

DRY CREEK CHANNEL REPORT

Airpark Village

Fort Collins, Co.

UPDATED
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PURPOSE OF REPORT

The purpose of this report is to discuss the two features of the site that will likely have the greatest impact on its development. These items are the construction of a major flood channel through the site, and the site soils. Additional items are discussed as matters of information.

DRY CREEK CHANNEL DISCUSSION

The site is currently subject to significant flooding during high flows in Dry Creek resulting from an upstream drainage basin area of slightly under 62 square miles. The City of Fort Collins has determined the ultimate 100 year flow reaching the northerly property line of the site to be 680 cubic feet per second after full development of the basin and completion of all drainage facilities currently proposed by the Dry Creek Drainage Basin Master Plan and the North College Drainage Improvements Design plan. However the improvements proposed by the North College Drainage Improvements Design are only proposals that will possibly be built at some unknown time in the future with no firm commitment as to when funding will occur. Because there is hardly even a remote idea of when the North College Drainage Improvements could be built, it has been proposed to construct the facilities through Airpark Village for an interim 100 year peak flow of 943 cfs plus tributary onsite flow utilizing a channel design standard slightly less stringent than for the 680 cfs. The net result is the channel size required for each condition is identical. The draft LOMR has been prepared by the City for 943 cfs.

The City of Fort Collins has major flood control improvements under construction within the portion of the basin above Vine Drive that will be completed this year. The City Council recently authorized the expenditure of \$700,000 to construct the railroad bridge immediately south of the reinforced concrete box culverts under Vine Drive. The bridge will be constructed on the existing ground. The channel under it will be excavated in the future when the channel to the south is constructed. Investigations indicate the best location for the channel is adjacent to the northerly boundary. Exploratory backhoe pits near this alignment have been dug by the City. Soil investigation borings by the Developer have also been made over the whole site. This alignment respects the FAA requirement for a 250' minimum clearance from the centerline of the runway as long as the airport is in operation, and joins the end of the previously constructed channel adjacent to Timberline Road. This route is the best because when combined with zoning requirements related to buffer strips and open space, it yields the least amount of land that must be committed to undevelopable status. It does however require construction of an additional small channel along the southerly site boundary and construction of the usual pipes, inlets and other facilities required to handle the onsite runoff. The City's contractor recently came up with a preliminary estimate of cost for

construction of the 6800' of channel from the railroad bridge to the existing Timberline Channel at \$600,000, not including the cost of R/W, engineering, surveying, contract administration, utility relocations and box culverts at proposed street crossings. Approximately 6000' of the channel is within Airpark Village. This leaves 800' between the railroad bridge and the northerly boundary of Airpark Village.

The cost of construction of the facilities above Vine Drive and the railroad bridge have depleted the funds available for construction and the City has notified the Developer it did not include funds for construction of this portion in the 2006-2007 budget. A monthly stormwater fee payment is required on all properties in the City. It amounts to \$4100/month for Airpark Village in its undeveloped condition and will begin upon annexation. To avoid the need to provide for this in cash flow, a tentative agreement has been reached with the City to have this accrue as a credit against the eventual cost of the right-of-way in the amount of \$190,000 approximately. In addition, the City will include funding for the channel construction in its 2008-2009 budget.

The opportunity still exists for construction by the Developer under a payback agreement calling for reimbursement by the City.

The current citywide acreage drainage fee is \$3070/acre.

Precise channel alignment studies are underway to facilitate the design and construction of a 60" water line by the City of Greeley within the channel right-of-way.

Corps of Engineers Permit. (I need to check this info.) Whatever the location of the channel, a Corps of Engineers 404 permit and approval by the City's Natural Resource Department will be required. During the review process the Corps will contact the EPA, U.S. Fish and Wildlife Service, Colorado Division of Wildlife, Colorado Health Department, and the Colorado Historic Preservation Office. After evaluation of the comments from these agencies, wetland determinations and environmental evaluations, the Corps will determine the need for a public hearing. The Corps will then make its requirements known and issue or deny the permit. The process could take as much as 120 days after receipt of the application. The City will be submitting for the permit soon.

