

**NATIONAL WETLANDS INVENTORY  
MAP REPORT FOR THE COMPLETION OF  
WYOMING**

**FOR THE 1:100,000 MAP UNITS OF  
SUBTASK 1: SHERIDAN NW, RAWLINS NE  
SUBTASK 2: ARMINTO NE, ARMINTO SE  
TORRINGTON NE, TORRINGTON SW  
CHEYENNE NW, CHEYENNE NE  
CHEYENNE SW, CHEYENNE SE**

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Locator Map A

## I. INTRODUCTION

The United States Fish and Wildlife Service's National Wetlands Inventory (NWI) is producing maps showing the location and classification of wetlands and deepwater habitats of the United States. Classification of Wetlands and Deepwater Habitats of the United States by Cowardin et al. (1979) is the document used by the NWI to define and classify wetlands. Photo interpretation conventions, hydric soils lists and wetland plant lists are also used to implement the Cowardin classification system.

The purpose of this map report is to: (1) provide information on the production of NWI maps, including narrative on imagery and interpretation; (2) provide a descriptive crosswalk from NWI wetland codes on the map to common terminology and to representative plant species found on specific wetland sites; and (3) describe local geography, climate and wetland communities.

## II. FIELD RECONNAISSANCE

Field reconnaissance is a necessary procedure in order to accurately interpret aerial photography. Photographic signatures are correlated to the wetland habitat in the field. Collateral information including vegetative communities, soil types and topographic setting are further evaluated to aid in the photointerpretation process. This information is evaluated for seasonality and conditions existing at the time of photography and at ground truthing.

### Project Area

The project area is located throughout the eastern portion of Wyoming. Sheridan NW is in the north central portion of Wyoming. Arminto NE and Arminto SE are located in central Wyoming. Rawlins NE, Torrington NE and Torrington SW are located in the central eastern section of Wyoming. Cheyenne SE, Cheyenne Sw, Cheyenne NE and Cheyenne NW are located in the southeast corner of Wyoming. (See Appendix A)

Field reconnaissance was conducted in each of the maps in the task order.

### Field Personnel

Renee Whitehead	-	U.S. Fish and Wildlife Service
Amy Alford	-	Geonex, Inc.
Lynn Ashby	-	Geonex, Inc.
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Field Dates

July 13 - 24, 1992

Aerial Photography

Primary Source Data (100%)

Type: HAP Color Infra-Red High Altitude

Scale: 1:58,000

Torrington NE; 8/21/80, 8/28/80, 9/7/80, 9/29/80, 10/6/80,  
7/5/81

Torrington SW; 6/2/81, 6/25/81, 7/5/81, 7/6/81, 9/17/81,  
9/18/81, 7/21/82, 10/7/82

Rawlins NE; 7/31/80, 9/4/80, 9/5/80, 9/26/80, 9/17/81,  
10/1/81

Arminto NE; 7/31/80, 8/28/80, 9/4/80, 9/5/80, 9/20/80,  
8/18/81, 9/8/81

Arminto SE; 7/31/80, 8/28/80, 9/4/80, 9/5/80, 9/14/80

Sheridan NW; 7/8/80, 7/21/80, 7/22/80, 7/27/80, 7/28/80,  
9/3/80, 9/5/80, 9/20/80, 7/8/81, 9/7/81,  
9/18/81, 10/1/81

Cheyenne NW; 6/2/81, 6/25/81, 7/5/81, 7/6/81, 9/12/81,  
9/17/81, 9/18/81, 7/21/82, 10/7/82

Cheyenne SW; 6/2/81, 6/25/81, 7/5/81, 7/6/81, 9/12/81,  
9/17/81, 9/18/81, 10/7/82

Cheyenne NE; 8/21/80, 8/28/80, 9/7/80, 9/29/80, 10/6/80

Cheyenne SE; 8/21/80, 8/22/80, 8/28/80, 9/7/80, 9/29/80,  
10/6/80, 7/5/81

Percentage Coverage: All 256 USGS quadrangles were  
covered with the HAP photography.

## Collateral Data

United States Geological Survey (USGS) Quadrangles  
Soil Conservation Service Soil Surveys  
Bailey's Description of the Ecoregions of the United States  
Water Resources Data Wyoming  
National List of Plant Species That Occur In Wetlands:  
Northwest (Region IX)  
National List of Plant Species That Occur In Wetlands:  
North Plains (Region IV)  
Hydric Soils of the State of Wyoming

### III. PHYSICAL DESCRIPTION OF PROJECT AREA

According to Bailey, Description of the Ecoregions of the United States (1980), The study area is composed of three provinces. These provinces are within the dry domain where evaporation exceeds the annual precipitation.

