

FINAL REPORT

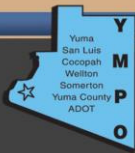
YUMA COUNTY RAIL CORRIDOR STUDY



March 22, 2013

Submitted to
**Yuma Metropolitan
Planning Organization**

Submitted by
**PARSONS
BRINCKERHOFF**



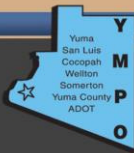
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Introduction

The purpose of the Yuma Rail Corridor Study is to recommend a feasible rail corridor between Sonora Mexico and Yuma County, as well as to explore opportunities for freight-related economic development, increased mobility and access for freight movements by rail. Two study areas have been considered. Within a more limited area is the jurisdiction of the Yuma Metropolitan Planning Organization (YMPO), namely Yuma County. A broader study area encompasses a wider region, including not only Yuma County, but also Imperial County, CA and the Mexican states of North Baja California and Sonora.

In considering a feasible rail corridor to Mexico, the study investigates a number of related questions. What shippers would use a rail line between Sonora and Yuma County? What is the role of rail within the North American freight transportation system, and would a rail line between Sonora and Yuma County support that role? What are the rail needs of Yuma County? What industries within the County now use rail? What existing Yuma County industries could use rail or could be attracted to Yuma County with improved rail service? What are some other potential rail improvements that would benefit the region, and how would the benefits and costs of these improvements compare to the benefits and costs of constructing a new rail alignment between Sonora, Mexico and Yuma County? Finally, this study has been completed within the context of the megaport project at Punta Colonet. As originally conceived this project would include a rail connection between the port and the United States. At one point, a proposed alignment ran through Yuma County. On November 30, 2012, the Mexican transport and communications ministry, SCT, cancelled the Punta Colonet project. The Yuma Rail Corridor Study provides the Yuma County community with the opportunity to propose its own preferred rail alignment in case the Punta Colonet project is ever renewed.

Four technical memoranda have been prepared for this study.

- Technical Memorandum No. 1 investigated the types of industries that are located in Yuma County and their likely usage of rail, the current status of rail service in Yuma County, and the nature of Yuma County's trading relationships, particularly with Mexico. This technical memorandum also provides economic profiles of Yuma County's neighboring regions of Imperial County, CA and Sonora, Mexico. Finally, this technical memorandum presented a consideration of rail's role in the U.S. transportation system, and how this might impact options to improve rail service in Yuma County.
- Technical Memorandum No. 2 presented typical rail improvements and considered rail usage by existing and prospective industries in Yuma County. Potential alternatives that could address the needs of Yuma's current and prospective industries were presented and then given a preliminary evaluation.
- Technical Memorandum No. 3 explored several of the alternatives that were described in Technical Memorandum No. 2 in terms of the likely location of these projects, the required investment, additional steps, including recommended research, the likely organization of these projects, and funding alternatives.

- Technical Memorandum No. 4 considered the benefits, costs, and economic impacts of several of the alternatives presented in Technical Memorandum No 2. Specifically, this technical memorandum evaluated the relative costs and benefits of building a rail line to Mexico and whether the project would warrant the necessary public investment. The benefits and costs of building rail access to a new industrial park were also considered. The technical memorandum presented a very rough, order of magnitude estimate of the jobs impact of these alternatives.

Yuma County Economic Base and Freight Flows

Existing Yuma County Industries

Agriculture

Yuma County has considerable advantages in agricultural production, given the County’s warm climate, access to the Colorado River, and access to inexpensive labor.

Exhibit 1: Comparison of Agriculture in Yuma County to that in Arizona Statewide

	Pct of Land	Pct of Workforce	Value Per Acre	Total Farm Payroll
Yuma County	6%	8.8%	\$4,558	\$77,446,000
Arizona	36%	1.1%	\$124	\$380,491,000
United States	41%	1.9%	\$323	\$21,877,661,000

Source: U.S. Census Bureau

Despite being home to 3.1 percent of Arizona’s population, Yuma County was responsible for 20.4 percent of the state’s farm payroll in 2007 (**Exhibit 1**). Nationally, \$1 in every \$286 in American agricultural payroll is spent in Yuma County, while only 1 out of every 1,578 people live there.

