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#E1-1439
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April 4, 2005

VIA HAND DELIVERY

Ms. Victoria Rutson
Chief
Section of Environmental Analysis
Surface Transportation Board
1925 K Street, N.W.
Washington, D.C. 20423

**Re: STB Finance Docket No. 34284, Southwest Gulf Railroad Company –
Construction and Operation Exemption – Medina County, TX**

Dear Ms. Rutson:

This will reply on behalf of Southwest Gulf Railroad Company ("SGR") to the February 15, 2005 letter from your office requesting certain additional information for SEA's consideration in connection with the on-going environmental review of the SGR rail project.

1. **Alternative Rail Routes.** Your letter correctly notes that a total of 15 potential routes for the SGR line were initially considered, with seven of these constituting only minor variations from eight basic alignments that were initially considered. You have asked for maps of all fifteen routes and information specifying the reasons as to why each of the 11 of the 15 eliminated from further consideration was eliminated.

Four of these 15 potential alignments consist of SGR's preferred route, and alternatives 1, 2 and 3 that were reviewed in the Draft Environmental Impact Statement (DEIS) issued by SEA in this proceeding. Maps of four additional alignments that were considered but rejected by SGR are attached in Exhibit 1 to this letter. Maps of the additional seven variations are no longer available. However, the eight alignments for which maps are available (the four alignments under review in this proceeding and the four included as part of Exhibit 1) represent each of the basic alignments that were reviewed by Vulcan (prior to SGR's formation as a separate corporate entity) and its contractor, TRAX Engineering and Associates, Inc. ("TRAX"). Thus, the alignments for which maps are not available would reflect only very minor variations from these eight alignments for which maps have been supplied.

A copy of the TRAX report on the alignments initially considered for this rail project has previously been supplied to SEA and URS under cover of our February 27, 2003 letter, which is set forth in Exhibit G (beginning at page G-18) to the DEIS. Unfortunately, TRAX is no longer in business and we have been unable to contact the person at that firm who handled this matter. Further, neither Vulcan nor SGR have in their files maps of the seven variations of the eight basic alignments.

The reasons that each of the alternatives set forth at Exhibit 1 were eliminated in favor of the Preferred Alternative (and the other three alternatives under consideration) are, as to each alignment, that the alternative would have traversed additional landowner property and/or not met the grade, curvature or other screening criteria (or not met that criteria as efficiently as the alternatives under consideration) described below. The specific screening criteria used by TRAX and Vulcan to assess routes included avoidance of wetlands, topography (avoidance of grades in excess of 1%), avoidance of curves in excess of 4 degrees near the ends of the line and 3 degrees near the central part of the line, limiting the number of properties required to be crossed and minimization of the number of properties that might have to be bisected. The grade and curvature screening criteria are, as described in the TRAX report, consistent with rail industry standards. Apart from the preferred route and the three alternatives under consideration in this proceeding, none of the other routes fully satisfied these screening criteria.

Please note that none of the eight basic alignments that were considered, and accordingly none of the minor variations of those routes that were considered, traverse any further to the east or west of the preferred route than do Alternatives 1 (the most westerly route) or Alternative 3 (the most easterly route). In fact, each of these routes is in the same general area as the preferred route and the three alternatives. While you have also noted that opponents of the SGR rail project have suggested that reasonable and feasible alternatives exist "that bypass the Quihi, Texas area" to the east or west, the fact is that there are no routes farther to the east or west that would be either reasonable or feasible.¹

Any routes further to the east or west than those studied would effectively require a much more circuitous route (almost a semi-circle) relative to the obviously straighter, and, therefore, shorter and more efficient rail routes that were considered between the quarry and the point on the UP line most advantageous in terms of a connection between the two rail lines. These two end points are essentially fixed -- the quarry cannot be relocated and the point of connection with the UP line chosen by SGR is uniquely advantageous (to both SGR and UP) from an operational viewpoint and because no grade separation needs to be constructed in relation to a major highway, U.S. 90, at that point of connection. As SGR has noted previously, this is at a point in the area where the UP line is north of U.S. 90, meaning that U.S. 90 need not be crossed.

¹ As there is no town or other entity officially known as Quihi, we assume that you are referring to a cluster of structures, approximately one mile west of where the preferred route would cross Quihi Creek. The impacts of the SGR line on these structures are addressed in the Draft EIS and a Draft Programmatic Agreement has been developed that would further address these properties.

The fixed nature of these end points, and the fact that rail routes for the type of traffic to be transported by the SGR line are limited by grade and curvature considerations, make any type of semi-circular route considerably less efficient from a rail operational and cost viewpoint, as well as from the perspective of SGR's interest in minimizing the number of persons and properties impacted by the line. In that regard, any "bypass" route would, almost by definition, impact the properties of more persons and traverse many more miles, than do any of the other relatively straight routes under consideration. The so-called Medina Dam route, for example, would be at least 11 and possibly 13 miles long, as compared to the approximately 7 mile long route that SGR favors.²

Any western "bypass route" would be at least as long as the Medina Dam route, and possibly longer. A longer rail line would be significantly more expensive to build. Conservatively, an eastern or western bypass would cost at least an additional \$4-6 million to build, which would severely and adversely impact the economic viability of the SGR rail line. This assumes a conservative figure of \$1 million/mile in construction costs, while in fact TRAX has estimated higher costs for construction of the SGR line.³ Further, a longer line means higher operating (largely, fuel and labor) costs and maintenance costs. Excluding additional capital investment costs, the maintenance expenses for a longer bypass line are estimated by SGR to consist of at least an additional \$80,000/year based on the need to hire an additional rail maintenance employee and to operate additional equipment. Further, a longer route would necessarily have more impacts in terms of noise, air quality and safety, among other factors, than would the shorter alignments SGR has proposed. For these reasons alone, no semi-circular "bypass" route warrants serious consideration as the cost/benefit balance suggests that such a route would not be economically feasible or practical.

Nonetheless, recognizing that concerns have been raised about routing the line in the vicinity of certain historic resources in the "Quihi" area, and in view of comments suggesting that a more easterly routing over the so-called Medina Dam route be considered, SGR did study that route. The results of that study were discussed in SGR's May 4, 2004 submission to SEA, set forth beginning at page G-153 of the DEIS. SGR explained in that submission that the Medina Dam route (including certain variations on that route that were considered) would require grades (or alternatively substantial cuts and fills) and curves that are simply not feasible from a rail operational viewpoint. No commenter has shown otherwise. SGR refers SEA to that May 4 submission for more details on the problems with this easterly alternative, as well as to the information described below which indicates that any Medina Dam route

² The length of the Medina Dam route would vary based on the precise course that that route might take. As explained in SGR's May 4, 2004 letter to SEA, deviations from the old Medina Dam rail route would be required at both its south and north ends since the route followed by the old railroad that was used to construct the Medina Dam did not go near the quarry or near the logical and practical point of connection with the UP line.

³ Based on the cost estimates set forth in Exhibit 2 to the TRAX Report (page G-24 of the DEIS), the cost of a 7 mile SGR line will in fact exceed \$11.5 million.

would require a much larger amount of cut and fill relative to the other alternatives under review to avoid the grade problems, and thus be much more environmentally disruptive.

The disqualifying problems with a more westerly "bypass" are equally significant. First, as is evident from the relative disadvantages that SEA has determined exist with respect to Alternative 1 (the most westerly of the alternatives under review), a more westerly orientation would exacerbate impacts on historic resources. The Technical Memorandum prepared by Mr. Daniel Cassedy, and set forth as Appendix I-4 of the Draft EIS, correctly notes that, "In addition to the 18 Germanic-Alsatian structures inventoried near the proposed rail alignments [only 5 of which are proximate to the proposed route], there are many more located to the south and west toward New Fountain and along Quihi Creek."

Mr. Cassedy's conclusion about the numerous historic resources in the New Fountain/Quihi Creek area, which is south and west of the area in which the preferred alignment is located and directly in the path of any westerly alignment of the SGR line, is supported by information supplied to SGR by its cultural resources consultant, Mr. Sergio Iruegas. Mr Iruegas has prepared the attached letter describing the history of the New Fountain area and the map, attached to his letter, showing the number of potential historic resources west of the preferred alignment, including in the New Fountain area. (See Exhibit 2 to this letter). It is apparent from Mr. Iruegas' review of the area, and from his map, that rerouting the SGR line further west of Alignment 1 would create a new set of issues concerning cultural resources impacts.⁴

An equally serious problem with any westerly bypass routing would be the heightened impact of any such routing on floodplains. The point at which the preferred route crosses Quihi Creek, which is the point at which the Creek is at its narrowest, was carefully selected based on stream flows to reduce floodplain impacts. South and west of that point, Quihi Creek joins with Elm Creek and becomes a more robust stream with a wider floodplain. Thus, the DEIS properly notes that Alternative 1, the most westerly of the alternatives under consideration, would cross more total floodplain than the other alternatives and would "cross more streams of higher order (i.e., more main streams), which means it would be more difficult to mitigate an increased potential for flooding by the engineering design of the crossing." DEIS at 4-37.

⁴ The impacts of the preferred route on cultural resources have been studied in the DEIS and would be further addressed in the event that a Programmatic Agreement -- previously negotiated between interested parties in this matter -- were finalized or the terms of that Programmatic Agreement imposed as mitigation. SGR believes that its consideration of several alternative routes has demonstrated a good faith effort in regard to addressing cultural resources. In conformity with the requirements of the Section 106 process, SGR is prepared to work under the terms specified in the PA to identify, assess effects, and mitigate any adverse effects to cultural resources that may be encountered during the course of a more intensive review of resources that may be located along the ultimately approved corridor.

Were the line routed further west of Alternative 1, the floodplain impacts would not diminish. As shown on the map attached to this letter as Exhibit 3, there are significantly more floodplain areas (shown in the light blue lines), and more low-lying areas (shown in blue shade) to the west of the proposed route than in the immediate area of the proposed route or to the east of that area. The floodplain information on this map is drawn from FEMA's Flood Insurance Rate maps, which identify areas of 100 year flood hazard. (Also see page 3-25 of the DEIS, which illustrates the floodplain point addressed here.) In addition, there are larger drainage features west of the current alignment, as is clear from Exhibit 3, as well as Exhibit 5, a satellite photograph of the area. Thus, a westerly bypass would result in surface water impacts that are not present to the same degree with respect to the preferred route, which was designed to cross Quihi Creek at a point designed to minimize impacts. See page 4-37 of the DEIS.

As SEA is well aware, the NEPA requirement that alternatives be considered is subject to a "rule of reason" such that unreasonable or infeasible alternatives need not be addressed. See *National Resources Defense Council, Inc. v. Hodel*, 865 F.2d 288, 294-95 (D.C. Cir. 1988). According to the Supreme Court, "[T]he concept of alternatives [under NEPA] must be bounded by some notion of feasibility." *Vermont Yankee Nuclear Power Corp. v. NRDC*, 435 U.S. 519, 551 (1978). Thus, alternatives that are neither practical nor effective -- which is the case with either a western or eastern bypass around Quihi -- need not be evaluated in depth. See *Airport Neighbors Alliance, Inc. v. U.S.*, 90 F.3d 426 (10th Cir. 1996). Indeed, any alternative that would thwart a primary purpose of the SGR rail project, which is the efficient transportation of aggregate from the Vulcan quarry to the UP line, need not be evaluated. Here, SEA has met its NEPA obligations by considering, in depth, the preferred route, three alternative alignments and a no-action alternative. The above information, as well as information on the Medina Dam route previously supplied, demonstrates that no additional alternatives farther to the east or west of the alternatives under review would meet the purposes of the project. Thus, no other alternatives warrant further consideration.

2. Cut and Fill: In response to your letter, inquiring as to whether SGR has studied cut and fill data for the various routes under consideration, including the Medina Dam route, SGR has recently completed a study to determine cut and fill volumes for each of the alternative routes under consideration, including the preferred alternative. In addition, it has studied the cut and fill volumes that would be associated with the Medina Dam route, as modified in a manner so that it would reach the quarry and connect with the UP line at the planned point of connection.⁵ The results are set forth in the spreadsheet attached as Exhibit 4, and discussed further below.⁶

⁵ The calculations were based on the same modifications or deviations to the old Medina Dam railroad route as are described in SGR's May 4, 2004 letter to SEA and as are shown on the maps set forth as Exhibits 3 and 5 to this letter

⁶ SGR can supply workpapers underlying the calculations set forth in this Exhibit should SEA or URS wish to review these.

