

Western Water Use Management Model Western Canal Service Area Acreage Classification Comparison

DRAFT MEMORANDUM

TO: Western Water Use Management Model Technical Team
FROM: Marc Groff
RE: Western Canal Acreage Comparison
DATE: 30 Aug 2012

INTRODUCTION

This memo is intended to provide a brief overview of the information and process used to develop a comparison of acreage classification datasets which overlie the Western Canal service area. This comparison was prompted by the need to select a representative dataset for use in the Western Water Use Management Model (WWUMM). This analysis was assembled to provide information regarding what information is available within the area of interest in order to facilitate discussion among the technical team.

DATA SOURCES

COHYST

The COHYST land use information is summarized from two land use classification efforts – one completed in August of 2010 and one completed in July of 2012. The August 2010 effort was conducted by the Nebraska Department of Natural Resources (DNR) as a revision and update to the original COHYST land use dataset that covered both the original Central and Eastern COHYST Models (essentially the areas modeled as part of COHYST east of the Nebraska panhandle). The effort represented the time period 1950 through 2005 and covered the entirety of the Western Canal service area as represented in COHYST.

The July 2012 effort was a further revision and update conducted as part of the COHYST 2010 project. While this effort did extend the represented time period through 2007, it was more geographically focused than the August 2010 effort. As it relates to the Western Canal service area, lands within the Twin Platte NRD were updated, while lands in the South Platte NRD were not.

Both of these efforts were developed using a “grid cell” based approach. The acreage classifications were summarized within a 160 acre cell. No attempt was made to define where within a given 160 acre cell a certain land use type occurred.

The August of 2010 and July of 2012 efforts have been merged for work currently being conducted as part of the COHYST 2010 project. The time period covered by this combined dataset corresponds to the current focus of the COHYST 2010 project which is 1985 – 2005. This merged dataset comprises the COHYST land use information summarized as part of this comparison.

WWUMM

The WWUMM land use information is summarized from the land use classification effort conducted by Leonard Rice Engineers¹. This effort represented the time period 1953 – 2010. With respect to the Western Canal service area, lands within the South Platte NRD are represented, while lands within the Twin Platte NRD are not.

This WWUMM effort used a “parcel” based approach. Acreage classifications for both irrigated and non-irrigated croplands were summarized within annually changing polygons of varying size/shape that were derived from digitizing land use imagery. No attempt was made to define where within a given parcel a certain land use type occurred. Lands not classified within a polygon are assumed to be rangeland.

PROCESS

To identify classification records for comparison, certain database field values within each dataset were used. Within the COHYST dataset, records having a “District ID” field value of “55” were selected. The value of “55” indicates that the cell is within the Western Canal service area as defined for the COHYST project.

Within the WWUMM dataset, records having a “SW_FAC” field value of “Western Canal” were selected. These records represented the irrigated parcels related to the Western Canal. In order to select parcels for comparisons to non-irrigated (or “dry” cropland) and to rangeland classifications, a different process was required as the non-irrigated parcel records do not have the field “SW_FAC” populated and rangeland is not specifically identified (rather it is the remaining area after all other lands are classified within parcels). For comparisons of these classifications, it was determined that a common geographic area should be used and the classifications within that area compared. The geographic area taken for this analysis was the area assigned within the COHYST project as being within the Western Canal service area. WWUMM information was spatially joined to this area using a uniform distribution of classification assignments (i.e. if a parcel was only partially within the geographic area of concern, the

¹ Refer to the report “Western Water Use Management Model: Irrigated and Dryland Acreage Assessment, May 2012” prepared by Leonard Rice Engineers, Inc. for additional details.

acreage assigned inside/outside of the geographic area was split based on the percentage of the polygon located inside/outside of the geographic area). Rangeland assignments were populated as the remainder of the geographic area not assigned to either an irrigated or non-irrigated crop classification.

Figure 1 provides a graphical look at this process for the year 2005 within the South Platte NRD. As the figure indicates, irrigated lands from the WWUMM project are not constrained to the Western Canal service area defined by the COHYST project as they were selected based on their record attributes. The figure also shows that the COHYST defined service area does not extend completely to the Western Canal diversion point. Figures 2-5 provide a graphical look at the datasets for the year 1994.

RESULTS

Charts 1 through 5 provide a comparison of lands classified as being irrigated with surface water only, as being irrigated with both surface water and groundwater, as being irrigated with ground water only, as being non-irrigated cropland, and as being rangeland, respectively, within the South Platte NRD. Chart 6 provides the annual values for those same classifications from the COHYST dataset within the Twin Platte NRD.

