

### **3.0 ANALYSIS OF THE EASTERN ALTERNATIVES**

This chapter presents the Section of Environmental Analysis' (SEA) study of the potential environmental impacts associated with Southwest Gulf Railroad Company's (SGR) potential construction and operation of the Eastern Bypass Route, the MCEAA<sup>1</sup> Medina Dam Alternative, and SGR's Modified Medina Dam Route (collectively, Eastern Alternatives) (see Figure 2-1). In order to compare these three routes to the alternatives studied in the Draft Environmental Impact Statement (DEIS) - the Proposed Route, Alternative 1, Alternative 2, Alternative 3, and the No-Action Alternative - SEA has organized this chapter by resource area (for example, air quality), to parallel the discussion of the affected environment and environmental consequences provided in Chapters 3 and 4 of the DEIS. Each resource area section contains a brief description of the affected environment (i.e., existing environmental conditions), followed by a discussion of the potential environmental impacts of the construction and operation of each of the three Eastern Alternatives on that resource area.

Throughout this chapter SEA refers the reader to sections of the DEIS that contain additional information, as appropriate, in order to avoid repetition. SEA has included a copy of Chapters 3 and 4 of the DEIS in Appendix A of this document for ease of reader reference. SEA acknowledges that comments to the DEIS called into question some of SEA's methodology for assessing particular resource areas, requested modifications to particular mitigation recommendations, and suggested additional mitigation measures for SEA to recommend. However, as discussed in Chapter 1 of this Supplemental Draft Environmental Impact Statement (SDEIS), SEA will respond to the comments received on the DEIS in the Final Environmental Impact Statement (FEIS). Thus, the following sections of this chapter depart from the methodology and mitigation recommendations used throughout the DEIS only to the extent that the changed methodology or different mitigation recommendations address unique aspects of the Eastern Alternatives (i.e., issues that would not arise from construction and operation of the Proposed Route, Alternative 1, Alternative 2, Alternative 3, or the No-Action Alternative) or information that was unavailable when the FEIS was prepared.

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<sup>1</sup> MCEAA is the acronym for the Medina County Environmental Action Association, which is the citizens' organization that proposed the MCEAA Medina Dam Alternative.

Chapter 6 of this SDEIS provides a comparison of the Eastern Alternatives to the alternatives SEA studied in the DEIS and includes SEA's discussion of the Environmentally Preferable Alternative(s). Chapter 6 also includes a list of mitigation measures recommended earlier in the DEIS and the additional or modified mitigation measures recommended here in this SDEIS.

### **3.1 Transportation and Traffic Safety**

#### **3.1.1 Affected Environment**

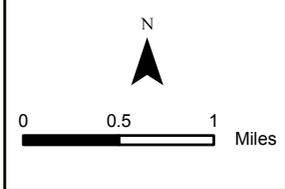
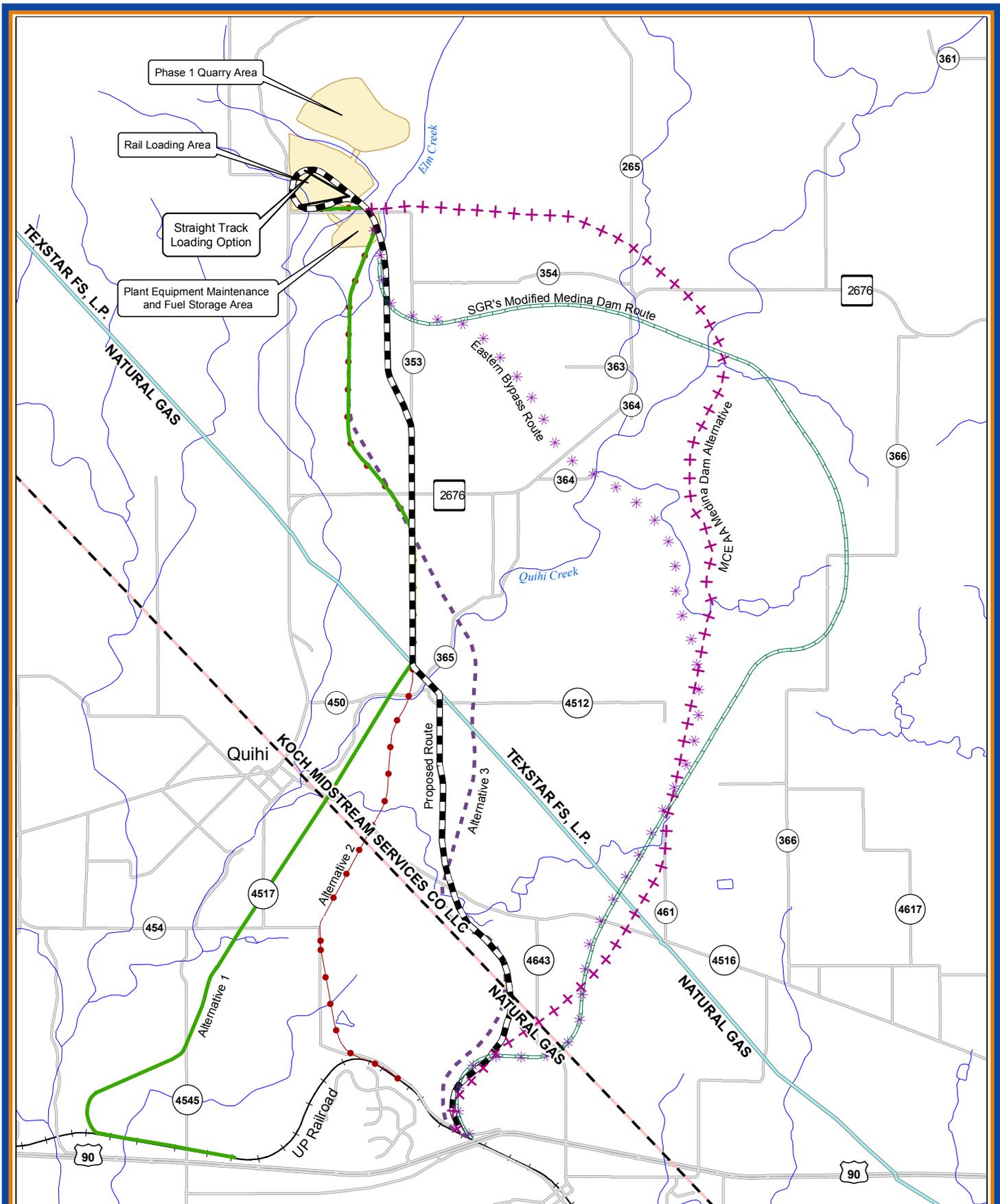
The Eastern Bypass Route, the MCEAA Medina Dam Alternative, and SGR's Modified Medina Dam Route would each cross several public roadways as well as two utility gas pipeline rights-of-way (see Figures 2-1 and 3-1). Section 3.1 of the DEIS describes the existing transportation infrastructure of the proposed project area in more detail.

#### **3.1.2 Environmental Impacts**

In this section, SEA discusses the potential impacts of the construction and operation of the Eastern Bypass Route, the MCEAA Medina Dam Alternative, and SGR's Modified Medina Dam Route on the existing transportation network in the project area, including the following: vehicular delays at at-grade crossings and grade-crossing safety; the potential for train derailments or accidents from proposed rail operations; and potential pipeline safety issues at rail/pipeline crossings, as appropriate.

##### **Eastern Bypass Route**

The Eastern Bypass Route would cross a total of 18 roadways at-grade. These roadways are the following: eleven private drives/roads; six county roads (County Road 353 [twice], County Road 364, County Road 4516, County Road 4643, County Road 454); and one state-maintained road (Farm to Market [FM] 2676).



Legend			
	Proposed Route		Eastern Bypass Route
	Alternative 1		MCEAA Medina Dam Alternative
	Alternative 2		SGR's Modified Medina Dam Route
	Alternative 3		Pipeline (Active)
	Pipeline (Abandoned)		County Road
	County Road		FM Road
	FM Road		US Highway

**Figure 3-1  
Southwest Gulf Railroad  
Pipeline Line  
Crossings**

As discussed in Section 4.1.2 of the DEIS, operation of trains at at-grade roadway crossings could cause a potential risk of accidents from derailments or collisions between trains and vehicles. Using the methodology set forth in Section 4.1.2 of the DEIS, SEA calculated the potential risk of accidents for the Eastern Bypass Route.

The total distance covered by the trains transporting stone between the quarry and the Union Pacific Railroad Company (UP) rail line under the Eastern Bypass Route would be approximately 9.2 miles, or 14.72 kilometers (km). Each train would be approximately 100 cars long, and there would be a total of two round trips a day, for a total of 5,888 railcar-km/day.

Using the Department of Energy (DOE) methodology set forth in Section 4.1.2 of the DEIS for regular trains,<sup>2</sup> the risk to human health and safety due to the operation of the Eastern Bypass Route on an annual basis would be:

$$(4.26 \times 10^{-8} \text{injuries/railcar-km}) \times (5,888 \text{ railcar-km/d}) \times (250 \text{ days/year}) = 0.063 \text{ injuries and}$$
$$(2.27 \times 10^{-8} \text{injuries/railcar-km}) \times (5,888 \text{ railcar-km/d}) \times (250 \text{ days/year}) = 0.033 \text{ fatalities.}$$

But the actual risk would be lower due to the use of dedicated trains.<sup>3</sup>

The Eastern Bypass Route would have seven at-grade road crossings of county roads and state-maintained roads. Applying the U.S. Department of Transportation (USDOT) statistics (USDOT, 2000) for grade crossings, as detailed in Section 4.1.2 of the DEIS, the accident risk at these grade crossings would be 0.22 accidents per year, resulting in 0.076 injuries and 0.022 fatalities. No USDOT statistics are currently available to evaluate the risk of accidents associated with private roadway/driveway crossings.

SEA set forth its analysis of vehicular delays at at-grade crossings and potential pipeline safety issues at rail/pipeline crossings in Section 4.1 of the DEIS. The response to comments

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<sup>2</sup> “Regular” trains are those, which may share use, either between passenger/freight or between various types of freight (Saricks and Kviteck, 1994).

<sup>3</sup> “Dedicated” trains are those used for a single freight type (Saricks and Kviteck, 1994).

received regarding these issues and any additional analysis and mitigation will be presented in the FEIS. The vehicular delays at at-grade crossings during construction and operation of the Eastern Bypass Route and potential pipeline safety issues at rail/pipeline crossings would be the same as they would be for the Proposed Route, Alternative 1, Alternative 2, or Alternative 3. SEA also recommends the same mitigation measures to reduce transportation and traffic safety impacts from construction and operation of the Eastern Bypass Route, as it has for the Proposed Route, Alternative 1, Alternative 2, or Alternative 3 (see Chapter 6).

### **MCEAA Medina Dam Alternative**

The MCEAA Medina Dam Alternative would cross a total of 16 roadways at-grade. These roadways are the following: ten private drives/roads; five county roads (County Road 265, County Road 461, County Road 4516, County Road 4643, County Road 454); and one state-maintained road (FM 2676).

As discussed in Section 4.1.2 of the DEIS, construction and operation of trains at at-grade roadway crossings could cause a potential risk of accidents from train-vehicle collisions. Using the methodology set forth in Section 4.1.2 of the DEIS, SEA calculated the potential risk of accidents for the MCEAA Medina Dam Alternative.

The total distance covered by the MCEAA Medina Dam Alternative would be approximately 9.9 miles, or 15.84 km. Each train would be approximately 100 cars long, and there would be a total of two round trips a day, for a total of 6,336 railcar-km/day.

Using the DOE methodology set forth in Section 4.1.2 of the DEIS for regular trains, the risk to human health and safety due to the operation of the MCEAA Medina Dam Alternative on an annual basis would be:

$$(4.26 \times 10^{-8} \text{injuries/railcar-km}) \times (6,336 \text{ railcar-km/d}) \times (250 \text{ days/year}) = 0.067 \text{ injuries and} \\ (2.27 \times 10^{-8} \text{injuries/railcar-km}) \times (6,336 \text{ railcar-km/d}) \times (250 \text{ days/year}) = 0.036 \text{ fatalities.}$$

But the actual risk would be lower, due to the use of dedicated trains.

The MCEAA Medina Dam Alternative would have six at-grade road crossings over county roads and state-maintained roads. Applying USDOT statistics for grade crossings set forth in Section 4.1.2 of the DEIS, the accident risk at these grade crossings would be 0.19 accidents per year, resulting in 0.065 injuries and 0.019 fatalities. No USDOT statistics are currently available to evaluate the risk of accidents associated with private roadway/driveway crossings.

SEA set forth its analysis of vehicular delays at at-grade crossings and potential pipeline safety issues at rail/pipeline crossings in Section 4.1 of the DEIS. The response to comments received regarding these issues and any additional analysis and mitigation will be presented in the FEIS. Vehicular delays at at-grade crossings during construction and operation of the MCEAA Medina Dam Alternative and potential pipeline safety issues at rail/pipeline crossings would be the same as they would be for the Proposed Route, Alternative 1, Alternative 2, or Alternative 3. SEA also recommends the same mitigation measures to reduce transportation and traffic safety impacts from construction and operation of the MCEAA Medina Dam Alternative, as it has for the Proposed Route, Alternative 1, Alternative 2, or Alternative 3 (see Chapter 6).

### **SGR's Modified Medina Dam Route**

SGR's Modified Medina Dam Route would cross a total of 16 roadways at-grade. These roadways are the following: eight private drives/roads; seven county roads (County Road 353 [twice], County Road 366 [twice], County Road 4516, County Road 4643, County Road 454); and one state-maintained road (FM 2676).

As discussed in Section 4.1.2 of the DEIS, construction and operation of trains at at-grade roadway crossings could cause a potential risk of accidents from train-vehicular collisions. Using the methodology set forth in Section 4.1.2 of the DEIS, SEA calculated the potential risk of accidents for SGR's Modified Medina Dam Route.

The total distance covered by SGR's Modified Medina Dam Route would be approximately 10.9 miles, or 17.44 km. Each train would be approximately 100 cars long, and there would be a total of two round trips a day, for a total of 6,976 railcar-km/day.

Using DOE methodology set forth above for regular trains, the risk to human health and safety due to the operation of SGR's Modified Medina Dam Route on an annual basis would be:

$(4.26 \times 10^{-8} \text{ injuries/railcar-km}) \times (6,976 \text{ railcar-km/d}) \times (250 \text{ days/year}) = 0.074 \text{ injuries}$  and  
 $(2.27 \times 10^{-8} \text{ injuries/railcar-km}) \times (6,976 \text{ railcar-km/d}) \times (250 \text{ days/year}) = 0.040 \text{ fatalities}$ .