Please note that the figures set forth in Exhibit 4 offer a relatively rough approximation of the cut and fill volumes for the studied routes. Developing more precise information, which will be done in connection with final engineering of the approved route, would consume a substantial amount of time and resources. However, the data developed by SGR provide a sound and reliable basis for comparing the cut/fill impact of one route versus another. The following process was used to calculate the cuts and fill volumes:

1. U.S. Geological Survey Digital Elevation Model data (this data is not final engineering quality data) was used to generate a three dimensional surface of the area between the main line and the quarry.
2. The proposed routes were draped on the surface and the high, low, and average elevation of each route was calculated.
3. The criteria outlined in the December 2002 TRAX Report previously provided to SEA were taken into account for:
 - o Grade Limitations
 - o Curve Radius Limitations
 - o Cut and Fill Profiles
4. The draped line was raised or lowered to hold reasonable grades, and to minimize cuts and fills along the routes in order to create a "route at grade" line.
5. Once that process was completed, a three dimensional surface of the cut and fill profiles was attached to the "route at grade" line.
6. These cut and fill surfaces were used to create solids that represent the areas that had to be cut or filled. The volumes of these solids was computed.
7. U.S. Federal Emergency Agency Flood Insurance Rate Maps based on 100 year flood events were used to delineate where Flood Plains (Class A) exist.
8. Portions of the fill solids that extended into the Flood Plain were removed and the total amount of fill was reduced by that amount. It was assumed for purposes of the calculations that fill generally would not be placed into floodplains and that trestle bridges would be used to cross streams.

The results of this process show that the Medina Dam route (as modified to serve the quarry and to connect with the UP line at the optimal connection point -- see May 4 letter) would entail substantially more cut and fill volumes than the other routes, and thus result in significantly more disruption to the landscape and the environment. As Exhibit 4 indicates, the Medina Dam route would require cutting and filling of a total of approximately 1.7 million cubic yards of dirt, as compared to only

approximately 270,000 cubic yards for the preferred alignment. That result is consistent with the fact that the Medina Dam route would require that an escarpment be traversed, as previously discussed by SGR in its May 4 submission.

In this connection, the satellite photograph of the area showing an overlay of the routes set forth as Exhibit 5 to this letter clearly depicts the substantial elevation changes that would be required for the Medina Dam route versus the preferred and the three alternative routes. The photograph graphically illustrates why the cut and fill volumes for that route are significantly greater than for the routes under consideration. The photograph, and the cut and fill figures, offer further reason why the modified Medina Dam route is not a feasible alternative.

3. Road Upgrades: SEA has asked SGR to provide additional information on any needed road upgrades to demonstrate that area roads could accommodate the type of increased truck traffic that would be required to serve the Vulcan quarry were the SGR line not built. In addition to the information it has previously provided on the highway alternative, SGR can offer the following:

First, Vulcan's primary plan in the event that a railroad were not available would be to use existing public roads, rather than build any new private roads on land that it owns. The trucks that would transport the aggregate would observe applicable weight limits. A private road would be constructed only if, for reasons not now apparent, public roads could not feasibly be used.

Second, Vulcan recognizes, and has acknowledged, that some upgrades likely would be needed to the area's public roads. The precise upgrades that would be required have not been studied in depth as Vulcan assumes that the SGR line will in fact be available. At such time as it may become necessary to address the upgrades in specific detail, Vulcan would work with state and county officials to discuss the upgrades that would be required. Vulcan has undertaken similar efforts in other parts of Texas and other states and sees no impediments to coordinating with public highway officials on roadway improvement issues. Vulcan is not aware of any formal permits that would be required for road upgrades.

Third, with respect to road flooding concerns, SGR notes that the Medina County area receives on average only about 28 inches of rain per year.⁷ (For comparison purposes, the Washington, DC area receives on average over 39 inches/year, according to NOAA records.) To the extent that it does rain heavily on occasion, it is certainly possible that some roadways in Medina County may temporarily flood. The critical point to note here is that any such flooding is temporary; Medina County roads are not flooded for more than several hours at any time and only following an unusually heavy rain. The simple answer to the flooding concern that has been raised, which has been vastly exaggerated by quarry opponents, is that whatever flooding occurs ends quickly, allowing roads to be reused. Thus, the impact of any such flooding (which, again, is a relatively infrequent event) would be no more than a very short-

⁷ See Handbook of Texas Online at www.tsha.utexas.edu/handbook/online/articles/print/MM/hcm10.html

term cessation of the trucking operation, a situation that Vulcan would not expect to happen more than a handful of times during the course of a year. Moreover, any temporary cessation of truck service would not likely disrupt continued operations since Vulcan anticipates that it will retain an inventory of aggregate at the remote rail loading facility.

Fourth, with respect to information about any private road that might be constructed, see the diagram set forth as Exhibit 6, which provides much of the information requested. In addition, Vulcan offers the following information:

The private road that could be constructed by Vulcan, were that necessary, would be approximately 1.5 to 1.75 miles long,⁸ linking CR 353 to CR 365, and intersecting FM 2676 (as shown on the map attached to SGR's May 4 submission and reprinted at page G-169 of the DEIS). Vulcan estimates that this road could be built in about 7 weeks by an approximately 15 person crew. The private road would be a two lane road, one lane in each direction. Each travel lane would be 12 feet wide, and there would be shoulders on each side that would be 8 feet wide. As to crossing drainage features or floodplains, Vulcan does not believe that the short private road that it has described would cross any major drainage features. To the extent that any floodplains would be crossed, Vulcan would consult, as appropriate, with the Corps of Engineers and the Medina County Floodplain Administrator to ensure that such crossing was properly designed. Concerning frequency of maintenance, Vulcan would schedule routine maintenance to fix small potholes and cracks on an ongoing basis. A resurfacing (chip and seal) would likely be required every three to five years and a surface overlay every eight to nine years. Weather conditions, notably the amount of rain, would play a major role impacting the frequency of this schedule.⁹

As to permits for any private road, Vulcan would need to coordinate with Texas DOT with respect to the intersection between FM 2676 and the private road. Texas DOT has a permitting process set forth in regulations governing the construction of access connections, including so-called private driveways, intersecting with state highways. Vulcan is advised that these regulations would apply to private roads intersecting with state highways as well. The Texas DOT manual entitled, "Regulations for Access Driveways to State Highways," sets forth the applicable regulations and may be located via a link at <http://www.dot.state.tx.us/mnt/default.htm>.

⁸ The estimates provided here assume that the private road would be 1.75 miles long, but these estimates would not change in any meaningful way were the road 1.5 miles long.

⁹ Were Vulcan to build another private road into the remote railcar loading facility, instead of locating that facility at a point directly accessible to CR 4516 (see May 4 letter at p. G-155 of DEIS), the same roadway and maintenance standards would apply to such a private road. Any such road would be shorter than the road described above. The construction estimates with respect to such a road would be commensurately lower in terms of manpower and length of construction time than the estimates set forth above. More precise information cannot be offered at this time since the exact location of the remote railcar loading facility, should such a facility be needed, has not been determined.

Vulcan understands that it would also need to coordinate with County officials concerning the intersection between the private road and CR 365. Whether any additional permits might be required with respect to the private road is a matter that would be reviewed in greater detail if and when necessary, but Vulcan is not currently aware of other permits that might be required.

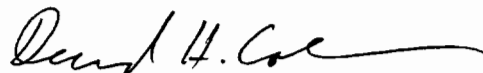
4. Location of the Maintenance and Fueling Facility: A detailed, small scale map showing the location of the fueling/maintenance facility relative to the recharge zone is attached as Exhibit 7. As the map shows, the facility would not be located over the recharge zone.

5. Maintenance Activities: SGR would maintain the right of way consistent with the Manual for Railway Engineering issued by the American Railway Engineering and Maintenance of Way Association (AREMA), which is a standard industry guide to these matters. This is a large and detailed manual that addresses all relevant issues concerning the maintenance of track, roadbed, ties, bridges and other structures. The AREMA Manual also addresses control of vegetation. An excerpt from the portion of the Manual on vegetation control is attached as Exhibit 8, which also includes the table of contents for the entire Manual.

6. Fencing: Your letter notes that the Texas Parks and Wildlife Department (TPWD) has requested information regarding the height and mesh size of the fencing that SGR proposes to use on both sides of its right of way. Subsequent to your letter, Mr. Tom Ransdell of SGR spoke with Mr. Russell Hooten of TPWD about this matter and the results of that discussion are reflected in Mr. Hooten's March 2, 2005 letter to SEA, attached hereto as Exhibit 9. SGR intends to adhere to Mr. Hooten's updated views with respect to fence a least 4 feet high and with respect to mesh (fine, so that small animals will not be able to access the tracks). Further, SGR will incorporate wildlife crossings along the track at bridges and culverts, as also recommended by Mr. Hooten.

We would be pleased to respond to any questions that you might have concerning the above.