The Wyoming Basin Province is the first of these provinces. This province consists of Rawlins NE and Arminto SE. Portions of Arminto NE, Sheridan NW, Cheyenne NW and Torrington SW are located within this province along with midsections of Cheyenne SW and Torrington NE.

The Rocky Mountain Forest Province is another ecoregion making up this study area. Located in this province is the eastern half of Sheridan NW, the upper west portion of Arminto NE, eastern portions of Torrington SW, Cheyenne NW and Cheyenne SW.

Torrington NE and eastern parts of Arminto NE, Arminto SE, Cheyenne SE and Cheyenne NE are located in the Great Plains-Shortgrass Prairie Province.

#### Geography

Wyoming Basin Province - This region is characterized by plains interrupted occasionally by low mountains and hills. Altitudes range from 6,000-8,000 feet. Few mountains are 1,000-2,000 feet higher than the plains.

Rocky Mountain Forest Province - These are glaciated, rugged mountains between 3,000-12,000 feet. There are some high elevation plateaus composed of horizontally layered rock.

Great Plains-Shortgrass Prairie Province - Region consists of rolling plains. These plains are flat, but there are occasional buttes, canyons and valleys located throughout the area.

## Climate

Wyoming Basin Province - This climate is characterized by cold winters due to its altitude and latitude. Summers are short and hot. Annual temperature averages range from 40°F to 52°F. Annual precipitation ranges from 5 inches to 14 inches and is evenly distributed throughout the year. The average growing season is less than 140 days.

Rocky Mountain Forest Province - The precipitation in this province falls in winter. Most of the annual precipitation in the higher mountains falls as snow. There are few permanent snowfields and glaciers in the high mountain areas. At the base of these mountains rainfall is the primary precipitation. The annual rainfall amount is only 10-20 inches. East slopes of the mountains are drier than the west slopes. Average annual temperatures in the mountain areas are 35° to 45° F and the valley temperature reaches 50° F.

Great Plains-Shortgrass Prairie Province - The total amount of moisture is low with the maximum rainfall in the summer. The average amount of precipitation is approximately 10 inches. The average annual temperature is 45° F. The growing season is less than 100 days.

## Vegetation

Wyoming Basin Province - The major vegetation is sagebrush with a mixture of short grasses. Near streams in the mountains where water is available, willow and sedges line the valley floor. Farther away from the mountains the above vegetation gives way to greasewood.

Rocky Mountain Forest Province - This province is characterized by distinct vegetational zones. These zones are determined by a combination of altitude, latitude, prevailing wind direction and slope exposure.

The upper most zone is alpine, which is characterized by alpine tundra and absence of trees. The subalpine zone is dominated by Englemann spruce and subalpine fir. The next zone is the montane where ponderosa pine and Douglas-fir are dominant. Located below the montane are the foothills. These are dry rocky slopes where mountain mahogany and several types of scrub oak are found in shrub form.

Unforested parks are characteristic of this province. These are generally dominated by grasses, but some are covered in sagebrush and other shrubs.

Great Plains-Shortgrass Prairie Province - Sparse trees and occasional shrubs are scattered throughout. The area is predominantly shortgrasses usually clumped and sparsely distributed. Buffalo grass is the grass commonly found here and sunflower and locoweed are the typical forbs growing here.

## Soils

**Province:** Wyoming Basin

**Group:** The majority of the soils in this province are the soils of the Intermountain Basins and foothills.

**Soil:** The soil that dominates this group is light in color and found in basins, terraces and fans. This soil is usually dry in all parts.

**Association:** The associations found in the group are: Torrifluvents-Haplargids and Haplargids-Calciorthids which are formed by transported material. Torriorthents-Haplargids-Rock Outcrop, Torriorthents (red), Torriorthents (fine) and Haplargids-Torriorthents are associations found in this group formed from residual material.

**Soil:** Another soil in this group is light in color and found in basins, terraces and fans. This soil is usually dry but may be moist in some parts during the summer.

**Association:** One association in this group is formed by transported material. This association is named Calciorthids-Haplargids. The other associations are formed from residual material.