According to the U.S. Department of Agriculture (USDA) 2007 Census of Agriculture, Yuma County producers sold agricultural products worth nearly \$1 billion in 2007. This value of production makes Yuma County not only the top agricultural producing county in Arizona, but 23rd among all counties in the United States. This agricultural production is dominated by winter produce. Vegetables are 70 percent of the value of Yuma County’s agricultural production. Yuma County is ranked third for vegetable production nationwide. Yuma County produces most of the leafy greens that are consumed nationwide during winter months.

Government Services and Tourism

Aside from agriculture, a plurality of jobs in Yuma County are either for federal, state, and local agencies or hospitals and schools. Over 31 percent of nonfarm jobs in Yuma County are in government services. According to the Marine Corps Air Station Yuma (MCAS), the base had a workforce of 4,427 military and 2,172 civilians in 2011. The Yuma Proving Ground has an estimated workforce of 1,500 military and 1,500 civilians. Other federal employees within Yuma County are from the Bureau of Land Management (BLM), the Bureau of Reclamation (USBR), the Social Security Administration (SSA), U.S. Fish and Game Service, the Federal Bureau of Investigations (FBI), and the U.S. Customs and Border Protection (CBP). The share of positions in the trade, transportation, and utilities field in Yuma County (18.7 percent)

nearly mirrors the prevailing statewide rate of 19.6 percent in those industries. Yuma County is also nearly at parity with the statewide share of jobs in the education and health service fields (14.8 percent statewide and 13.6 percent in Yuma County). In leisure and hospitality roles, tourism supports 10.8 percent of Yuma County jobs, as is the case statewide. In **Exhibit 2** below, those industries for which the employment concentration is equal to or higher than the statewide are highlighted.

Exhibit 2: Arizona and Yuma County Employment by Industry, 2011

Industry	Arizona		Yuma County	
	Jobs	% of Jobs	Jobs	% of Jobs
Total Nonfarm Payroll Employment	2,405,500	100.0%	49,100	100.0%
Government (Any Level)	410,400	17.1%	15,300	31.2%
Federal Government	56,900	2.4%	3,800	7.7%
State and Local Government	353,500	14.7%	11,500	23.4%
Private Sector	1,995,100	82.9%	33,800	68.8%
Goods-Producing Industries	272,900	11.3%	4,000	8.1%
Service-Providing Industries	2,132,500	88.7%	45,200	92.1%
Private Service Providing	1,722,200	71.6%	29,900	60.9%
-	-	-	-	-
Trade, Transportation and Utilities	472,600	19.6%	9,200	18.7%
Education and health services	354,900	14.8%	6,700	13.6%
Professional and Business Services	343,400	14.3%	5,500	11.2%
Goods-Producing Industries	272,900	11.3%	4,000	8.1%
Leisure and Hospitality	259,100	10.8%	5,300	10.8%
Financial Activities	166,000	6.9%	1,300	2.6%
Manufacturing	149,700	6.2%	1,800	3.7%
Other Services (except Public Administration)	89,600	3.7%	1,400	2.9%
Information	36,600	1.5%	500	1.0%

Source: Arizona Department of Administration, Office of Employment and Population Statistics. 2012. Note that column percentages are not additive.

Manufacturing

Exhibit 3 lists the manufacturing industries in Yuma County that employ more than 100 people, as reported by the U.S. Census Bureau County Business Pattern, 2009. The results suggest that Food Manufacturing is the largest manufacturing employer, followed by Yarn Mills, Chemical Manufacturing, and HVAC Manufacturing.