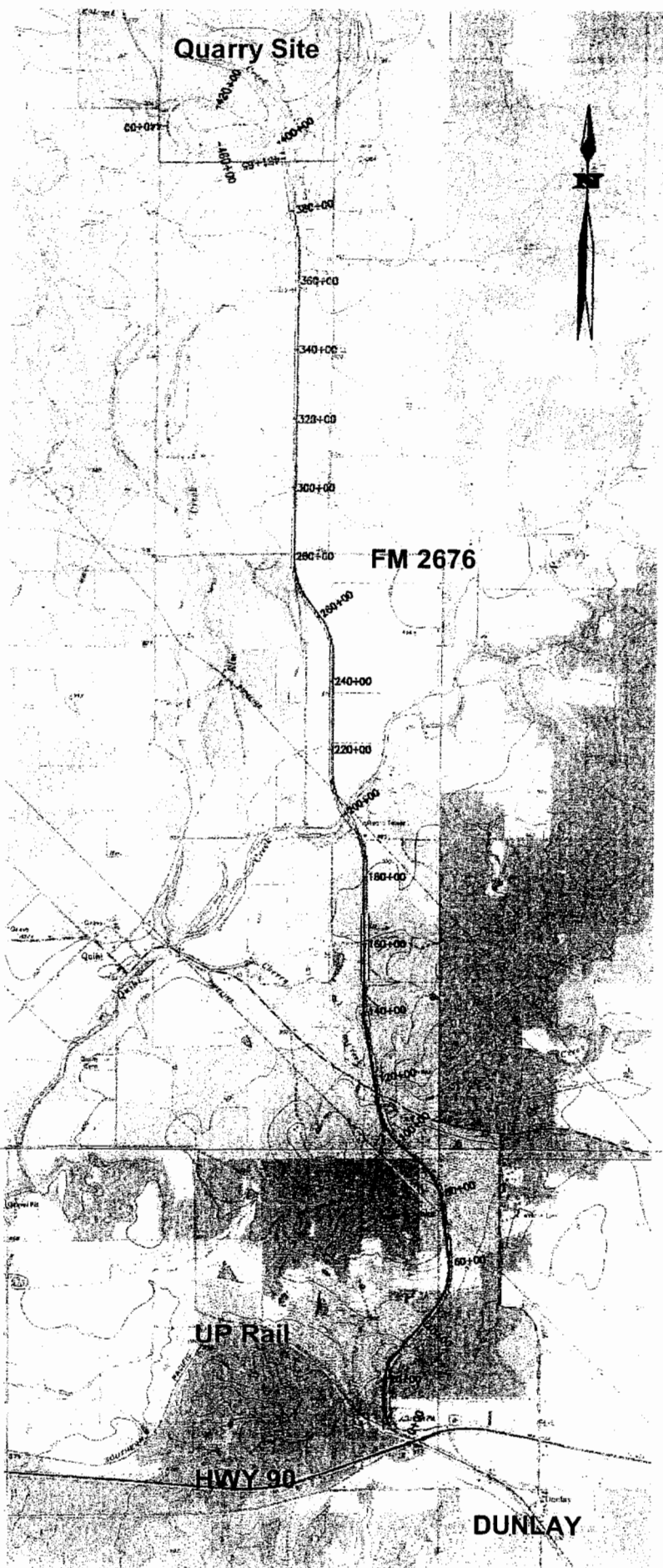
Respectfully,



David H. Coburn
Attorney for Southwest Gulf Railroad Company

cc: Ms. Rini Ghosh
Ms. Jaya Zyman-Ponebshek

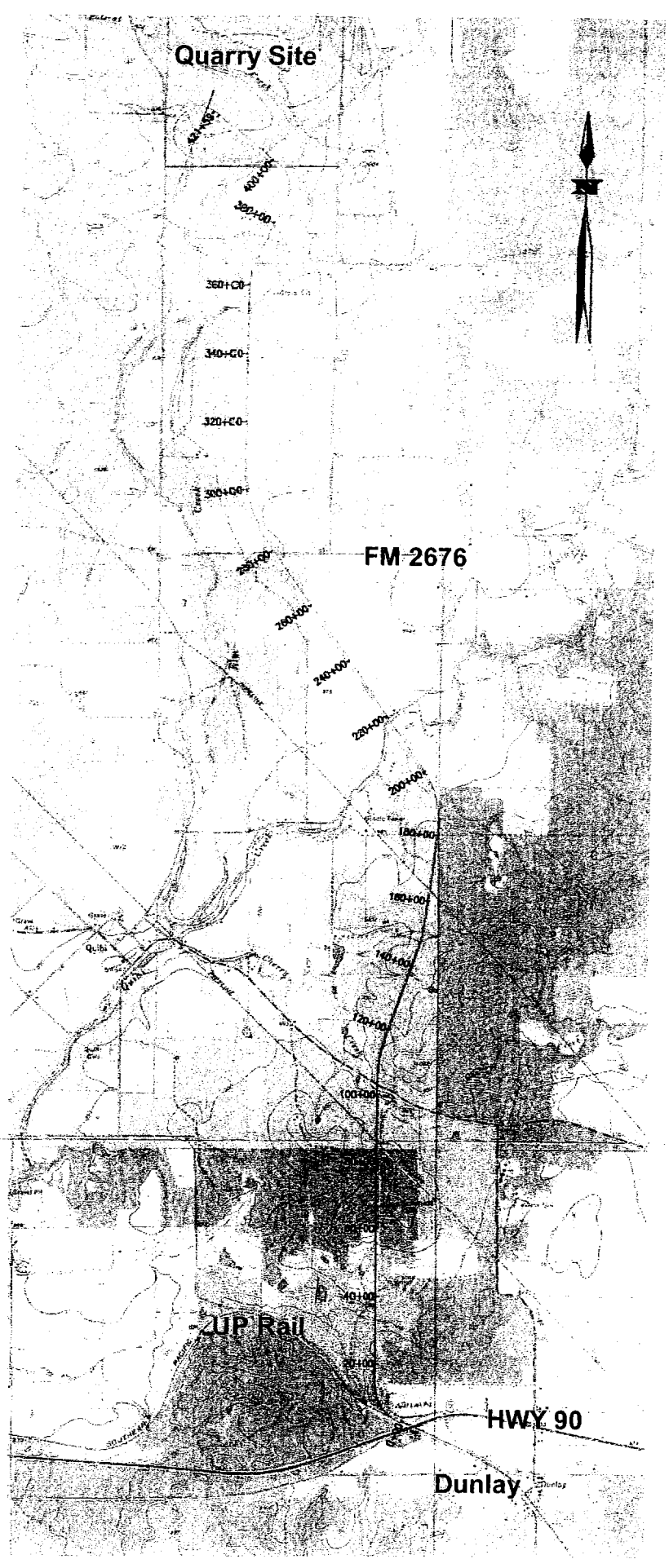
Conceptual Plan



LOCATION PLAN
Scale 1"=2000

Original version submitted in color. Please
contact the Section of Environmental Analysis
to view a color copy.

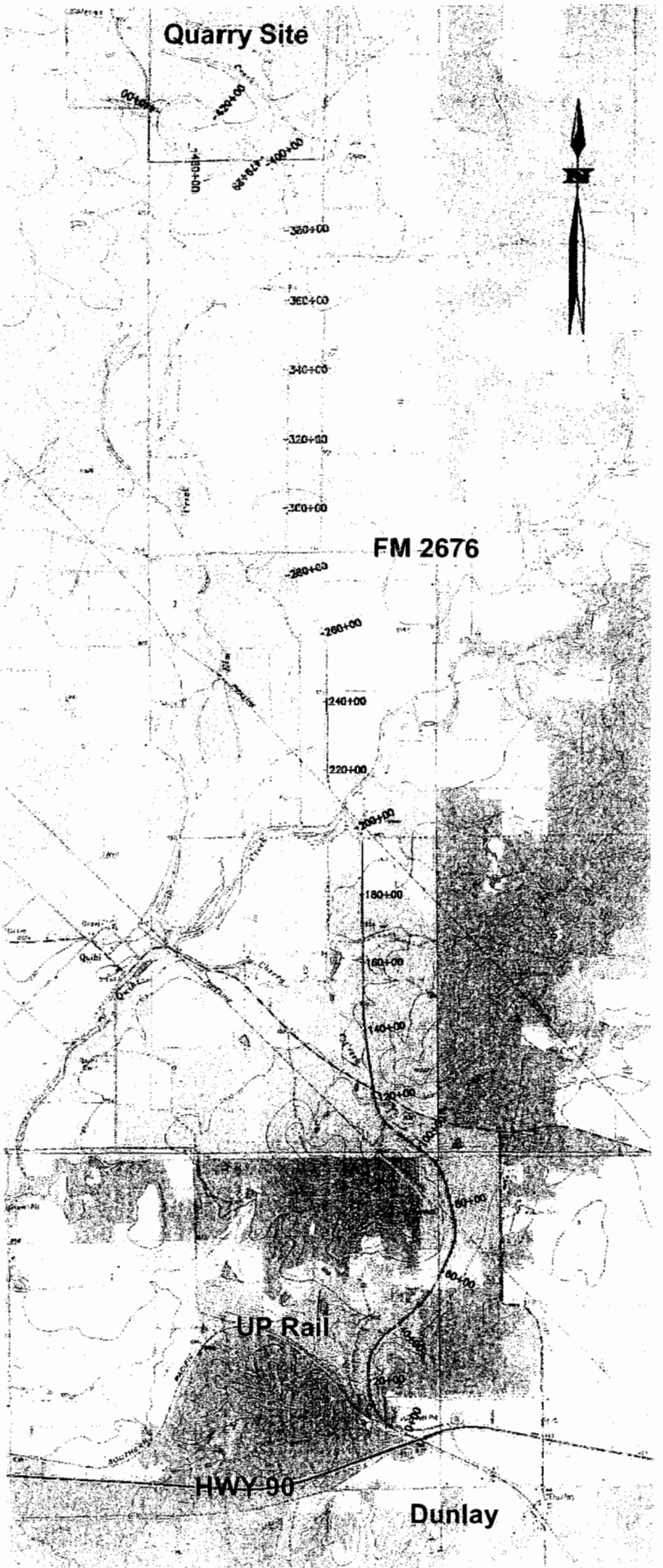
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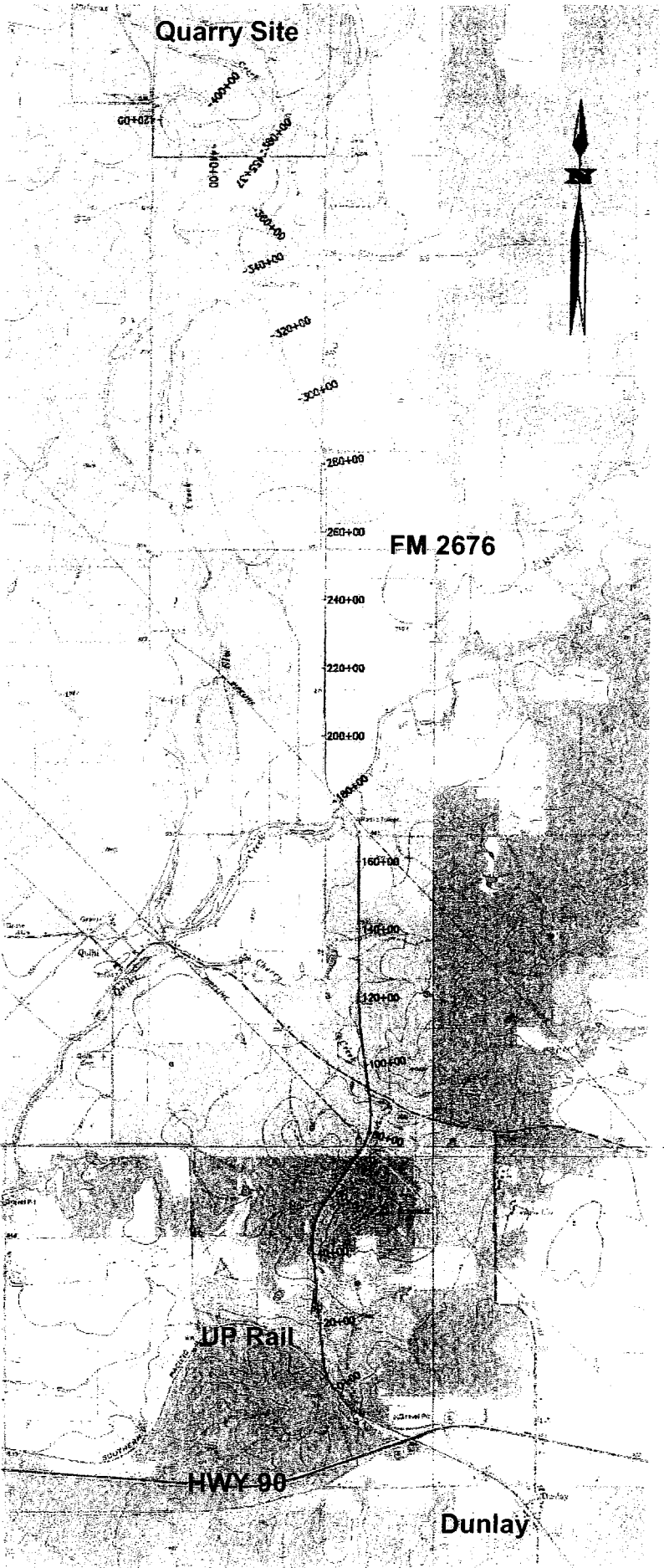
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González, Tate & Iruegas, Inc.
Environmental Consultants

March 30, 2005

Mr. David H. Coburn
Steptoe & Johnson LLP
1330 Connecticut Avenue, N. W.
Washington, DC 20036

Re: Potential historic property resources in the Quihi and New Fountain area, Medina County, Texas (STB Finance Docket No. 34284)

Dear Mr. Coburn:

As requested, I have prepared this letter and attached map to address, from a cultural resources perspective, a "western bypass" alignment for the Southwest Gulf Railroad (SGR) line. I understand that SGR has been asked by the Surface Transportation Board's Section of Environmental Analysis (SEA) to address the feasibility of such a bypass around the Quihi area. It is my strong opinion that any bypass west of Quihi—which would necessarily traverse the New Fountain area—has a greater potential to adversely effect historic properties in the area, notably those associated with Henri Castro's colonization of Medina County, Texas.

I have prepared this letter and map from my perspective as a former Program Administrator II and Section 106 project reviewer for the Texas Historical Commission, and as a qualified professional that meets the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation. I have over five years experience working for the THC, and a combined 18 years experience working directly with the National Historic Preservation Act. I have a bachelor's degree in History, a master's degree in Archaeology, and I have completed my Ph.D. coursework in Historical Archaeology. My Ph.D. coursework included American history and architecture, as well as, historic preservation coursework towards my Cultural Heritage Management prerequisite. I worked for Harvard University's Peabody Museum for three years, and I have over two years experience managing historic preservation projects that included detailed investigations of historic structures and preparation of historic structures research reports. I have also served on the Board of Directors for the Swede Hill Neighborhood

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Association that I helped organize to preserve the Swedish Hill National Register Historic District in Austin, Texas.

Consideration of a western by-pass loop would require expanding the Areas of Potential Effect of the proposed SGR line and alternatives under review westward from their current boundaries to include New Fountain. New Fountain is a larger, well established, historic community with a longer history than Quihi. Ten families settled the Quihi community—two of which were killed within the first year. New Fountain, on the other hand, had numerous families and a well established community that thrived beyond agricultural pursuits. Its population was over 400 before the end of the 1800s. There would be a substantial concern for historical archaeology sites as well as historic properties. The land surrounding New Fountain has a higher probability area in which prehistoric archaeological sites are more likely to be present due to the numerous confluences of creeks, as compared to the area surrounding Quihi.

I have reviewed the Texas Historical Commission's "Visionaries in Preservation: Castroville Report." The Report includes the basis for a historic context regarding Henri Castro's efforts to colonize the area. Further, the Handbook of Texas discusses the French Alsatians in Quihi and the Germans in New Fountain that responded to Castro's advertisements of new land and opportunities. According to the Handbook of Texas, in 1845 a number of German families in Henri Castro's colony settled on Verde Creek at Vandenberg, and a year later they moved to a new reliable water resource area known historically and today as New Fountain. In 1858, the Reverend F. A. Schaper, a German Methodist, organized a Methodist church that has served its congregation for more than 100 years. The church is known today as the Ebenezer Church of New Fountain. The fourth post office in Medina County opened in New Fountain in 1857, with Roland Goering as postmaster.

In 1860, New Fountain had the Methodist church, a mill, and a Masonic lodge. By this time the town was a stagecoach stop on the old road from San Antonio to Uvalde. The first New Fountain School was established in 1876. In 1896, New Fountain had become well established with a population of 400 and two general stores, a corn mill, and a railroad express. Sometime in the mid-1800s, George Muennink, of Hondo, founded the Old Muennink Gin in New Fountain. It is believed to have been the first cotton gin in Medina County.

Because of the numerous German families that settled New Fountain and the numerous historic resources, such as the historic church, school, post office, cotton gin, general stores, and corn mill, the proposed construction of a by-pass railroad loop west of Quihi in the New Fountain area has a greater potential to adversely effect historic properties associated with Henri Castro's colonization of Medina County, Texas.

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The attached USGS topographic map shows unverified resources, indicated by red flags, west of the project Area of Potential Effect. These resources consist of structures located in the New Fountain area and the area generally west of Quihi. The structures may or may not be historic resources, although it is more likely than not that structures located along creeks are historic. The blue flags represent those verified and unverified potential historic resources in the general vicinity of the SGR preferred route, which is east of the area generally known as Quihi. The red triangle indicates a National Register listed property. Yellow diamonds indicate historic cemeteries or graves based on the topographic map. (I reviewed the Texas Historical Commission's atlas database for evidence of documented historic resources in the area of New Fountain. Neither historic buildings nor archeological sites have been documented, nor has the area been surveyed for archeological sites or for historic structures.)