**Group:** The next largest group in this province are the soils of the Eastern Wyoming Plains. These soils are dark and light in color and located on upland plains, terraces and fans.

**Soil:** These soils are usually moist in some parts during the summer. There are two types of formation within this group of soils. The first is from transported materials.

**Association:** The associations formed by this process are Torripsamments, Torrifluvents-Haplargids and Torrifluvents-Haplargids-Torriorthents. The last process of formations by residual material are located on steep uplands. Torriorthents (shallow), Torriorthents-Torriorthents (shallow), Torriorthents-Torriorthents (shallow-rock outcrop) and Torriorthents are the remaining associations in this group.

- Group:** The smallest group of soils in this province are the soils of mountains and mountain valleys.
- Soil:** These soils are dark in color and are usually moist in some parts during the growing season. These soils are formed from residual materials.
- Association:** The associations in this classification are EutroboralFs-Haploborolls, Haploborolls-Argiborolls-Rock Outcrop and Haploborolls (shallow).
- Province:** Rocky Mountain Forest Province
- Group:** The dominant soil group in this province is the soils of mountain and mountain valleys.
- Soil:** The first of two classifications is a combination of dark and light in color. These soils of the high mountains are usually moist.
- Association:** The associations under this classification are formed by residual material. The names of the associations are CryoboralFs-CryoboralFs, CryoboralFs-Cryoborolls, Rock Outcrop-CryoboralFs-Cryoborolls, Cryoborolls and Cryochrepts-Cryumbrepts.
- Soil:** The second classification of soil is dominantly dark in color and are usually moist in some parts during the growing season.
- Association:** There is only one soil found in the class. This soil is formed from residual material and is named EutroboralFs-Haploborolls.
- Group:** The second group of soils found in the Rocky Mountain Forest Province are the soils of the Intermountain basin and foothills.
- Soil:** Within this group the dominant soil is light in color and is found in basins, and on terraces and fans. These soils are usually dry in all parts.
- Association:** The dominant factor in formation of the soil described above is transported material. The associations formed by this process are Torrfluvents-Haplargids and Haplargids-Torrfluvents. The remaining process of formation is from residual material and the only association under this process is Torriorthents.

- Soil:** The next abundant soil is light in color and found in basins, terraces and fans. This soil is usually dry but may be moist in some parts during the summer.
- Association:** These soils are formed by two different processes. The first association is Argiborolls-Torriorthents and it is formed from transported materials. The other association is formed from residual material and its name is Torriorthents-Rock Outcrop.
- Group:** The soil association is Torriorthents-Torriorthents (shallow). This soil is formed from residual materials on steep uplands.
- Association:** The final group in this province contains one association. It is in the group of soils of the Eastern Wyoming Plains. It is characterized by soil that is dark and light in color. It is located on upland plains, terraces and fans. This soil is usually moist in some parts during the summer.
- Province:** Great Plains-Shortgrass Prairie
- Group:** The only soil group found in the province is the soil of the Eastern Wyoming Plains.
- Soil:** This soil is dark and light in color and found on upland plains, terraces and fans. The soil is usually moist in some parts during the summer. The three types of formation are represented by these associations.
- Association:** The first process of formation is by transported materials. The associations included in the process are Torripsamment (shallow) and Torriorthents-Haplargids. Torriorthents (shallow), Torriorthents-Torriorthents (shallow) and Argiustolls (shallow) are formed by residual material on steep uplands. The last soil associations are located on nearly level to rolling upland plains, terraces and fans. These associations are Haplargids-Paleargids-Torriorthents, Haplargids-Torriorthents, Argiustolls-Haplustolls and Haplustolls-Argiustolls-Torriorthents.

#### IV. DESCRIPTION OF WETLAND HABITATS

##### Riverine

The major drainage basins within the study area are the Powder River, the Medicine Bow River, North Platte River and North Laramie River. The Medicine Bow and portions of the North Laramie River will be classified R2UBH. R2UBF will be used on riverine systems that would have been classified R4SBF in past projects. The Powder River and the North Fork of the Powder River will be classified R3UBH. R3UBF will be used in the mountains to classify feeder streams of main drainages.

Riverine bars will be classified R2USC, R2USA, R3USC or R3USA. Intermittent streams are classified R4SBA and R4SBC according to photo signature. Irrigation canals are classified R4SBCx and R2UBFx based on photo signature.