FIGURES

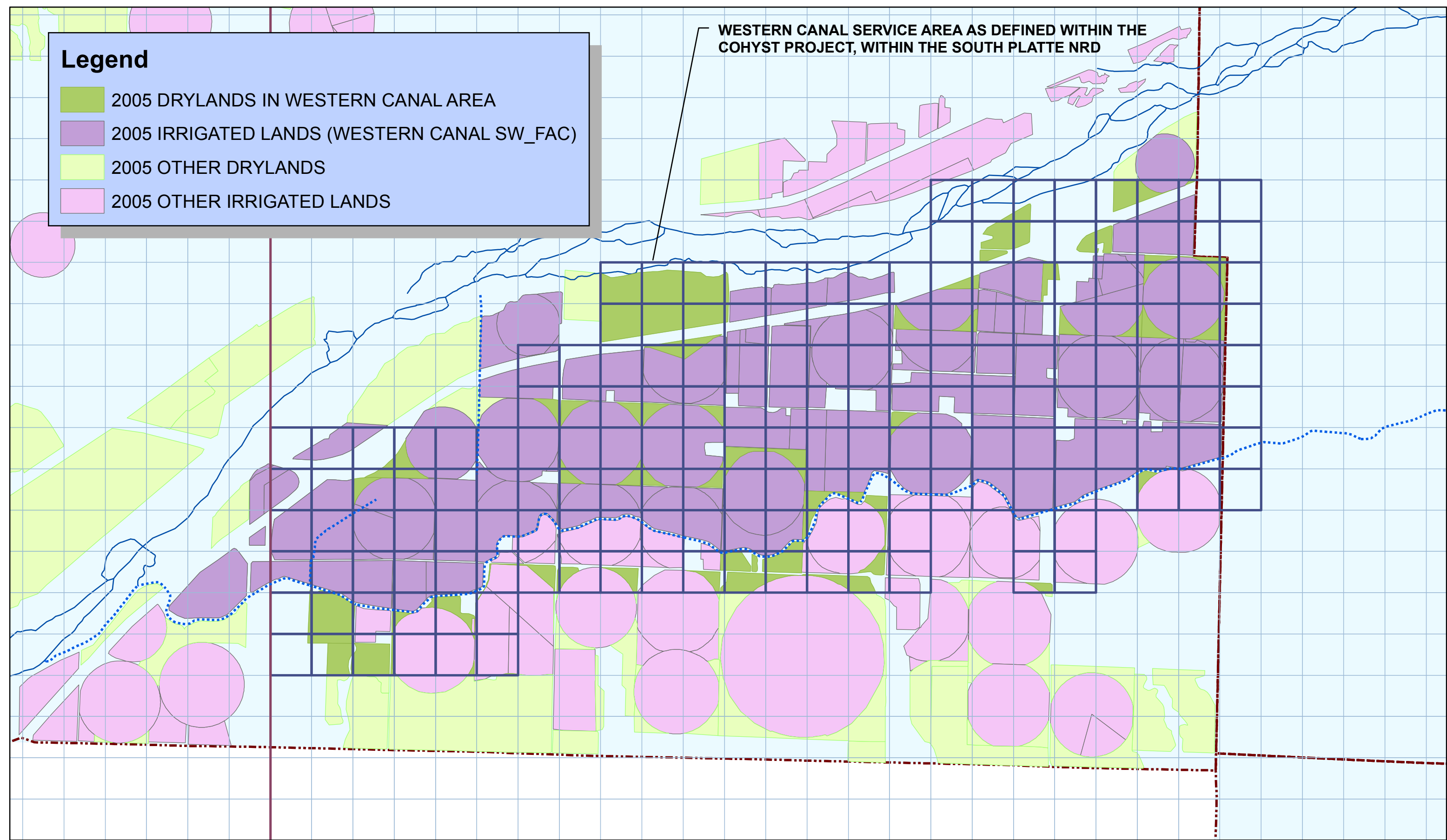


FIGURE 1 - 2005 WESTERN WATER USE LANDS ASSOCIATED WITH WESTERN CANAL

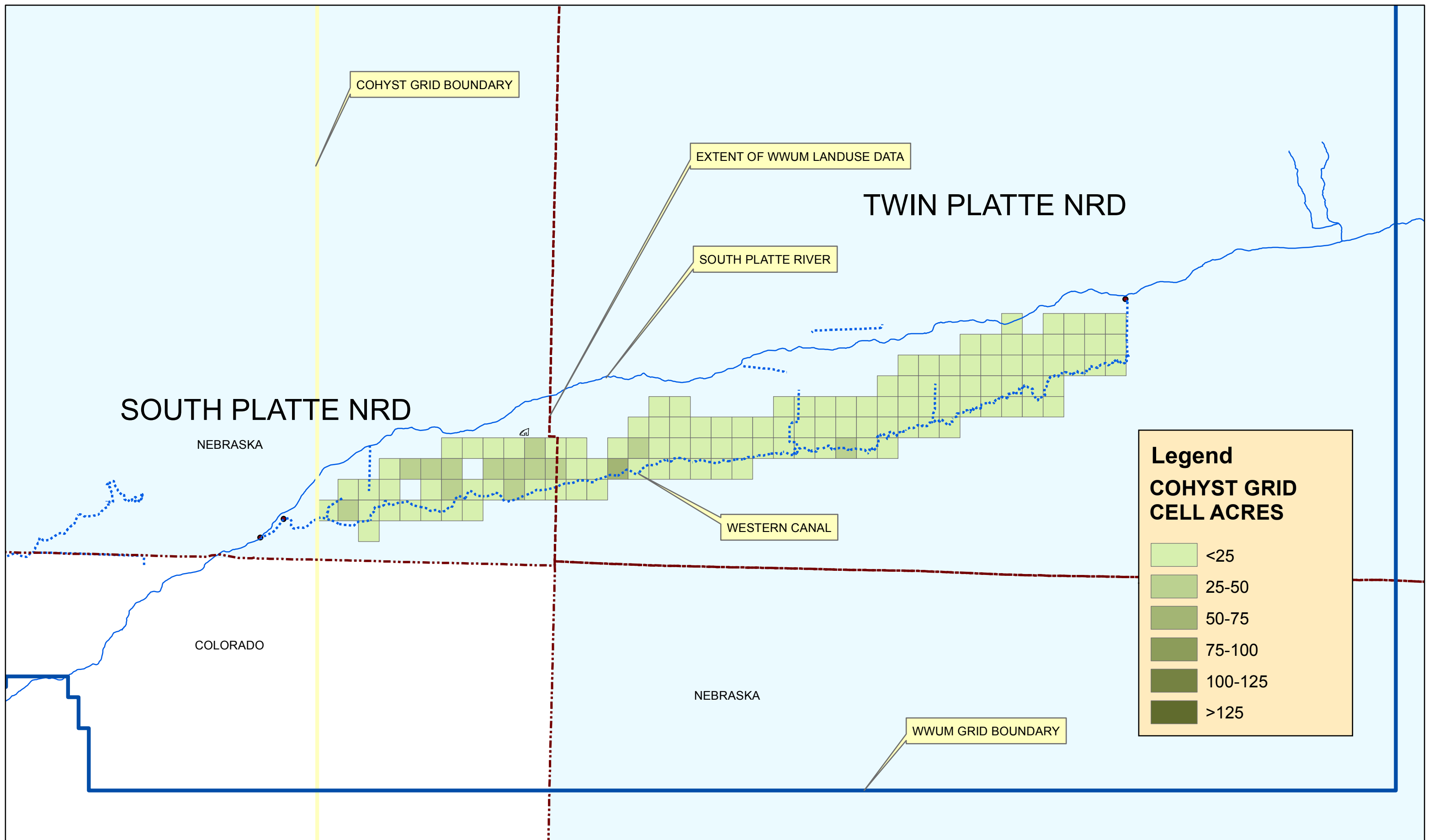