It is important to note that the unverified historic resources I indicate on the map with red flags are far more numerous than the blue flagged verified and unverified historic resources in the project Area of Potential Effect east of Quihi. This underscores that any routing of the SGR line west of its current planned position will likely increase the opportunity for impacts to historic resources.

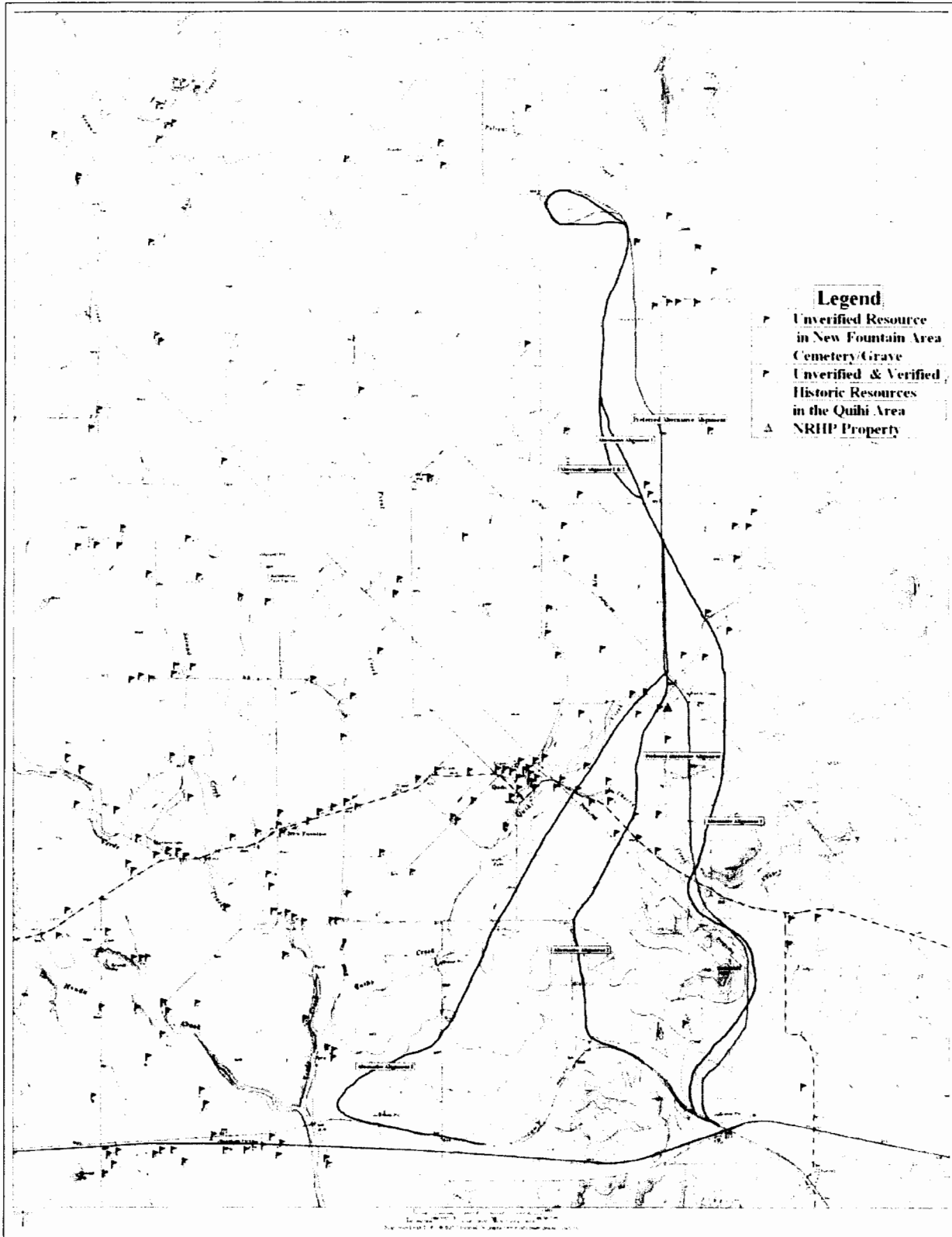
I appreciate the opportunity to offer these views.

Regards,

A handwritten signature in cursive script, appearing to read "Sergio A. Iruegas".

Sergio A. Iruegas, RPA
President/Cultural Resources Director

Original version submitted in color.
Please contact the Section of Environmental
Analysis to view a color copy.

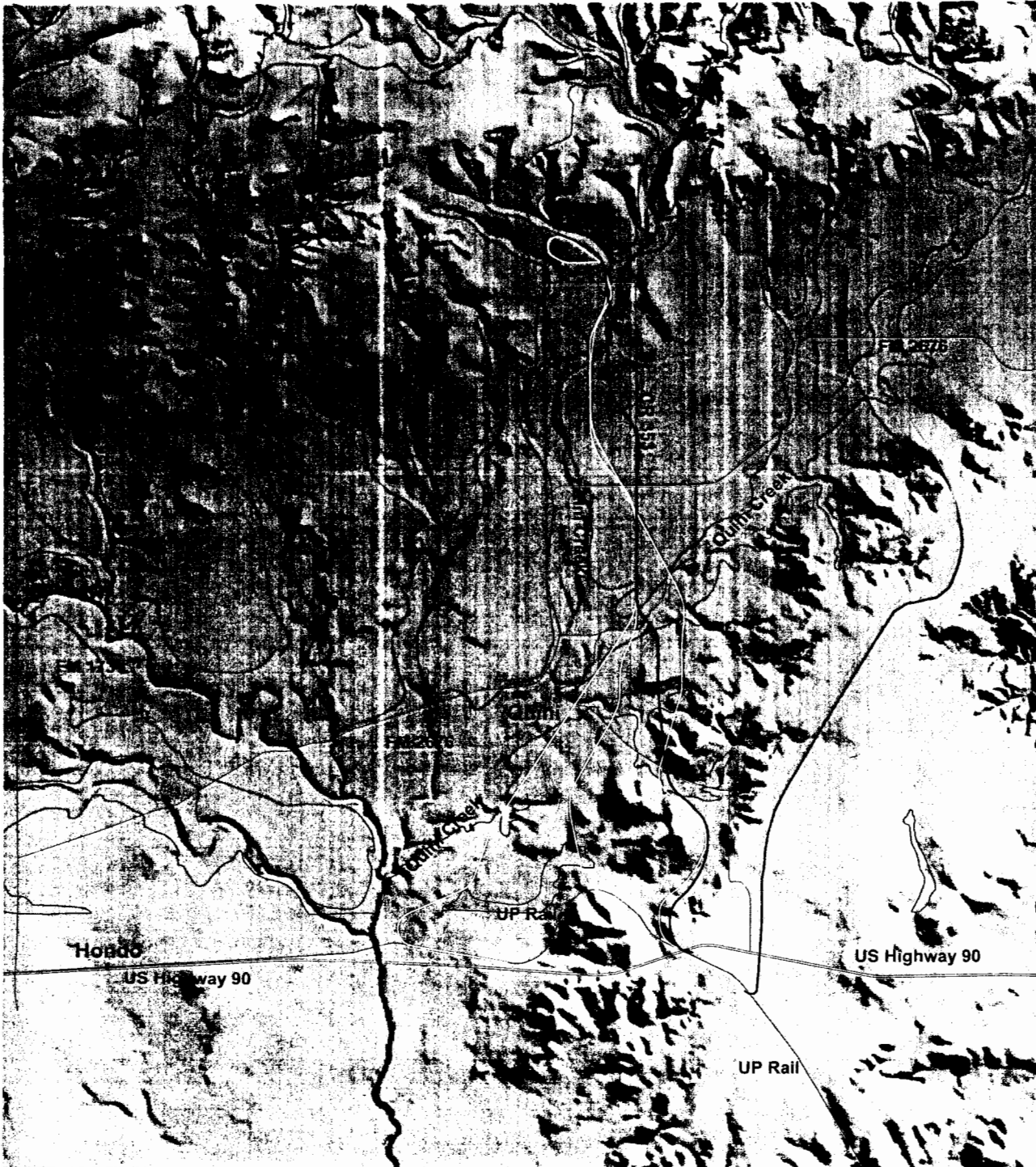
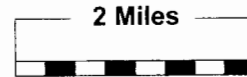


González, Tate & Iruegas, Inc.
Environmental Consultants

**Verified and Unverified Potential Historic Resources
in the New Fountain and Quihi Area,
Medina County, Texas**

Original version submitted in color & 11x17 inch size. Please contact the Section of Environmental Analysis to view a color copy.

Southwest Gulf Railroad Company: Medina County, Texas EXHIBIT 3



- Magenta Colored Line - SGR Proposed Route
- Red Colored Line - Old Medina Lake Dam Rail Route
- Blue Colored Lines - FEMA Flood Plain

SGR RAIL PROJECT

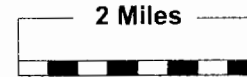
Cut and Fill Data for Alternative Routes

(stopping fill at flood plain and using trestles to cross streams)

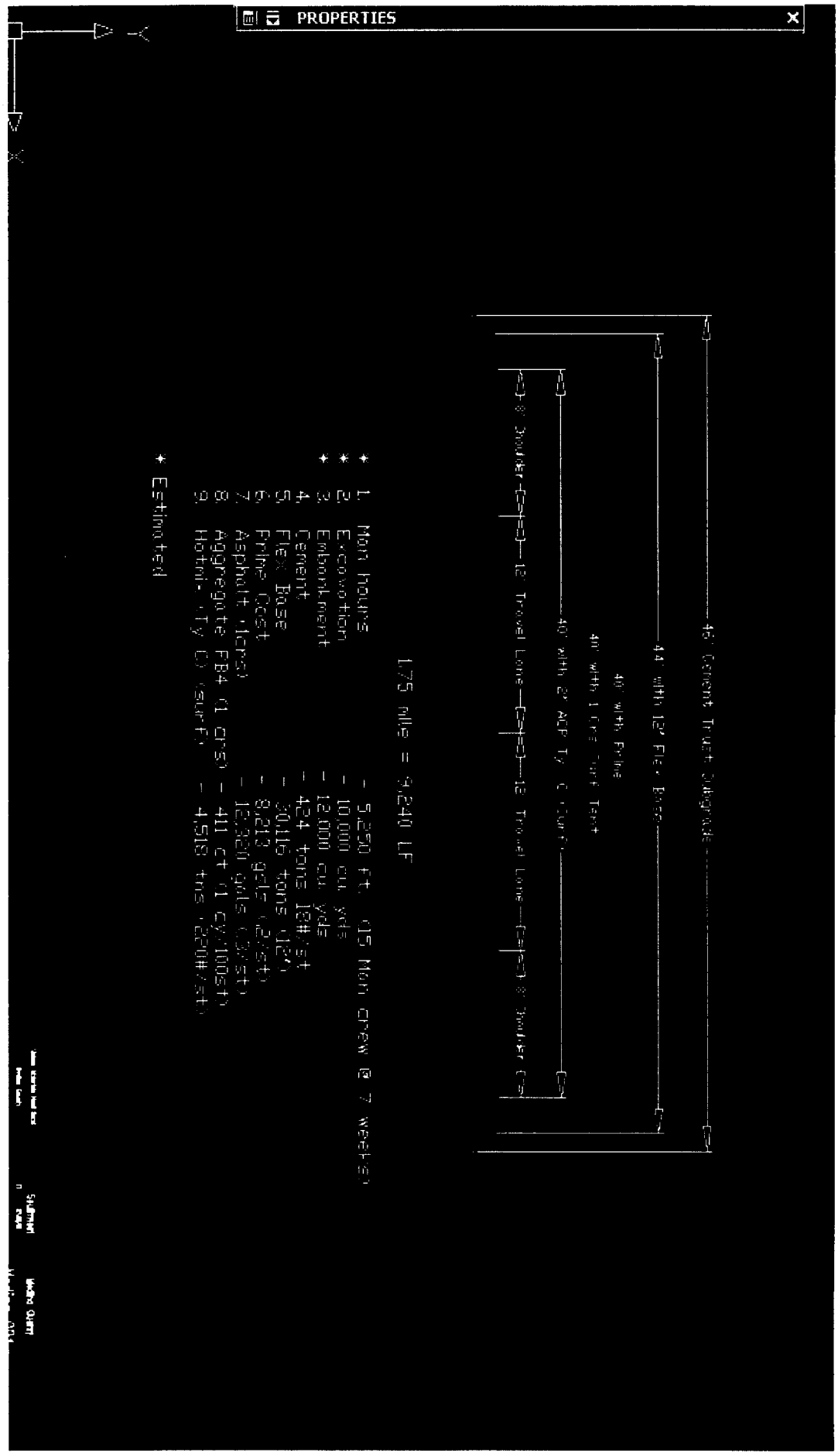
<u>Route</u>	<u>Maximum Elevation of Route</u>	<u>Minimum Elevation of Route</u>	<u>Average of Elevation of Route</u>	<u>Cut in Cu Yds</u>	<u>Fill in Cu Yds</u>	<u>Net in Cu Yds</u>
Proposed Alignment	991.83	859.38	913.99	167,683	101,973	65,710
Alternative Alignment # 1	931.51	819.93	868.89	22,456	187,430	(164,974)
Alternative Alignment # 2	934.70	857.51	895.08	69,562	123,775	(54,213)
Alternative Alignment # 3	979.82	865.86	918.71	109,882	425,865	(315,983)
Medina Dam Route assumes deviations proposed by SGR)	1,056.18	908.30	983.81	729,778	928,248	(198,470)

Original version submitted in color and 11x17
inch size. Please contact the Section of
Environmental Analysis to view a color copy.