##### Lacustrine

Any natural water body larger than twenty acres is classified L2ABF.

The reservoirs in this study area are classified L1UBHh. Sybille Dam and Lake Hattie are examples of this classification. There are a few exceptions to this, for example, Glendo Reservoir is classified L2ABGh. There are a few shallow reservoirs located throughout the study area classified as L2ABFh.

Unconsolidated shores located adjacent to these reservoirs are classified L2USCh or L2USAh depending of photo signature. Unconsolidated shores associated with the natural lakes are classified L2USC and L2USA.

Regardless of size, lakes in the high elevations with any part of the shoreline composed of rock are classified L1UBH.

##### Palustrine

This classification is used on the majority of wetlands in the study area. Emergents (PEMA, C, F and B) and aquatic bed (PABF and G) are the dominant cover types. These are located in pockets and swales associated with riverine and lacustrine systems. PSSA and PFOA are also represented in the same situations but are less prevalent.

The unconsolidated shore classification is used when there is a well defined border and a scoured white (PUSA) or a grey/blue (PUSC) signature.

The following are species encountered while field checksiting prior to delineation:

Palustrine Temporary Emergents: PEMA

Hordeum jubatum, foxtail barley  
Juncus spp., rush  
Rumex spp., dock  
Phleum pratense, timothy  
Agrostis alba, red top

Palustrine Saturated Emergents: PEMB

Eleocharis spp., spikerush  
Sphagnum spp., moss  
Allium spp., wild onion  
Typha sp., cattail  
Carex sp., sedge  
Pedicularis groenlandica, elephant's head  
Ranunculus spp., buttercups  
Swertia perennis, alpine bog swertia  
Polygonum bistortoides, American bistort  
Aster spp., asters  
Trifolium spp., clovers  
Carex spp., sedge  
Mertensia ciliata, streamside bluebells  
Epilobium spp., willow herb  
Polygonum spp., smartweed  
Sedum sp., queens crown

Palustrine Seasonal Emergents: PEMC

Beckmania syzigachne, American sloughgrass  
Eleocharis spp., spikerush  
Scirpus americanus, threesquare  
Agrostis alba, red top

Palustrine Semi-permanent Emergents: PEMF

Typha spp., cattail  
Scirpus validus, softstem bulrush  
Scirpus americanus, common threesquare

Palustrine Semi-Permanent Aquatic Bed: PABF

Lemna spp., duckweed

Palustrine Intermittently Exposed Aquatic Bed: PABG

Lemna spp., duckweed

Palustrine Saturated Scrub-Shrub: PSSB  
Salix spp., willow  
Kalmia microphylla, alpine bog laurel  
Potentilla fruticosa, shrubby cinquefoil

Palustrine Temporary Scrub-shrub: PSSA  
Salix spp., willow  
Elaeagnus angustifolia, Russian olive

Palustrine Seasonal Scrub-shrub: PSSC  
Salix spp., willow  
Populus deltoides, eastern cottonwood  
Elaeagnus angustifolia, Russian olive  
Alnus incana, speckled alder

Palustrine Temporary Forested: PFOA  
Populus deltoides, eastern cottonwood  
Elaeagnus angustifolia, Russian olive  
Salix spp., willow

Palustrine Temporary Unconsolidated Shore: PUSA  
Salicornia europaea, glasswort

Palustrine Seasonal Unconsolidated Shore: PUSC  
Salicornia europaea, glasswort

Salt flats were also noted in the study area. These were sparsely vegetated with slender glasswort (Salicornia europaea).

## OBSERVED WETLAND VEGETATION TABLE

### A. EMERGENT

<u>Agrostis alba</u>	red top
<u>Allium</u> spp.	wild onion
<u>Eleocharis palustrine</u>	spikerush
<u>Epilobium</u> spp.	willow herb
<u>Hordeum jubatum</u>	foxtail barley
<u>Juncus</u> spp.	rush
<u>Pedicularis groenlandica</u>	elephant's head
<u>Phleum pratense</u>	timothy
<u>Ranunculus</u> spp.	buttercups
<u>Rumex</u> spp.	dock
<u>Salicornia europaea</u>	glasswort
<u>Scirpus acutus</u>	Hardstem bulrush
<u>Scirpus americanus</u>	common threesquare
<u>Sedum</u> sp.	queens crown
<u>Sphagnum</u> spp.	moss
<u>Scirpus pallidus</u>	alkali bulrush
<u>Scirpus validus</u>	softstem bulrush
<u>Typha latifolia</u>	cattail
<u>Trifolium</u> spp.	clovers

