resources Conservation Service
(formerly Soil Conservation Service)

1301 Redwood Way, Ste 170
Petaluma, CA 94954
(707) 794-1242

For Water Quality information contact:
Natural Resources Conservation Service
Regional Water Quality Control Board
California Department of Fish & Game
UC Cooperative Extension

6/95

SIMPLY THE FACTS on
Conductivity

DEFINITION **Electrical conductivity** is one way to determine the salinity in soil and water. Salinity is the concentration of dissolved salts found in soil and water. An electric conductivity meter is used to determine salt content and is recorded in umhos/cm. High soil salinity interferes with plant water uptake resulting in reduced plant growth and germination. In excessive amounts, salts running off into nearby waters such as streams, ponds, and lakes can become toxic to freshwater aquatic plants and fish. Animal wastes as well as some agricultural products may have a high salt content and can be a problem when over-applied to the land. One should expect to find high salinity readings present in streams with tidal influences. If your property is located near an estuary, contact the Regional Water Quality Control Board to determine ideal salinity levels.

Date	Station	Reading

WATER MONITORING • Conductivity

Below 500 umhos/cm
- Management practices are sufficient

Between 500 - 1000 umhos/cm
- Evaluate waste management system

Above 1000 umhos/cm
- Identify possible sources
- Immediate action necessary!

SALINITY SOURCES Poor subsurface drainage. Irrigated crops. Runoff from enclosed confined facilities (i.e., loafing barn). Runoff from silage storage areas. Runoff from open confined areas (i.e., corals, feedlots). Runoff from manure storage areas. Facilities wastewater. Runoff from over-fertilization. Runoff from overstocked pastures. Animals in the creek. Tidal influence.

AmeriCorps &
United States Department of Agriculture
Natural Resources Conservation Service
(formerly Soil Conservation Service)

1301 Redwood Way, Ste 170
Petaluma, CA 94954
(707) 794-1242

For Water Quality information contact:
Natural Resources Conservation Service
Regional Water Quality Control Board
California Department of Fish & Game
UC Cooperative Extension

6/95

SIMPLY THE FACTS on BOD

DEFINITION **Biochemical oxygen demand (BOD)** is an indirect way of measuring the oxygen required for the decomposition of materials such as animal waste in waters. A **BOD** test may be necessary when oxygen hungry bacteria contained in animal waste discharges into streams or ponds through runoff. This reduces the amount of oxygen available for fish. In reality it is a measurement of the ability of bacteria to grow and reproduce in animal waste over a 5 day period. Monitoring is measured in parts per million (ppm) or mg/l.

Date	Station	Reading

WATER MONITORING • BOD

GOOD

Below 10 ppm
- Management practices are acceptable

CAUTION

10 - 30 ppm
- Nutrients entering stream
- Evaluate waste management

DANGER

Above 30 ppm
- Immediate action necessary!

POSSIBLE SOURCES Runoff from enclosed confined facilities (i.e., loafing barn). Runoff from silage storage areas. Runoff from open confined areas (i.e., corrals, feedlots). Runoff from manure storage areas. Facilities wastewater. Runoff from over-fertilization. Runoff from overstocked pastures. Animals in creeks. Decomposing leaves and grass debris in water.

AmeriCorps &
United States Department of Agriculture
Natural Resources Conservation Service
(formerly Soil Conservation Service)

1301 Redwood Way, Ste 170
Petaluma, CA 94954
(707) 794-1242

For Water Quality information contact:
Natural Resources Conservation Service
Regional Water Quality Control Board
California Department of Fish & Game
UC Cooperative Extension

6/95

SIMPLY THE FACTS on

DO

DEFINITION **Dissolved Oxygen (DO)** is the concentration of oxygen dissolved in water. All fish and aquatic life must have adequate amounts of **DO** in the water at all times to survive. Problems occur when organic material such as animal waste enters surface water. Micro-organisms in the water use the organic material for food and consume **DO** in the process. When surface water with warm temperatures are mixed with organic material, a growth explosion of micro-organisms will occur, thus reducing **DO** to a level that suffocates fish and other aquatic life. Monitoring is measured in parts per million (ppm) or mg/l.