FIGURE 2 - COHYST WESTERN CANAL LANDUSE WITH WWUM PARCELS OVERLAID - SURFACE WATER ONLY

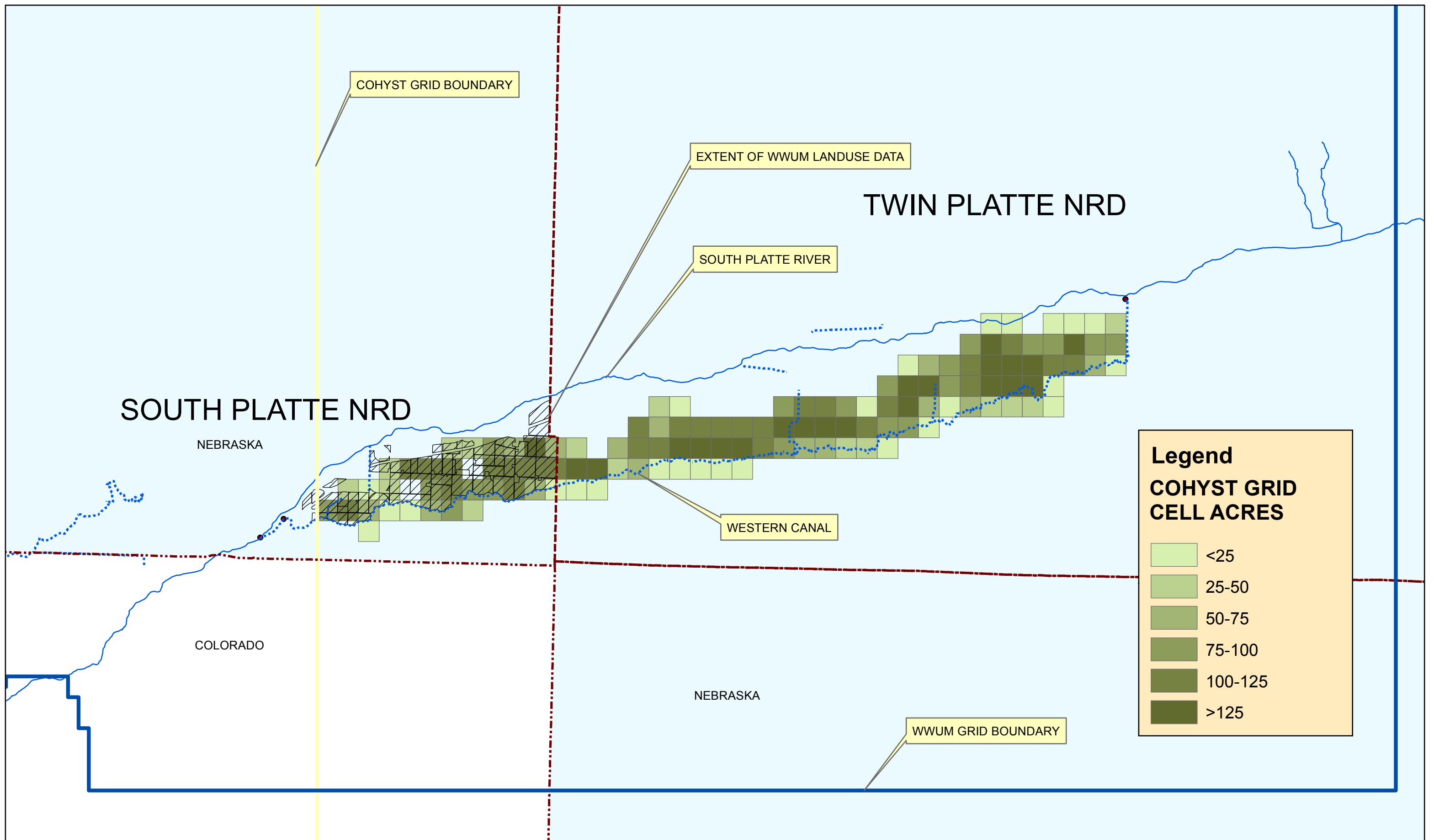