But the actual risk would be lower, due to the use of dedicated trains.<sup>4</sup>

SGR's Modified Medina Dam Route would have eight at-grade road crossings of county roads and state-maintained roads. Applying USDOT statistics for grade crossings, the accident risk at these grade crossings would be 0.25 accidents per year, resulting in 0.087 injuries and 0.025 fatalities. No USDOT statistics are currently available to evaluate the risk of accidents associated with private roadway/driveway crossings.

SEA set forth its analysis of vehicular delays at at-grade crossings and potential pipeline safety issues at rail/pipeline crossings in Section 4.1 of the DEIS. The response to comments received regarding these issues and any additional analysis and mitigation will be presented in the FEIS. Vehicular delays at at-grade crossings during construction and operation of SGR's Modified Medina Dam Route and potential pipeline safety issues at rail/pipeline crossings would be the same as they would be for the Proposed Route, Alternative 1, Alternative 2, or Alternative 3. SEA also recommends the same mitigation measures to reduce transportation and traffic safety impacts from construction and operation of SGR's Modified Medina Dam Route as it has for the Proposed Route, Alternative 1, Alternative 2, or Alternative 3 (see Chapter 6).

### **Preliminary Conclusions**

Based on the above analysis and due to fewer county road crossings and a lower USDOT risk of an accident, injury, or fatality, construction, and operation of the MCEAA Medina Dam Alternative would cause the fewest impacts to transportation and traffic safety of any of the Eastern Alternatives, followed by the Eastern Bypass Route. Because of the number and types of road crossings, SGR's Modified Medina Dam Route would cause the maximum impact to

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<sup>4</sup> "Dedicated" trains are those used for a single freight type (Saricks and Kviteck, 1994).

transportation and traffic safety of any of the Eastern Routes. However, construction and operation of any of the Eastern Alternatives would not cause significant transportation and traffic safety impacts.

Chapter 6 of this SDEIS compares all eight alternatives that SEA is studying for this project in more detail (Proposed Route, Alternative 1, Alternative 2, Alternative 3, No-Action Alternative, Eastern Bypass Route, the MCEAA Medina Dam Alternative, and SGR's Modified Medina Dam Route) and presents SEA's discussion of the Environmentally Preferable Alternative(s). Chapter 6 includes discussion of the number of private road at-grade crossings for the Proposed Route, Alternative 1, Alternative 2, and Alternative 3 for comparison purposes, since this information was not included in the DEIS.

### **3.2 Public Health and Safety**

#### **Environmental Impacts**

In this section SEA discusses the potential impacts resulting from the construction and operation of the Eastern Bypass Route, the MCEAA Medina Dam Alternative, and SGR's Modified Medina Dam Route on public health and safety within the project area.

Construction of any of the Eastern Alternatives would not result in significant impacts to public health and safety. The impacts to public health and safety from the construction of the proposed rail line would primarily be from the emission of dust and criteria air pollutants.<sup>5</sup> Because the construction activities on any given segment of the rail line would be of short duration, any adverse impact on health would be temporary. Section 4.2 of the DEIS describes the public health and safety concerns of the construction of the proposed rail line in more detail.

Impacts to public health and safety from the proposed rail operations over any of the Eastern Alternatives would include risks from at-grade crossings of roadways and risks from rail accidents, as discussed in Section 3.1 of this document.

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<sup>5</sup> As defined by the U.S. Environmental Protection Agency's National Ambient Air Quality Standards, criteria air pollutants are the following: carbon monoxide; lead; nitrogen oxides; particulate matter; ozone; and sulfur dioxide.

## **Preliminary Conclusions**

The degree of potential environmental impacts caused by construction often relates to the size of the project. Therefore, because the MCEAA Medina Dam Alternative and the Eastern Bypass Route are of similar length, potential impacts from construction activities on public health and safety would be essentially the same for these rail alignments. SGR's Modified Medina Dam Route would be approximately one mile longer in length, and thus, construction activities would be slightly longer in duration. Section 4.2 of the DEIS describes SEA's mitigation recommendations. Additional mitigation may be included in the FEIS.

### **3.3 Hazardous Materials/Waste Sites and Existing Energy Resources**

#### **3.3.1 Affected Environment**

SEA did not identify any hazardous-material spill sites or hazardous-waste sites within 500 feet of the Eastern Alternatives. SEA also conducted a search of the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) database for Medina County, Texas, on April 4, 2006<sup>6</sup> (CERCLIS, 2006). The CERCLIS database lists four sites in Medina County: the Hondo Army Airfield at the Hondo Municipal Airport in Hondo, Texas; the La Coste Refinery in La Coste, Texas; National Foam Cushion Manufacturing, Inc. in Natalia, Texas; and UP Natalia Derailment in Natalia, Texas. None of these sites are within 500 feet of the Eastern Alternatives.

According to data obtained from the Railroad Commission of Texas (RRC) in April 2006 (RRC, 2006), two natural gas pipeline rights-of-way occur within the proposed project area of the Eastern Alternatives. The southernmost pipeline was owned by Koch Midstream Services Co. LLC (Koch), and was removed in November 2003. The second pipeline is an active natural gas pipeline currently owned and operated by Texas FS, L.P. (Texas FS). No other pipelines are crossed by the Eastern Alternatives (see Figure 3-1).<sup>7</sup>

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<sup>6</sup> CERCLIS database (visited on March 15, 2006) <cfpub.epa.gov/supercpad/cursites.cfm>.

<sup>7</sup> As discussed in Section 3.2.2 of the DEIS, the Proposed Route, Alternate 1, Alternative 2, and Alternative 3 would also cross these pipeline rights-of-way.

According to Platts Geospatial data obtained in May 2006 (Platts, 2006), there is one high-tension transmission line (less than 230 kilo volt [Kv]) within the proposed project area. This line, owned and operated by Mosbacher Operations Ltd. (Mosbacher), conducts electricity at a rated voltage of 69 Kv from the Hondo Creek Southwest substation to the Quihi substation. This line is located near the southern end of the project area (see Figure 3-2).

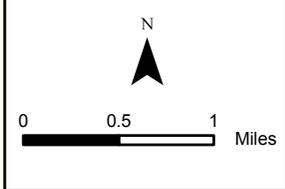
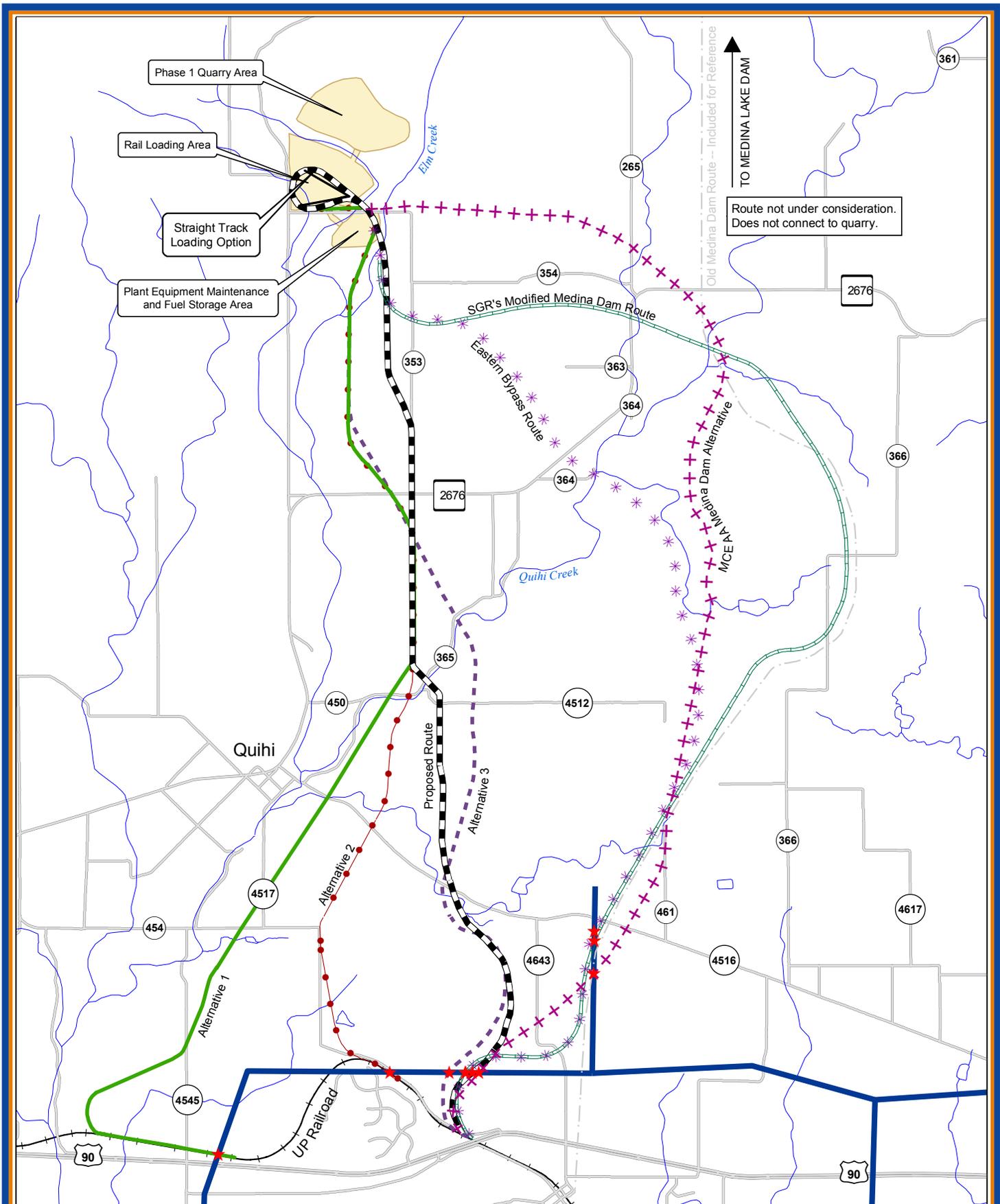
### **3.3.2 Environmental Impacts**

In this section SEA discusses the potential impacts of the construction and operation of the Eastern Bypass Route, the MCEAA Medina Dam Alternative, and SGR's Modified Medina Dam Route on the existing hazardous materials/waste sites and energy resources in the project area.

Typically, construction activities and railroad operations are not likely to disturb hazardous-materials spill sites and hazardous waste sites located more than 500 feet from the rail line simply because these sites are too far away from the project area. Based on the results of site visits to the area and reviews of maps and aerial photography, SEA has not identified any existing hazardous materials spill sites or hazardous waste sites within 500 feet of the Eastern Alternatives that could potentially be affected as a result of the proposed construction activities. These results are consistent with those found for the previous four alternatives described in Section 4.3.1 of the DEIS.

#### **Eastern Bypass Route**

There are two natural gas pipeline rights-of-way within the project area that would be crossed by the Eastern Bypass Route. According to the RRC (RRC, 2006), Koch owns the southernmost pipeline, which has been removed, leaving only the right-of-way. The second pipeline right-of-way that would be crossed by the Eastern Bypass



Legend			
	Proposed Route		Eastern Bypass Route
	Alternative 1		MCEAA Medina Dam Alternative
	Alternative 2		SGR's Modified Medina Dam Route
	Alternative 3		Transmission Line
	Transmission Line Crossing		County Road
	FM Road		US Highway

**Figure 3-2**  
**Southwest Gulf Railroad**  
**Transmission Line**  
**Crossings**

Route is an active natural gas pipeline (Texas FS). No other pipelines occur within the project area. The Eastern Bypass Route also would cross the Mosbacher high-tension transmission line twice (Platts, 2006).

#### **MCEAA Medina Dam Alternative**

There are two natural gas pipelines within the project area that would be crossed by the MCEAA Medina Dam Alternative. According to the RRC (RRC, 2006), Koch owns the southernmost pipeline, which, as stated above, has been removed. The second pipeline crossed by the MCEAA Medina Dam Alternative is an active natural gas pipeline (Texas FS). No other pipelines occur within the project area. The MCEAA Medina Dam Alternative also would cross the Mosbacher high-tension transmission line twice (Platts, 2006).

#### **SGR's Modified Medina Dam Route**

There are two natural gas pipelines within the project area that would be crossed by SGR's Modified Medina Dam Route. According to the RRC (RRC, 2006), Koch owns the southernmost pipeline, which has been removed, leaving only the right-of-way. The second pipeline crossed by SGR's Modified Medina Dam Route, is an active natural gas pipeline (Texas FS). No other pipelines occur within the project area. SGR's Modified Medina Dam Route also would cross the Mosbacher high-tension transmission line twice (Platts, 2006).

#### **Preliminary Conclusions**

SEA determined that there is no risk of disturbing known hazardous materials or hazardous waste sites from the construction and operation of any of the Eastern Alternatives. In addition, SEA believes that the potential for disturbing undocumented sites during construction of the rail line is extremely low, based on the lack of nearby industrial activities, the historical land uses in the area, SEA's review of aerial photography, and site visits.

As discussed in Section 3.1 of this document, SEA set forth its analysis of potential pipeline safety issues at rail/pipeline crossings in Section 4.1 of the DEIS. The response to comments received regarding these issues and any additional analyses and mitigation will be presented in the FEIS. There are no significant environmental concerns associated with the

transmission line crossings shown in Figure 3-2. The transmission line rights-of-way have been previously disturbed and they are being properly mowed and maintained. Although no height information was available, generally these transmission lines are built high enough off of the ground to allow for the safe passage of trains underneath. However, SGR would need to survey the locations of the poles in order to avoid them during the rail line construction.

Accordingly, SEA recommends that the Board impose the following mitigation condition upon any decision granting SGR authority to construct and operate the rail line:

- Prior to initiating construction activities, Southwest Gulf Railroad Company, shall survey the location of the transmission line poles and avoid them during the construction of the rail line right-of-way.<sup>8</sup>

### **3.4 Worker Health and Safety**

#### **Environmental Impacts**

In the DEIS, Section 4.4, SEA discussed the potential impacts of the construction and operation of the Proposed Route, Alternative 1, Alternative 2, and Alternative 3 on the worker health and safety in the project area, including the following: dust and criteria air pollutant emissions from construction; hazards associated with normal rail construction and operation activities; probability of nonfatal injuries related to construction; chance of fatalities related to construction; number of nonfatal injuries related to normal operations for 30 years; and number of fatalities related to normal operations for 30 years.

The potential impacts from the construction and operation of the Eastern Alternatives to worker health and safety would be essentially the same as those discussed in the DEIS, and would not result in significant environmental impacts to worker health and safety. The environmental impacts to worker health and safety also would be similar to the public health and safety impacts discussed in Section 3.2 of this document, and would be primarily from the exposure to criteria air pollutants generated by construction activities. Because the construction activities on any given segment of the rail line would be of short duration, any adverse impacts on worker health and safety would be temporary.

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<sup>8</sup> This condition would be applicable to the construction of any of the Eastern Alternatives as well as to the construction of the Proposed Route, Alternative 1, Alternative 2, or Alternative 3.

