

EMWIN System Radio Coverage Update

Prepared for the

Urban Drainage and Flood Control District



Prepared by



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Radio Coverage Update

Table of Contents

	Page
I. Executive Summary – Radio Coverage Update	3
II. Discussion	4
III. System Design Updated	5
IV. Radio Coverage Estimation	6
V. Conclusions / Recommendations	8
Appendix A – proposed site locations	9

I. Executive Summary - Radio Coverage Update

A radio coverage prediction tool has been used to estimate radio coverage for two new possible EMWIN rebroadcast sites in the Front Range area around Denver, CO. The original coverage prediction was based on use of a Public Safety facility in Westminster, CO. That site is no longer available.

Radio coverage from the Cherokee Power Plant will provide adequate coverage for a large portion of the UDFCD service area. Based on computer models, the coverage area using the Cherokee site is comparable to the predicted Westminster coverage. Lower ground elevation is offset by a 400 foot smokestack. Valmont Power Plant provides limited value due to terrain obstructions. When evaluated in conjunction with Cherokee, it provides coverage to only two additional sites in the analysis – Boulder County and Longmont. Valmont does not appear to provide sufficient incremental coverage to warrant the additional investment.

It is recommended to pursue the Cherokee Power Plant as an EMWIN rebroadcast site.

II. Discussion

The original report in July, 2003, was based the satellite downlink equipment and the EMWIN VHF rebroadcast equipment co-located at the Westminster CO. Public Safety building. The Westminster site is no longer available. The task force has identified Adams County administration offices as a candidate for the satellite downlink, and Xcel Energy offered two power generating plants as potential transmitter sites.

David Baca of Xcel Energy surveyed the likely sites, and recommended Cherokee Power Plant and Valmont Power Plant. These sites have tall structures; either smoke stacks or towers, with adequate steel superstructure to support an antenna for EMWIN transmission. Cherokee is near Commerce City, while Valmont is near Boulder.

Adams County, CO has agreed to host the downlink equipment at its facility. The primary contact is Mike Kercheval – Emergency Manager at Adams County. Downlink equipment has been identified and ordered for that location. Downlink requirements have been documented and delivered. Based on information provided, the Adams County facility does not provide adequate elevation for EMWIN retransmission purposes.

The Adams County site location must work in conjunction with a remote transmitter site to achieve reasonable coverage in the Front Range. The system design requires the addition of a radio link to support separation of the downlink and rebroadcast equipment – and a line-of-site path from the Adams County office to the transmitter site.

III. System Design Update

As stated in Section II, based on available sites, the system design must be modified to support the separation of the downlink and rebroadcast equipment. Figure 1 shows the updated system design block diagram. Link radio TX-RX pairs have been added between the modulators and the rebroadcast transmitters.