FIGURE 3 - COHYST WESTERN CANAL LANDUSE WITH WWUM PARCELS OVERLAID - COMINGLED

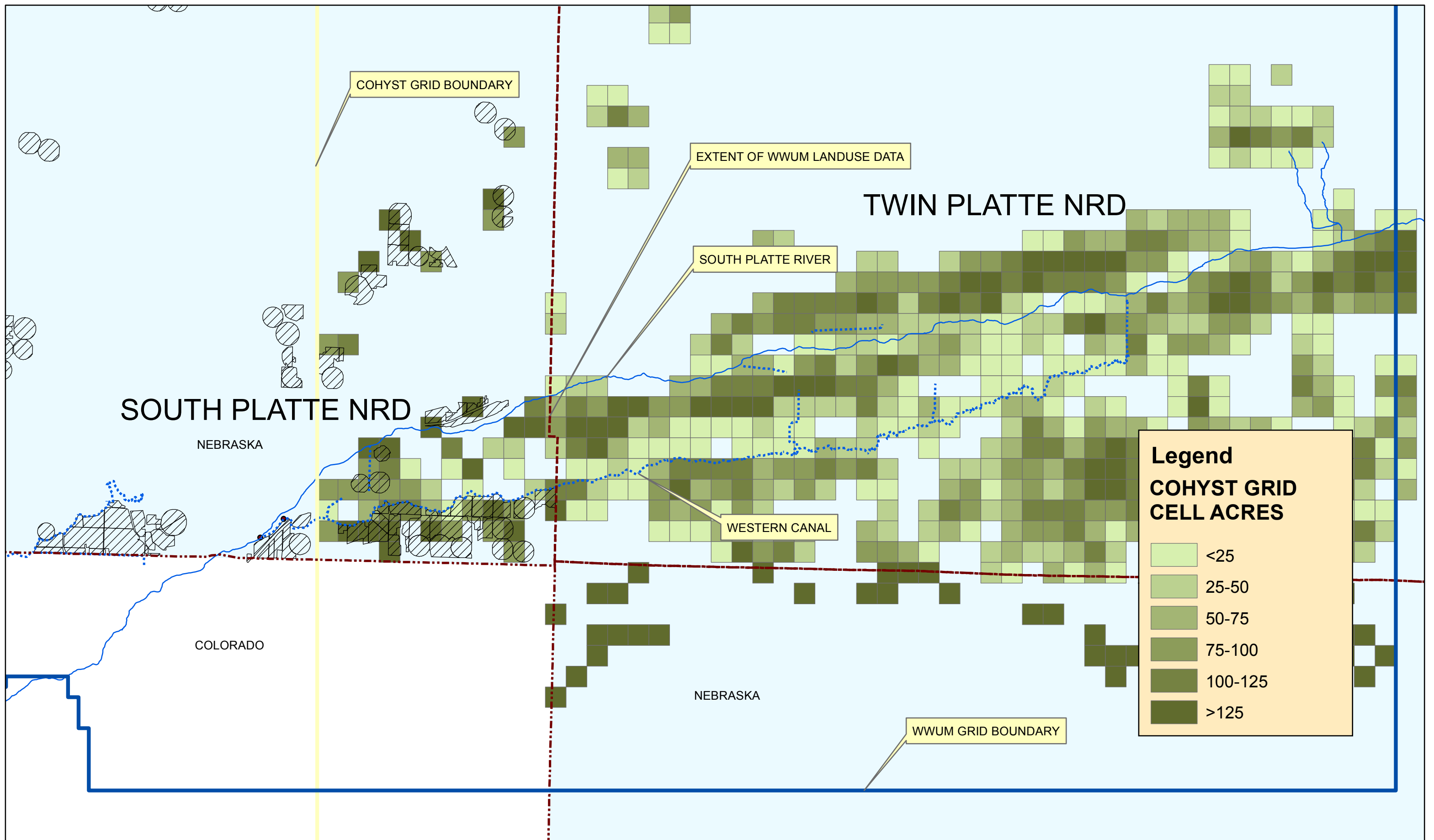


FIGURE 4 - COHYST WESTERN CANAL LANDUSE WITH