## **Preliminary Conclusions**

The degree of potential environmental impacts caused by construction often relates to the size of the project. Therefore, because the MCEAA Medina Dam Alternative and the Eastern Bypass Route are of similar length, potential impacts from construction activities on worker health and safety would be essentially the same for these rail alignments. SGR's Modified Medina Dam Route would be approximately one mile longer in length, and thus construction activities would be slightly longer in duration. SEA's mitigation recommendations to reduce any potential adverse impacts to worker health and safety are discussed in Section 4.4 of the DEIS. SEA may include additional mitigation in the FEIS.

### **3.5 Water Resources**

#### **3.5.1 Affected Environment**

The water resources in the area of the proposed project include groundwater, floodplains, surface water, and potential wetlands. Section 3.3 of the DEIS describes the water resources of the proposed project area in more detail. The watershed area intercepted by each of the Eastern Alternatives is presented in Table 3.5-1, while the number of stream crossings and associated stream order<sup>9</sup> for each alternative are presented in Table 3.5-2.

**Table 3.5-1. Watershed Areas Intercepted by The Eastern Alternatives**

<b>Watershed</b>	<b>Area Intercepted (square mile)</b>		
	<b>Eastern Bypass Route</b>	<b>MCEAA Medina Dam Alternative</b>	<b>SGR's Modified Medina Dam Route</b>
Cherry Creek	1.6	1.4	1.5
Elm Creek	28.9	28.6	28.9
Polecat Creek	2.3	2.3	2.3
Quihi Creek	19.1	20.1	23.2
Unnamed	0.9	0.9	0.9

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<sup>9</sup> Stream order is a method of numbering streams as part of a drainage basin network. The smallest unbranched mapped tributary is called first order; the stream receiving the tributary is called second order, and so on.

**Table 3.5-2. Number of Crossings in Each Watershed by Stream Order**

Watershed	Stream Order	Note	Number of Crossings		
			Eastern Bypass Route	MCEAA Medina Dam Alternative	SGR's Modified Medina Dam Route
Cherry Creek	1		1	1	1
Elm Creek	4	main stem	1	1	1
Polecat Creek	3	main stem	1	1	1
Quihi Creek	1		1	3	1
Quihi Creek	2			3	
Quihi Creek	3	main stem		1	2
Quihi Creek	4	main stem	1		
Unnamed (Loop)	1		2	2	2
Unnamed 2	1		1	1	1
<b>Total number of crossings</b>			8	13	9
<b>Total number of main stem crossings</b>			3	3	4

Note: The stream order associated with each crossing is an indicator of the significance of the crossing. Crossings of stream orders 3 and 4 are more significant than crossings of stream orders 1 and 2.

### 3.5.2 Environmental Impacts

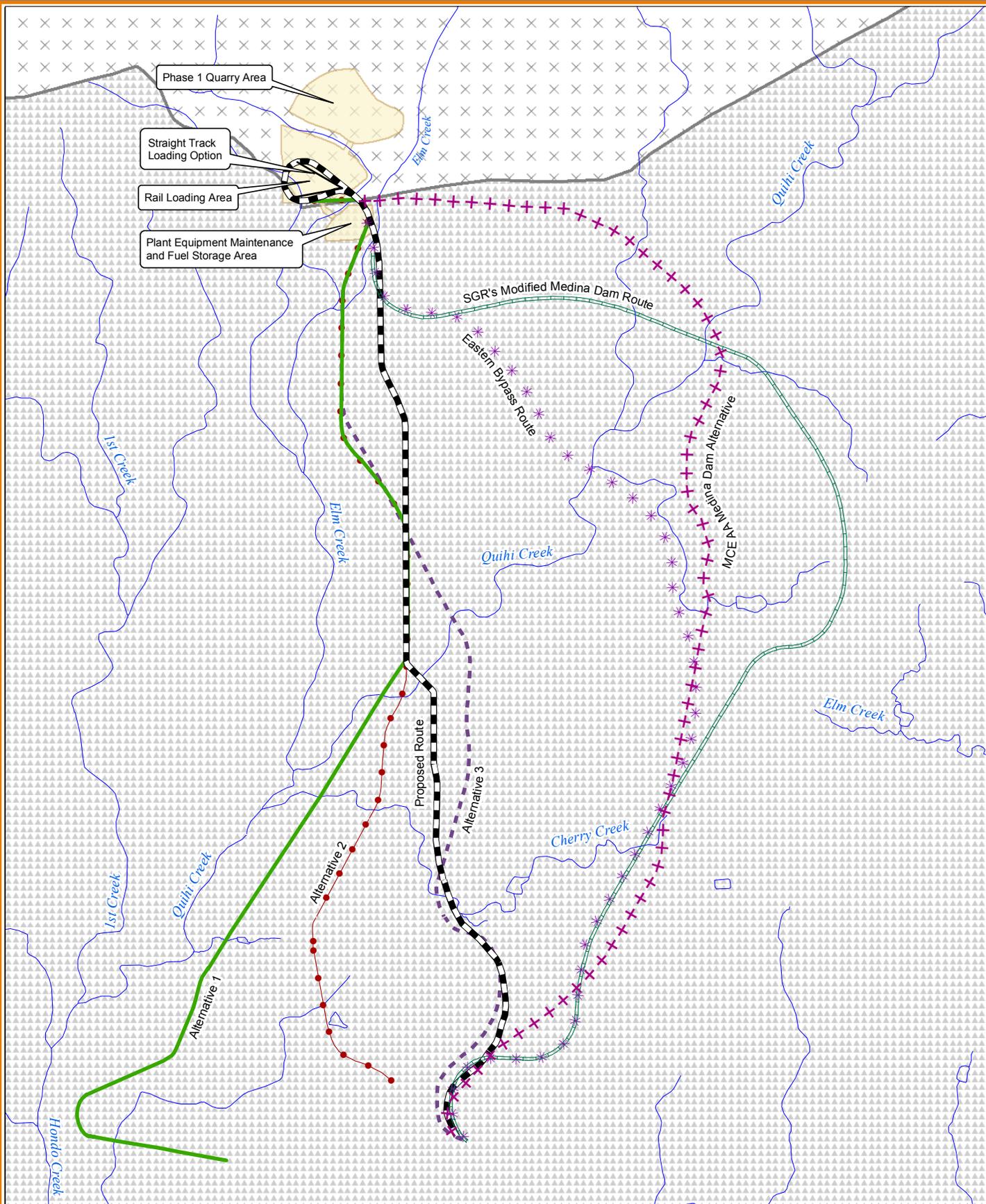
In this section SEA discusses the potential environmental impacts of the construction and operation of the Eastern Bypass Route, the MCEAA Medina Dam Alternative, and SGR's Modified Medina Dam Route on the water resources in the project area, including the following: groundwater (aquifers and springs); surface waters (streams and creeks); floodplains; and wetlands. SEA examined relevant maps (from the United States Geological Survey and from National Soil Information Systems (NASIS), field surveys (conducted by SEA in April 2006), publications, and databases of the Texas Water Development Board (TWDB, 2006) to assess the potential impacts from construction and operation of the Eastern Alternatives on these resources. Section 4.5.1 of the DEIS describes the general water resource impacts from the proposed rail line construction and operation in more detail.

Construction and operation of any of the Eastern Alternatives could cause some environmental impacts to groundwater resources. Construction impacts to groundwater would

involve earth-disturbing activities, such as creation of the roadbed and making cut and fills to level out the grade of the rails. These impacts could create increased stormwater run-off containing silt and debris to enter into the streams that recharge the Edwards Aquifer (see Figure 3-3). The proposed rail operations would not be likely to contaminate groundwater resources. There would be a small risk of petroleum entering the groundwater during routine fueling and maintenance of locomotives and during any train derailments. Section 4.5.2 of the DEIS discusses the potential environmental impacts from rail construction and operation to groundwater resources in greater detail and recommends several mitigation measures to reduce the impacts. SEA may recommend additional mitigation in the FEIS.

Construction and operation of any of the Eastern Alternatives could also cause some environmental impacts to surface water resources. Construction of the Eastern Alternatives has the potential to impact normal stream flooding patterns, alter stream stability, and increase sedimentation. Section 4.5.3 of the DEIS describes the potential environmental impacts from construction and SEA's mitigation recommendations in further detail. Proposed train operations would not adversely impact the floodplain and any spill of the limestone to be transported would not be hazardous to surface waters. However, in the event of an unanticipated diesel or oil spill, surface waters could be adversely impacted. Section 4.5.3 of the DEIS details SEA's proposed mitigation measures to reduce potential adverse impacts to surface waters from the proposed rail line construction and operation. SEA may recommend additional mitigation in the FEIS.

SEA evaluated the potential environmental impacts of construction and operation of any of the Eastern Alternatives on potential wetlands and waters of the U.S., including effects from construction, operation, and maintenance. SEA reviewed aerial photographs and data obtained from the National Wetlands Inventory (NWI) (USFWS, NWI, 2006) to identify potential wetlands and waters of the U.S. in the project area. Data obtained from the NWI indicates the



Phase 1 Quarry Area

Straight Track Loading Option

Rail Loading Area

Plant Equipment Maintenance and Fuel Storage Area

SGR's Modified Medina Dam Route

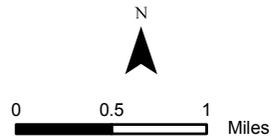
Eastern Bypass Route

MCEAA Medina Dam Alternative

Proposed Route

Alternative 2

Alternative 1



**Legend**

- Proposed Route
- Alternative 1
- Alternative 2
- Alternative 3
- MCEAA Medina Dam Alternative
- Eastern Bypass Route
- SGR's Modified Medina Dam Route
- Stream
- Artesian Zone
- Recharge Zone

**Figure 3-3**  
**Southwest Gulf Railroad**  
**Edwards Aquifer Zones**

presence of three types of potential aquatic features<sup>10</sup> potentially affected by the Eastern Alternatives. Based on desktop research<sup>11</sup> and field surveys conducted on April 11, 12, and 20, 2006, SEA determined that these aquatic features are stream channels or swales that are impounded for use, typically, as livestock watering ponds. The features are mostly associated with area creeks and are used for irrigation by private landowners in the project area. Therefore, SEA determined that wetlands impacts from the Eastern Alternative to waters of the U.S. might occur at the crossings of Elm Creek, Quihi Creek, and Cherry Creek. Section 3.6 further discusses impacts to potential wetlands.<sup>12</sup>

### **Eastern Bypass Route**

The Eastern Bypass Route would cross the outcrop of the following major geologic formations (Bureau of Economic Geology, 2001): approximately 0.8 miles of Quaternary alluvium; 0.6 miles of the Pecan Gap Formation; 1.6 miles of the Escondido Formation; 2 miles of the Leona Formation; and 4.2 miles of Quaternary terrace deposits.<sup>13</sup> No public water supplies are known to withdraw groundwater from either the Edwards Aquifer or the Leona Formation within one mile of the Eastern Bypass Route. The Leona Formation supplies groundwater for domestic and stock purposes. No water wells screened in the terrace deposits were identified in the TWDB's Water Information Integration and Dissemination System (WIID)

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<sup>10</sup> Data obtained from the National Wetland Inventory maps revealed the presence of three types of aquatic features. These are "palustrine aquatic features" and include marshes, streams and open, shallow water. More specifically they are described by the NWI as PUSCh, PUBHh, and PUBFh and are defined as: 1) **PUSCh** - Palustrine, Unconsolidated Shore, Seasonally Flooded, Diked/Impounded; 2) **PUBHh** - Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded; 3) **PUBFh** - Palustrine, Unconsolidated Bottom, Semi-permanently Flooded, Diked/Impounded.

<sup>11</sup> SEA conducted a desktop research review of data available from the Texas Parks and Wildlife website and from U.S. Geological Survey (USGS) maps.

<sup>12</sup> Figure 3-6 also shows the potential aquatic features that would be crossed by the Proposed Route, Alternative 1, Alternative 2, and Alternative 3. This information was not included in the DEIS.

<sup>13</sup> The terrace deposits are generally less than 20 feet thick, and are not known to yield groundwater. The topographic position of these deposits on hilltops permits most of the groundwater to drain out readily; therefore, the risk of groundwater contamination is even lower.

(TWDB, 2006). In addition, SEA did not identify any major or minor springs along the Eastern Bypass Route. This route would be entirely within the Edwards Aquifer Artesian Zone, except for the loading track, which is common to all rail alternatives.

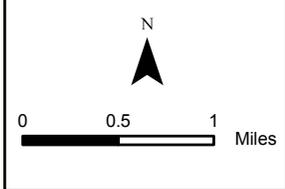
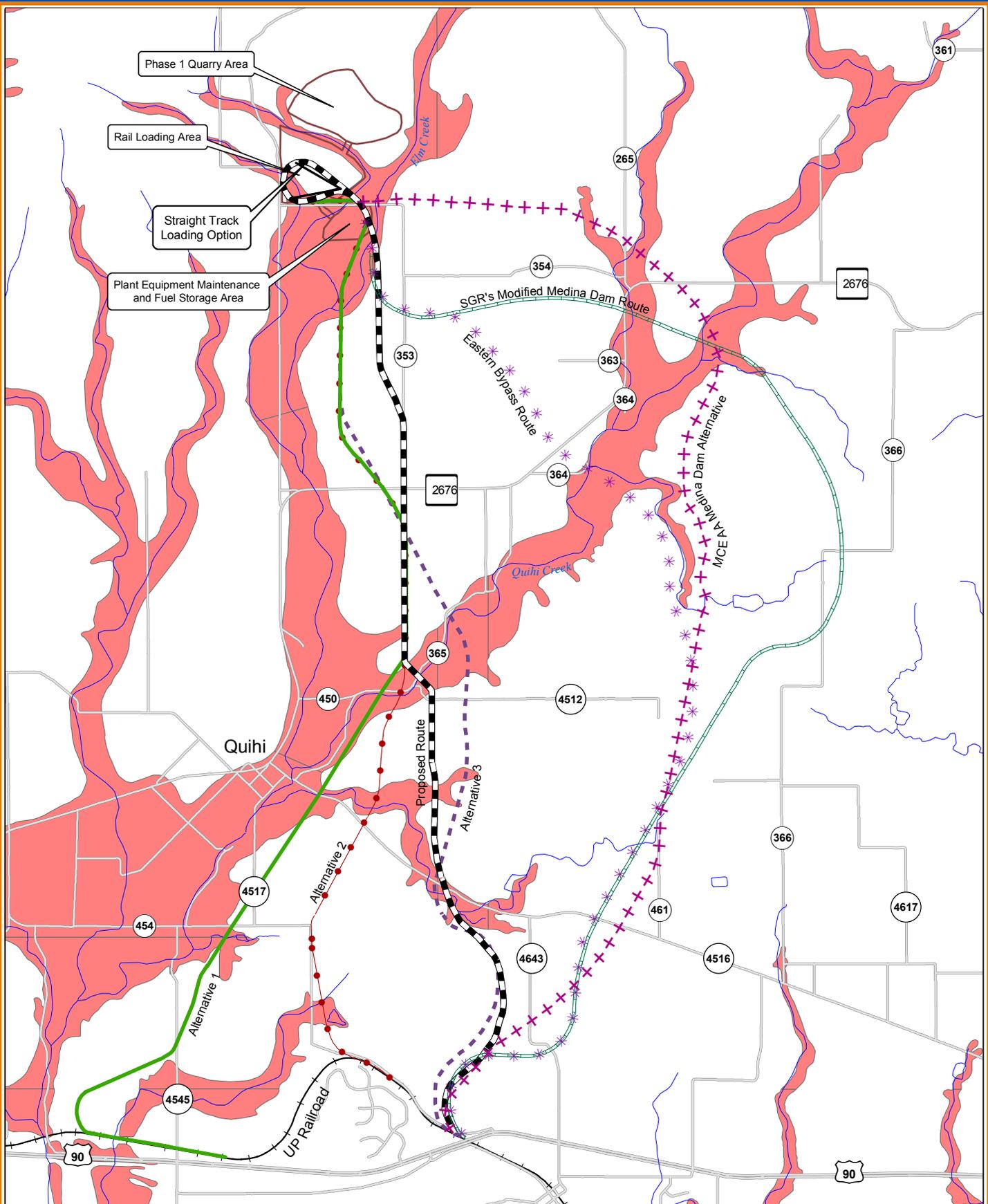
Figure 3-4 illustrates the extent of the 100-year floodplain associated with the streams of the region. The Eastern Bypass Route would cross floodplains two times, with a total distance of 4,557 feet (Federal Emergency Management Agency (FEMA), 2006).<sup>14</sup> This alternative has the longest floodplain crossing of the Eastern Alternatives, slightly more than 561 feet longer than the MCEAA Medina Dam Alternative and nearly 222 feet longer than SGR's Modified Medina Dam Route. The Eastern Bypass Route would also cross the fewest streams and creeks of any of the Eastern Alternatives. This alternative would cross the watersheds of five intermittent streams: Elm Creek, Quihi Creek, Cherry Creek, Polecat Creek, and Unnamed 2 (see Table 3.5-2 and Figure 3-5).