Ultimately, the Corps will issue the 404 permit to a single party or to multiple parties for a 2 year period unless a longer time is requested. It seems it would be advisable for the permit to be issued to the City of Fort Collins, and for at least a four year period to allow the maximum time flexibility and to hopefully avoid the possibility of having to deal with a new set of rules for renewal.

The Corps makes periodic inspections during the life of the permit and a final one at the end of construction.

The City Department of Natural Resources imposes conditions on the development when local attitudes and sentiments deem it necessary to be more restrictive than the Corps. These are generally written into a subdivision development agreement. The Department also makes inspections both during and at the end of construction.

FEMA Status FEMA has approved the City's CLOMR for the project and it is assumed no additional contact will be required until the completion of construction except for some discussions related to bridge crossings. Upon completion of construction the City will submit as-built plans and a LOMR requesting that FEMA revise the Dry Creek flood plain map. FEMA then has 90 days to accomplish the revision.

The developer can begin and complete subdivision site construction after City approval of subdivision construction drawings and can get a permit for construction of buildings prior to FEMA approval of the flood plain map revision by complying with stringent conditions outlined in the City Code. However the process is much simpler if done after approval of the LOMR.

The City has a developer reimbursement process in place in the event the channel gets built by the developer. It revolves around getting an agreement approved before design begins based on sound estimates, then submitting evidence of payment of all contractors upon completion of construction.

Greeley Water Line

The City of Greeley is in the process of building a 60" steel cylinder water line from north of Fort Collins to Greeley. They have elected to go through Airpark Village within the flood channel right-of-way. The pipe will have a cover of 5' placing the bottom at 10' below the elevation of the channel maintenance road. It will be located 12' to 13' north of the southerly right-of-way line of the channel. They plan to start construction on a 5 mile portion from east of I-25 to near E. Vine Drive in October 2006 and finish in 2007.

Soils Investigation Discussion A preliminary soils investigation has been completed. High ground water and the presence of collapsible soils are issues that will require attention. Much of the site is wet due to a high water table that varies from 1 foot to 6 feet below the ground surface depending on the time of year and the location on the site. Anecdotal evidence indicates it is corrosive in

nature near the hangars, possibly caused by an upstream polluter. There are known sinkholes throughout the property. The implication for development is that at least larger buildings will probably require pilings to bedrock in most areas of the property. Soils testing included drilling 23 holes into bedrock, up to 25 feet deep. Frequent soil samples were collected for laboratory analysis. Small slotted plastic pipes were installed in approximately half of the holes so the depth to groundwater could be monitored. The Soils Engineer will make preliminary foundation and pavement thickness recommendations based on his field observations, laboratory results and experience in the area.