WWUM PARCELS OVERLAID - GROUNDWATER BASINWIDE

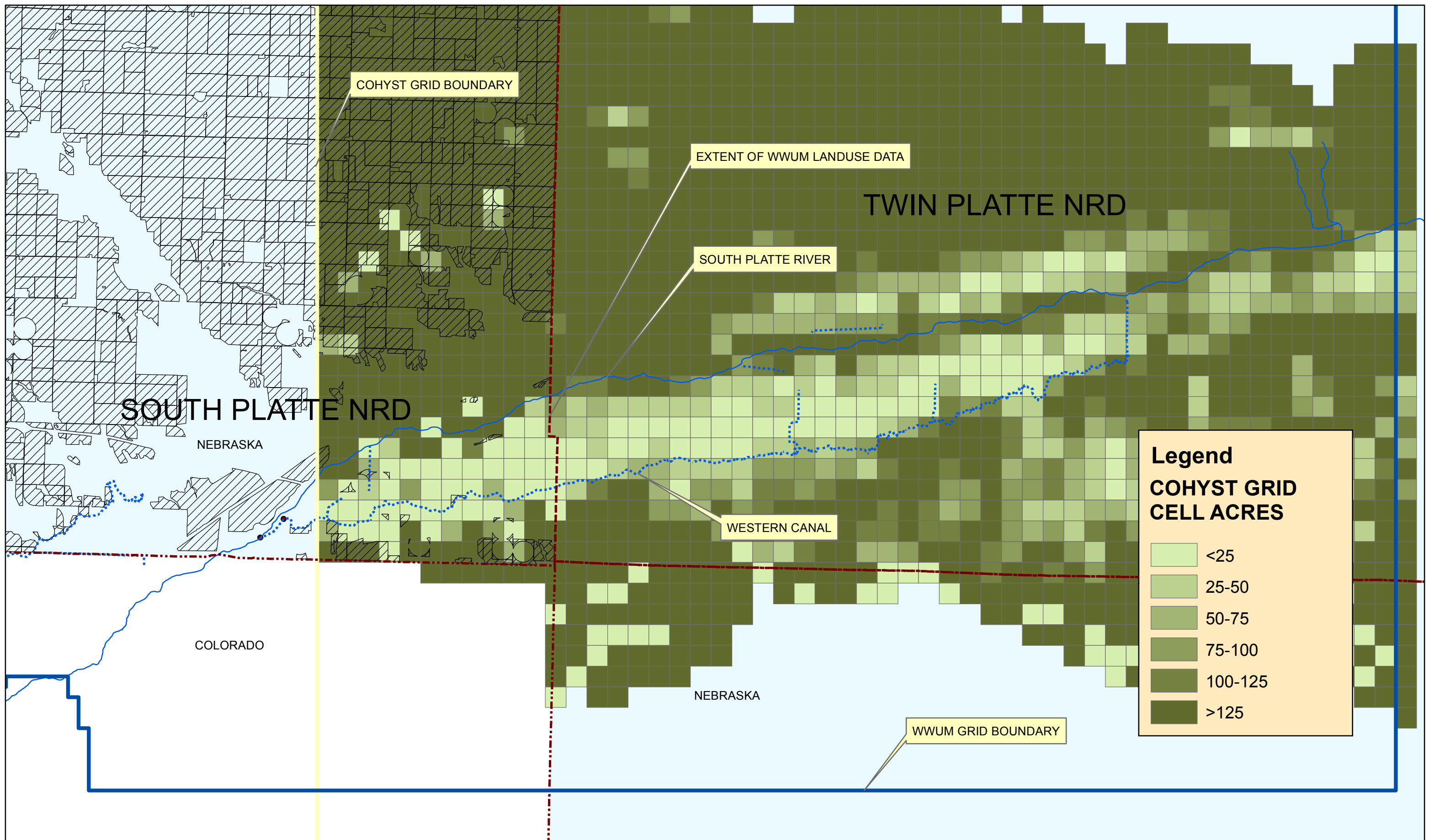


FIGURE 5 - COHYST WESTERN CANAL LANDUSE WITH WWUM PARCELS OVERLAID - DRYLANDS BASINWIDE