Exhibit 3: Manufacturing Industries in Yuma County that Employ More than 100 Employees in 2009

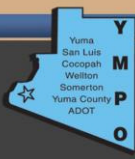
Industry	Employment
Perishable prepared food manufacturing	500-999
Yarn texturizing, throwing, and twisting mills	250-499
All other basic organic chemical manufacturing	250-499
AC, refrigeration, and forced air heating	250-499
Corrugated and solid fiber box manufacturing	100-249
All other plastics product manufacturing	100-249
Fabricated metal product manufacturing	100-249
Nonmetallic mineral product manufacturing	123
Wood product manufacturing	118

Source: U.S. Census Bureau: County Business Patterns

Yuma County Target Industries

The primary organization tasked with leading economic development initiatives within the Yuma region is the Greater Yuma Economic Development Corporation (GYEDC). The GYEDC lists the following target industries:

- **Food Processing** – Food processing is seen as a logical extension of Yuma County’s agricultural industry. Food processing plants frequently locate within close proximity of agricultural production. Rail is used for shipping some food products, but mostly those derived from grain rather than produce. There is limited usage of rail for shipping frozen foods.
- **Military & Defense Testing** – With the Marine Corps Air Station Yuma, the Yuma Proving Ground, and the Barry M. Goldwater Range, there is a large military presence in the region. Weapons are tested at the Yuma Proving Ground. This would make the region a natural location for companies that supply the military and whose weapons would need testing. Rail would not be commonly used for shipping commodities associated with weapons testing.
- **Industrial Manufacturing** – Proximity to Mexican and California markets is seen as an advantage for the Yuma region in industrial manufacturing. Low unionization and relatively low wages are also seen as an advantage. The usage of rail by industrial manufacturing depends upon the specific products manufactured.
- **Logistics & Distribution** - Proximity to Mexican and California markets is seen as an advantage for the Yuma region in logistics and distribution. Yuma County is also considered to have an advantage because of the high capacity port of entry at San Luis II, the UP Sunset Corridor, and I-8. Yuma County is also less than 250 miles from the Ports of Los Angeles/Long Beach, CA and 498 miles from the Port of Guaymas in Mexico. Rail’s role will depend upon the nature of products that are to be distributed. Rail is heavily used for transporting construction supplies, so if Yuma County is to be a hub for shipments of construction supplies, rail would be a logical transportation choice to support this initiative. Rail is used for transporting finished



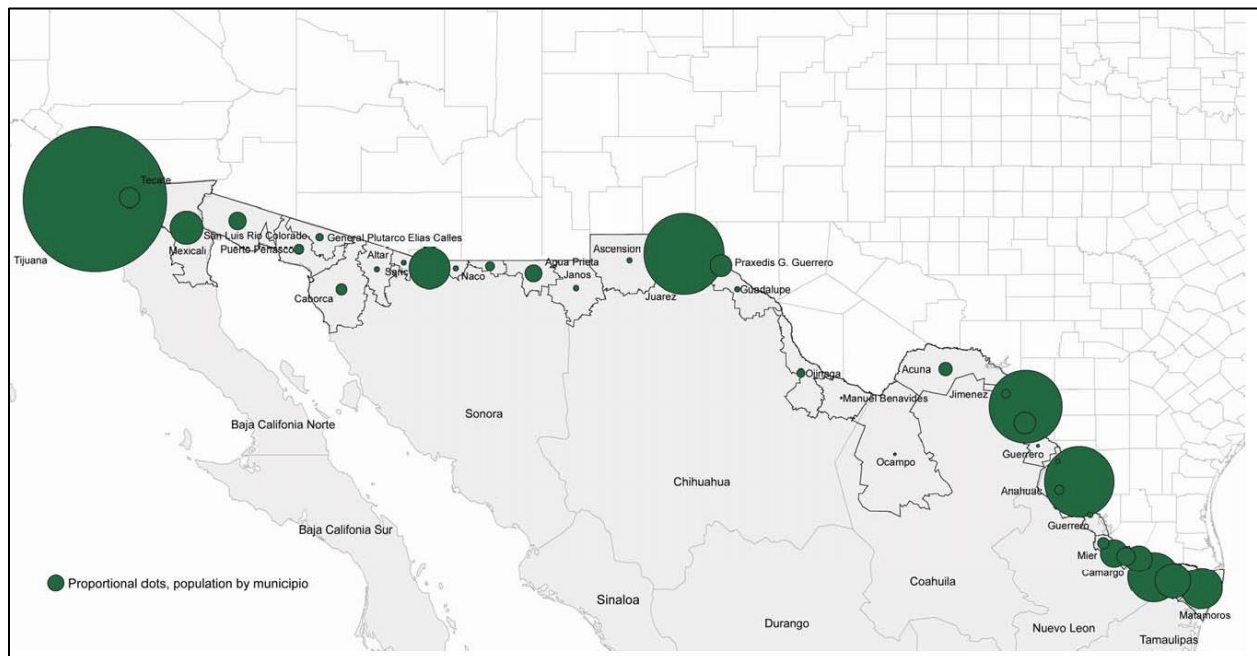
automobiles. An automotive ramp would depend on rail. General retail or other distribution facilities are often constructed in conjunction with intermodal ramps. However, to be successful Yuma County would need to generate above a threshold level of intermodal traffic. Intermodal ramps tend to be located in or near larger metropolitan areas.