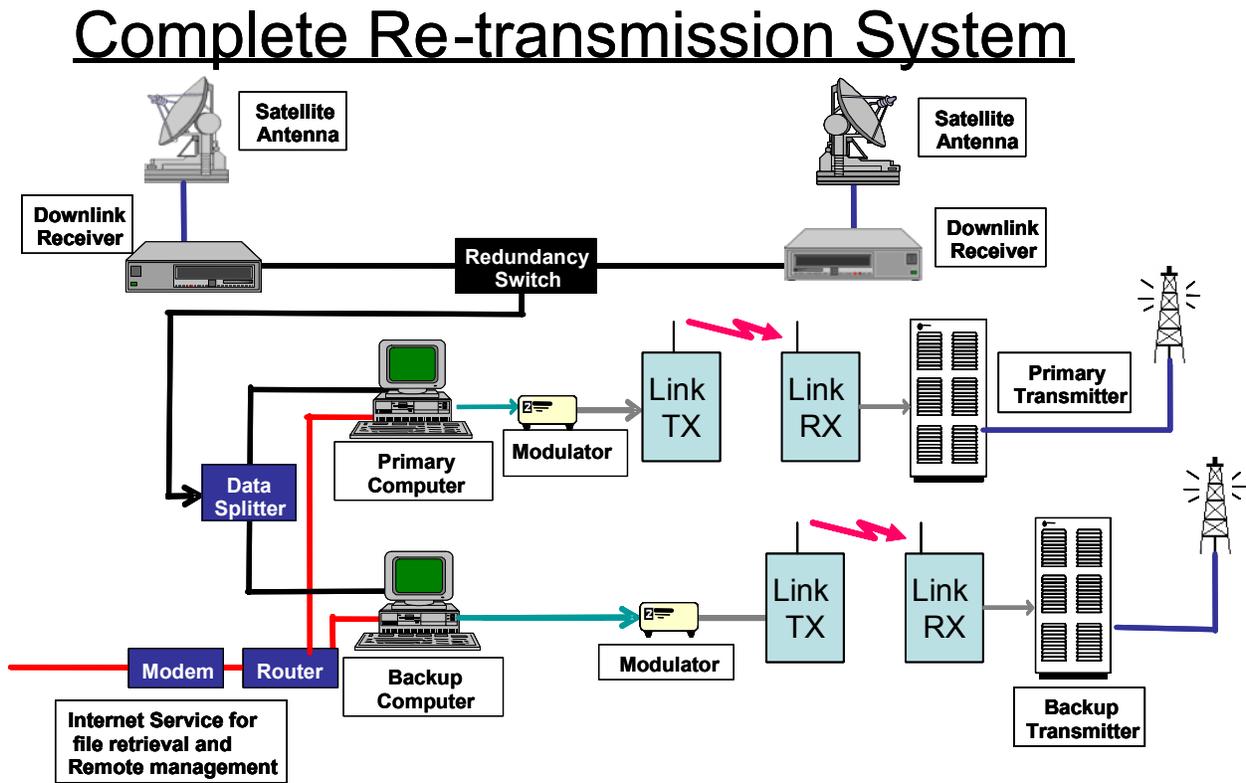


Figure 1

V. Radio Coverage Estimation - Cherokee

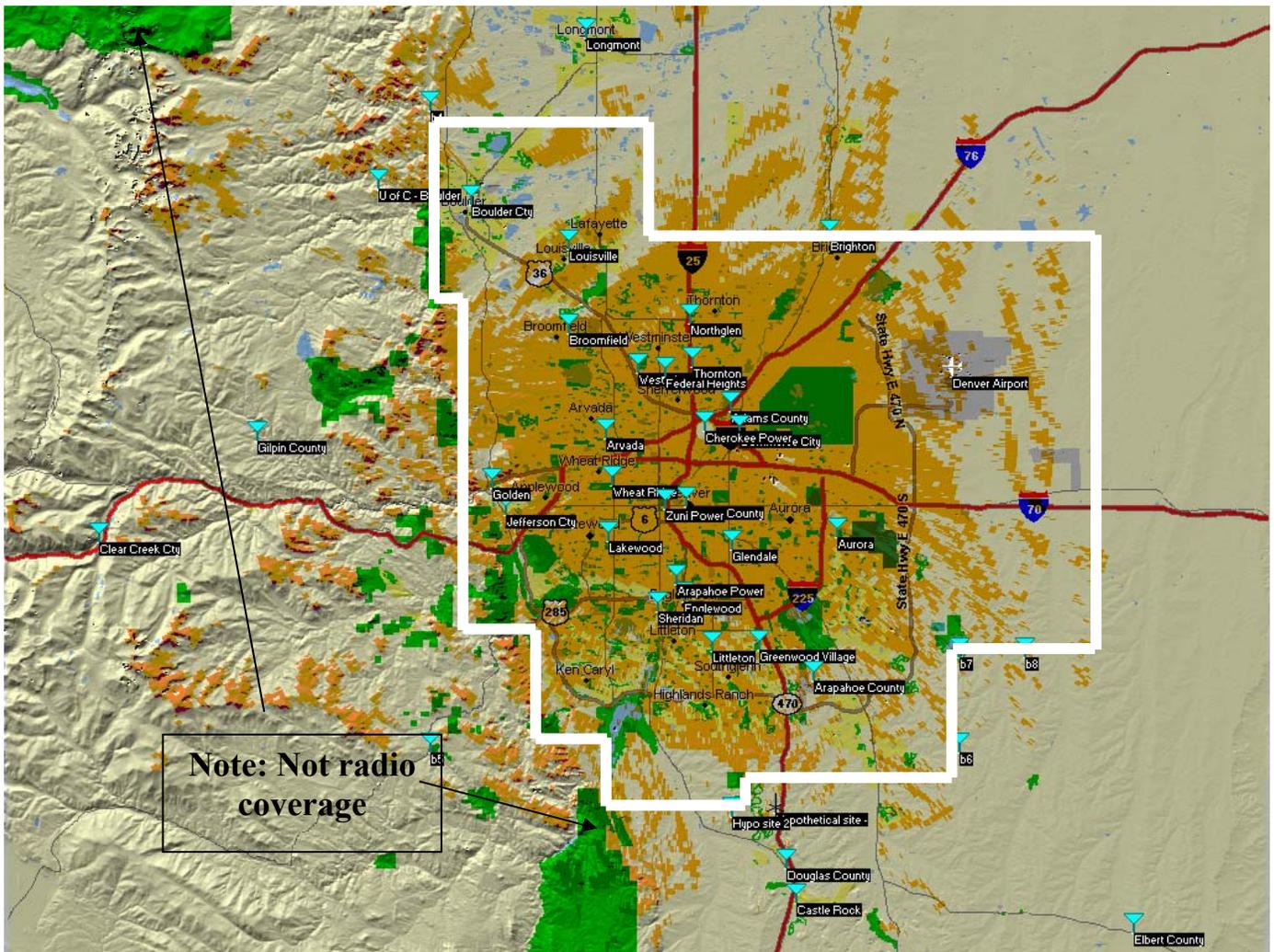


Figure 2

Figure 2 is an estimate of coverage from the Cherokee Power Plant location. The approximate boundaries of the UDFCD are shown in white. Orange indicates signal coverage. Dark green at the bottom and upper left are designations for federal land or other entities – not radio coverage.