CHARTS

Chart 1: South Platte Surface Water Only

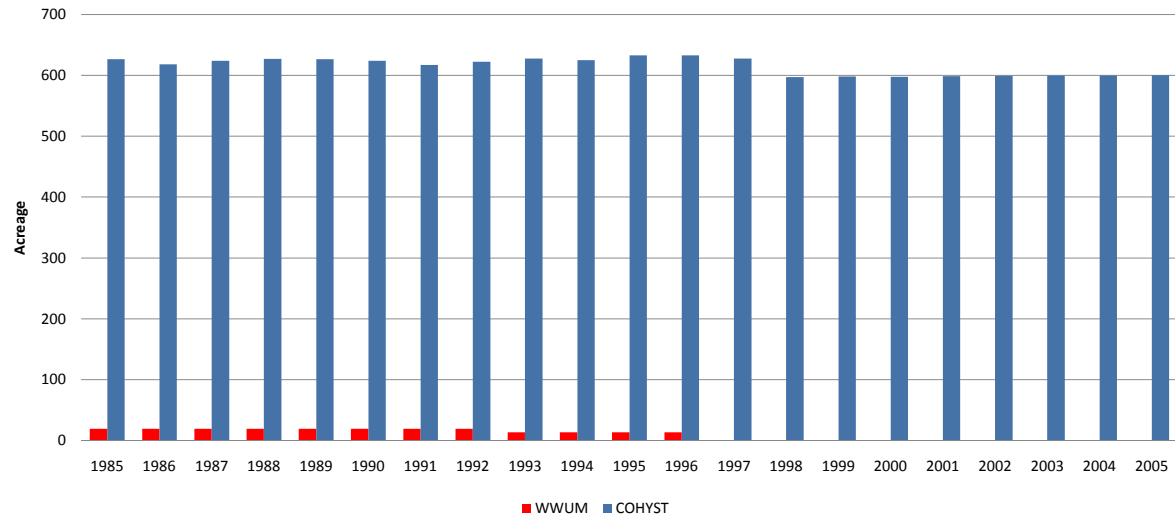


Chart 2: South Platte Commingled