- Renewable Energy – Seven companies have committed to build utility scale renewable energy plants within three hours of Yuma. According to the Solar Foundation, Arizona is ranked third in the nation for solar. Arizona Western College Solar Array Testing Site provides research on solar energy, thus establishing a connection between solar technology and the region. With its dry weather, Arizona is a logical location for solar power. Manufacturers of solar equipment would be expected to locate near locations of demand for their products, i.e. solar power production. For solar, the collectors and mirrors themselves would not likely be shipped by rail. However, the steel girders and support structures that hold solar apparatus may be shipped by rail.
- Twin Plant/Maquila Operations – Proximity to Mexican and California markets is seen as an advantage for the Yuma region in twin plant/maquila operations. San Luis Rio Colorado is the third largest municipality within the State of Sonora. Rail’s role in supporting these plants would depend upon the nature of the twin plant/maquila operations.

Regional Economic Base

The mouth of the Colorado River separates the two Mexican states of Baja California in the west and Sonora in the east. Two municipalities, San Luis Río Colorado and Mexicali, provide the bulk of the population opposite Yuma County on the Mexican side of the border (**Exhibit 4**).

Exhibit 4: 2004 Population of Mexican Colonias along the Border



Source: U.S. Mexico Border Counties Coalition

Agriculture and manufacturing are major industries in San Luis Río Colorado and Mexicali. Agricultural is particularly significant to the San Luis Río Colorado economy. Manufacturing employment is heavily associated with maquiladora operations.

Yuma County Freight Flows

Yuma County's inbound and outbound rail service is currently almost entirely devoted to agriculture, with inbound shipments of grain to feedlots, outbound shipments of grain, and shipments of fertilizer. YMPO has obtained a license for the IHS Global Insight's TRANSEARCH database, which describes current and forecasts future truck flows to, from, within, and across Arizona. As shown in **Exhibit 5**, Yuma County's largest trading partners for truck traffic are the major metropolitan areas within Arizona and southern California, as well as Yuma County itself.

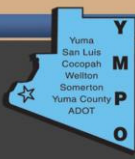
Exhibit 5: Number of Trucks to and from Yuma County by Trading Partner

Trading Partner	2009		2035	
	No of Trucks	% Total	No of Trucks	% Total
California Portion of Los Angeles BEA ¹	171,502	25%	198,861	22%
Maricopa County, AZ	134,636	20%	214,138	24%
Yuma County, AZ	97,782	15%	128,693	14%
San Diego, CA BEA	87,336	13%	100,079	11%
Pima County, AZ	29,450	4%	48,290	5%
Pinal County, AZ	25,427	4%	33,354	4%
Other	128,105	19%	179,008	20%
Total	674,238	100%	902,423	100%

Source: TRANSEARCH

As shown in **Exhibit 6**, commodities carried to and from Yuma County are primarily related to agriculture and building trades.

¹ A Business Economic Area (BEA) is a collection of counties as designated by the U.S. Bureau of Economic Analysis, centered around a metropolitan area, along with surrounding counties that are economically tied to that area.