### B. AQUATIC BED

<u>Lemna</u> spp.	duckweed
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### C. SCRUB-SHRUB

<u>Salix</u> spp.	willow
<u>Elaeagnus angustifolia</u>	Russian olive
<u>Populus deltoides</u>	eastern cottonwood
<u>Alnus incana</u>	speckled alder

### D. FORESTED

<u>Populus deltoides</u>	eastern cottonwood
<u>Elaeagnus angustifolia</u>	Russian olive
<u>Salix</u> spp.	willow

Table 1. NWI WETLAND CLASSIFICATION CODES, COWARDIN DESCRIPTION AND COMMON TERMINOLOGY

NWI CODE WATER REGIME	COWARDIN DESCRIPTION	COMMON DESCRIPTION	VEGETATION
R2UB (F,G,H)	Riverine, lower perennial, unconsolidated bottom	Meandering rivers, low gradient	Unconsolidated bottom
R2US (A,C)	Riverine, lower perennial, unconsolidated shore	Mud, sand, or gravel bars	Unconsolidated shore
R3UB (F,H)	Riverine, upper perennial, unconsolidated bottom	Mountain streams, major drainage areas	Unconsolidated bottom
R3US (A,C)	Riverine, upper perennial, unconsolidated shore	Mud, sand, or gravel bars	Unconsolidated shore
R4SB (A,C)	Riverine, intermittent, streambed	Small streams, creeks, or irrigation ditches	Streambed
L2AB (F)	Lacustrine, littoral, aquatic bed	Natural shallow lakes	Aquatic bed
L2AB (F,G)	Lacustrine, littoral, aquatic bed	Impoundments and reservoirs	Aquatic bed
L2US (A,C)	Lacustrine, littoral, unconsolidated shore	Dry alkaline lake beds	Unconsolidated shore
PUB (F)	Palustrine, unconsolidated bottom	Open water, settling ponds	Unconsolidated bottom
PAB (F,G,K)	Palustrine, aquatic bed	Deep basins, impoundments, sewage treatment	Aquatic bed

Table 1. NWI WETLAND CLASSIFICATION CODES, COWARDIN DESCRIPTION AND COMMON TERMINOLOGY

NWI CODE WATER REGIME	COWARDIN DESCRIPTION	COMMON DESCRIPTION	VEGETATION
PEM (A, B, C, F)	Palustrine, emergent	Basins, depressions, marshes, meadows, springs, seeps, oxbows, or drainage areas	<u>Eleocharis palustris</u> (spikerush) <u>Hordeum jubatum</u> (foxtail barley) <u>Juncus</u> spp. (rush) <u>Phleum pratense</u> (timothy) <u>Rumex</u> spp. (dock) <u>Salicornia europaea</u> (glasswort) <u>Scirpus acutus</u> (hardstem bulrush) <u>Scirpus americanus</u> (common threesquare) <u>Scirpus pallidus</u> (alkali bulrush) <u>Scirpus validus</u> (softstem bulrush) <u>Typha</u> (cattail)
PSS (A, B, C)	Palustrine, scrub-shrub	Thickets, river banks, seeps, springs, oxbows, or drainage areas	<u>Salix</u> spp. (willow) <u>Flaegnus augustifolia</u> (Russian olive) <u>Populus deltoides</u> (Eastern cottonwood) <u>Alnus incana</u> (speckled alder)

Table 1. NWI WETLAND CLASSIFICATION CODES, COWARDIN DESCRIPTION AND COMMON TERMINOLOGY

NWI CODE WATER REGIME	COWARDIN DESCRIPTION	COMMON DESCRIPTION	VEGETATION
PFO (A,B)	Palustrine, forested	Cottonwood, river banks, oxbows, floodplains, drainage areas or associated with seeps on a slope	<u>Populus deltoides</u> (eastern cottonwood) <u>Elaeagnus angustifolia</u> (Russian olive) <u>Salix</u> spp. (willow)
PUS (A,C)	Palustrine, unconsolidated shore	Salt flats	Unconsolidated shore

