

MEMORANDUM

To: Katie Knapp, City of Boulder Planning and Development Services
From: Alan Carpenter, Land Stewardship Consulting, Inc.
Re: Review of Environmental & Engineering Assessment & Feasibility Study for
Hogan–Pancost Property
Date: November 22, 2010

Introduction

Per your request, I reviewed certain documents provided to the City by the consultants for the proposed Hogan-Pancost property development project. I reviewed the Executive Summary and associated figures in Book 1 of the Environmental & Engineering Assessment & Feasibility Study. I also reviewed the portions of Book 2 of the Environmental & Engineering Assessment & Feasibility Study relating to wetland delineation, vegetation and wildlife habitat existing conditions, species of special concern, and wetland mitigation and enhancement. I also visited the property to a) gain a better understanding of its environmental values, b) check the wetland delineation, and c) determine if any wetland areas were omitted from the delineation.

On October 7, 2010, I attended a meeting at the City office building where the project proponents and consultants, principally David Johnson, responded to the comments I made in the August 27, 2010 memo. On November 22, 2010, I reviewed the responses by David Johnson to the comments in the August 27, 2010 memo as well as to comments made during the October 7, 2010 meeting. This memo reflects slight revisions to my memo dated August 27, 2010.

Wetland Delineation

The hydrology of the subject property has been substantially altered over time. The Dry Creek Ditch #2 was constructed along the western border of the West parcel and the Howard-Superphosticle Ditch bisects the East parcel and runs across a small area of the West parcel. Both of these ditches convey significant amounts of adjudicated water. The CD Bodam lateral runs along the southern boundary of the West parcel. Much of the property has been flood-irrigated starting in the 19th Century.

The consultants established a ground water monitoring program to determine if the wetlands “are due to a natural high ground water table, a groundwater table elevated by irrigation ditches and laterals, or due to flood irrigation practices”. Flood irrigation was terminated on the West parcel during 2008 but continued on the East parcel. The consultants installed a number of ground water monitoring wells from which data were collected in 2008. The consultants also investigated the vegetation and soils of putative wetlands to determine if they possessed wetland vegetation and soils. The results of the vegetation and soils investigation and the ground water monitoring were used to delineate wetlands.

Terminating flood irrigation on the West parcel enabled the consultants to determine if the putative wetlands exhibited wetland hydrology in the absence of irrigation. Wetland hydrology was assumed to exist if “The site is inundated (flooded or ponded) or the water table in ≤ 12 inches below the soil surface for ≥ 14 consecutive days during the growing season at a minimum frequency of 5 years in 10 ($\geq 50\%$ probability).” (National Research Council 1995)

The ground water monitoring indicated that the wetlands on the West parcel are induced by seepage from Dry Creek Ditch #2 and are not the product of a naturally high ground water table. Thus, most of the wetlands, most notably Wetlands A, B, and C (per the consultant report), in the West parcel are not jurisdictional. Areas of wet meadow which I observed during my site visit and which appeared to be wetland due to the dominance of wetland plant species do not possess wetland hydrology once irrigation was terminated during 2008, according to the ground water monitoring data. That notwithstanding, wetlands that are the products of leaky ditches and/or irrigation are regulated by the City of Boulder under the terms of its Stream, Wetland and Water Body Protection Ordinance.

The U. S. Army Corps of Engineers concluded that the 0.228-acre linear wetland located along Dry Creek Ditch #2 is jurisdictional because this ditch flows north to South Boulder Creek. The Corps also concluded that the 0.227-acre wetland A, the 0.21-acre wetland B, and the 0.28-acre wetland C are not jurisdictional, because they do not provide flows to the Dry Creek Ditch #2.

The ground water levels in the East parcel are likely influenced by the Howard-Super-phosticle Ditch which flows all year. Ground water levels in the monitoring wells in the East parcel exhibited wetland hydrology. However, because flows in this ditch were not terminated during the ground water monitoring, it was not possible to determine if the wetlands in the East Parcel are the product of seepage from the ditch or a naturally high water table. Thus, the consultants assumed that the wetland areas, collectively encompassing 1.622 acres, on the East parcel may have natural wetland hydrology and are jurisdictional.