Date	Station	Reading

WATER MONITORING • DO

GOOD

7 ppm <-> 10 ppm
- Good DO levels for aquatic life

CAUTION

5 ppm <-> 7 ppm
- DO levels moderate
- Evaluate waste management system
- Organic material may be entering surface water

DANGER

0 ppm <-> 5 ppm
- Inadequate DO levels for most aquatic life
- Identify sources of organic material runoff
- Immediate action necessary!

LOW DO SOURCES Unvegetated streambanks have higher water temperatures. Runoff from enclosed confined facilities (i.e., loafing barn). Runoff from silage storage areas. Runoff from open confined areas (i.e., corrals, feedlots). Runoff from manure storage areas. Facilities wastewater. Runoff from over-fertilization. Stagnate non-moving water. Runoff from overstocked pastures. Animals in the creek.

AmeriCorps &
United States Department of Agriculture
Natural Resources Conservation Service
(formerly Soil Conservation Service)

1301 Redwood Way, Ste 170
Petaluma, CA 94954
(707) 794-1242

For Water Quality information contact:
Natural Resources Conservation Service
Regional Water Quality Control Board
California Department of Fish & Game
UC Cooperative Extension

6/95

SIMPLY THE FACTS on pH

DEFINITION

pH is the measure of acid or alkaline characteristics and is measured on a scale of 0-14. A **pH** of 7.0 is neutral and ideal for water conditions. Readings that fall below 7.0 identify acidic conditions while readings above 7.0 identify alkaline conditions. The **pH** directly affects the amount of unionized ammonia in water. An increase in pH values above 7.0 combined with high water temperatures will result in higher levels of unionized ammonia which are deadly to fish. Shifts in **pH** levels can be contributed to a number of agricultural practices such as animal waste and silage, and should be kept away from streams. Changes in **pH** can also result from natural conditions such as algal growth.

Date	Station	Reading

WATER MONITORING • pH

GOOD

6.5 - 8.5
- Neutral
- Ideal water condition

CAUTION

5.0 <-> 6.5 and 8.5 <-> 10
- Readings closest to 7.0 are ideal
- Evaluate waste management

DANGER

0 <-> 5.0 and 10 <-> 14
- Acid and alkaline conditions
- Identify sources of pH change
- Immediate action necessary!

POSSIBLE SOURCES

Runoff from enclosed confined facilities (i.e., loafing barn). Runoff from silage storage areas. Runoff from open confined areas (i.e., corrals, feed-lots). Runoff from manure storage areas. Facilities waste water. Runoff from over-fertilization. Runoff from overstocked pastures. Animals in the creek.

AmeriCorps &
United States Department of Agriculture
Natural Resources Conservation Service
(formerly Soil Conservation Service)

1301 Redwood Way, Ste 170
Petaluma, CA 94954
(707) 794-1242

For Water Quality information contact:
Natural Resources Conservation Service
Regional Water Quality Control Board
California Department of Fish & Game
UC Cooperative Extension

6/95

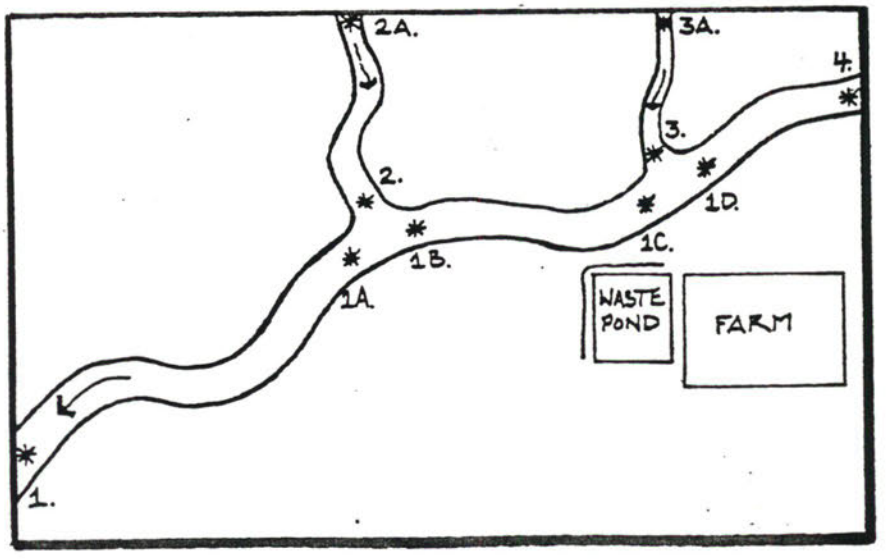
SIMPLY THE FACTS on
Monitoring Sites

To select water monitoring sites for a farm or ranch:

1. Obtain current aerial photography or a map of the property. Label the map in a numeric system to denote the best locations for possible monitoring sites (example below). Start by choosing sites on property lines (i.e., sites 1, 2A, 3A, 4). This will determine the water quality entering and leaving your property.