## V. WATER REGIME DESCRIPTION

- (A) Temporarily Flooded - Surface water present for brief periods during growing season, but water table usually lies well below soil surface. Plants that grow both in uplands and wetlands are characteristic of this water regime.
- (B) Saturated - The substrate is saturated to the surface for extended periods during the growing season, but surface water is seldom present.
- (C) Seasonally Flooded - Surface water is present for extended periods especially early in the growing season, but is absent by the end of the growing season in most years. The water table after flooding ceases is extremely variable, extending from saturated to a water table well below ground surface.
- (F) Semipermanently Flooded - Surface water persists throughout the growing season in most years. When surface water is absent, the water table is usually at or very near the land's surface.
- (G) Intermittently Exposed - Surface water is present throughout the year except in years of extreme drought.
- (H) Permanently Flooded - Water covers the land surface throughout the year in all years.
- (K) Artificially Flooded - Substrate manipulated by man using natural or synthetic materials. Water level is not constant. Depending on needs, the water is pumped in or out of the reservoir.

## VI. IMAGERY

The HAP Color Infra-Red photography is of good quality. Some problems occurred when there were different dates and emulsions of photography. (i.e. Cheyenne SW fields. One strip was blood red and the adjacent was bleached out pink.)

## PHOTOGRAPHIC CONVENTIONS FOR PALUSTRINE WETLANDS

Palustrine wetlands represent the majority of wetlands in the Wyoming project. Palustrine wetlands can be classified by water regime as artificial, saturated, temporary, seasonal, intermittently exposed, semi-permanent or permanent.

### Artificial Water Regime

Artificial palustrine wetlands appear as open water or aquatic bed. These are sewage treatment settling ponds. Man's influence on the water level of these ponds is ever changing. Aquatic bed will always be used with this water regime.

### Saturated Water Regimes

Saturated water regime will be used with emergents, scrub-shrub and a few forested areas.

Saturated emergent wetlands are associated with springs and seeps. They are also located on slopes. In the higher elevations where there are glacial fields and permanent snow packs depicted on the topo, saturated emergents may be present.

Saturated scrub-shrub and forested areas are few. These are restricted to areas on a steep slope in association with a seep.

### Temporary Water Regimes

The temporary water regime will be used with the scrub-shrub, forested, emergent and unconsolidated shore classes.

There are very few temporary emergents. The ones that are pulled will be a well defined basin shape having a pale pink or blue color. Some may be associated with seasonal emergents along drainages. These will also have a pink signature.

The temporary trees and shrubs will be located along riverine systems. These signatures will be pink and clumpy in texture. There may be seasonal emergents associated with these wet trees and shrubs.

Unconsolidated shore signatures will have a well defined basin boundary and a scoured white signature.

### Seasonal Water Regimes

Seasonal water regimes are used to classify emergents, scrub-shrub and unconsolidated shore.

Seasonal emergents will appear as a deep red or brown swaled signature. This signature will usually be associated with basins, riverine systems and irrigation canals. Hayed fields were found in some areas to be entirely seasonal while other areas contained only pockets of seasonal emergents.

Most of the seasonal scrub-shrub will be associated with beaver dams. The scrub-shrub signature in this water regime will be clumpy in texture, stunted, red color and may have an understory of seasonal emergents. This classification will also be found along major drainages and limited areas in the mountains.

Seasonal unconsolidated shore signatures will be a well defined grey to blue signature. This classification may have shallow water signature in all or part of the polygon.

### Semipermanent Water Regimes

Wetlands in this study area that are classified semipermanently flooded are emergents, unconsolidated bottom and aquatic bed.

This water regime will be used with the unconsolidated bottom class to identify excavated ponds, rivers and irrigation canals with an open water signature on the photography.

Emergents in this water regime will be a deep dark red signature with a clumpy texture.

Large natural shallow water bodies over twenty acres will be classified semipermanently flooded along with some shallow impounded reservoirs in this project.

### Intermittently Exposed Water Regime

Small bodies of water in the higher elevations surrounded by vegetation will be classified aquatic bed, intermittently exposed.

Some of the larger impounded reservoirs will carry this water regime. Glendo Reservoir is one example.

## CONVENTIONS FOR LINEAR WETLANDS

Linear wetlands are delineated if there is evidence of hydrophytic vegetation, open water or a scoured white streambed.

Most vegetated wetland linears will be classed PEMC. There are few PEMA linears. Care has to be taken not to delineate upland grassy waterways. There will be a few PEMF linears associated with riverine systems. The PEMF signature is a dark red almost black color with some texture throughout.