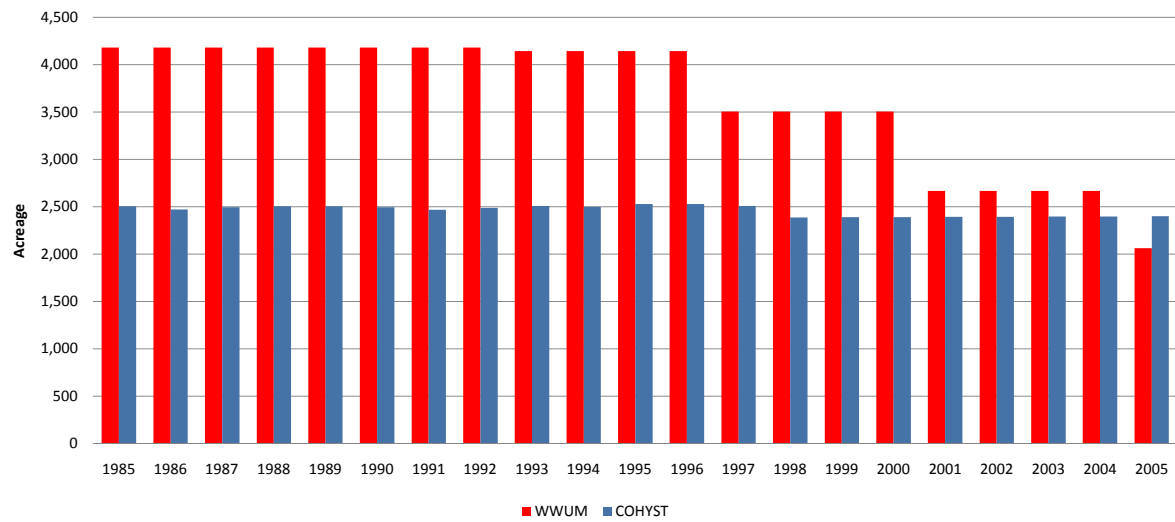


Chart 3: South Platte Ground Water Only

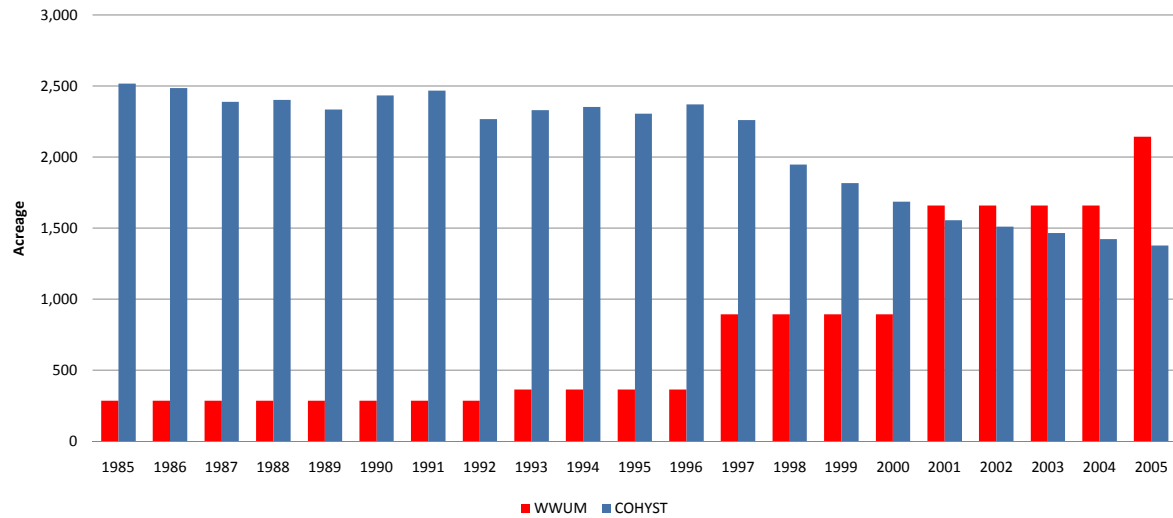


Chart 4: South Platte Dry Cropland