Other Factors

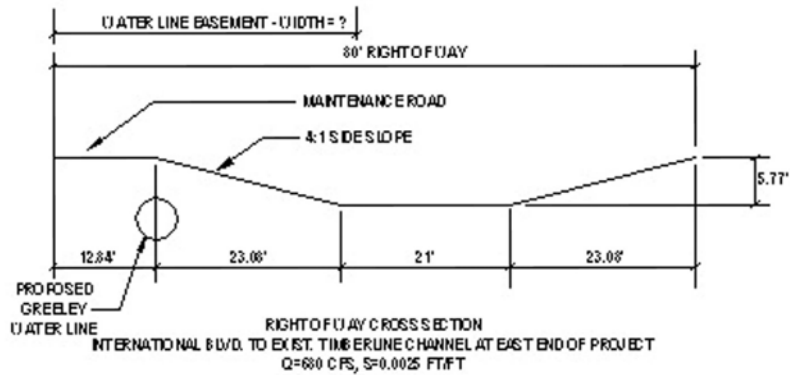
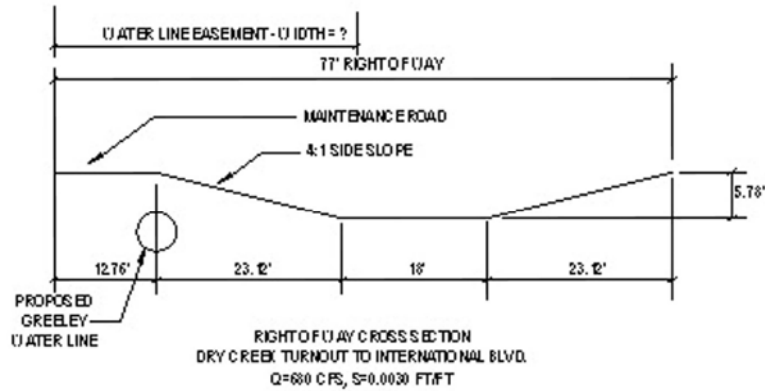
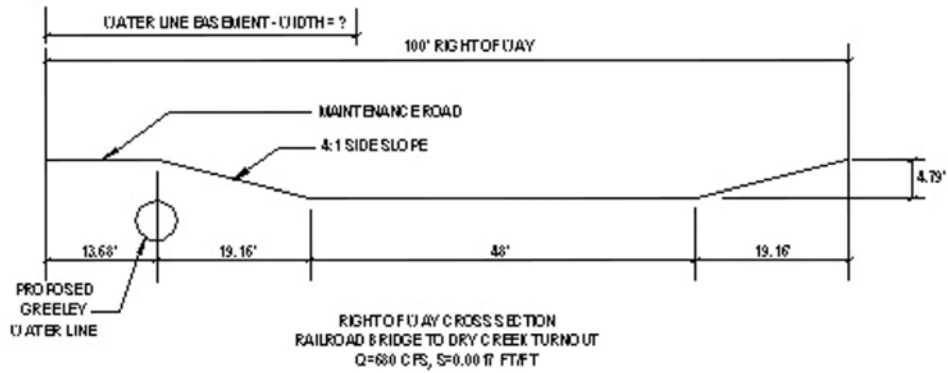
The channel will require up 100 feet of R/W with a depth up to 6 feet to accommodate 943 cubic feet per second of flood flow during a 100 year storm. The sides will slope at a 4:1 ratio for 25 or so feet allowing room for a minimum 10 foot wide maintenance road on one side. The moderate side slopes will simplify maintenance, and utilization for

recreation. Wetlands, grass and trees will be installed in the portion of the channel above the Dry Creek diversion. The channel downstream of this will be grassed. The channel bottom will most certainly soon support a natural growth of cattails as occurs in the existing channel adjacent to Timberline Road as shown in the photograph above. The cattails will support wildlife, which may become an amenity to future development.



Bridges

The existing City neighborhood plan shows **two** proposed roads crossing the airport. One is International Boulevard, the other is the main entry road coming from Timberline Road. This means box culvert bridges will be required where they cross the channel. Maintenance equipment will not be able to go under them so will get from one side of the street to the other by crossing at street grade level. The bridges will be constructed after the channel so an effort should be made to provide for the effect of the bridges on the depth of flow in the channel so retrofitting of the channel will not be required when the bridges are constructed.



Appendix A

CONTACTS

CITY OF FORT COLLINS, Utilities Department/Stormwater

700 Wood St., PO Box 580

Fort Collins, CO 80522-0580

Web page: fcgov.com/utilities

Voice: 970-221-6700 FAX: 970-221-6619

Contacts:

Jim Hibbard, P.E. - Water Engineering and Field Service Department Manager,

Owen Randall, P.E. - Senior Utility Engineer, 970-221-6619, orandall@fcgov.com

Link Mueller, P.E. - Special Projects Manager, 970-224-6039, lmuller@fcgov.com

Dean Saye - Special Projects Manager, 970-221-6212, dsaye@fcgov.com

Bob Smith - Storm Water Planning Manager, 970-224-6021, bsmith@fcgov.com,

Glen Schlueter - Civil Engineer, 970-224-6065, gschlueter@fcgov.com

Drainage responsibilities are shared by the above cited department representatives with Messrs. Randall, Mueller and Saye most directly involved in the design and scheduling aspects and Messrs. Smith and Schlueter involved in the ancillary functions relating to drainage policy and administration. Glen is a first contact to work out a payback agreement should the channel be built by a developer.