The DEIS (Section 3.3.3) describes the potential wetlands in the project area. Features and conditions described in the DEIS are essentially the same for the Eastern Bypass Route in that there is a potential for aquatic features (mostly stock ponds) associated with the stream crossings and floodplains along the route. According to the NWI maps (USFWS, NWI, 2006), the Eastern Bypass Route would cross two stock ponds (one classified as a Palustrine, unconsolidated bottom, permanently flooded, diked/impounded water feature [PUBHh] and the other as a Palustrine, unconsolidated shore, seasonally flooded, diked/impounded water feature [PUSCh]).

Both of these stock ponds are likely suitable for irrigation. This route has the potential to adversely impact both ponds.

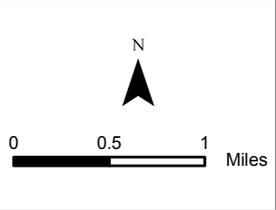
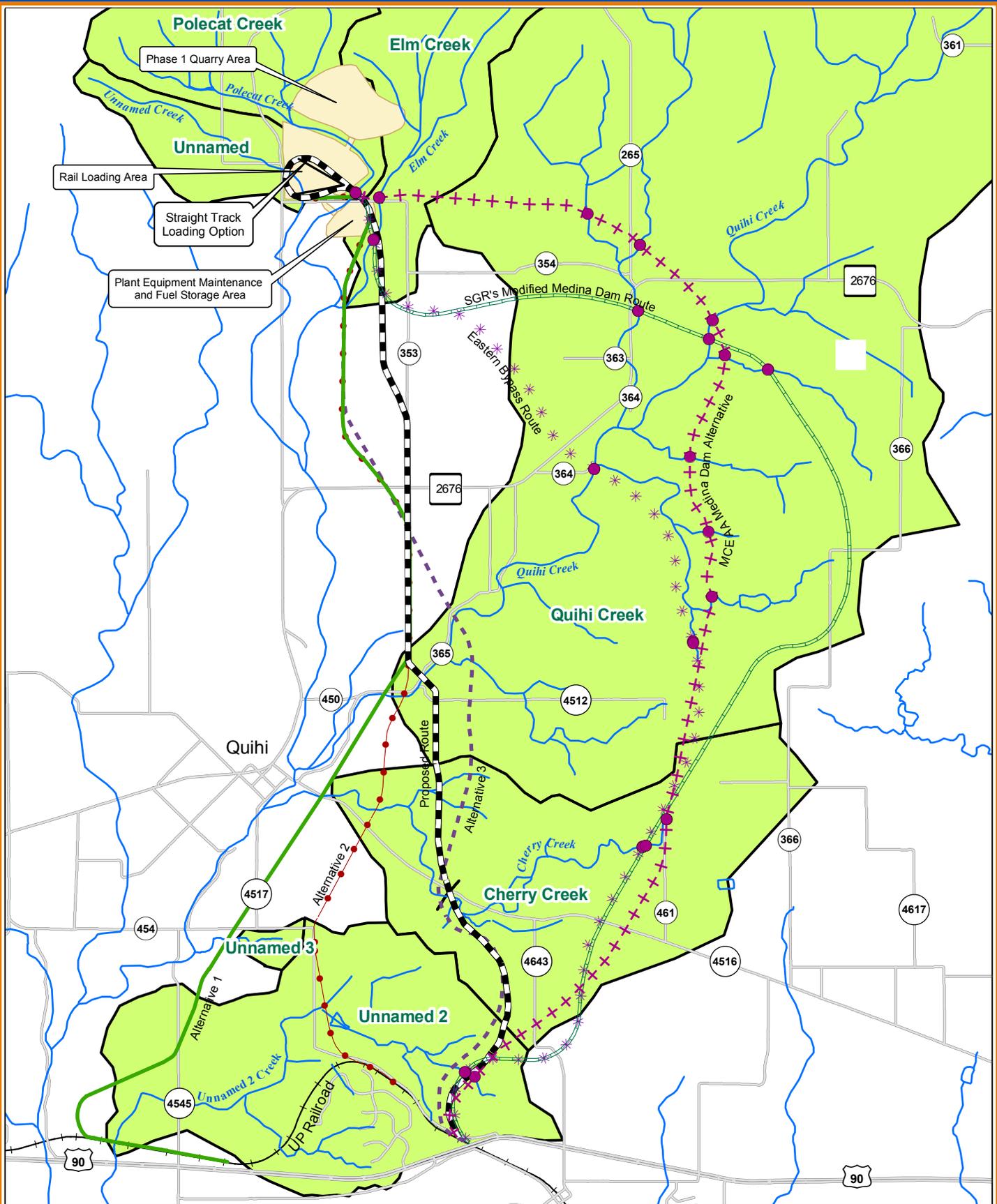
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<sup>14</sup> This length does not include one additional crossing of the floodplain for a total of 4,080 feet for the loading track. This additional floodplain crossing would be the same for all rail alternatives.



Legend			
	Proposed Route		Eastern Bypass Route
	Alternative 1		MCEAA Medina Dam Alternative
	Alternative 2		SGR's Modified Medina Dam Route
	Alternative 3		Stream
	Floodplain		County Road
	FM Road		US Highway

**Figure 3-4  
Southwest Gulf Railroad  
Floodplain Regions  
Within Project Area**



Legend	
Proposed Route	Eastern Bypass Route
Alternative 1	MCEAA Medina Dam Alternative
Alternative 2	SGR's Modified Medina Dam Route
Alternative 3	Stream
	Eastern Alternative Creek Crossing
	Watershed
	County Road
	FM Road
	US Highway

**Figure 3-5  
Southwest Gulf Railroad  
Routes, Creek Crossings,  
and Watersheds**

### **MCEAA Medina Dam Alternative**

The MCEAA Medina Dam Alternative would cross the outcrop of the following major geologic formations: approximately 0.3 miles of Quaternary alluvium; 0.4 miles of Pecan Gap Formation; 0.2 miles of Del Rio Clay; 2.5 miles of the Escondido Formation; 2.6 miles of the Leona Formation; and 3.9 miles of terrace deposits. This route would cover approximately the same distance of geologic formations as the Eastern Bypass Route; therefore, the risk to groundwater resources is relatively equal. This route would be entirely within the Edwards Aquifer Artesian Zone (Figure 3-3) except for the loading track, which is common to all alternatives. Figure 3-4 illustrates the span of the 100-year floodplains associated with the streams of the region. The MCEAA Medina Dam Alternative would cross floodplains four times, with a total distance of 3,996 feet.<sup>15</sup> This distance is the shortest of the three Eastern Alternatives. The MCEAA Medina Dam Alternative would cross the watersheds of five streams: Elm Creek, Quihi Creek, Cherry Creek, Polecat Creek, and Unnamed 2 (see Table 3.5-2 and Figure 3-5). No quantifiable differences were observed between the three Eastern Alternatives in relation to potential wetlands and waters of the U.S., as each alternative would cross streams and floodplain areas. According to the NWI maps, the MCEAA Medina Dam Alternative would cross four stock ponds (two classified as a PUSCh and two classified as a Palustrine, unconsolidated bottom, semi permanently flooded, diked/impounded water features [PUBFh]). All of these stock ponds are likely suitable for irrigation. This route has the potential to adversely impact all four ponds.

### **SGR's Modified Medina Dam Route**

SGR's Modified Medina Dam Route would cross the outcrop of the following major formations: approximately 0.8 miles of Quaternary alluvium; 0.6 miles of Pecan Gap Formation; 1.3 miles of the Escondido Formation; 2.4 miles of the Leona Formation; and 5.8 miles of Quaternary terrace deposits. This route lies entirely within the Edwards Aquifer Artesian Zone (Figure 3-3) except for the loading track, which is common to all alternatives.

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<sup>15</sup> This length does not include one additional crossing of the floodplain for a total of 4,080 feet for the loading track, which would be the same for all rail alternatives.

Figure 3-4 illustrates the extent of the 100-year floodplains associated with the streams of the region. SGR's Modified Medina Dam Route has four floodplain crossings and traverses approximately 4,335 feet of floodplains.<sup>16</sup> The route across floodplains is similar to that of the MCEAA Medina Dam Alternative. This alternative would cross the watersheds of five streams: Cherry Creek, Quihi Creek, Elm Creek, Polecat Creek, and Unnamed 2 (Figure 3-5). According to the NWI maps, SGR's Medina Dam Route would cross one stock pond (one classified as a PUBHh). This stock pond is likely used for irrigation. This route has the potential to adversely impact this pond.

### **Preliminary Conclusions**

SEA did not identify any public water system or public recreational uses of groundwater within one mile of the proposed alternatives. SEA identified several irrigation wells and potential wetlands (including stock ponds) within one mile of the Eastern Alternatives using USGS 7.5-minute series topographic maps and the TWDB WIID water-well database. All known irrigation wells within this area are located within the confined (artesian) zone of the Edwards Balcones Fault Zone (BFZ) Aquifer (Figure 3-4). Thus, groundwater in the Edwards BFZ Aquifer in the artesian zone is separated from any possible surface contamination by the thick upper confining unit (rock) overlying the aquifer. This means that it is unlikely that contaminants released upon the surface within the artesian zone could migrate to the irrigation wells screened in the Edwards Aquifer. However, any contaminants released along any of the Eastern Alternatives may pose a slightly greater risk to the local aquifers that occur within the Leona Gravel Formation. SEA preliminarily concludes that construction and operation of any of the Eastern Alternatives would have a minimal risk of significant adverse impacts to groundwater resources. Imposition of the recommended mitigation measures (see DEIS, Section 3.5.2) would reduce this risk such that any adverse impact would not have a significant effect on the human environment. SEA may recommend additional mitigation measures in the FEIS.

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<sup>16</sup> This length does not include one additional crossing of the floodplain for a total of 4,080 feet for the loading track.

As noted on Table 3.5-2, the MCEAA Medina Dam Alternative crosses more stream lines of lower order (10 crossings of orders 1 and 2) than the Eastern Bypass Route (crosses 5 streamlines of orders 1 and 2) or SGR's Modified Medina Dam Route (crosses 5 crossings of orders 1 and 2). It also crosses the same number of streamlines of higher order (3 crossings of orders 3 and 4 or "main stems") as the Eastern Bypass Route and less than the SGR's Modified Medina Dam Route. Lower order streams typically have fewer intermittent flows, and wider, more mature riparian zones. Thus, lower order streams are easier to transverse without impact. Therefore, it would be easier to design stream crossings for the MCEAA Medina Dam Alternative and the Eastern Bypass Route than for SGR's Modified Medina Dam Route. However, because the Eastern Bypass Route would have fewer stream crossings than the MCEAA Medina Dam Alternative, it would be the most environmentally preferable of the Eastern Alternatives in terms of stream crossings.

All of the Eastern Alternatives would cross some stock ponds (aquatic features) and would have the potential to adversely impact the intended use of those ponds. The MCEAA Medina Dam Alternative goes through more stock ponds than any of the other Eastern Alternatives. Further field investigation would be needed prior to making a full wetland determination and delineation of areas subject to jurisdiction by the U.S. Army Corps of Engineers (Corps) under the Clean Water Act (CWA) as waters of the United States. Therefore, SEA recommends that the Board impose the following condition if any of the Eastern Alternatives is approved:

- Prior to initiating construction activities, SGR shall survey the location of privately owned stock ponds and irrigation systems within the project area. If avoidance is not possible, SGR shall minimize intrusion to these water bodies and to important sources to these water bodies to the extent practicable and shall consult with the Corps to determine if a full wetland delineation study is required. In addition, SGR shall negotiate with affected landowners regarding the appropriate replacement of these stock ponds/irrigation systems.<sup>17</sup>

Possible environmental impacts to water resources related to construction and operation of the rail line are discussed in Section 4.5 of the DEIS. Construction and routine operations

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<sup>17</sup> As discussed in Chapter 6, the Proposed Route, Alternative 1, and Alternative 2 would also cross several stock ponds, which SEA did not identify in the DEIS. Thus, this mitigation condition would apply to any decision approving one of these routes as well.

over the proposed rail line (any rail alternative) would result in little or no impacts to groundwater resources. Temporary silting due to construction and maintenance activities for the proposed rail line could cause minor impacts to groundwater. In the inadvertent release of diesel fuel caused by a derailment, SEA proposes mitigation to reduce the impacts to groundwater to be less than significant.

In the DEIS, SEA determined that the only potentially significant impacts to potential wetlands and other aquatic resources would be in areas where the rail line would cross larger creeks. This impact could be minimized by designing spans that avoid requiring placement of permanent fill material or structures within the ordinary high-water mark (OHWM) of the stream channels. Consultation with the Corps also would be required under Section 404 of the CWA, if a stream crossing required the creation of permanent features within the OHWM. Additional impacts to potential wetlands could be avoided or minimized by the implementation of appropriate mitigation measures. SEA's recommended mitigation is discussed in Section 4.5 of the DEIS. SEA may recommend additional mitigation measures in the FEIS.