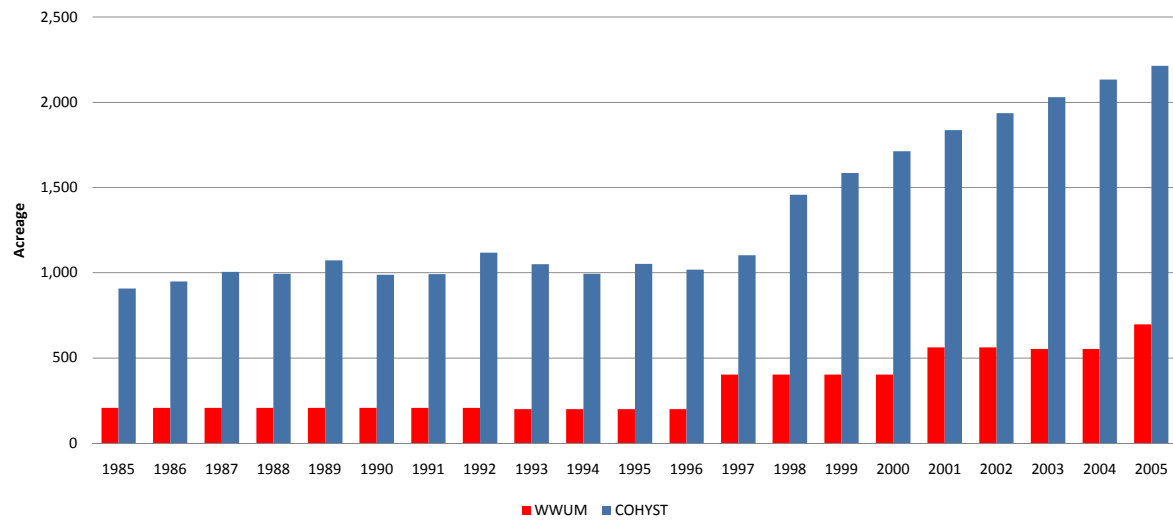


Chart 5: South Platte Rangeland

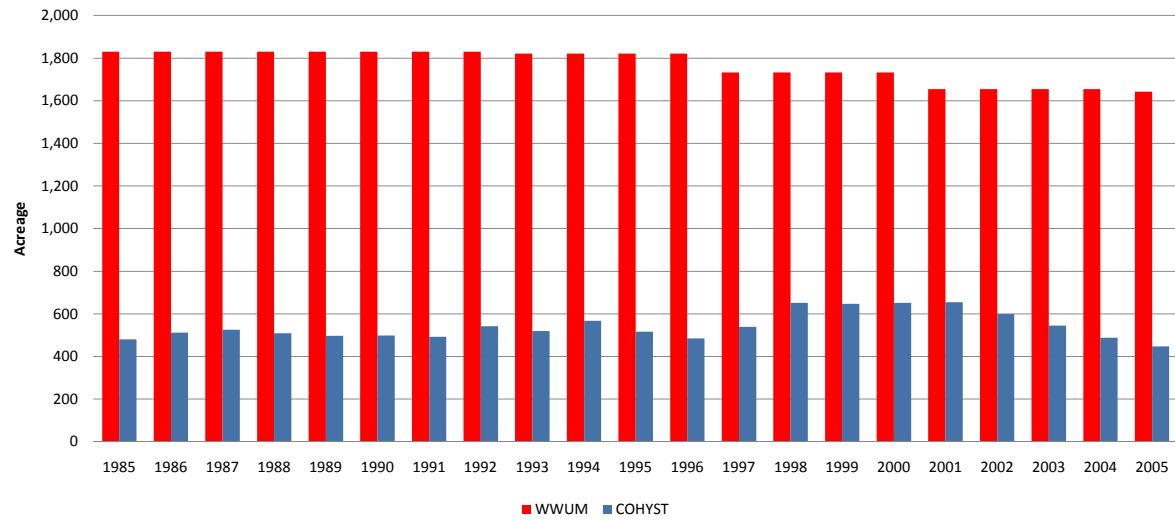


Chart 6: Twin Platte COHYST Acres