CITY OF FORT COLLINS, Natural Resources Department

281 N. College Ave.

Fort Collins, CO

Contact: Doug Moore

Voice tel: 970-224-6143 FAX: 970-224-6177

e-mail: dmoore@fcgov.com

Web page: fcgov.com

The domain of the Natural Resources Department with regard to this project is similar to that of the Corps of Engineers and the U.S. Fish & Wildlife Service and has the authority to enforce additional and stricter standards with respect to protection of natural habitats and features both onsite and in the vicinity of the site. An example would be requirement of buffer zones of from 50' along irrigation ditches to 2640' from bald eagle nest sites.

The standards are spelled out in a recently adopted amendment to Section 11 Article 3.4.1 of the Land Use Code dealing with "Natural Habitats and Features". This amendment will probably not show up on the City's web page for some time but can be obtained from the City, and a copy is included in this report as Appendix C. The amendment allows for some negotiated trade offs.

The requirements applicable to a project are determined during the planning process and become part of the development agreement.

Inspections of the site are made by City representatives on a periodic basis during and at the end of construction.

CORPS OF ENGINEERS

9307 S. Wadsworth Boulevard

Littleton, CO 80128-6901

Contact: Scott Franklin

Alternate contact: Rena

Voice tel: 303-979-4120

FAX 303-979-0602

e-mail: j.scott.franklin@nwo.02.usace.army.mil

Web page: www.nwo.usace.army.mil

The mission of the Corps as related to this project is to enforce the provisions of Section 404 of the Clean Water Act as passed by Congress and deals with the placement of fill in wetland areas.

A full description of the authority of the Corps and its mission can be found at their web page. More detailed permit requirements can be found by clicking on “permits”, “Denver”, and “Permit Applications”. The Dry Creek project will fall in the “individual permit” category.

The permit may be issued to a party or parties for as long as 4 years if requested. Renewal of a permit can be requested but it can be denied resulting in loss of the permit, or additional requirements may be imposed. The permit requirements may be completed by second parties but the permittee is held responsible by the Corps.

The Corps addresses wetland mitigation and environmental impact issues in addition to holding any required public hearings. It also requests approvals from the EPA, Colorado Division of Wildlife, Colorado Health Department, Colorado Historic Preservation Office and the U.S. Fish and Wildlife Service (USFWS) as part of its mission. The likely USFWS contact would be Pete Plage (303-275-2309) at the Colorado Service Office. The USFWS web page is www.FWS.gov. See Appendix E for a copy of a Corps 404 Permit form and preparation instructions.

The currently known endangered species of concern are Ute Ladies’ Tress Orchid, Colorado Butterfly Plant and the Preble’s Meadow Jumping Mouse. None have been found on the property.

The Corps makes periodic inspections during construction, and a final inspection at the end.

FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

Web page: www.fema.com

Outside consultant:

Michael Baker, Jr., Inc.

355 Union Blvd., Ste 200

Lakewood, CO 80228

Voice tel: 303-986-5848
Contact: David Jula
e-mail: djula@mbakercorp.com

A CLOMR could be required to install bridges across Dry Creek.

APPENDIX B

DEVELOPER PAYBACK AGREEMENT
(from Municipal Code)

<http://www.colocode.com/ftcollins/municipal/chapter26.htm#artVIIdiv2>

then scroll to
**Section 26-545 Credit for Construction of Major
Basin Improvements**

APPENDIX C

CITY WETLANDS BUFFER REQUIREMENTS

APPENDIX D

LETTER SIZE MAPS

APPENDIX E
CORPS OF ENGINEERS 404 PERMIT FORM
AND
INSTRUCTIONS