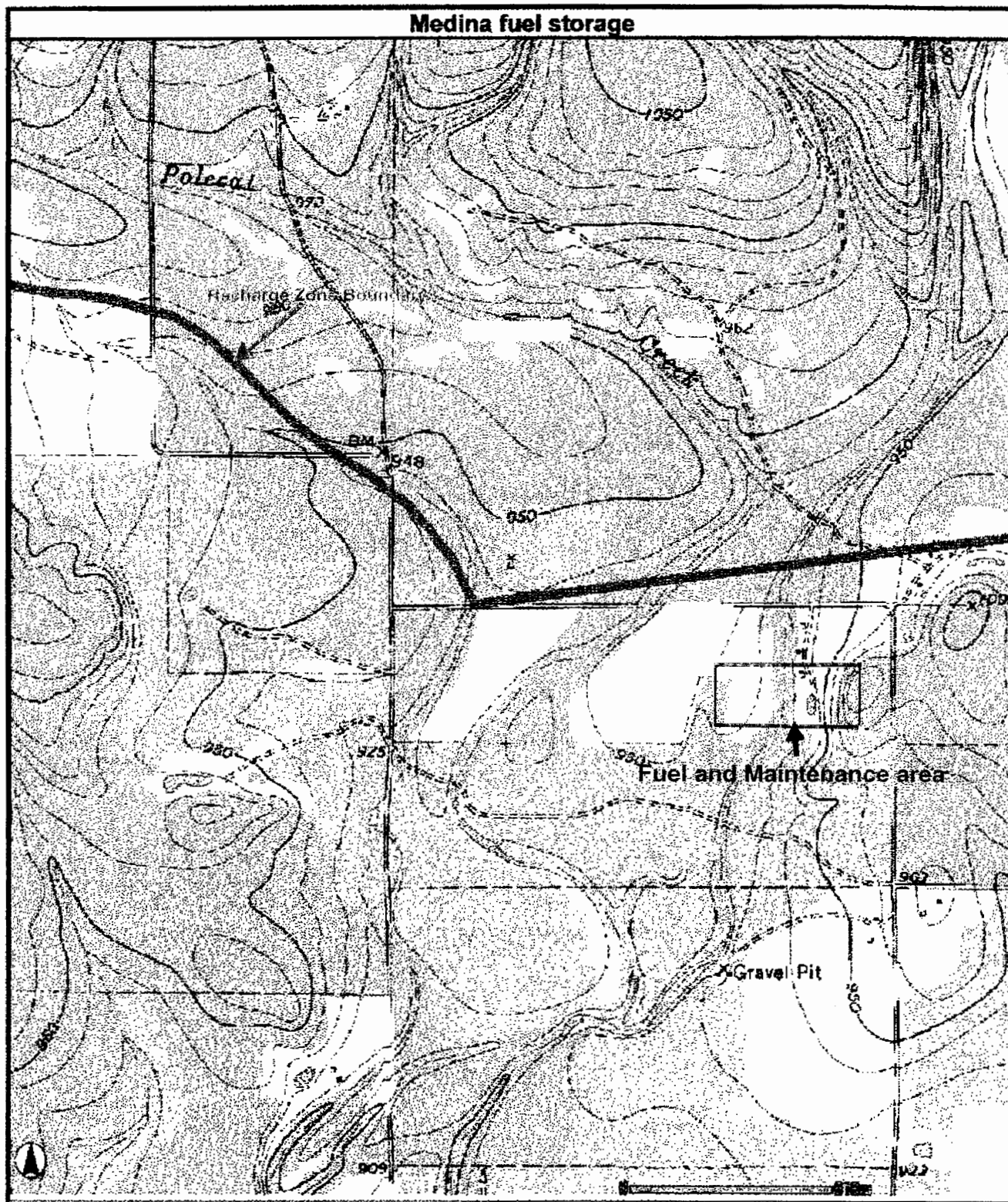
Southwest Gulf Railroad Company: Medina County, Texas EXHIBIT 5



Magenta Colored Line - SGR Proposed Route
Red Colored Line - Old Medina Lake Dam Rail Route



original version submitted with several color lines and 8 1/2 x 14 inch size. Color lines do not appear in B&W version. Please contact the Section of Environmental Analysis to view a color copy.

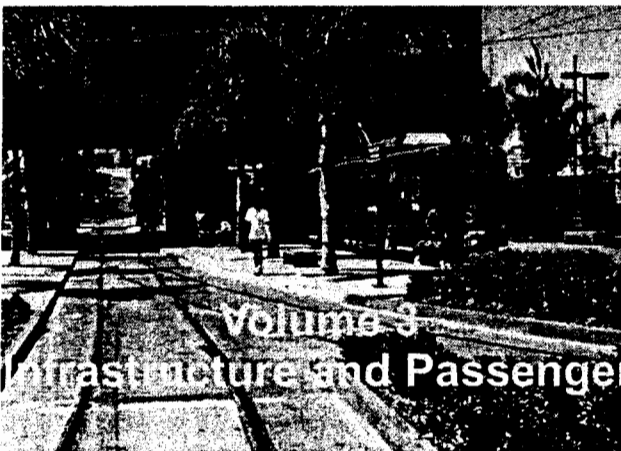
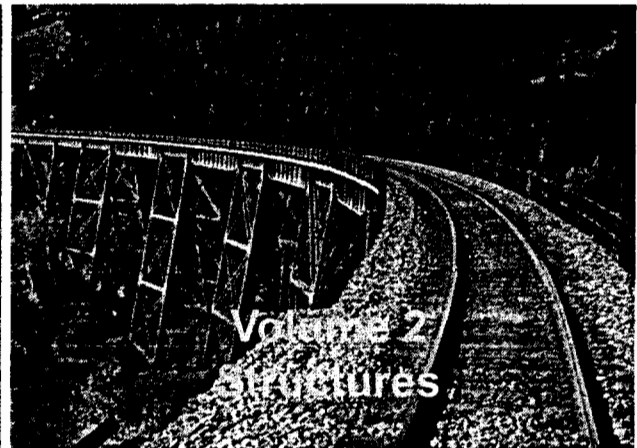
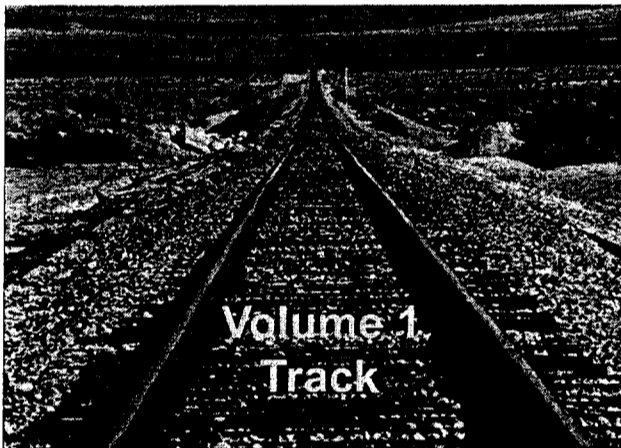


Original version submitted with some color images that appear in gray in B&W version. Please contact the Section of Environmental Analysis to view a color copy.



2004

Manual for Railway Engineering





American Railway Engineering and
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This Manual is divided into four Volumes which are further subdivided into Chapters and Parts. Each volume contains a general subject index covering data found in all volumes. Each Chapter and Part are prefaced by a Table of Contents.

Because of numbering of Chapters to coincide in most cases with AREMA technical committees, there are no Chapters 3, 10, 13, 20, 21, 22, 23, 24, 25, 26, 31 and 32. Committee 24 does not maintain a Manual Chapter.

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Part 9

Vegetation Control¹

— 2001 —

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¹ References, Vol. 68, 1967, p. 605; Vol. 70, 1969, p. 190; Vol. 76, 1975, p. 145; Vol. 77, 1976, p. 238; Vol. 83, 1982, p. 153; Vol. 87, 1986, p. 55; Vol. 89, 1988, pp. 40, 61; Vol. 92, 1991, p. 41; Vol. 94, 1994, p. 30.

SECTION 9.1 RATIONALE AND SCOPE OF WORK

9.1.1 GENERAL (1994)

Reasons to control Vegetation on Railroad Right-of-Ways.

- a. Ballast Sections:
 - Maintain drainage.
 - Allow for inspection.
 - Prevent wheel slippage or sliding.
- b. Shoulders and Ditches:
 - Maintain drainage.
 - Provide safe walkways.
 - Allow for inspection of trains.
 - Reduce fire hazards.
- c. Bridges, Buildings and Other Structures:
 - Prevention of Fires.
 - Permit proper inspection of structure.
 - Facilitate maintenance of structure.
- d. Yards:
 - Promote safety.
 - Improve efficiency of yard operations.
 - Permit proper inspection of track.
 - Facilitate track maintenance.
- e. Noxious Weeds:
 - Prevent fires.
 - Insure health and safety of employees.
 - Comply with legal requirements.
 - Reduce plant propagation to neighboring properties.
- f. Signal Appurtenances:
 - Maintain visibility of signals, switch position indicators and derails.
 - Permit safe, efficient operation of switch stands and telephones.
- g. Wayside Signs:
 - Maintain visibility of speed signs, whistle signs, mile posts, etc.
- h. Signal Communication and Power Lines:
 - Prevent service interruptions.
- i. Brush Adjacent to Track:
 - To permit inspection of moving trains.
 - To prevent close clearance hazards.
- j. Highway Grade Crossings:

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SECTION 9.2 PREPARING A VEGETATION CONTROL PROGRAM

9.2.1 VEGETATION CONTROL METHODS (1994)

The methods employed to control vegetation on railroad rights-of-way may be grouped into three general categories; controlled burning, mechanical control and chemical control. In the course of developing a program, a determination must be made of the method to be used. If the program is extensive, a combination of these methods may be desirable.

9.2.1.1 Controlled Burning

This method, used rather extensively in certain areas of the country at one time, is now rarely used. The cost of fuel as well as the labor associated with this type of operation is very high. In addition, the pollution caused by smoke and fumes are no longer acceptable to the general public. Burning is prohibited by law in many areas of the country. Weed burning usually produces only temporary control, and even when it is practiced, it may be necessary to burn several times each year. However, in several states, Departments of Forestry require hundreds of miles of fire lane burned or plowed; notably, Florida and Virginia.

9.2.1.2 Mechanical Control

- a. This category includes methods involving the use of hand tools such as brush hooks, axes, and scythes, including all types of power equipment since the results obtained are similar. The determination of where to use these mechanical methods should be based on the degree of control desired, availability of labor force, and existing conditions.
- b. Lawn maintenance by mowing in the vicinity of stations, offices, and other facilities is part of the vegetation control program. Mowing may also be performed on the rights-of-way where terrain permits; particularly in the area beyond drainage ditches to the right-of-way line. The reasons are:
 - Visibility adjacent to grade crossings.
 - Preventing the spread of weed seeds onto adjacent farmland.
 - Aesthetic value.
- c. The establishment of permanent, maintenance-free ground cover may be justified. Mowing weeds and grasses in the track and shoulder area is also useful, principally to cut down uncontrolled vegetation. The use of this practice in ballast areas will further contribute to the fouling of the ballast.
- d. Recent developments in mechanical control have been largely directed toward brush cutting. Equipment is available to perform this work operating either on track, off track or with the flexibility of hy-rail equipment. On-track equipment has the advantage of not having to operate over rough terrain. The area which can be worked is limited by the lateral reach of the cutting equipment from the track. Productive time may be limited with such equipment, depending upon the density of the rail traffic. Off-track equipment can work independently of train movements and is not restricted by the distance from the track. This may be of particular value in working under communication and signal lines. Frequently, the area covered per working hour may be less than that with on-track equipment as the equipment may have to traverse rough terrain. While hy-rail equipment may be more flexible, its construction is such that it generally cannot cover terrain as rugged as equipment designed exclusively for off track usage.
- e. The cost of controlling brush by mechanical methods is usually greater than the cost of chemical brush control. Mechanical brush control is appropriate for situations where removal of all standing vegetation is required such as interference with communication lines, clearance, or visibility. Once the brush cutting is accomplished, it will usually be more economical to control regrowth by chemical methods. Mechanical control may also be used when the use of herbicides is restricted due to federal, state, or local regulations, proximity of adjacent crops, ornamental vegetation, or pesticide sensitive people living adjacent to the right-of-way.