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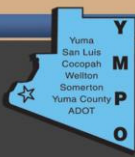
Exhibit 6: Number of Trucks to and from Yuma County by Commodity

Commodity	2009		2035	
	Units	% Total	Units	% Total
Semi-trailers Returned Empty	313,131	46%	434,024	48%
Leafy Fresh Vegetables	59,999	9%	77,930	9%
Gravel or Sand	38,876	6%	47,443	5%
Grain	38,242	6%	35,724	4%
Misc. Field Crops	32,694	5%	33,304	4%
Broken Stone or Riprap	30,874	5%	38,077	4%
Warehouse & Distribution Center	21,147	3%	60,262	7%
Misc Industrial Organic Chemicals	16,933	3%	19,425	2%
Misc Fresh Vegetables	14,658	2%	18,510	2%
Fertilizers	13,978	2%	9,836	1%
Other	93,708	14%	127,887	14%
Grand Total	674,238	100%	902,423	100%

Source: TRANSEARCH

Yuma County Trade with Mexico

Trade with Mexico accounts for a relatively small portion of Yuma County’s overall inbound or outbound freight, about 1.1 percent of truck freight to or from Yuma County in 2009. To place this into perspective, trade with all of Mexico is about 4 percent of the trade between Yuma County and the area around Los Angeles, CA and six percent of the trade between Yuma and Maricopa County. As can be seen from **Exhibit 7** below, trade between Yuma County and Mexico is dominated by produce.



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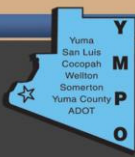


Exhibit 7: Trucks between Yuma County and Mexico in 2009

Exports to Mexico		Imports from Mexico	
Commodity Type	Total	Commodity Type	Total
Leafy Fresh Vegetables	1,988	Leafy Fresh Vegetables	2,294
Misc Industrial Organic Chemicals	328	Misc Fresh Vegetables	481
Fertilizers	169	Deciduous Fruits	358
Containers or Boxes, paper	164	Tropical Fruits	286
Misc Fresh Vegetables	116	Misc Fabricated Textile Products	157
Refrigeration Machinery	49	Sugar, Refined, Cane or Beet	112
Grain	33	Citrus Fruits	105
Lumber or Dimension Stock	32	Industrial Trucks, etc.	97
Cotton, raw	29	Oil Kernels, Nuts, or Seeds	84
Other	96	Other	603
Total	3,004	Total	4,578

Source: TRANSEARCH

The heavy orientation toward produce is apparent from the seasonality of actual border crossings at San Luis Port-of-Entry as recorded by the Greater Yuma Port Authority. Border crossings increase during the peak winter growing season and then decline over the summers (**Exhibit 8**).