2. Pick sites located at the downstream end of tributaries to determine the water quality entering the main channel of a creek (i.e., sites 2 and 3). This way, you can identify possible sources of nutrient loading simply by backtracking upstream from those sites (to sites 2A and 3A). While backtracking, if you receive a clean/non-polluted sample, you can pinpoint the pollution source.
3. Once you have identified a source of pollution, keep a record of your results and note problem sites. Record any observations concerning water quality and riparian habitat. These observations include date, time, weather conditions, water color, odor (if any), vegetation, the presence of wildlife, and general conditions. Also record your water sampling data such as temperature, pH, ammonia, flow, turbidity, conductivity, DO, etc.

4. The best time to sample is in the morning when the water is coolest. It is also best to sample in the rain or just after a rain to locate problem areas. Consistency in sampling is important to evaluate results over a period of time and to make corrections as needed.



AmeriCorps &
United States Department of Agriculture
Natural Resources Conservation Service
(formerly Soil Conservation Service)

1301 Redwood Way, Ste 170
Petaluma, CA 94954
(707) 794-1242

For Water Quality information contact:
Natural Resources Conservation Service
Regional Water Quality Control Board
California Department of Fish & Game
UC Cooperative Extension

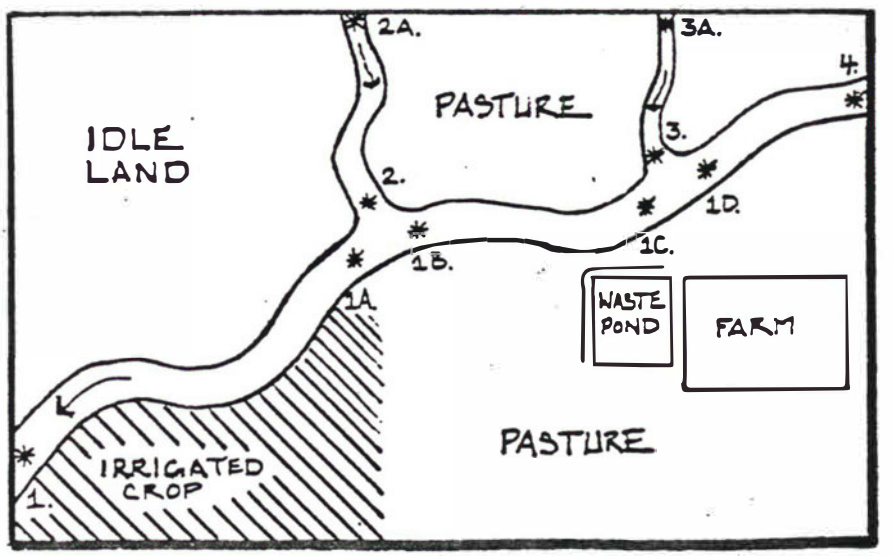
6/95

WATER MONITORING EXAMPLES

▼ A high nutrient reading was found at monitoring stations #1 and #1A. All other stations were sampled with low readings.
- Conclusion: Nutrient source most likely is runoff from irrigated crop.

▼ A High turbidity (suspended sediment) level is recorded entering the property at station #4. At station #1 leaving the property a low turbidity level is recorded.
- Conclusion: Sediment is being deposited between Station #1 and #4 in the stream channel.

▼ Station #2A and #2 have high nutrient levels recorded. A moderate nutrient reading was recorded at station #1A. Station #1B has a low nutrient level.
- Conclusion: Tributary #2 has a high nutrient level entering the creek. Reading at station #1A has been diluted but a problem has still been diagnosed.



AmeriCorps &
United States Department of Agriculture
Natural Resources Conservation Service
(formerly Soil Conservation Service)

1301 Redwood Way, Ste 170
Petaluma, CA 94954
(707) 794-1242

For Water Quality information contact:
Natural Resources Conservation Service
Regional Water Quality Control Board
California Department of Fish & Game
UC Cooperative Extension

6/95