### **3.6 Biological Resources**

#### **3.6.1 Methodology**

To gather and evaluate information on biological resources in the area, SEA conducted a field assessment of the Eastern Alternatives on April 11, 12, and 20, 2006. This field assessment included pedestrian (walking) surveys of undeveloped lands and unimproved agricultural lands. SEA also used aerial photography from the NASIS, 2004 (NASIS, 2004), published soil maps, NWI maps, and United States Geological Survey (USGS) 7.5-minute topographic maps. Additional sources included Texas Parks and Wildlife Department (TPWD), U.S. Fish and Wildlife Service (USFWS), Texas Threatened and Endangered Species List (TPWD, 2006), List of the Rare Plants of Texas (TPWD, 2006) and the Texas Natural Diversity Database (TPWD, 2006) records for Medina County.

SEA conducted general habitat assessments and limited reconnaissance-level surveys for Federally listed and state listed threatened and endangered species along the Eastern

Alternatives, and determined the availability of suitable habitat for listed species and special-status species by the presence of diagnostic habitat elements.

### **3.6.2 Affected Environment**

The following sections describe the existing conditions of the major habitat types found within the area that would be crossed by the Eastern Alternatives. This section also addresses the potential for Federal and state listed threatened and endangered species to occur within the vicinity of the Eastern Alternatives. Habitat types and Federal and state listed species descriptions discussed in this chapter were obtained from descriptions on the TPWD website (TPWD, 2006).

The Eastern Alternatives (MCEAA Medina Dam Alternative, Eastern Bypass Route, and SGR's Modified Medina Dam Alternative) would intersect four major habitat types. These habitats can be described as agricultural croplands, mixed mesquite-oak brush, mesquite-ashe juniper shrub, and riparian, which are the same habitats as those identified and discussed in Section 3.4.1 of the DEIS (although the broader umbrella term "South Texas Brushlands vegetation region" was used instead of the specific habitat types, as detailed below). A brief description of the existing habitats is given below.

#### **Agricultural Croplands**

A large portion of the Eastern Alternatives would traverse through cultivated cover crops and/or row crops that provide food for humans and domestic animals. This cover type may also exhibit various mixed native or introduced grasses and forbs, or mixed herbaceous communities resulting from crop rotations and clearing of woody vegetation.

#### **Mixed Mesquite-Oak Brush and Mesquite-Ashe Juniper Shrub**

Next to crops, areas of mixed brushland are the second most prevalent habitat intersected by the Eastern Alternatives. Typical species that occur in this habitat type include mesquite (*Prosopis glandulosa*), live oak (*Quercus virginiana*), blackbrush (*Acacia rigidula*), Texas pricklypear (*Opuntia lindheimeri*), lotebush (*Ziziphus obtusifolia*), and buffalo grass (*Cenchrus ciliaris*) being the dominant herbaceous species. Other species commonly associated with this habitat include ceniza (*Leucophyllum frutescens*), guajillo (*Acacia berlandieri*), althorn

(*Koeberlinia spinosa*), whitebrush (*Aloysia gratissima*), bluewood (*Condalia hookeri*), granjeno (*Celtis pallida*), guayacan (*Guaiacum angustifolium*), leatherstem (*Clematis pitcheri*), tasajillo (*Opuntia leptocaulis*), kidneywood (*Eysenhardtia texana*), yucca (*Yucca treculeana*), desert yaupon (*Schaefferia cuneifolia*), goatbush (*Castela texana*), purple three-awn (*Aristida purpurea*), pink pappusgrass (*Pappophorum bicolor*), hairy tridens (*Erioneuron pilosum*), slim tridens (*Tridens muticus*), hairy grama (*Bouteloua hirsuta*), red threeawn (*Aristida purpurea* Nutt. var. *longiseta*), knotroot bristlegrass (*Setaria geniculata*), and two-leaved senna (*Senna roemeriana*).

Mesquite-ashe juniper shrub is similar to mixed mesquite brush but has a higher density of ashe juniper (*Juniperus ashei*).

### **Riparian**

Riparian zones are those areas adjacent to or near a stream or watercourse containing alluvial soils and woody vegetation adapted to wet environments. Most riparian zones contain a wide diversity of plants and are subject to periodic flooding. Many wildlife species live in riparian zones where food, cover, and water are available during most of the year. Riparian zones often support growth of tall trees that provide important roosting and nesting sites for many birds and other wildlife species. During the field assessments, SEA observed riparian zones adjacent to Elm Creek, Quihi Creek, Cherry Creek, and their associated tributaries, which would be intersected by the Eastern Alternatives.

### **Critical Habitat, Waters of the U.S. and Wetlands**

Sensitive habitats include those regulated by the Federal government under the CWA (i.e., jurisdictional wetlands and “waters of the U.S.”) or the Endangered Species Act (ESA) (i.e., site-specific designated critical habitat areas for Federally listed wildlife species).

The USFWS has not designated any areas within the Eastern Alternatives as critical habitat for sensitive plant or wildlife species.

Waters of the U.S. and wetland habitats are under the jurisdiction of the Corps pursuant to Section 404 of the CWA. To be considered a wetland under the jurisdiction of the Corps,

aquatic features must meet specific vegetation, hydrologic, and soil criteria. Wetlands serve many functions, including flood and sediment control, habitat for rare and common species, corridors for wildlife movement, and control of water quality and erosion. Data received from the NWI (USFWS, NWI, 2006) indicated the presence of three types of aquatic features, as described in Section 3.5.2, within the proposed Eastern Alternatives project area. Although SEA did not conduct formal wetland delineations, Figure 3-6 illustrates areas of aquatic features and “waters of the U.S.” within the project area, as indicated by the USGS and NWI maps.

**Special-Status Plant and Wildlife Species**

Special-status plant and wildlife species include those species listed by the USFWS or TPWD as endangered, threatened, rare, proposed, or candidate species. A list of sensitive plants and wildlife that have the potential to occur within the project area of the Eastern Alternatives was derived from literature research and consultation with TPWD and USFWS. A list of these species including habitat type and potential for occurrence is provided below in Table 3.6-1 and Table 3.6-2.

**Table 3.6-1. Special-Status Plant Species**

<b>Species</b>	<b>Federal Listing</b>	<b>State Listing</b>	<b>Flowering/ Phenology</b>	<b>Habitat Type and Potential for Occurrence</b>
Bracted twistflower ( <i>Streptanthus bracteatus</i> )	None	SR	April through May.	Endemic; shallow clay soils over limestone, mostly on rocky slopes, in openings in juniper-oak woodlands. Low/moderate potential to occur within the project area.
Sandhill woollywhite ( <i>Hymenopappus carrizoanus</i> )	None	SR	Late spring through fall.	Endemic; open areas in deep sands derived from Carrizo and similar Eocene formations, including disturbed areas. Low potential to occur within the project area.
Texas mock-orange ( <i>Philadelphus texensis</i> )	None	SR	April through May.	Endemic; limestone cliffs and boulders in mesic stream bottoms and canyons, usually in shade of mostly deciduous sloped forest. Low potential to occur within the project area.
Texas wild rice ( <i>Zizania texana</i> )	FE	SE	Spring through fall.	Aquatic perennial grass found only in the upper 2 miles of the San Marcos River. Not expected to occur within the project area or to be impacted by project activities.

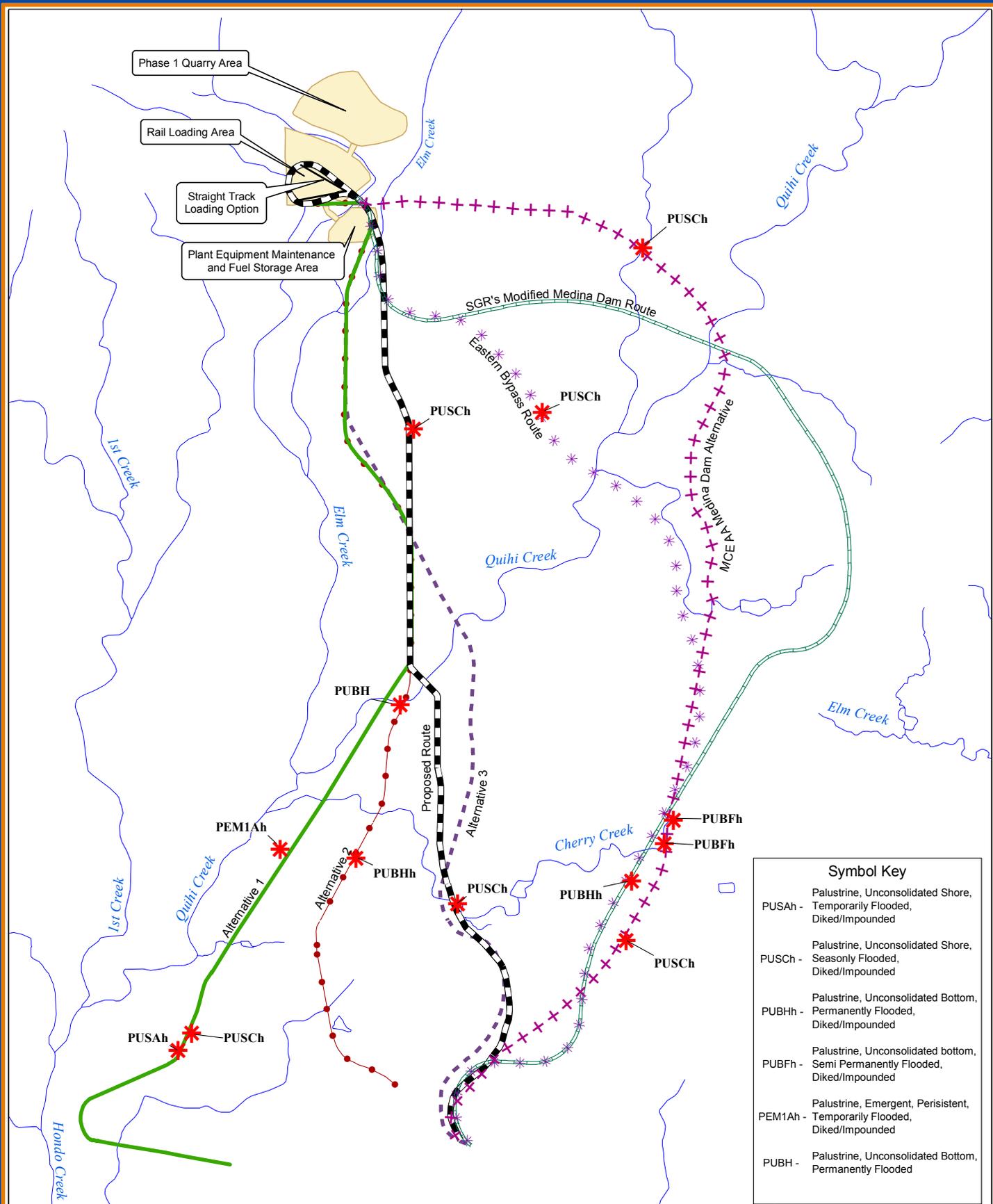
**U.S. Fish and Wildlife Service (USFWS, 2006)**

FE - Federally listed, endangered

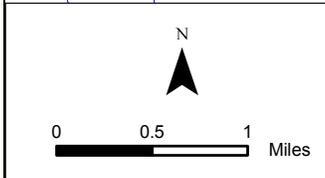
**Texas Parks and Wildlife Department (TPWD, 2006)**

SE - State listed, endangered

SR - State rare



Symbol Key	
	Palustrine, Unconsolidated Shore, Temporarily Flooded, Diked/Impounded
	Palustrine, Unconsolidated Shore, Seasonally Flooded, Diked/Impounded
	Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded
	Palustrine, Unconsolidated bottom, Semi Permanently Flooded, Diked/Impounded
	Palustrine, Emergent, Persistent, Temporarily Flooded, Diked/Impounded
	Palustrine, Unconsolidated Bottom, Permanently Flooded



Legend					
	NWI Wetlands		Alternative 1		MCEAA Medina Dam Alternative
	Rivers		Alternative 2		Eastern Bypass Route
	Proposed Route		Alternative 3		SGR's Modified Medina Dam Route

**Figure 3-6**  
**Southwest Gulf Railroad**  
**Potential Wetlands Crossed**  
**by Eastern Alternatives**

**Table 3.6-2. Special-Status Wildlife Species**

Common Name/ Scientific Name	Listing Status	Potential for Species Occurrence Within the Project Area	Comments
<b>Arachnids</b>			
Braken Bat Cave Meshweaver (=Veni's Cave Spider) ( <i>Cicurina venii</i> )	FE SE	Not expected to occur.	Small, eyeless, or essentially eyeless spider; karst features in western Bexar County and eastern Medina County.
Government Canyon Bat Cave Meshweaver (=Vesper Cave Spider) ( <i>Cicurina vespera</i> )	FE SE	Not expected to occur.	Small, eyeless, or essentially eyeless spider; karst features in western Bexar County and eastern Medina County.
Government Canyon Bat Cave Spider (=Government Canyon Cave Spider) ( <i>Neoleptoneta microps</i> )	FE SE	Not expected to occur.	Small, eyeless, or essentially eyeless spider; karst features in western Bexar County and eastern Medina County.
Madla Cave Meshweaver (=Madla's Cave Spider) ( <i>Cicurina madla</i> )	FE	Not expected to occur.	Small, eyeless, or essentially eyeless spider; karst features in western Bexar County and eastern Medina County.
<b>Birds</b>			
Black-capped Vireo ( <i>Vireo atricapilla</i> )	FE SE	Not expected to occur.	Oak-juniper woodlands with distinctive patchy, two-layered aspect; shrub and tree layer with open, grassy spaces; requires foliage reaching to ground level for nesting cover; return to same territory, or one nearby, year after year; deciduous and broad-leaved shrubs and trees provide insects for feeding; species composition less important than presence of adequate broad-leaved shrubs, foliage to ground level, and required structure; nests mid April-late summer.
Golden-cheeked Warbler ( <i>Dendroica chrysoparia</i> )	FE SE	Low potential.	Juniper-oak woodlands; dependent on Ashe juniper (also known as cedar) for long fine bark strips, only available from mature trees, used in nest construction; nests placed in various trees other than Ashe juniper; only a few mature junipers or nearby cedar brakes can provide the necessary nest material; forage for insects in broad-leaved trees and shrubs; nests late March-early summer.
Interior Least Tern ( <i>Sterna antillarum athalassos</i> )	FE SE	Not expected to occur.	This subspecies is listed only when inland (more than 50 miles from a coastline); nests along sand and gravel bars within braided streams, rivers; also known to nest on man-made structures (inland beaches, wastewater treatment plants, gravel mines, etc); eats small fish and crustaceans; when breeding forages within a few hundred feet of colony.
Zone-tailed Hawk ( <i>Buteo albonotatus</i> )	SR	Not expected to occur.	Arid open country, including open deciduous or pine-oak woodland, mesa or mountain county, often near watercourses, and wooded canyons and tree-lined rivers along middle-slopes of desert mountains; nests in various habitats and sites, ranging from small trees in lower desert, giant cottonwoods in riparian areas, to mature conifers in high mountain regions.
<b>Reptiles</b>			
Texas Horned Lizard ( <i>Phrynosoma cornutum</i> )	ST	High potential.	Open, arid and semi-arid regions with sparse vegetation, including grass, cactus, scattered brush or scrubby trees; soil may vary in texture from sandy to rocky; burrows into soil, enters rodent burrows, or hides under rock when inactive; breeds March-September.
Texas Tortoise ( <i>Gopherus berlandieri</i> )	ST	High potential.	Open brush with a grass understory is preferred; open grass and bare ground are avoided; when inactive occupies shallow depressions at base of bush or cactus, sometimes in underground burrows or under objects; longevity greater than 50 years; active March-November; breeds April-November.