9.2.1.3 Chemical Control

The predominate method of controlling vegetation on rail rights-of-way is with herbicides. Factors which contribute to the use of herbicides are:

- Economy.
- Ease of application.
- Ability to regulate degree of control, including percentage of control, duration of control period, and selectivity.
- Productivity, which results in less demands on available labor force and track occupancy.

9.2.2 DEGREE OF CONTROL (2001)

Where controlled burning or mechanical control methods are used, the degree of control obtained is usually a fixed characteristic of the method used. With chemical methods the desired degree of control can be regulated with the area requirements and available funds. It is important to determine the degree of control required by segments in the early stages of planning and to develop the program in accordance with these requirements. Degrees of control attainable are described as follows:

9.2.2.1 Long Term Weed Control

Complete eradication of vegetation for the entire growing season is the most expensive degree of control. Initial high rates of residual herbicides followed by reduced rates are required for a successful program. Bare ground is usually desired under and around timber bridges, switch stands, fuel storage tanks, yards, and terminal areas.

9.2.2.2 Short Term Weed Control

This term denotes a high degree of control, but not to the extent that bare ground is obtained. It involves the use of an herbicide or combination of herbicides to control weeds which are present, plus residual control for less than a growing season. One or two treatments may be necessary per growing season depending on the herbicides used, weed species present, and length of the growing season. Short term control is usually programmed for highway grade crossings, passing tracks and sidings, and maintrack areas such as ballast sections and shoulders.

9.2.2.3 Chemical Weed Mowing

This term is used to describe treatments aimed at reducing the above ground vegetation body without retarding the process of resurgence of more desired species. Systemic or translocated herbicides are generally used for chemical weed mowing, and the degree of control is short term. One to four applications per year may be necessary depending on the amount of rainfall and the length of the growing season.

9.2.2.4 Selective Weeding

Selective weeding is the use of herbicides to control specific species of vegetation without damaging desired species. This method is used on the right-of-way outside the established roadbed pattern. Selective weeding can be used to control vegetation designated as noxious by state and local governments. It is also used to control brush and vines along the railroad property. Multiple treatments may be needed to fully establish the desired species.

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9.2.3 QUANTITATIVE CONSIDERATIONS (1994)

9.2.3.1 Patterns and Acreage

- a. Railroads generally exercise the option of specifying not only the total acreage to be treated, but the treatment shape, or pattern. By using the centerline of the track as a reference point, it is possible to define a simple pattern, as in a yard program pattern. Main and branch line patterns may be specified as a ballast pattern (which may not require an out-of-face treatment), and a shoulder or toe path pattern. Figures frequently specified as pattern widths are found in Table 1-9-1.
- b. An estimate of acres per track mile may be derived by dividing the pattern width in feet by eight. This figure times the treated miles yields a total program acreage if treated out-of-face. Actual acres treated may be less if the ballast area has been "spot treated", that is, spraying only when vegetation is visible. Similarly, brush acres may be spot treated as needed, which will cause the actual acreage to be less, or in some cases more, than those shown in Table 1-9-1.

Table 1-9-1. Pattern Widths

Program	Pattern	Width	Acres/Mile
Yard	14'	Treat tracks to overlap, out-of face	1.75
Branch	16'-20'	2-4 foot toe paths, spot treat center 8-12 feet	1.75-2.25
Main line	18'-28'	2-4 foot toepaths, spot treat center 10-12 feet	1.5-2.75
Siding	16'-20'	Treat out-of-face	2.00-2.50
Crossing	50'-100'	Pattern starts at the outer edge of roadbed pattern, four quadrants per crossing (Note 1).	0.50-1.00
Brush			
Pole line	40'-60'	Acreage may vary depending on density of brush	5.00-7.50
Opposite side	10'-24'	Treat for clearance	1.25-3.00
Note 1: State requirements for patterns may vary. Consult with state agencies before specifying spray patterns for crossings.			

9.2.3.2 Contract Costs

- a. Most railroads do not use their own personnel for the application of herbicides. The vegetation control program may be awarded to contract applicators. The contracts may be awarded as Guaranteed Performance contracts, or as Railroad Specified contracts. Both may be awarded by competitive bidding. With Guaranteed Performance contracts the railroad does not specify the herbicides or acreage. The pattern widths and areas to be treated are specified, but the railroad pays a lump sum amount on the condition that the property will be maintained to the satisfaction of the railroad company. With a railroad specified program the railroad specifies the herbicide formulations and acreage to be treated. The contractor provides a total cost per acre, which includes both the cost of the specified herbicides and the application cost per designated acre. The railroad may wish to ask for the price of each component in order to ascertain what percentage of the budget is labor and what percentage is materials. The following formula illustrates this point:

$$\text{Herbicide \$/acre} + \text{Application \$/acre} = \text{Total \$/acre}$$

- b. The program cost is the product of Total \$/acre times the number of acres.

9.2.3.3 Survey

- a. A number of methods may be used to determine the acreage involved in the proposed program. Vegetation control is performed on the basis of fixed patterns. It is possible to estimate a constant per mile acreage by allowing for an out-of-face treatment to the toe path area on each side of the track. The toe path treatment will generally be four feet. This is supplemented by a spot application to the ballast area. The allotment is usually based upon treating half of the area to be spot treated per mile. The allocation can range from 0.5 to 1.0 acres per mile. The density of the spot application can best be determined by a field survey. Allocations should also be made for out-of-face treatments on the roadbed at crossings, through switches, and in areas of dirty or fouled ballast. Areas such as yards require treatment of the total facility, in which case the acreage can be accurately determined. The determination for brush spray requirements need a field survey, since the density per mile varies. Treatments of such facilities as bridges and grade crossings should be specified by acres for consistency, but can be specified on a unit basis rather than an acreage basis.
- b. The methods of estimating may vary depending on the scope of the work, the level at which the estimating is done and the familiarity with the actual field conditions. In any case, it is necessary to accurately define the program and determine the quantities which are needed in each area.

9.2.4 SCHEDULING OF WORK (1994)

The type of treatment used and the degree of control desired will determine when the application should be performed. All herbicide labels state the proper time of the year to apply the product to insure optimum results. The label recommendations should be followed, and the availability of labor and equipment, climatic conditions and requirements for track occupancy must also be considered when scheduling the work.

9.2.4.1 Controlled Burning

This is usually performed in the autumn after the vegetation has become dry, but before the first snowfall.

9.2.4.2 Mechanical Control

Weather conditions often affect equipment mobility because of soft ground or snow cover.

9.2.4.3 Chemical Control

To determine the proper herbicides to use for the control of weeds and grasses, the vegetation must first be identified. The susceptibility of the various species to the products available must also be determined. The determination can then be made to use a pre-emergent or post-emergent application. Program herbicides with a contact or systemic mode of action are of no value in a pre-emergent program. This type of application should be limited to residual herbicides. While residuals are also valuable in post-emergent applications, they are normally used in combination with contact and/or systemic products. Factors such as rainfall and length of growing season will affect the herbicides selection process. There are several types of brush control treatments available.

9.2.4.3.1 Summer Foliage

Such treatments are made after the brush reaches full leaf and is actively growing.



9.2.4.3.2 Dormant Stem (cane)

These applications are made during late fall and winter while the brush is completely dormant. An advantage of this method is the reduction of potential damage to adjacent crop lands which can be caused by drift during summer foliage applications.

9.2.4.3.3 Basal Treatments

Basal treatments are generally individual stem treatments. The herbicide is applied to the basal and root collar area. It is of particular value for control of cut stumps or for clean up of scattered plants. This method can be used any time of the year.

9.2.4.3.4 Soil Treatments

Soil applications are made with pellets, granular, and liquids, either by a broadcast application to the entire area, or by spot treatment to the ground around individual stems or clusters. This type of application can be made at any time of the year except when the ground is frozen. Rainfall is necessary to activate these materials.

9.2.5 CHEMICAL CONTROL – SELECTION OF HERBICIDES (1994)

9.2.5.1 Species to be Controlled

- a. An important consideration when selecting herbicides is the type of vegetation to be controlled. Generally, vegetation is categorized as grasses, sedges, broad-leaf weeds, vines, or brush. Programming for such broad categories can be beneficial in that it will lead to the selection of herbicides that are reasonably effective on many different species and subspecies. There is considerable variation in the susceptibility of different plants to the various herbicides.
- b. Weed resistance to the treatments being applied may take over an area if the same herbicides are used year after year. Species which are susceptible to the formulations being applied are easily controlled. It then becomes necessary to change the herbicide formulations to prevent the proliferation of resistant plants.

9.2.5.2 Herbicide Information

- a. A reliable source of data pertinent to a particular herbicide is the label which is affixed to the herbicide container. Labeling is the literature which is used in promoting the products. Labeling is now considered to be a part of the official label by the Environmental Protection Agency. It must not differ in meaning from the information furnished to the EPA when the product was registered.
- b. All labels require approval by the EPA. The label must show the registration number and establishment number issued by the EPA. This information can always be found on the bottom center panel of the label. Herbicides cannot be shipped either intra- or interstate unless the product is in its original labeled container.
- c. The Insecticide, Fungicide and Rodenticide Act, as amended by the Federal Environmental Pest Control Act of 1972, requires extensive investigation and testing prior to granting label registration. Performance data and toxicity testing from various regions throughout the country is required before granting label registration. All use precautions for the product are required to be listed on the label. A thorough understanding of the label is necessary to insure safe and effective use of the herbicides selected. Personnel charged with vegetation management should keep abreast of changes and new developments.

9.2.5.3 Factors Affecting Herbicide Performance

Prior to the final choice of herbicides, a number of other factors should be considered which might affect the performance of the herbicides. Significant factors are:

9.2.5.3.1 Soils

- a. In considering this variable as related to an overall vegetation management program, it should be noted that the character of the soil generally does not affect the use of contact or systemic type herbicides except as soil affects the plant growth process. These products are applied directly to the plant and pass through that medium.
- b. Residual herbicides are applied to the soil taken into the plant through the root system, and therefore are affected by soil type. The most significant effect of soils on organic compounds applied to them is the physical absorption of the product. This physical absorption, which is caused by the mineral and organic colloids in the soil, renders the chemicals biologically unavailable. It is however, this same characteristic which determines, to a large degree, the length of time during which the product will be effective.
- c. Absorption varies from one soil to another depending upon the concentration of clay and organic matter, and the chemical and physical properties of the compounds being applied. Sand and silt content do not require as much herbicide to produce weed control as do soils that are high in clay and organic matter. However, because they do not retain them as well, the duration of effective weed control is usually shorter.

9.2.5.3.2 Rainfall

- a. Rainfall is important as a source of moisture for producing good growing conditions that make plants more susceptible to chemical treatments. Excessive rainfall can also cause problems. Highly porous soils and those low in clay and organic matter can cause too rapid leaching of herbicides through the soil and out of the root area. This can produce a lower level of vegetation control that is of shorter duration. Excessive rainfall can also cause surface movement of the herbicides out of the target area. This can cause a lower degree of control and damage to off-target vegetation such as crops and ornamentals.
- b. The rainfall patterns common in various geographical regions are also important. The amount and timing of rainfall can control when herbicides can successfully be applied. The amount of rainfall can almost always be correlated with the types of soil and weed species present in a given location. Low rainfall areas generally produce more alkaline soils, while moderate and high rainfall areas produce neutral or acidic soils.
- c. During drought periods plants usually undergo growth stress, resulting in poor performance of systemic and contact herbicides. The plants produce a heavy wax tissue on the leaves and stems to protect against excessive transpiration losses. During dry periods herbicides will remain on the soil surface until enough moisture is received to dissolve the material and carry it into the root zone.
- d. The successful use of a particular product or combination of products depends very much on the interrelated functions of the chemical with the climate, the soil, and the species present.

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9.2.5.3.3 Length of Growing Season

The length of the growing season is a consideration when selecting the proper herbicide. Normally, the longer the growing season the more resistant the vegetation. This necessitates higher use rates to realize an acceptable degree of control. The combination of a long growing season and a high rate of rainfall results in leaching of the residual herbicides below the root zone. Multiple applications are therefore required.

9.2.5.3.4 Temperature

- a. Temperature affects the use of herbicides in a number of ways. The rate of plant growth and the length of time during the year when temperature is favorable for any plant growth are two important effects of temperature. Temperature, as it affects the factors responsible for the deterioration of the herbicide, can also be important. High temperatures generally accelerate these processes, while low temperatures delay this effect.
- b. A general rule valid with most herbicide use is that most herbicides are more successfully used when plants are sensitive and vigorously growing. The systemic products have a substantially reduced effect when applied to plants approaching dormancy, and practically no effect when applied to dormant plants.

9.2.5.3.5 Soil Microorganisms

- a. Microorganisms use all types of organic matter, including organic herbicide, as a food source. They are a major factor in the breakdown of residual herbicide. These organisms, which live in the soil, attack the applied herbicide, as they do any other organic matter, for nutritional elements that are contained in the product. Eighty to ninety percent of the product disappears from the soil during the first growing season due to these organisms.
- b. Two factors which are favorable are: 1) microorganisms do not build up as a result of normal repeated application of these products and do not present a limiting factor to their use on an annual basis and 2) the products do not destroy the microorganisms and therefore do not change the flora of the soil.