Radio Coverage Estimation - Valmont

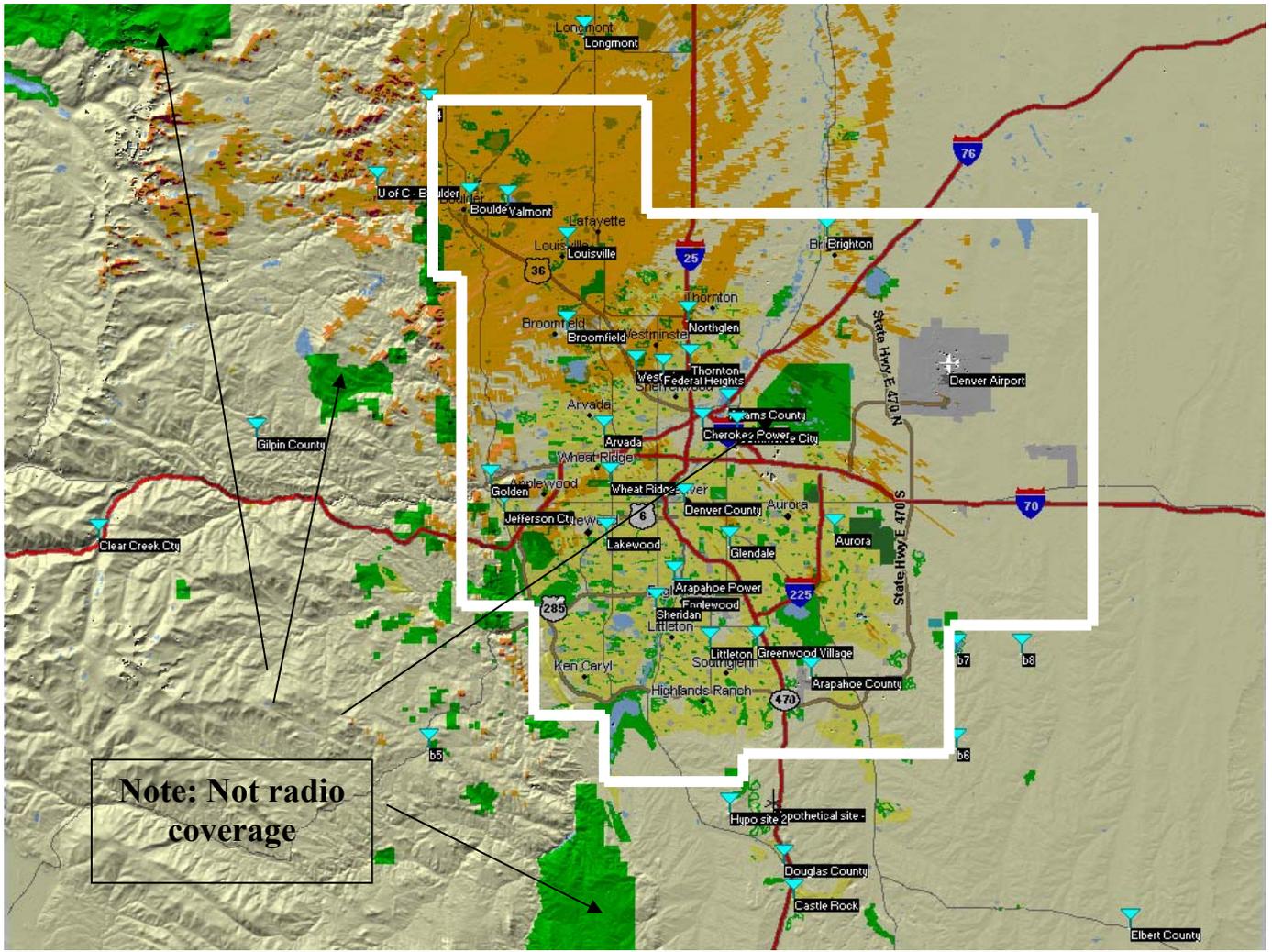


Figure 3

Terrain allows radio coverage dominantly to the north from Valmont. Radio coverage is shown in orange. While Valmont could provide some “fill-in” coverage, it is not appropriate for a wide-area transmitter site.

VI. Conclusions / Recommendations

While neither of the proposed transmitter sites provides complete coverage of the service area based on the models, Cherokee Power Plant provides wide area coverage comparable to that estimated for the original Westminster site.

It is recommended UDFCD pursue an agreement with Xcel Energy for the EMWIN rebroadcast service located at Cherokee Power Plant.

It is recommended transmitter equipment at the Cherokee Power Plant be installed in a structure at ground level. A different group has requested AC power installation for their equipment on the walkway at the 400 foot level. Plant engineering has suggested EMWIN equipment be placed at the 400 foot level as well. While having an advantage of much shorter antenna cables, it would create a major obstacle in maintenance and servicing of the equipment.

Appendix A --- Proposed site locations

Cherokee Power Plant

6198 Franklin St.

Commerce City, Colorado 80216

Coordinates: 39-48-34N, 104-58-07W, ground elevation 5158

Smoke stack height 400 feet

Valmont Power Plant

Boulder, CO

Coordinates: 40-00-59 N, 105-12-14W, Elevation 5265

Tower height 380 feet

Proposed downlink site location:

Adams County Office of Emergency Management

4201 East 72nd Avenue

Commerce City, CO 80022

Coordinates 39-49-38.4N 104-56-16.5W ground elevation 5150