**Table 3.6-2. Special-Status Wildlife Species (Continued)**

Common Name/ Scientific Name	Listing Status	Potential for Species Occurrence Within the Project Area	Comments
<b>Insects</b>			
A Ground Beetle ( <i>Rhadine exilis</i> )	FE	Not expected to occur.	Small, essentially eyeless ground beetle; karst features in northern Bexar County and northeastern Medina County.
A Ground Beetle ( <i>Rhadine infernalis</i> )	FE	Not expected to occur.	Small, essentially eyeless ground beetle; karst features in northern Bexar County and northeastern Medina County.
Helotes Mold Beetle ( <i>Batrisodes venyivi</i> )	FE	Not expected to occur.	Small, essentially eyeless ground beetle; karst features in northern Bexar County and northeastern Medina County.

**U.S. Fish and Wildlife Service (USFWS, 2006)**

FE - Federally listed, endangered  
 FT - Federally listed, threatened  
 SE - Species of concern  
 DL - Delisted Species

**Texas Parks and Wildlife Department (TPWD, 2006)**

SE - State listed, endangered  
 ST - State listed, threatened  
 SR - State reported

**3.6.3 Environmental Impacts**

This section discusses the potential environmental impacts that may result from construction and operation of each of the Eastern Alternatives.

**Eastern Bypass Route**

Construction of this route would temporarily disturb 89.21 acres, and permanently disturb 44.60 acres. Two aquatic features (as indicated by the NWI) and eight potential waters of the U.S. (as indicated by the USGS) would be impacted from the construction and operation of this route. Habitat for the Texas Tortoise and Texas Horned Lizard would be impacted by the construction of this route, and continued impacts to these species may occur as a result of the operation of the rail line. This route would cross a small area of habitat located immediately south of the loading track area, which has a low potential to support Golden-cheeked Warbler.

**MCEAA Medina Dam Alternative**

Construction of this route would temporarily disturb 95.99 acres, and permanently disturb 47.99 acres. Four aquatic features (as indicated by the NWI) and 13 potential waters of the U.S. (as indicated by the USGS) would be impacted from the construction and operation of this route. Habitat for the Texas Tortoise and Texas Horned Lizard would be impacted by the construction

of this route, and continued impacts to these species may occur as a result of the operation of the rail line. This route would cross a small area of habitat located immediately south of the loading track area, which has a low potential to support Golden-cheeked Warbler.

#### **SGR's Modified Medina Dam Route**

Construction of this route would temporarily disturb 105.7 acres, and permanently disturb 52.85 acres. One aquatic feature (as indicated by the NWI) and nine potential waters of the U.S. (as indicated by the USGS) would be impacted from the construction and operation of this route. Habitat for Texas Tortoise and Texas Horned Lizard would be impacted by the construction of this route, and continued impacts to these species may occur as a result of the operation of the rail line. This route would cross a small area of habitat located immediately south of the loading track area, which has a low potential to support the Golden-cheeked Warbler.

#### **Preliminary Conclusions**

The three Eastern Alternatives listed above traverse the same habitat types: agricultural croplands; mixed mesquite-oak brush; mesquite-ashe juniper shrub; and riparian. Each Eastern Alternative (as well as the original four routes) has the potential to impact habitat for the Texas Tortoise and Texas Horned Lizard, and to a lesser degree, habitat for Golden-cheeked Warbler. When assessing which alternative has the least amount of impacts to biological resources, consideration was given to the acreage of sensitive habitat disturbed (this includes riparian areas, wetlands, waters of the U.S. crossings, and potential habitat for the Golden-cheeked Warbler, Texas Tortoise, and Texas Horned Lizard). Table 3.6-3 below illustrates the impacts from each alternative.

**Table 3.6-3. Sensitive Biological Resources Crossed by the Eastern Alternatives**

Alternative	Waters of the U.S. Intermittent Streams	Potential Wetlands (Stock Ponds) <sup>(a)</sup>	Presence of Riparian Zones?	Disturbance to Habitat for Texas Tortoise and Texas Horned Lizard?	Disturbance to Habitat for Golden-cheeked Warbler?	Temporary Acreage Disturbed (80-foot right-of-way)	Permanent Acreage Disturbed (40-foot right-of-way)
Eastern Bypass Route	8	2	Yes	Yes	Minimal	89.21	44.60
MCEAA Medina Dam Alternative	13	4	Yes	Yes	Minimal	95.99	47.99
SGR's Modified Medina Dam Route	9	1	Yes	Yes	Minimal	105.7	52.85

(a) Potential wetlands in the area are mostly composed of aquatic features associated with stream channels or swales that are impounded for use as livestock watering ponds. The majority of these features appear to be isolated hydric areas adjacent to streams and are unlikely to be under the jurisdiction of the Corps. However, as discussed in Section 3.5.2, SEA recommends that consultation with the Corps be undertaken prior to beginning any construction activities.

SEA received a letter from the USFWS, dated April 12, 2006 (see Appendix B, #EI-1987), indicating that the Eastern Alternatives may provide suitable habitat for the following Federally listed species: Golden-cheeked Warbler (*Dendroica chrysoparia*); Black-capped Vireo (*Vireo atricapilla*); Comal Springs Dryopid Beetle (*Stygoparnus comalensis*); Comal Springs Riffle Beetle (*Heterelmis comalensis*); Fountain Darter (*Etheostoma fonticola*); Peck's Cave Amphipod (*Stygobromus pecki*); San Marcos Gambusia (*Gambusia georgei*); San Marcos Salamander (*Eurycea nana*); Texas Blind Salamander (*Typhlomolge rathbuni*); and Texas Wild-rice (*Zizania texana*).

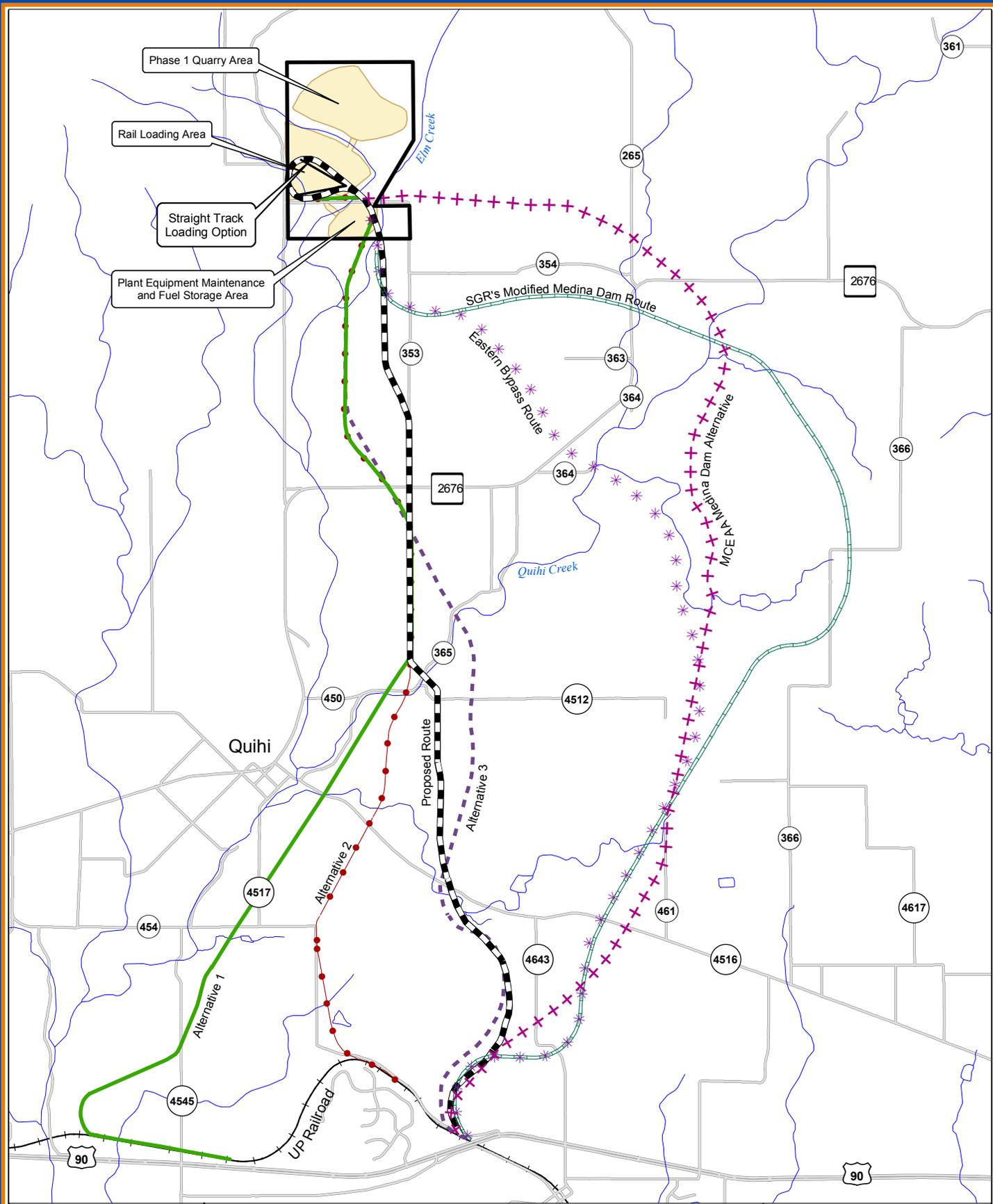
As discussed above, on April 11, 12, and 20, 2006, SEA conducted pedestrian field surveys of the areas that would be crossed by the three Eastern Alternatives and assessed potential impacts to the above-listed species. Findings indicate that habitat to support the Black-capped Vireo is not present within the areas traversed by the Eastern Alternatives, and that marginal habitat for the Golden-cheeked Warbler exists at the terminus of the MCEAA Medina Dam Alternative route, the Eastern Bypass Route and SGR's Modified Medina Dam Route, near the loading track area on the quarry site.

The area identified as marginal habitat for the Golden-cheeked Warbler occurs within Vulcan Construction Materials' (VCM) proposed Plant Maintenance Facility and Fuel Storage Area for the proposed quarry. VCM intensely surveyed this area in 2000, 2001, 2002, and 2003, to determine the presence or absence of threatened and endangered species in the proposed quarry area. These detailed surveys included presence/absence surveys for the Golden-cheeked Warbler by endangered species specialists, and concluded that it is unlikely that activities in the surveyed area would adversely affect Golden-cheeked Warblers or their habitat. These surveys included the proposed rail loading track area in the southern portion of the proposed quarry area as well. Figure 3-7 shows the area in which detailed surveys were conducted (see also DEIS, Volume II Appendix F). USFWS informed VCM, by letter dated October 17, 2003 (see DEIS, Appendix G, Pages G-113-14), that VCM and USFWS would be working together throughout the quarry project to avoid impacts to the Golden-cheeked Warbler.

The remaining Federally listed species (Comal Springs Dryopid Beetle, Comal Springs Riffle Beetle, Fountain Darter, Peck's Cave Amphipod, San Marcos Gambusia, San Marcos Salamander, Texas Blind Salamander, and Texas Wild-rice) identified in the April 12, 2006, letter from USFWS, depend on surficial karst features, and the Edwards Aquifer and its associated springs (specifically the San Marcos River). SEA's April 11, 12 and 20, 2006, pedestrian field surveys did not disclose observable karst features within the areas that would be crossed by any of the three Eastern Alternatives. Nevertheless, SEA recommends that a condition be imposed upon any decision granting SGR authority to construct any of the Eastern Alternatives that would require SGR to inventory any caves for endangered species, if SGR identifies a significant karst feature during the grading and construction of the rail line in the area susceptible to karst feature formation (this is the same condition that SEA recommended for the four rail alignments studied in the DEIS).

USFWS also indicated concern that the proposed rail line construction and operation could impact karst species by affecting the water quality and water quantity of the Edwards Aquifer.

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**Figure 3-7**  
**Biological Resources**  
**Survey**  
**Southwest Gulf Railroad**

To address the concern regarding potential impacts to the water quality of the Edwards Aquifer, SEA recommends mitigation measures requiring SGR to do the following: (1) develop and follow a Stormwater Pollution Prevention Plan; (2) use Best Management Practices during construction and maintenance activities; (3) develop a Spill Prevention, Containment, and Countermeasures Plan specifically for portions of the rail line that would be constructed over the Edwards Aquifer Recharge Zone; (4) develop a Water Pollution Abatement Plan; and (5) monitor the stream beds, land, and water quality in the vicinity of the rail line for indications of diesel or gasoline releases, take appropriate action to prevent diesel or gasoline releases, and remediate any contaminated soils as soon as practicable.<sup>18</sup> These measures would be applicable to any of the Eastern Alternatives for which the Board may grant a license. Moreover, SEA also recommends that a new condition be imposed that would require SGR to consult with USFWS and the Edwards Aquifer Authority during final engineering of the rail line (under any alternative route) and prior to beginning construction to ensure that the material used for the track, ties, and ballast would not pose hazards to the water quality of the Edwards Aquifer or species dependent upon the aquifer (e.g., use of ties not preserved with creosote).

SGR has indicated that its affiliate, Vulcan Materials Company (Vulcan), owns Edwards Aquifer water rights that could be transferred from existing Vulcan operations in Bexar County and Medina County to supply the needs for the construction, maintenance and operation of the proposed rail line. To ensure that construction and operation of the rail line would not affect water quantity in the Edwards Aquifer, SEA now recommends that a condition be imposed upon any decision granting SGR authority to construct the rail line (under any alternative route) that would require SGR to use Vulcan's existing Edwards Aquifer water rights and any other existing Edwards Aquifer water rights that may be acquired when using water from the Edwards Aquifer during construction, maintenance and operation of the rail line. Thus, SEA believes that construction and operation of any of the Eastern Alternatives would not cause significant impacts to the above-listed species, or to the Edwards Aquifer and its associated springs.