9.2.5.3.6 Toxicity

Toxicity is the capacity of a substance to produce injury or death. It may be a factor in the herbicide selection process. Both oral and dermal toxicity should be considered. The LD 50 system of rating oral toxicity is explained in various manuals. For simplicity the toxicity of a product can be determined by looking for the signal word printed on the label. The signal words and a description is listed below.

DANGER This word signals that the product is highly toxic. A taste to a teaspoonful taken by mouth could kill an average sized adult. Any product that is highly toxic oral, dermal, or through inhalation or causes severe eye or skin burning will be labeled "DANGER". Any product classified as highly toxic with the DANGER signal word will also carry the word POISON printed in red and the skull and crossbones symbol.

WARNING This word signals that the product is moderately toxic. As little as a teaspoonful to a tablespoonful by mouth could kill the average sized adult. Any product that is moderately toxic oral, dermal, or through inhalation, or causes moderate eye and skin irritation will be labeled WARNING.

CAUTION This word signals that the product is slightly toxic. An ounce to more than a pint taken by mouth could kill the averaged sized adult. Any product which is slightly toxic oral, dermal, or through inhalation, or causes slight eye and skin irritation will be labeled CAUTION.

9.2.5.3.6.1 Special Toxicity Statements

If a product is especially hazardous to wildlife, that hazard will be stated on the label. For example:

- a. This product is highly toxic to bees.
- b. This product is toxic to fish.
- c. This product is toxic to birds and other wildlife.

9.2.5.3.7 Government Regulations

The Federal Environmental Pest Control Act provides guidelines and authority for regulating and enforcing the sale and proper use of herbicides. Railroads engaged in vegetation control programs should be sure that proper licensing in the states in which work is to be performed has been obtained. Consult the State Department of Agriculture for information on the proper licensing procedures.

9.2.5.4 Herbicide Selection

There is no single ideal herbicide for applications. There may be two or more compounds of comparable suitability. At this point, relative economy may be a decisive factor. Even the most economical herbicide (or combination) may cost more than the funds available. In such a situation a review of the desired degree of control may be in order. If the original proposals are to be adhered to, low priority items should be eliminated from the program, rather than apply insufficient rates over the entire territory.

9.2.6 EQUIPMENT SELECTION (1994)

9.2.6.1 Controlled Burning

The primary equipment consists of on-track weed burners and hand carried torches, utilizing various petroleum products. When this method is used, adequate fire protection must be provided and permits acquired if necessary.

9.2.6.2 Mechanical Control

9.2.6.2.1 Weeds and Grasses

On and off-track, sickle-bar and rotary type equipment is available. The proper selection is dependent upon finances available and the topography of the area to be treated.

9.2.6.2.2 Brush

Rotary type, on-track, off-track, and hy-rail equipment is readily available. All equipment is available with varying lateral swath widths. This equipment is available in both single and double boom styles. Off-track equipment may be rubber tired or caterpillar type and brush cutters may be under slung or towed. Manual equipment consists of axes, chain saws, and rotary saws. It is suitable for terrain inaccessible to heavy equipment and for spot removal of large standing trees.



9.2.6.3 Chemical Control

9.2.6.3.1 Spray Trains



Spray trains are generally used for herbicide applications to the mainline areas. The trains can be either pushed or pulled and are generally run as a work train, enabling the train to make movements in both directions. In general a spray train is comprised of; a spray car, several large tank cars, and a box car for chemical concentrate storage. The productivity is very good for mainline applications. It loses much of its efficiency in terminal areas and on short branch lines. Spray trains provide multi-system capabilities, an opportunity for treatment of several different chemical formulations in a single pass.



9.2.6.3.2 Hy-Rail Trucks

The widespread use of hy-rail trucks with tank capacities ranging from 150 to 3,000 gallons is now available. The trucks are used for yard and terminal applications. The trucks can be used to treat branch lines, bridges, off track areas, and are becoming more popular for use on mainline applications. Production is somewhat less than that of a spray train, but hy-rail trucks are more mobile and require fewer operating personnel.



9.2.6.3.3 Dry Material Spreaders

These are used to distribute granular and pellet type material. They are available for use in areas not readily accessible to other types of application equipment. Dry applications are quite labor intensive.



SECTION 9.3 EXECUTING A VEGETATION CONTROL PROGRAM

9.3.1 PROGRESS REPORTS (1994)



- a. Accurate application records can serve a variety of useful purposes. These are:
 - (1) Provide a day to day monitoring of work completed and material usage.
 - (2) Provide a means for developing mile by mile costs, to be used in developing future programs.
 - (3) Provide data on actual productivity which can be used for developing schedules for future programs.
 - (4) Provides evidence for legal cases and claims.
 - (5) Facilities compliance with State and Federal laws.
- b. Guidelines for establishing a record keeping system:
 - (1) Determine the purpose of the report, and design the forms to conform to these purposes.
 - (2) Determine whether it is practical to obtain the information desired.
 - (3) If a contract application, determine if the contractor's report meets railroad criteria.
 - (4) Transmit daily reports promptly to the proper personnel.

9.3.2 TECHNIQUES OF CHEMICAL CONTROL (2001)

9.3.2.1 Herbicides for Liquid Formulations

Herbicides are available in various formulations. Field personnel should be familiar with these formulations and their characteristics. The formulations in use are:

- a. *Water Soluble Concentrate*. Forms a solution when added to water and applied with water as a carrier. This formulation usually has an amine or metallic salt in the molecule which enables water solubility. Agitation is not necessary to maintain the pesticide in solution. The product usually contains two to eight pounds of active ingredient per gallon.
- b. *Water Dispersible Granule or Dry Flowable*. Prepared as a granule sized particle. The product pours easily without associated dust. It readily disperses in water and forms a suspension. Constant agitation is required to keep the material in solution. The product usually contains a 70% to 90% active ingredient per pound.
- c. *Wettable Powder*. A dry preparation which may contain 5% to 95% active ingredient per pound or product. Wettable powders form a suspension rather than a true solution.
- d. *Soluble Powder*. A dry formulation which may contain 15% to 95% active ingredient per pound of product. Soluble powders look like wettable powders but they form a true solution when added to water.
- e. *Emulsifiable Concentrate*. {E or EC} An emulsifiable concentrate formulation usually contains the active ingredient, petroleum solvents and an emulsifier. These concentrates are soluble in oil and form an emulsion in water. The oil droplet containing the pesticide is dispersed in water {oil in water emulsion}. The milky colored appearance when mixed with water is typical of emulsifiable concentrates. Usually by-pass agitation is sufficient to keep the emulsion from separating.

The emulsifiable concentrate formulation {ester} is generally more phytotoxic than its water soluble {amine} counterpart. The ester formulation is more toxic to fish than the amine formulation. The ester formulation has a potential to be volatile and the suggested maximum soil and air temperatures may appear on the label.

- f. *Flowable*. A flowable {F or L} consists of a finely ground solid material suspended in a liquid. Liquid flowables usually contain a high concentration {4 pounds or more per gallon} of active ingredient and are mixed with water for application. The mixture forms a suspension when added to water. Spray nozzles seldom clog and only moderate agitation is needed.

9.3.2.2 Formulations for Dry Applications

- a. *Granule*. A ready to use dry mixture containing 1% to 15% of active ingredient per pound of product. Granules are never mixed with water.
- b. *Pellets*. Are similar to granules in that they are ready to use. They contain 10% to 20% of active ingredient per pound of product. Pellets are larger than granules and are never mixed with water.

9.3.2.2.1 Mixing and Agitation

Most formulation solutions applied for weed control are prepared in the field. The concentrated chemicals are added to the spray tank and mixed thoroughly with an agitation system. All label information concerning mixing procedures should be read and understood before any mixing ensues. Good agitation; hydraulic or by-pass, should be used. Agitation should be maintained at all times if dry products are used. All herbicide formulations should be applied with properly calibrated application equipment.

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9.3.2.2.2 Calibration



- a. To insure the proper rate of application of the prescribed chemicals, a calibrated meter must be included in the system and the following must be taken into account:
 - (1) Number of outlets.
 - (2) Size and capacity of nozzles (orifice size).
 - (3) Dilution ratio of chemicals.
 - (4) Operating pressure.
 - (5) Speed of application equipment.
- b. A check of the proper calibration should be made before the initial spraying operation begins and rechecked daily to assure continuity of the proper chemical application rates.

9.3.2.2.3 Speed and Pressure Control

Speedometers and pressure gages should be integral parts of any application equipment. A change of speed will disrupt the calibrated rate of chemicals unless the operating pressure is also changed at the same time, i.e. an increase in speed will reduce the rate of materials, therefore, the operating pressure must be increased to offset this difference.

9.3.2.2.4 Clogging of System

Clogging, or any obstruction in the spraying system, is detrimental to good vegetation control practices. To counteract this possibility, strainer units are placed in the system, preferably ahead of the intake side of the pump. In some cases, strainers are provided in the nozzle assembly. Sources of clogging include:

- Accumulation of rust from distributing containers and chemical pipe lines.
- Silt, sticks, and stones from water sources.
- Precipitation of chemicals caused by improper mixing techniques.
- Accumulation of improperly agitated, insoluble residuals in the chemical pipe line and/or pump.

9.3.3 PRECAUTIONS (1994)

9.3.3.1 Controlled Burning

Control of vegetation by burning introduces a number of hazards. Before burning is undertaken sufficient protection should be on hand to prevent the spread of fires to adjacent property. Burning should be avoided in the vicinity of wood bridges and other wooden structures. A less obvious but potentially serious hazard is the possibility of fires becoming established underground in cinders, peat, and wood chips, which may go undetected until well established. They can be difficult to extinguish and may result in collapse of the roadbed. Air pollution caused by burning is of increasing concern and burning is sometimes prohibited by law.

9.3.3.2 Mechanical Control

In the selection of equipment for a particular job, consideration should be given to its suitability for the use contemplated. Some of the more common safety hazards are:

- a. Overturning on slopes.
- b. Flying objects from cutting blades.
- c. Presence of stone, scrap, cable, wire, etc.
- d. Stumps and stubble.
- e. Hand tools (chain saws, etc.) – exposure to cutting edges.
- f. Danger of falls during manual work on steep slopes.

9.3.3.3 Chemical Control

- a. When applying vegetation control chemicals, the possibility of wind causing drift of the spray mix materials should be considered. Spray drift can cause damage to susceptible crops and ornamentals adjacent to the right-of-way and may result in litigation. Application should immediately cease if the herbicide cannot be confined to the target area. Individual state statutes should be considered regarding wind velocity. Application techniques, mechanical devices, and/or drift control agents may be utilized to control drift.
- b. Rain can be both beneficial and harmful. Rain provides the moisture necessary to maintain the plants in an active, growing state, which permits the uptake of the herbicides, and the carrying of residual chemicals to the root section of the plants. Rain immediately after treatment can wash the chemical from the plants (as in the case of contact herbicides) and cause run-off of the chemicals out of the target area.

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SECTION 9.4 EVALUATING RESULTS OF A VEGETATION CONTROL PROGRAM

9.4.1 FIELD INSPECTIONS (1994)

9.4.1.1 Controlled Burning

The principal field evaluation of a controlled burning program is to determine the extent to which the programmed territory was covered and to identify any damage resulting from such a program. As the results of such a program are of relatively short duration, such an evaluation should be made fairly soon after the burning is accomplished.

9.4.1.2 Mechanical Control

Field evaluation of mowing weeds and grasses can determine whether the frequency of such operations is consistent with the results desired and the degree of effectiveness of such procedures on the terrain involved. Brush cutting operations should be evaluated on the basis of rate of regrowth and increased brush density due to suckering.

9.4.1.3 Chemical Control

9.4.1.3.1 Rating Extent of Control Obtained



9.4.1.3.1.1 Brush

Inspection at the end of the first growing season should be made to determine whether coverage is uniform throughout the target area. All brush should show typical herbicide response. Brush height and density may necessitate spraying in two consecutive years in order to obtain effective control of all brush when using on track spray equipment. Final evaluation should be made at the end of the second growing season following application of the herbicide. At that time it can be determined if the degree of control is consistent with requirements.



9.4.1.3.1.2 Weeds and Grasses

Evaluation should be made near the end of the growing season during which the treatment is made, but prior to frost. The evaluation should be made on the basis of percentage of effectiveness.



9.4.1.3.2 Identifying Problem Species

It is possible that any remaining will be composed of a limited number of species which are resistant to the treatment used. Even if these species represent a small problem at the time of inspection, it's likely they may proliferate due to the elimination of competing species. Future programs should be designed to control these remaining species.



9.4.1.3.3 Relating Results to Original Goals

The results of a spray program should be consistent with the needs as described in Article 9.2.2 and Article 9.2.3.1. Photographs of representative areas taken prior to the application of the herbicides can be valuable aid in making evaluations. The pictures should be identified as to location and date.