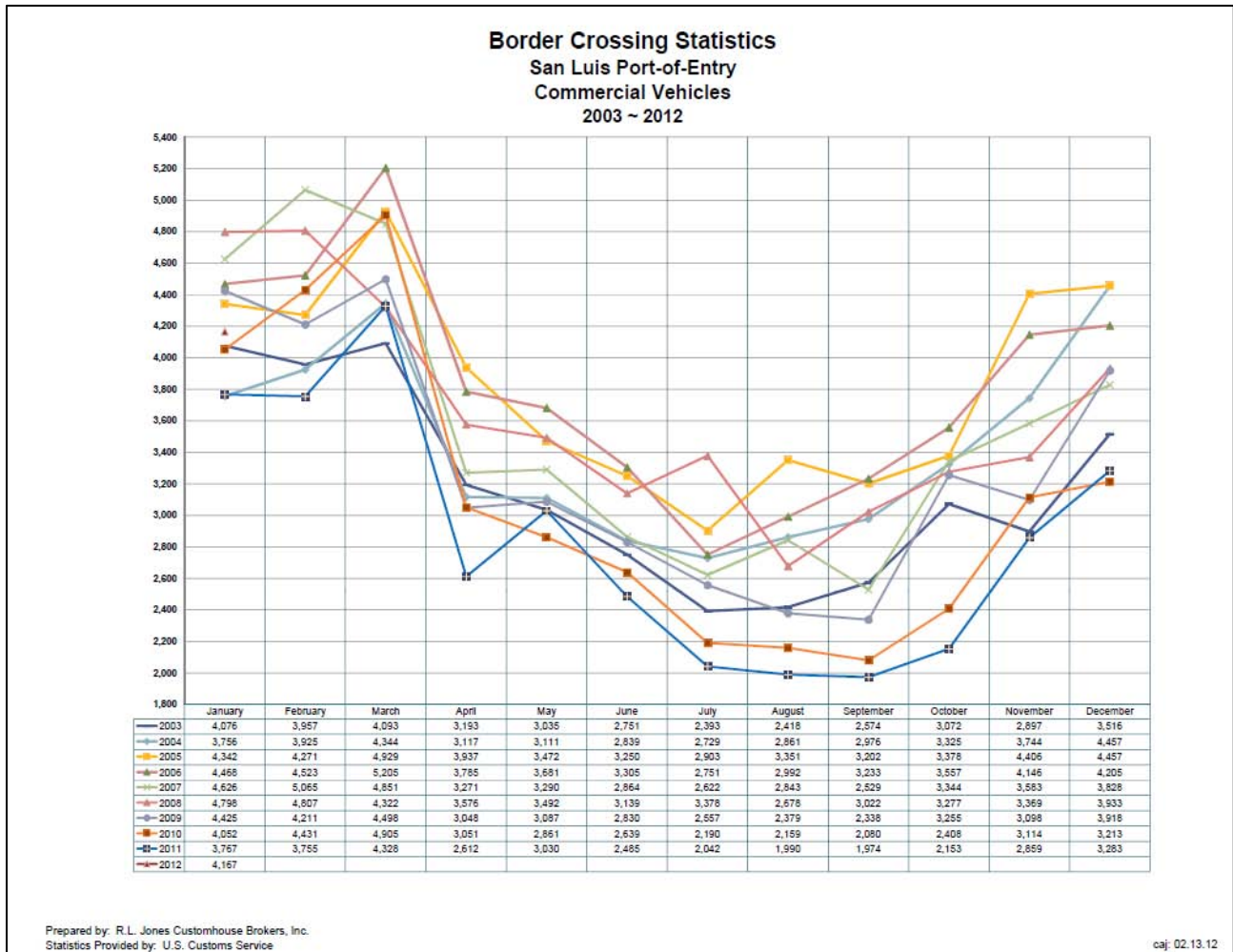


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Exhibit 8: San Luis Border Crossings - Commercial Vehicles



Source: Greater Yuma Port Authority

Stakeholder Views of Rail Service in Yuma County

The study team spoke with a range of stakeholders about the quality of rail service in the region, including government representatives, shippers, and economic development officials. Many of the comments represent the types of concerns that rail shippers typically have across the country and are not specific to Yuma County. The study team did not encounter any specific concerns with the current rail infrastructure, except for its lack of availability. Some shippers noted a reluctance on the part of Union Pacific Railroad (UP) to handle local carload freight for Yuma County. Economic development officials noted that they are frequently at a disadvantage in bidding for businesses to locate in the area because relatively few available locations are rail-served. There are a number of parcels available for development along the I-8 corridor, but none have rail access. A large parcel is available in Wellton, but it has no rail access. One thousand acres are available for development near San Luis, but there is no rail access. The UP Sunset Route is one of the busiest, fastest rail lines on UP's system. It is less oriented

toward local traffic and more oriented toward pass-through traffic, particularly intermodal containers travelling from the Ports of Los Angeles and Long Beach to markets in the interior of the country, such as Chicago, IL or Dallas/Fort Worth, TX.

Rail Improvements and Economic Development

Rail improvements can take a broad range of forms. **Exhibit 9** lists typical projects by planning goal area.

Exhibit 9: Typical Rail Improvement Measures by Goal Area

Goal Area	Rail Initiative
State of Good Repair	<ul style="list-style-type: none"> • Rehabilitate railroad tracks to state of good repair • Rehabilitate rail bridges to state of good repair
Mobility	<ul style="list-style-type: none"> • Upgrade FRA track class of rail lines to improve speed • Upgrade rail lines to remove either weight or height restrictions • Upgrade capacity of rail lines by building new sidings or parallel tracks • Upgrade capacity of rail lines by upgrading signal system • Upgrade capacity of rail lines by improving track geometry • Upgrade, expand rail yards
Access and Connectivity	<ul style="list-style-type: none"> • Build connections between rail lines • Provide new intermodal connections or improve existing connections
Safety	<ul style="list-style-type: none"> • Improve at-grade rail crossings, including countermeasures, surfacing, approaches, signage • Grade separation • Crossing closure • Rail bypass
Sustainability	<ul style="list-style-type: none"> • Reduce emissions of rail yard switch engines either by repowering, replacing engines or through measures aimed at reducing idling
Economic Development	<ul style="list-style-type: none"> • New intermodal connections • Rail access as part of an incentive package