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<sup>18</sup> These are the same conditions that SEA recommended for the rail alignments studied in the DEIS. See Chapter 6 of this SDEIS for SEA's complete discussion of recommended mitigation measures. SEA may recommend additional mitigation measures in the FEIS.

Based on SEA's field surveys of the Eastern Alternatives, and VCM's detailed surveys of the Plant Maintenance Facility and Fuel Storage Area, as well as indication that VCM would continue to consult with USFWS regarding impacts to Federally listed species on the quarry site, SEA believes that construction and operation of any of the Eastern Alternatives would not be likely to adversely affect Federally listed species or designated critical habitat. Moreover, the proposed mitigation measures for preventing groundwater contamination, and identifying and inventorying karst features and caves during grading and construction of the rail line, as described above, would further protect against potential impacts to Federally listed threatened and endangered species.

SEA requested concurrence from the USFWS with SEA's determination that construction and operation of any of the Eastern Alternatives would not be likely to adversely affect Federally listed species or designated critical habitat, pursuant to Section 7 of the Endangered Species Act, 16 U.S.C. 1536 (see Appendix B, #EO-289) and the USFWS concurred with this determination (see Appendix B, #EI-2490).

### **3.7 Air Quality**

#### **3.7.1 Methodology**

In this section, SEA explains the methods used to evaluate the air-quality impacts for the Eastern Alternatives.

##### **Basis for Calculation**

Please see Section 4.7.1 of the DEIS for the calculation methods used to estimate the potential air emissions from the proposed rail operations over each route.

##### **Emission Factors**

SEA used the same emission factors for the air quality analysis in this SDEIS as were used in Section 4.7.1 of the DEIS. Please see Section 4.7.1 of the DEIS for a more detailed discussion of the emission factors.

### **Significance Criteria**

As discussed in Section 4.7.1 of the DEIS, Medina County is in attainment with all National Ambient Air Quality Standards (NAAQS) for criteria air pollutants. Given Medina County's attainment status and the lack of defined significance criteria for these emissions, SEA decided to compare the combined stationary and mobile source emissions for each alternative with the U.S. Environmental Protection Agency's (USEPA) Title V major emission-source threshold of 100 tons-per-year (as further described in Section 4.7.1 of the DEIS). Emissions of criteria pollutants below this level are considered to be below the threshold of significance.

### **3.7.2 Affected Environment**

Section 3.5 of the DEIS describes the climate and air quality characteristics of the proposed project area.

### **3.7.3 Environmental Impacts**

In this section SEA describes the potential impacts on air quality of the construction and operation of the Eastern Bypass Route, the MCEAA Medina Dam Alternative, and SGR's Modified Medina Dam Route (the Eastern Alternatives). Table 3.7-1 lists the mobile source and rail loading emissions.

### **3.7.4 Construction Impacts**

Effects on air quality include dust generated by construction equipment and possible burning of construction debris. However, because of the short duration of the construction project, these impacts would be temporary, and should not be significant. Section 4.7.2 of the DEIS lists SEA's recommended mitigation measures to reduce potential air quality impacts from construction activities. SEA may recommend additional mitigation in the FEIS.

### **3.7.5 Impacts from Rail Operations**

As discussed in Section 4.7.3 of the DEIS, air quality from proposed rail operations would be affected by two sources:

- Rail car loading at the quarry and
- Mobile source emissions from locomotive emissions.

Table 3.7.5-1 shows the estimated rail car loading emissions of PM10<sup>19</sup> and mobile source emissions from the proposed rail operations over each of the Eastern Alternatives.

**Table 3.7.5-1. Mobile Source and Rail Loading Emissions for The Eastern Alternatives**

	<b>Eastern Bypass Route</b>	<b>MCEAA Medina Dam Alternative</b>	<b>SGR's Modified Medina Dam Route</b>
	<b>Ton/Year</b>	<b>Ton/Year</b>	<b>Ton/Year</b>
<b>Mobile Source</b>			
NOx Emissions	62.2	66.1	71.6
CO Emissions	35.5	37.7	40.9
PM Emissions	3.2	3.4	3.7
HC Emissions	9.3	9.9	10.7
<b>Rail Loading</b>			
PM Emissions	27.7	27.7	27.7

NOx - Nitrogen oxides.  
CO - Carbon monoxides.

PM - Particulate matters.  
HC - Hydrocarbon.

Based on the table above, emissions from proposed rail operations over each of the Eastern Alternatives would be less than 100 tons per year for any criteria air pollutant. Thus, the emissions from the Eastern Alternatives would be below the USEPA's major source thresholds for Title V permit applicability.<sup>20</sup> Appendix C-1 contains the worksheets for air emission calculations.

**Preliminary Conclusions**

Of the three Eastern Alternatives, construction and operation of the Eastern Bypass Route would cause the least impacts to air quality, due to its shorter length, while construction and operation of SGR's Modified Medina Dam Route would cause the most impacts to air quality.

<sup>19</sup> PM10 are the particulate matter emissions less than 10 microns in diameter.

<sup>20</sup> Title V is a Federal operating permit program, developed pursuant to the Clean Air Act.

## **3.8 Geologic Hazards and Soils**

### **3.8.1 Affected Environment**

SEA studied the potential for landslide/mass movement hazards over the Eastern Alternatives, which are defined as moderately rapid to rapid (on the order of 1 foot per year or greater) downslope transport of earth by means of gravitational body stresses. Section 3.6.2 of the DEIS describes the geologic hazards of the proposed project area in more detail.

Soils in the area of the Proposed Route and alternatives described in the DEIS (Section 3.6.1) are generally the same as those along the path of the Eastern Alternatives. The primary difference in soils between the Eastern Alternatives and those described in the DEIS is the greater area covered by the Victoria clay (VcA) that occurs on the nearly level surface of the floodplain deposits and Quaternary terrace deposits on the eastern side of the study area. Section 3.6.1 of the DEIS contains a detailed description of the soil types in the area.

### **3.8.2 Environmental Impacts**

In this section, SEA discusses the potential impacts as a result of construction and operation of the Eastern Bypass Route, the MCEAA Medina Dam Alternative, and SGR's Modified Medina Dam Route on the geology and soils of the project area.

Using USGS maps and associated data (USGS, 2001), SEA determined in the DEIS that the areas that would be most susceptible to landslides occur in or near the southern portion of the project area, where the rail line would cross the Escondido Formation outcrop. SEA conducted an on-site visit during the preparation of the DEIS to field verify conditions in March of 2003. Results indicated that the rail routes studied in the DEIS were much lower on the slope of the hills than the area of concern shown on the maps. The southern portion of the initial routes, as well as all of the Eastern Alternatives, would be located completely upon the Escondido Formation. As a result, SEA determined that landslide hazards in this area would be negligible.

To evaluate the impacts to soils in the routes of the Eastern Alternatives, SEA compared the routes of the Eastern Bypass Route, the MCEAA Medina Dam Alternative, and SGR's Modified Medina Dam Route to published soil maps.

The Eastern Bypass Route is primarily composed of soils associated with Victoria clay, Moneola gravelly clay, and the Quihi Series. The MCEAA Medina Dam Alternative is primarily composed of soils associated with Victoria clay, Moneola gravelly clay, and the Quihi Series. SGR’s Modified Medina Dam Route is primarily composed of soils of the Victoria clay and Moneola gravelly clay series.

The Natural Resources Conservation Service (NRCS) also reviewed the Eastern Alternatives to determine impacts to prime farmland soils, as part of the Farmland Protection Policy Act (see Appendix B, letter #EI-1959). NRCS’ review included the AD-1006 Farmland Conversion Impact Rating for the Eastern Alternatives. Table 3.8-1 presents the ratings:

**Table 3.8-1. NRCS Farmland Impact Conversion Rating**

<b>Alternative Route</b>	<b>Estimated Acres</b>	<b>Prime Farmland Acres</b>	<b>AD-1006 Score</b>
Eastern Bypass	106	48	130
MCEAA Medina Dam	115	35	125
SGR Modified Medina Dam	142	69	134

The NRCS concluded that “sites receiving a score of less than 160 need not be given further consideration for protection and no additional sites need to be evaluated.” Thus, SEA believes that construction and operation of any of the Eastern Alternatives would not significantly impact prime farmland soils in the area.<sup>21</sup>

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<sup>21</sup> The cover letter from NRCS indicates that 46 acres of prime farmland would be impacted by the Eastern Bypass Route, while the AD-1006 form states that 48 acres of prime farmland would be impacted by that route. SEA contacted Mr. James Greenwade at NRCS and verified that the cover letter contained a typographical error and the number on the AD-1006 form was correct. SEA also notes that NRCS used a 100 foot right-of-way to compute the amount of acreage that would be impacted by each of the Eastern Alternatives, as opposed to the 80 foot right-of-way that SEA has used throughout the environmental review process. While use of an 80 foot right-of-way could yield slightly different numbers in terms of acreage of prime farmland soils impacted by each route, these different numbers would not change SEA's overall results or conclusions.

## **Preliminary Conclusions**

Construction of any of the proposed Eastern Alternative rail lines would not disturb the soils in the areas most susceptible to landslides such as in the southern portion of the project area. Therefore, the risk of landslide hazards from construction and operation of any of the Eastern Alternatives would be negligible. SGR's Modified Medina Dam Route would be located on relatively flat terrace deposits and thus, would have a lower potential for causing geohazards than the other two Eastern Alternatives. The MCEAA Medina Dam Alternative received the lowest AD-1006 score, meaning that it would cause the least impacts to prime farmland soils of any of the Eastern Alternatives.

### **3.9 Karst Features**

#### **3.9.1 Affected Environment**

Karst is a term used to identify the unique morphological and hydrological characteristics associated with carbonate bedrock terrains. Karst terrain landforms include caves, sinkholes, blind valleys, sinking streams, springs, and other related features. Section 3.6.3 of the DEIS describes the karst features of the proposed project area.

#### **3.9.2 Environmental Impacts**

In this section, SEA discusses the potential impacts that could result from the construction and operation of the Eastern Bypass Route, the MCEAA Medina Dam Alternative, and SGR's Modified Medina Dam Route on karst features. SEA used topographic maps, aerial photographs, available literature, and a field reconnaissance for the DEIS conducted in March 2003 to evaluate the nature of karst features and the likelihood of development of karst-feature hazards.

### **Eastern Bypass Route**

The majority of the Eastern Bypass Route does not have the potential to be impacted by the development of karst features. Most of the route is underlain by the Leona or Escondido Formations, which are not conducive for the development of karst features (see Figure 3-8 of this document and Table 3.3-1 of the DEIS). However, the area near the loading track is susceptible to karst-feature development at a higher elevation than the 950 feet contour along Polecat Creek

and Elm Creek. Additionally, a portion of the Eastern Bypass Route extending approximately 1,500 feet to the south of the loading track area has thin (few to tens of feet thick) Quaternary Alluvium deposits overlaying carbonate rocks with the potential to develop karst features (see Figure 3-8).

#### **MCEAA Medina Dam Alternative**

The MCEAA Medina Dam Alternative is the least likely of the Eastern Alternatives to have the potential to be impacted by the development of karst features. Most of the route is underlain by the Leona or Escondido Formation, which are not conducive for the development of karst features (see Figure 3-8 of this document and Table 3.3-1 of the DEIS). However, the area near the loading track is susceptible to karst-feature development at a higher elevation than the 950 feet contour along Polecat Creek and Elm Creek.

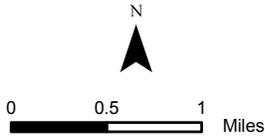
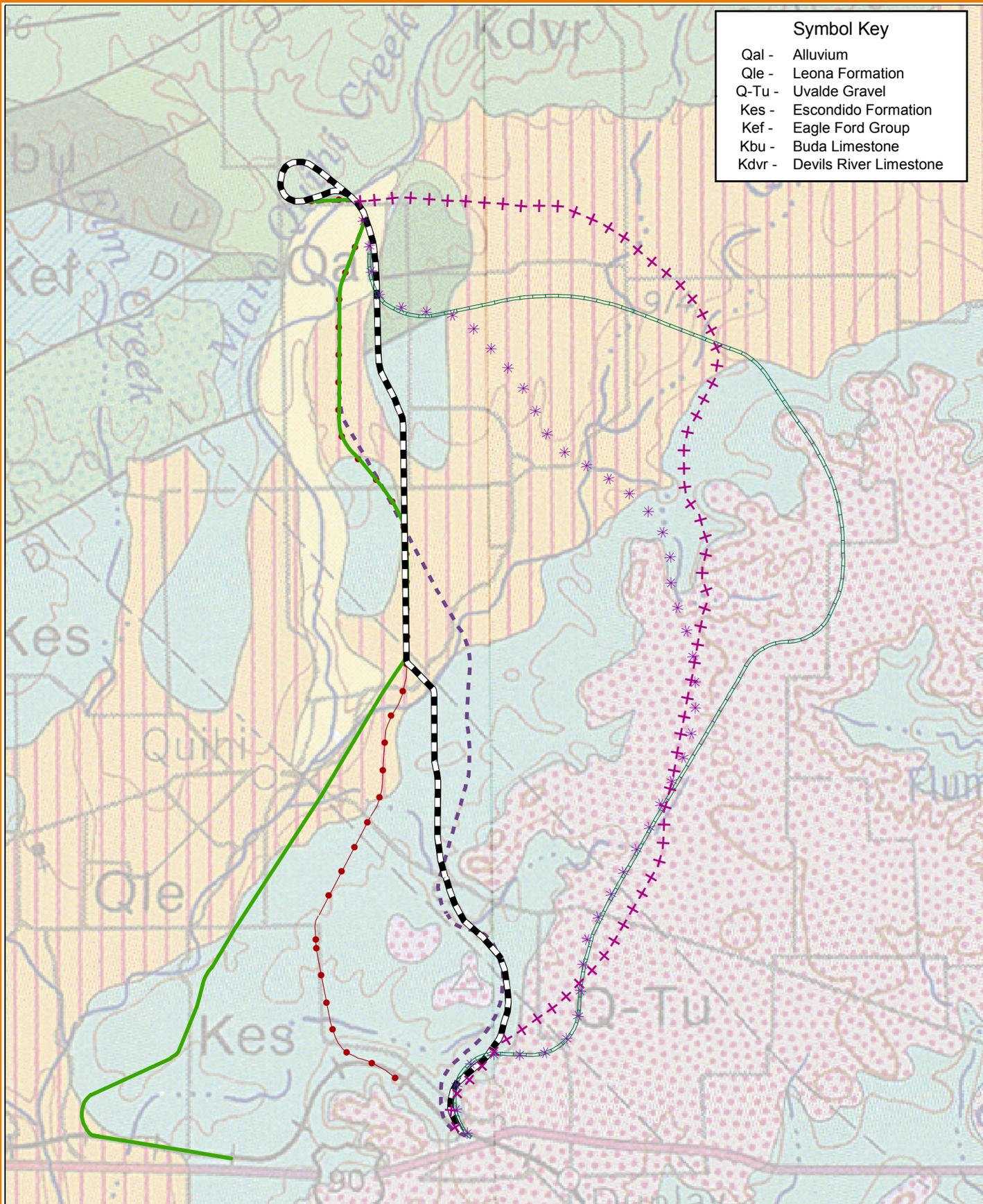
#### **SGR's Modified Medina Dam Route**

Most of the SGR's Modified Medina Dam Route does not have the potential to be impacted by development of karst features. Most of the route is underlain by the Leona or Escondido Formation, which are not conducive for the development of karst features. In addition, much of the route is underlain by terrace deposits that also have a low probability of developing karst features. However, the area near the loading track is susceptible to karst-feature development at a higher elevation than the 950 feet contour along Polecat Creek and Elm Creek. Additionally, as with the Eastern Bypass Route, a portion of the route extending approximately 1,500 feet to the south of the loading track area has thin (few to tens of feet thick) Quaternary Alluvium deposits overlaying carbonate rocks with potential to develop karst features (see Figure 3-8).