9.4.1.3.4 Contributing Factors

If it is determined that results are not consistent with what might reasonably be expected, one or any combination of the following may be contributing factors.

9.4.1.3.4.1 Chemicals

- a. Improper mixing procedures.
- b. Incompatibility between herbicides and/or their carriers.

9.4.1.3.4.2 Weather

- a. Rain too soon after application can wash the herbicide from the plant or the soil surface.
- b. Heavier than normal rainfall can leach and dilute soil applied herbicides.
- c. Rainfall may be inadequate to activate soil applied herbicides.
- d. Wet brush will not accept oil carrier spray solutions.
- e. Extended periods of dry weather reduce the effectiveness of foliar applied herbicides.

9.4.1.3.4.3 Equipment

- a. Improper calibration.
- b. Inadequate agitation.
- c. Clogging of nozzles.

9.4.2 ECONOMIC ANALYSIS (1994)

In addition to costs of material and contracts, labor and equipment cost can be a significant part of the total expense of vegetation control. Labor and equipment unit costs will vary with productivity. Well designed and properly completed daily reports can be an invaluable tool in determining costs and evaluating the efficiency of the operation. Thorough analysis of daily reports may indicate that changes should be considered in future programs in factors such as scheduling, type of equipment used, coordination with train operations, personnel assigned, and type of treatment applied.

SECTION 9.5 GLOSSARY (1994)

The following terms are for general use in Part 9. Refer to the Glossary located at the end of the chapter for definitions.

Absorption	Concentration	Labeling	Solution
Acre	Contact Herbicide	LC 50	Species
Active Ingredient	Deciduous	LD 50	Suckering
Acute Oral Toxicity	Defoliant	Leaching	Surfactant
Adjuvant	Degradation	Material Safety Data Sheet	Systemic Herbicide
Adsorption	Dermal Toxicity	Necrosis	Toxicity
Agitation	Dilute	Non-selective Herbicide	Translocated
Amine	Dormant Application	Oral Toxicity	Vines
Amine Salt	Drift	Orifice	Volatility
Annual	Dry Flowable	Pellet	Weed
Basal Treatment	Emulsion	Perennial	Wettable Power
Biennial	Emulsion Agent	Photosynthesis	
Broad Leaf Weeds	Emulsion Concentrate	Post-emergence Treatment	
Broadcast Application	EPA	Pre-emergence Treatment	
Brush	Ester	Residual	
Carcinogen	Foliar Application	Selective Herbicide	
Carrier	Granule	Soil Application	
Chlorosis	Grassy Weeds	Soil Persistence	
Chronic Toxicity	Herbaceous Plant		
Common Chemical Name	Herbicide		
	Label		



SECTION 9.6 LEAD AGENCIES (1994)



Agricultural Chemical & Plant Protection
P.O. Box 3336
Montgomery, AL 36193
(205) 242-2656

Idaho Department of Agriculture
P.O. Box 790
Boise, ID 83701
(208) 334-3243



Alaska Dept. of Environmental Conservation
Pesticide Use Specialist
Box 2309
Palmer, AK 99645
(907) 745-7348

Illinois Department of Agricultural
Office Admin. 1V
P.O. Box 19281
Springfield, IL 62794
(217) 785-2427



Division of Feeds, Fertilizer & Pesticide State Plant
Board
P.O. Box 1069
Little Rock, AR 72203
(501) 225-1698

Indiana State Chemist Office
170 Purdue University
West Lafayette, IN 47907
(317) 494-1598



CDFA Pesticide Branch
1220 N. Street Room
Sacramento, CA 95814
(916) 322-5032

Iowa Department of Agriculture Pesticide Division
Wallace State Office Building
Des Moines, IA 50319
(515) 281-4339



Pesticide Section
Colorado State Department of Agriculture
700 Kipling Street
Lakewood, CO 80215-5894
(303) 239-4140

Pesticide Use Law Adm.
901 S. Kansas Avenue
Topeka, KS 66612-1281
(913) 296-2142

Pesticide Control
165 Capitol Avenue
Hartford, CT 60106
(203) 566-5148

Division of Pesticide
Kentucky Department of Agriculture
7th Floor 500 Mero Street
Frankfort, KY 40601
(502) 564-7274

Division of Consumer Protection
Delaware Department of Agriculture
2320 S. Dupont Highway
Dover, DE 19901
(302) 739-4811

Louisiana Department of Agriculture Certification
Programs
Box 44153, Capitol Station
Baton Rouge, LA 70804-4153
(504) 925-3796

Florida Dept. of Agriculture & Consumer
Service
3125 Conner Blvd.
Tallahassee, FL 32399-1650 MD1
(904) 488-6838

Regulation Section
Maryland Department of Agriculture
Harry S. Truman Parkway 50
Annapolis, MD 21401
(410) 841-4134

Georgia Department of Agriculture
Capitol Square, Room 500
Atlanta, GA 30334
(404) 656-4958

Department of Food & Agriculture
Leverette Sandstall Bldg., 21st Floor
Govt. Center, 100 Cambridge St.
Boston, MA 02202
(617) 727-7712 ext. 128

Board of Pest Control
Licensing Specialist
Station 28
August, ME 04333
(207) 289-2731

Mgr. Pest Applicators
Pesticide & Plant Pest Mgmt. Division
Michigan Department of Agriculture
6110 West Ottawa
P.O. Box 30017
Lansing, MI 48909
(517) 373-1087

Pesticide Regulatory Specialist
Minnesota Department of Agriculture
90 W. Plato Blvd.
St. Paul, MN 55107
(612) 297-2746

Supervisor of Pest Control Section
Mississippi Department of Agriculture
P.O. Box 5207
Mississippi State, MS 39762
(601) 325-3390

Missouri Department of Agriculture
P.O. Box 630
Jefferson City, MO 65102-0630
(314) 751-2462

Montana Department of Agriculture Capitol Station
Helena, MT 59620-0201
(406) 444-2944

Nebraska Environmental Protection Agency
726 Minnesota Avenue
Kansas City, KS 66101
(913) 551-7020

Nevada Department of Agriculture
P.O. Box 11100
350 Capital Hill Avenue
Reno, NV 89510-1100
(702) 789-0180

Division of Pesticide Control
New Hampshire Department of Agriculture
Caller Box 2042
Concord, NH 03301
(603) 271-3550

New Jersey Bureau of Pesticide Op.
CN 411
Trenton, NJ 08645-0411
(609) 530-4134

Division of Pest Control
New Mexico Department of Agriculture
P.O. Box 3005, Dept. 3150
Las Cruces, MN 88003
(505) 646-3208

Pesticide Control Specialist
Dept. of Environmental Conservation
50 Wolf Road
Albany, NY 12233-42512
(518) 457-7482

North Carolina Department of Agriculture
P.O. Box 27647
Raleigh, NC 27611
(919) 733-3556

Pesticide Program Specialist
North Dakota State University
Extension Service
Fargo, ND 58105
(701) 237-7180

Control Specialist
Oklahoma Department of Agriculture
2800 North Lincoln Blvd.
Oklahoma City, OK 73015-4298
(405) 521-3864

Oregon Department of Agriculture
635 Capitol Street NE
Salem, OR 97310-0110
(503) 378-3776

Pennsylvania Department of Agriculture
2301 North Cameron Street
Harrisburg, PA 17110-9408
(717) 787-4843

Rhode Island division of Agriculture
William's Building
22 Hayes Street
Providence, RI 02908-5025
(401) 277-2781

South Carolina Department of Fertilizer & Pest
Control
256 Poole Agricultural Center
Clemson University
Clemson, SC 29634-0394
(803) 656-3171

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South Dakota Pesticide Program Supervisor
Anderson Bldg.
455 Pierre SD 57501-3188
(605) 773-3724



Tennessee Department of Agriculture
P.O. Box 40627
Melrose Station
Nashville, TN 37204
(615) 360-0130



Texas Department of Agriculture
Certification/Training Specialist
P.O. Box 12847
Austin, TX 78711
(512) 463-0013



Pesticide & Fertilizer Inspection
350 North Redwood Road
Salt Lake City, UT 84116
(801) 538-7100



Vermont Department of Agriculture
State Office Building
116 State Street
Montpelier, VT 05602
(802) 828-2431

Virginia Department of Agriculture
Office of Pesticide Regulations
P.O. Box 1163
Richmond, VA 23209
(804) 371-0152

Washington State Department of Agriculture
Certification and Training Coordinator
406 General Administration Building
Olympia, WA 98504-0641
(206) 753-5064

Cerification Coordinator
2100 Martin Luther King, Jr. Ave. S.E., Suite 203
Washington, DC
(202) 404-1167

West Virginia Department of Agriculture
Pesticide Division
Charleston, WV 25305
(304) 348-2209

Wisconsin Department of Agriculture
P.O. Box 8911
801 West Badger Road
Madison, WI 53708
(608) 266-9502

Wyoming Department of Agriculture
Agricultural Pest Control
2219 Carey Avenue
Cheyenne, WY 82002-0100
(307) 777-6590

SECTION 9.7 COMMENTARY (1994)

- a. Like other areas of engineering maintenance, vegetation control has become complex. Since the days when section gangs grubbed weeds, and simple one-system cars applied diesel fuel, the field has become mechanized and the herbicides regulated by federal and state laws. The term "management" has been substituted for "control". Such a change implies a concept greater than that of prevention or removal. As yet, the possibility of farming rights-of-way remains untried and falls outside our current concerns.
- b. To what extent can railroad employees still apply herbicides? Federal and state certification requirements differentiate between "commercial" and "private" (not for hire) applicators. In most areas the latter may still use general use pesticides on their own or their employer's property without passing state examination. Since only a few are restricted use products, most railroads make use of their own personnel for at least some of their granular or pellet applications. Other railroads have crews who are Certified Private Applicators in several states, and who can buy and apply restricted use products if necessary. It is probable that the list of states requiring all users to be certified and the list of restricted use herbicides will grow.
- c. It will be increasingly important for railroad personnel to gain proficiency through contact with a number of sources. For example, the Weed Science Society is an excellent source of information about products. The Federal Environmental Protection Agency and its various state branches are the ultimate sources of the most up-to-date regulations, State and county departments of agriculture and county and university extension agents can also be good sources, especially for species identification, The National Railroad Contractors Association can provide a list of companies with specialized equipment and certified applicators. State and County Health Boards may have special ordinances affecting local usage and of course the manufacturers themselves can provide technical data regarding their own products.





March 2, 2005

Surface Transportation Board
Case Control Unit
Washington, DC 20423
Attention: Rini Ghosh
STB Docket No. FD 34284

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ROBERT L. COOK
EXECUTIVE DIRECTOR

RE: Amended comments regarding fence height
Draft EIS for Southwest Gulf Railroad Company construction and
operation of a seven mile line of railroad in Medina County, Texas.

Dear Ms. Ghosh:

I was contacted by Thomas Ransdell, Vulcan Materials Company, on February 28, 2005 regarding comments Texas Parks and Wildlife Department (TPWD) provided to the Surface Transportation Board in a letter dated January 10, 2005 following a review of the Draft Environmental Impact Statement (DEIS) prepared to identify the impacts associated with the construction and operation of a seven mile line of railroad in Medina County, Texas. Based on information contained within the DEIS, TPWD recommended a wildlife exclusion fence, at least nine feet high, to prevent potential wildlife mortality caused by wildlife wandering onto the railroad tracks. Mr. Ransdell provided additional information that has resulted in TPWD amending that original recommendation.

Specifically, Mr. Ransdell has indicated that trains would be traveling at or less than 30 miles per hour (MPH). The Department concurs that the species of wildlife that would have been kept off the tracks by a nine foot tall fence (*i.e.*, deer) would under normal circumstances be able to avoid a train moving ≤ 30 MPH. Therefore, TPWD agree that a fence of standard height (approximately four feet) commonly used to contain livestock, would be suitable in the present project. A fence of this height would prevent livestock from wandering onto the tracks, yet allow deer to continue to move through the area as they can easily jump a four foot high fence.

TPWD does maintain the original recommendation that at least the bottom half of the fence should consist of fine mesh wire to prevent small animals (*e.g.*, Texas tortoise, a state-listed threatened species) from accessing and possibly becoming stranded on the tracks. It may be more cost effective for the entire fence to be constructed with a single mesh wire or woven wire with openings that are 1x1, 2x2, or 2x4 inches in size.

Also, as mentioned in the original response letter, project plans should incorporate wildlife crossings (under bridges or through culverts) wherever possible along the



Take a kid
hunting or fishing

• • •

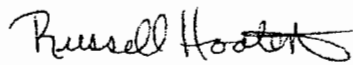
Visit a state park
or historic site

Ms. Ghosh
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proposed route. TPWD understands that these design features will be fully developed as project planning continues.

I appreciate your coordination on this project. If you have any questions regarding our amended comments, please contact me at (361) 825-3240.

Sincerely,

A handwritten signature in black ink that reads "Russell Hooten". The signature is written in a cursive style with a large, stylized "R" and a long, sweeping underline.

Russell Hooten
Wildlife Habitat Assessment Program
Wildlife Division

/rh

cc: Thomas Ransdell, Vulcan Materials Company