Vegetation and Wildlife Habitat

The subject property is characterized by the consultant documents as degraded due to its long history of intensive agricultural use. The vegetation of the property typically consists of introduced, alien species, some of which are listed as noxious weeds by the State of Colorado, and by weedy native species. According to the consultant reports, the vegetation of the property consists of 10.588 acres of degraded agricultural seeding, 8.355 acres of Colorado noxious and other weeds, 1.957 acres of man-induced jurisdictional wetlands, 0.465 acres of non-jurisdictional wetlands, and 0.324 acres of plains cottonwoods. Thus, 87% of the subject property is classified as either degraded agricultural seeding or Colorado noxious and other weeds. The most abundant noxious weeds on the property are common teasel (*Dipsacus fullonum*), Scotch thistle (*Onopordum acanthium*), common mullein (*Verbascum thapsus*), diffuse knapweed (*Acosta diffusa*), Canada thistle (*Breea arvensis*), and field bindweed (*Convolvulus arvensis*).

I observed small areas of wet meadow in the West parcel that are dominated by native wetland plant species and which are in good condition. As explained elsewhere, these areas were not classified as wetland by the consultants because they lacked wetland hydrology. In addition, wetland areas A, B, and C, which were judged to be non-jurisdictional, from the standpoint of US Army Corps of Engineers regulations, are generally dominated by native plant species and are in fair to good condition.

In spite of its degraded condition, the property does have some wildlife value, primarily for generalist species that are common in urban areas. These species include raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), red fox (*Vulpes vulpes*), and coyote (*Canis latrans*). The small area of plains cottonwood forest in the eastern portion of the East parcel is probably the most significant wildlife habitat on the property, because the canopy of the cottonwoods provides foraging and nesting habitat for numerous songbird species, e.g., vireos and warblers. In addition, the Howard-Super-phosticle Ditch and the wet meadows in the West parcel provide

suitable habitat for native small mammal species such as meadow vole (*Microtus pennsylvanicus*) and prairie vole (*Microtus ochrogaster*).

As explained below, the proposed mitigation and enhancements, if successful, could greatly improve the quality of the vegetation on the property and the amount and quality of the wildlife habitat.

Species of Special Concern

The consultant reports mentioned a number of species of special concern that are known to occur in Boulder County. Such species include those that are listed as either threatened or endangered or as candidates by the federal government or the State of Colorado and species denoted as “special concern” by the Colorado Division of Wildlife. Also included are significant natural communities, rare plants areas, significant riparian corridors, and critical wildlife habitats as shown in the Boulder County Comprehensive Plan.

A number of species were quickly eliminated from active consideration because they do not occur in the area and/or because the property does not provide suitable habitat for them. The property could conceivably provide suitable habitat for three of the listed species, namely Preble’s meadow jumping mouse, Ute ladies’ tresses orchid, and the Colorado butterfly plant, in the future if proposed mitigation activities are successful; however, it is very unlikely that these species now occur on the property. Consultants familiar with the jumping mouse concluded that the property does not provide suitable habitat for this species, because of the lack of dense riparian vegetation. It worth noting, however, that the jumping mouse is found on adjacent City of Boulder Open Space and Mountain Parks (OSMP) land along South Boulder Creek. If the proposed wetland mitigation and enhancement measures on the East Parcel are successfully implemented, it is possible that the jumping mouse might colonize the East parcel. Repeated surveys over several years during the flowering period failed to reveal any Ute ladies’ tresses orchids, although this species occurs on OSMP land about one-fourth mile south of the subject property. The Colorado butterfly plant is known to occur in Colorado and southeastern Wyoming in plains riparian habitats on upper portions of stream banks. The only remotely comparable habitat on the property occurs along the Howard-Super phosticle Ditch; however, the butterfly plant has not been observed on the property, and it likely does not exist there due to the decades of heavy agricultural use.

The black-tailed prairie dog (*Cynomys ludovicianus*) inhabits the property. According the consultants, the population of prairie dogs is increasing on the property. I observed many prairie dogs and active burrows during my site visit. If the property is developed for residential use, the prairie dogs would presumably be relocated or exterminated.

Of the special concern species, the only two that might inhabit the property include the northern leopard frog (*Rana pipiens*) and the common garter snake (*Thamnophis sirtalis*). The property lacks the standing water habitat favored by the northern leopard frog. However, the common garter snake “inhabits marshes, ponds, and the edges of streams”, according to Hammerson (1988). The Howard-Super-phosticle Ditch and its strip of riparian vegetation provide suitable habitat for the common garter snake.

The consultants dismissed all of the areas identified in the Boulder County Comprehensive Plan, because they do not occur on the property. That is the case. However, the somewhat rare plant, tulip gentian (*Eustoma grandiflora*), occurs in wet meadows similar to those that exist on the property, particularly on the West parcel. Furthermore, the South Boulder Creek (+ wetlands)

Critical Wildlife Habitat Area lies about ¼ mile northeast of the subject property, although this species has not been documented from this Area.