#### **Preliminary Conclusions**

The MCEAA Modified Medina Dam Route is less likely to be affected by the development of karst features than the other two Eastern Alternatives. The portion of the study area that is susceptible to karst-feature hazards is limited to the loading track area and a portion of the Eastern Bypass Route and SGR's Modified Medina Dam Route extending about 1,500 feet to the south of the loading track. Section 4.9 of the DEIS lists SEA's recommendations to

Symbol Key	
Qal -	Alluvium
Qle -	Leona Formation
Q-Tu -	Uvalde Gravel
Kes -	Escondido Formation
Kef -	Eagle Ford Group
Kbu -	Buda Limestone
Kdvr -	Devils River Limestone



Legend	
	Proposed Route
	Alternative 1
	Alternative 2
	Alternative 3
	MCEAA Medina Dam Alternative
	Eastern Bypass Route
	SGR's Modified Medina Dam Route

**Figure 3-8  
Southwest Gulf Railroad  
Geologic and Karst  
Units**

mitigate potential impacts to karst features from the proposed rail line construction and operation. SEA may include additional mitigation in the FEIS.

### **3.10 Land Use**

#### **3.10.1 Affected Environment**

The proposed rail line would be located in south central Texas in Medina County near the community of Quihi, as shown in Figure 2-1. Section 3.7 of the DEIS describes the land use of the proposed project area in more detail.

The Eastern Alternatives would originate at the proposed quarry location and extend south approximately 10 miles to the Del Rio Subdivision of the UP rail line near Dunlay. The general location of the Eastern Alternatives is shown in Figure 2-1. Most, if not all, of the right-of-way of the Eastern Alternatives would be on land owned by private owners. According to the Medina County Appraisal District (MCAD), the Eastern Bypass Route would cross about 32 individual properties; the MCEAA Medina Dam Alternative would cross about 22 individual properties; and SGR's Modified Medina Dam Route would cross about 26 individual properties (see Appendix B). Section 3.7 of the DEIS describes the nearby land uses of the project area in more detail.

#### **3.10.2 Environmental Impacts**

In this section SEA discusses the potential impacts of the construction and operation of the Eastern Bypass Route, the MCEAA Medina Dam Alternative, and SGR's Modified Medina Dam Route on the land uses in the project area, including the following: total acreage disturbed; acres of prime farmland soils impacted; acquisition of right-of-way; and location and number of nearby receptors (houses within a ½ mile on either side of each alignments and houses within one mile on either side of each alignment).

Several commenters submitted letters indicating that all three of the Eastern Alternatives would pass through the Weiblen Farm in locations that would disrupt irrigation systems and destroy irrigated farmland (see Appendix B, #EI-1990). Commenters also indicated that the Weiblen house is located at the intersection of the three Eastern Alternatives. Thus, the proposed

rail construction and operation over any of the Eastern Alternatives has the potential to adversely affect this and perhaps other properties. However, SEA believes that any adverse effects would be reduced by the mitigation recommended at the end of this section.<sup>22</sup>

### **Eastern Bypass Route**

The construction of the Eastern Bypass Route would directly affect approximately 89.21 acres, assuming a construction corridor of about 80 feet. According to the NRCS (see Appendix B, #EI-1959), approximately 48 acres of the corridor would be NRCS-designated prime farmland. NRCS assigned an AD-1006 Farmland Conversion Impact Rating for each alternative, pursuant to the Farmland Protection Policy Act (FPPA). The AD-1006 score assigned by the NRCS for the Eastern Bypass Route equals 130, which is below the score of 160 requiring further action. As discussed in Section 3.6, about 44.6 acres would be restored as fenced and maintained grasslands after construction, although this area would no longer be available for agricultural use or grazing. According to MCAD, approximately 32 individual properties not owned by SGR or Vulcan Construction Materials, LP (VCM), would be crossed by the Eastern Bypass Route. A majority of the properties would be severed to some extent. According to aerial photography and field verification by SEA, there are approximately 78 houses within ½ mile and 167 houses within 1 mile on either side of the alignment.

### **MCEAA Medina Dam Alternative**

The construction of the MCEAA Medina Dam Alternative would directly affect about 95.99 acres, assuming a construction corridor of about 80 feet. According to the NRCS, approximately 35 acres of the corridor would be NRCS designated prime farmland. The AD-1006 score assigned by NRCS for the MCEAA Medina Dam Alternative equals 125, which is

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<sup>22</sup> As indicated throughout this document, SGR has not yet developed final engineering plans for any of the alternative rail line alignments, and thus, SEA's analysis has been based upon the available project maps, which suggest that some of the alignments could pass in close proximity to homes (see Noise and Vibration Technical Report, Appendix C-3). Although SGR has submitted information indicating that no homes would be taken by the Proposed Route, Alternative 1, Alternative 2, or Alternative 3, and that these routes would not be closer than about 400 feet from any inhabited home (see DEIS, Volume III, Appendix G, page G-60), based on the information available to date, SEA believes that this mitigation measure in its entirety would be appropriate for all of the rail alignments under consideration.

below the score of 160 requiring further action. As discussed in Section 3.6, about 48 acres would be restored as fenced and maintained grasslands after construction, although this area would no longer be available for agricultural use or grazing. According to MCAD, the MCEAA Medina Dam Alternative would cross approximately 22 individual properties not owned by SGR or VCM. A majority of the properties would be severed to some extent. According to aerial photography and field verification by SEA, there are approximately 72 houses within ½ mile and 145 houses within 1 mile on either side of the alignment.

### **SGR's Modified Medina Dam Route**

The construction of SGR's Modified Medina Dam Route would directly affect about 105.7 acres, assuming a construction corridor of about 80 feet. According to the NRCS, approximately 69 acres of the corridor would be NRCS designated prime farmland. The AD-1006 score assigned by NRCS for SGR's Modified Medina Dam Route equals 134, which is below the score of 160 requiring further action. As discussed in Section 3.6, about 53 acres would be restored as fenced and maintained grasslands after construction, although this area would no longer be available for agricultural use or grazing. According to MCAD, SGR's Modified Medina Dam Route would cross approximately 26 individual properties not owned by SGR or VCM. A majority of the properties would be severed to some extent. According to aerial photography and field verification by SEA, there are approximately 76 houses within ½ mile and 166 houses within 1 mile on either side of the alignment.

### **Preliminary Conclusions and Mitigation**

Based on the above analysis of the Eastern Alternatives, construction and operation of the MCEAA Medina Dam Alternative would cause the fewest impacts to current land use. This alternative would cross the smallest number of properties, would result in less farmland disturbance, and a lower number of houses exist within a ½-mile and 1-mile area of the alignment. Construction and operation of the Eastern Bypass Route would cause more land use impacts than the MCEAA Medina Dam Alternative but less than SGR's Modified Medina Dam Route. Because of numbers of properties crossed, more farmland disturbance and larger number of houses within a ½-mile and 1-mile area of the alignment, SGR's Modified Medina Dam Route would cause the maximum amount of impacts to current land use of any of the Eastern

Alternatives. Chapter 6 of this SDEIS compares all eight alternatives that SEA is studying for this project (Proposed Route, Alternative 1, Alternative 2, Alternative 3, No-Action Alternative, Eastern Bypass Route, the MCEAA Medina Dam Alternative, and SGR's Modified Medina Dam Route) and presents SEA's discussion of the Environmentally Preferable Alternative(s). Section 4.10.2 of the DEIS describes SEA's mitigation recommendations to reduce potential impacts from the proposed rail line construction and operation to area. SEA may recommend additional mitigation in the FEIS.

Construction and operation of the proposed rail line under any of the Eastern Alternatives would have some adverse effects upon existing land uses in the proposed project area (in addition to the mitigation conditions set forth in the DEIS). SEA recommends that the Board impose the following additional mitigation condition upon any decision approving one of the Eastern Alternatives to further reduce these adverse effects:

- Where construction of the rail line would cause unavoidable property severance, damage to a home or to an irrigation system, or property demolition and/or destruction, SGR shall negotiate with the appropriate land owner(s) to ensure access to the severed property and/or replacement of the irrigation system, and, if appropriate, realign the track to avoid taking houses and/or to minimize the impacts.<sup>23</sup>

### **3.11 Environmental Justice**

As discussed in Section 4.11 of the DEIS, the project area does not meet SEA environmental justice community of concern criteria, and therefore, construction and operation of any of the Eastern Alternatives does not have the potential to cause disproportionately high and adverse human health or environmental effects on environmental justice communities.

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<sup>23</sup> As indicated throughout this document, SGR has not yet developed final engineering plans for any of the alternative rail line alignments, and thus, SEA's analysis has been based upon the available project maps, which suggest that some of the alignments could pass in close proximity to homes (see Noise and Vibration Technical Report, Appendix C-3). Although SGR has submitted information indicating that no homes would be taken by the Proposed Route, Alternative 1, Alternative 2, or Alternative 3, and that these routes would not be closer than about 400 feet from any inhabited home (see DEIS, Volume III, Appendix G, page G-60), based on the information available to date, SEA believes that this mitigation measure in its entirety would be appropriate for all of the rail alignments under consideration.

### **3.12 Noise and Vibration**

The existing noise environment and noise and vibration impacts within the project area are discussed in Chapter 4 of this document.

### **3.13 Recreational and Visual Resources**

#### **3.13.1 Affected Environment**

Major recreational activities within Medina County include hunting and fishing. Medina Lake and several manmade surface reservoirs near the channels of Chacon, Parkers, Squirrel, Live Oak, and Elm Creeks provide opportunities for recreational activities in the vicinity of the proposed project (Handbook of Texas Online, 2006). In addition, several stock ponds appear to have been recently created for recreational purposes along Quihi and Elm Creeks, to the north and east of the community of Quihi. No parks or recreational water facilities are located in the project area. Section 3.10 of the DEIS describes the recreational and visual resources within the proposed project area in more detail.

#### **3.13.2 Environmental Impacts**

In this section SEA discusses the potential environmental impacts that could result from the construction and operation of the Eastern Bypass Route, the MCEAA Medina Dam Alternative, and SGR's Modified Medina Dam Route on recreational and visual resources within the project area. Because no public recreational sites exist within the project area of the Eastern Alternatives, construction and operation of any of the Eastern Alternatives would have no recreational resource impacts other than some adverse visual impacts. However, the Eastern Alternatives each would pass through or near some existing stock ponds, as described below (U.S. Fish and Wildlife Service, 2006).

##### **Eastern Bypass Route**

The Eastern Bypass Route would cross two stock ponds, one permanently flooded, and the other one seasonally flooded. Both of these stock ponds are likely used for irrigation but they may also be used for recreation. This route has the potential to adversely impact irrigation and recreational uses of these two ponds.

### **MCEAA Medina Dam Alternative**

The MCEAA Medina Dam Alternative would cross four stock ponds, two seasonally flooded, and two permanently semi-flooded. All of these stock ponds are likely used for irrigation, but they may also be used for recreation. This route has the potential to adversely impact irrigation and recreational uses of these four ponds.

### **SGR's Modified Medina Dam Route**

SGR's Modified Medina Dam Route would cross one permanently flooded stock pond. This stock pond is likely used for irrigation, but it may also be used for recreation. This route has the potential to adversely impact irrigation and recreational uses of this pond.

### **Preliminary Conclusions**

Construction and operation of the Eastern Alternatives have the potential to adversely impact existing stock irrigation and/or recreation ponds. The MCEAA Medina Dam Alternative has the greatest potential for causing an adverse impact, due to the greater number of stock ponds this route would cross. Please see Section 3.5 of this SDEIS for SEA's recommended mitigation for reducing impacts to these stock ponds. Section 4.14 of the DEIS lists SEA's recommendation to mitigate potential impacts to recreational resources. SEA will respond to comments received on the DEIS regarding recreational resources in the FEIS and may propose additional mitigation.

## **3.14 Cultural Resources**

The known cultural resources or historic properties located within the project area, as well as the potential for unknown historic properties, and the corresponding impacts to cultural resources from the construction and operation of the Eastern Alternatives are discussed in Chapter 5 of this document.

## **3.15 Socioeconomics**

### **3.15.1 Affected Environment**

The project area is located in Medina County, Texas, approximately 30 miles west of San Antonio. In 2000, the population of Medina County was 39,304, which demonstrated an annual

population growth rate of 4.4 percent from the 1990 census. Based on the 2000 census, the block group that would be affected by the proposed project has a 22.7 percent minority population, and 7 percent of the population within the proposed project area lives below the poverty level. The economy of Medina County is rural, with the largest employment sectors being agriculture, services, and government. Section 3.12 of the DEIS describes the socioeconomic characteristics (population, employment, and income) of the proposed project area in more detail.

### **3.15.2 Environmental Impacts**

Section 4.16 of the DEIS describes the socioeconomic impacts from the construction and operation of the proposed rail line. Construction and operation of any of the Eastern Alternatives would result in essentially the same socioeconomic impacts as those described in the DEIS.

#### **Preliminary Conclusions**

As in the DEIS, SEA preliminarily concludes that the construction and operation of any of the Eastern Alternatives would not significantly contribute to socioeconomic impacts within the proposed project area. SEA received numerous comments regarding socioeconomic impacts in response to the DEIS. SEA will respond to these comments in the FEIS.

### **3.16 Cumulative and Indirect Effects**

Sections 4.17 and 4.18 of the DEIS present SEA's analysis of the potential cumulative and indirect effects that could result from SGR's rail line construction and operation under any of the rail line alternatives studied in the DEIS (Proposed Route, Alternative 1, Alternative 2, and Alternative 3). Construction and operation of any of the Eastern Alternatives would result in similar or identical cumulative and indirect effects. SEA received multiple comments regarding cumulative and indirect effects in response to the DEIS. SEA will respond to those comments and conduct additional analysis, as necessary, in the FEIS.