There are a few PFOA and PSSA linears associated with riverine systems. Many of these willow and cottonwood linears are found in old meander scars and oxbows.

The major riverine systems in the study area are the Powder River and the North Fork of the Powder River which are classified R3UBH. The Medicine Bow River, Sheep Creek and portions of the North Laramie River will be R2UBH.

Small mountain tributaries out of the higher elevations feeding into major drainages will be classified R3UBF. These will have visible streambeds and may or may not have some water running in them. North and South branch of Sybille Creek and Ashley Creek are also classified R3UBF due to the smaller size and the cobble bottom that was evident in the field.

Intermittent linears in the lower elevations will be classified R2UBF, R4SBC or R4SBA according to signature. R2UBF will usually be a shallow open water signature. R4SBC will have shallow intermittent water throughout the course of stream flow. R4SBA will have a well defined scoured white signature.

Vegetated roadside ditches are classified PEMC which will carry the excavated modifier (x).

## MISCELLANEOUS

This section addresses conventions that are uncommon throughout the area.

All ponds which are excavated will be classified PUBFx, PUSC<sub>x</sub> or PUSAx. These include golf course ponds and oil and gas sludge pits. All sewage treatment settling ponds will carry the PABK<sub>x</sub> label.

Irrigation canals will vary in class depending on size of canal and photo signature. R2UBFx will be open water on photo. R4SBC<sub>x</sub> has a linear size streambed or will be void of vegetation and may have an open water signature. PEMC<sub>x</sub> will have a vegetated photo signature.

## VII. MAP PREPARATION

The classification and delineation of wetlands is in accordance with Cowardin et al (1979). National Wetlands Inventory photographic and cartographic conventions can provide more information about the mapping process. Delineations are produced through stereoscopic interpretation of 1:58,000 scale color infrared photography. The dates of photography ranged from 1980 through 1984. The months the mission was flown were June through October.

Field checks were conducted in each of the eight 1:100,000 maps in the study area prior to the delineation of wetlands. The check sites were selected to clarify wetland/upland breaks and coinciding signatures to the various vegetative covers.

USGS topographic maps, SCS soil surveys, USGS water resource data book for 1990 water year, vegetation, climate and ecoregional information are all used as collateral data for wetland delineation.

The user of the map is cautioned that, due to the limitation of mapping primarily through aerial photointerpretation, a small percentage of wetlands may be unidentified. Since the photography depicts only one specific moment in time there may be discrepancies between the maps and current field conditions. Changes in landscape which occurred after the date of photograph would result in such discrepancies.

Aerial photointerpretation and drafting were completed by Geonex, Inc., St. Petersburg, Florida with quality assurance conducted by the United States Fish and Wildlife Service.

## VIII. SPECIAL MAPPING PROBLEMS

Field checking proved that photo signatures generally coincided with true field conditions.

Hayed fields throughout the study area posed some problems. Photography is from the early 1980's and some agricultural practices have changed. Signatures were sometimes lost due to mowing. Extensive ground truthing in these areas were performed in order to more accurately delineate these fields. (See Mapping Conventions, page 8, for a more indepth review).

**IX. MAP ACQUISITION**

To discuss any questions concerning these maps, please contact:

Regional Wetland Coordinator  
U.S. Fish and Wildlife Service - Region 6  
Denver Federal Center  
P. O. Box 25486  
Denver, CO 80225

To order maps call 1-800-USA-MAPS.

Maps are identified by the name of the corresponding USGS 1:24,000 scale topographic quadrangle name. Topographic map indices are available from the USGS.

X. LITERATURE CITED

Bailey, R.G., 1978. Description of The Ecoregions of The United States. United States Department of Agriculture, Forest Service.

Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRue, 1979. Classification of Wetlands and Deepwater Habitats of The United States. United States Department of Interior, Fish and Wildlife Service, FWS/PBS - 79/81.

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Wetland Plants of the State of Wyoming, 1986. United States Department of the Interior, Fish and Wildlife Service.

National List of Plant Species That Occur In Wetlands: Northwest (Region IX), 1988. United States Department of The Interior, Fish and Wildlife Service.

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7.5 Minute, 1:100,000 and 1:250,000 Scale USGS Topographic Maps.

APPENDIX A  
LOCATOR MAP

WYOMING PROJECT AREA