In addition, the property appears to abut the South Boulder Creek Natural Area, as shown in the OPSMP Visitor Master Plan of 2005. The proximity of the subject property to OSMP lands gives weight to the proposal of the consultants that the East parcel would not be developed and that the degraded habitat there would be greatly improved via habitat creation and enhancement activities.

Wetland Mitigation and Enhancement

The jurisdictional and non-jurisdictional wetlands on the property are typically in fair to poor condition, reflecting the abundance of introduced alien and weedy native species.

The consultant reports state that 0.228 acres of jurisdictional wetland located along the Dry Creek Ditch # 2 would be lost due to the proposed development. Because the ditch would be piped through the property. The Corps of Engineers permit states that this loss of wetland along Dry Creek Ditch #2 can be mitigated by purchase of 0.261 acres of wetland mitigation credit in the Middle South Platte River Wetland Mitigation bank. However, the consultant report states that the mitigation would be accomplished by creating 0.465 acres of wetland on the East parcel. I did not find any reference to the need to prepare an augmentation plan to compensate for increased loss of tributary ground water from the created wetlands.

The proposed project would result in the loss of 0.465 acres of non-jurisdictional wetland in the western portion of the West parcel. This loss would be mitigated by restoring 0.227 acres of wetland (Wetland A per the consultant reports) in the southwestern corner of the West parcel.

The proposed prairie bioswales would include 2.921 acres of shortgrass prairie, with stringers of riparian vegetation, as part of the overall proposed mitigation.

Enhancements include controlling noxious weeds and other introduced, alien plant species on both the West and East parcels. In addition, plains cottonwood and peach-leaf willow trees would be planted along the lower-elevation areas of the proposed prairie bioswales in the West parcel, which would function as stormwater conveyance channels. Finally, plains cottonwood and peach-leaf willow trees would be planted in various areas on the East parcel to create additional wildlife habitat. The consultant report states that the entire 2.73-acre East parcel would be restored to native habitats, which would include both wetland and non-wetland areas.

Summary

The wetland delineation, as informed by the ground water monitoring and the field investigation of vegetation and soils, appears to be reasonable overall. The ground water monitoring data on the West parcel indicates that presence of the ditches, the lateral, and flood irrigation has provided the hydrology to support wetlands in portions of the property. I observed a small area (about 70 feet long and 3 feet wide), along the northern boundary of the West parcel and adjacent to the southern side of the Howard-Super phosticle Ditch, which appeared to be wetland in that it was dominated by wetland plant species and had saturated soil, but which was apparently not mapped as wetland by the consultants. This could be resolved if a new wetland delineation is performed when the Hogan-Pancost property is annexed to the City. Areas of wet meadow which I observed during my site visit and which were dominated by wetland vegetation did not meet the wetland hydrology criteria as set forth in the National Research Council report. The wetland area

along the Dry creek Ditch #2 and the wetland areas in the East parcel were judged to be jurisdictional.

The property is highly degraded due to its long-term, intensive agricultural use. Development of the property would be concentrated in areas that have minimal natural habitat or wildlife value. Some areas of fair to good condition native vegetation (e.g., wet meadow that is not jurisdictional wetland) would be lost due to development.

The proposed project would likely eliminate one species of special concern, namely the black-tailed prairie dog, from the property. Presumably, the prairie dogs living on the subject property would be relocated or exterminated. This would greatly complicate the project if the black-tailed prairie dog were listed as “threatened” by the federal government. Successful implementation of the proposed mitigation and enhancements for the project would likely increase the habitat value of the property for the northern leopard frog, common garter snake, and the tulip gentian, three species that could inhabit, but which are apparently now absent from, the property.

I believe that conducting the wetland mitigation and enhancements on the subject property would be preferable to buying credits in a wetland mitigation bank, because the mitigation and enhancements could greatly increase the quantity and quality of natural habitats on the property. The property would also have a much greater aesthetic appeal if the proposed mitigation and enhancements are successful.

The consultants mention that the East parcel would be “preserved” but do not explain exactly what this means. This could involve conveying a perpetual conservation easement over the East parcel or perhaps conveying fee title to the East parcel to a qualified organization. Perhaps another appropriate means of protecting the natural resources of the East Parcel could be employed.

Attachments

Twenty-two photographs taken on August 19, 2010, and printed four to a page, plus a photolog with GPS coordinates and brief descriptions of the photo locations.

Please call me at 303.443.8094 or send me an e-mail at alantcarpenter@comcast.net if you have any questions or comments.