Some project types are generally funded by rail carriers without public agency involvement. Generally, Class I rail carriers add capacity to their systems where there is sufficient promise of rail traffic to justify the expenditure. The public sector participates in projects where there are potential public benefits and where private funds would not be forthcoming. Given the region’s rail infrastructure and employment issues, projects to support access and connectivity, as well as economic development would be the most relevant to Yuma County. The need to attract employers and jobs is a major issue for Yuma County. According to data by the U.S. Bureau of Labor Statistics, the unemployment rate in Yuma County in 2011 was 27.1 percent compared to 9.5 percent for Arizona and 9.0 percent for the national average. In 2011

about 20.8 percent of Yuma County residents lived below the poverty level, compared to 16.2 percent for Arizona.

Several specific types of intermodal connections and economic development initiatives are worth considering.

- Intermodal - Intermodal terminals handle either containerized or trailer truck/rail transfers. Intermodal terminals have garnered significant interest among communities across the United States as drivers of economic development. Intermodal facilities are often accompanied by logistics and distribution developments. Intermodal ramps generally constitute large investments. Intermodal terminals are not scalable. They require a minimum volume of freight, measured in container lifts, to be viable. They are typically located in or near large metropolitan areas unless a large shipper or group of large shippers can render the terminal viable without the overall economic activity of a large metropolitan area.
- Transload refers to a broad array of non-containerized truck/rail transfer facilities. Similar to intermodal terminals, transload facilities allow shippers to use rail without having direct rail service at their facilities. Trucks carry product to and from the transload facility, while rail provides the long distance, line haul transportation. Transload is oriented toward carload rail service, rather than unit train or intermodal. Transload facilities require far lower levels of freight traffic to be viable, relative to intermodal terminals.
- Rail-served industrial parks allow shippers to share transportation infrastructure. Rail and roadways into the park are shared by the park's shippers. Unlike transload, tenants in rail parks are directly rail-served, although industrial parks sometimes include transload facilities as well. Often industrial parks are served by small, switching railroads which can move railcars around the park at less expense than if a Class I railroad were providing the service. The two primary examples of rail-served industrial parks in Arizona are the Central Arizona Commerce Park in Casa Grande and the Kingman Arizona Industrial Park. Kingman has some similarities in that it is located along a major east/west interstate near the California border. The Kingman Industrial Park caters to companies that would like to distribute to California but do not want to locate in California. The park markets itself to companies that are establishing a new presence in the West and would like to serve California. Rail is primarily used for transporting raw materials such as lumber or plastic pellets into the industrial park.

Usage of Rail by Yuma County Industries

In identifying potential rail measures for Yuma County, it helps to consider the type of rail services and facilities used by current and prospective industries in Yuma County.

Produce/Frozen Food

Rail is seldom used to carry produce, since in most cases rail service is too slow to transport these perishable commodities. Rail is occasionally used to ship frozen foods. Several innovative new services have been initiated to ship produce by rail. One service, RailEx, provides a service whereby produce and other refrigerated products are shipped in 55 car unit trains of refrigerated boxcars from Delano, CA and



Wallula, WA to Rotterdam, NY, near Schenectady. Another company called RRLX Cold Train provides a service along the same concept. But instead of refrigerated boxcars, RRLX ships refrigerated intermodal containers. The service operates between Quincy, WA and Chicago, IL. Both the RRLX and RailEX services are made possible by consolidating produce into unit train quantities, which is a much faster service than carload rail.

Other Agricultural Products

Most rail traffic in Yuma County currently consists of inbound shipments of grain to the McElhaneey Cattle Company feedlots in Wellton. Grain is also shipped outbound from Yuma County, particularly in the summer. It is uncertain the extent to which shippers would use publicly available facilities, such as transload, to ship agricultural products.

Construction Materials

The study team spoke with a representative from a company that manufactures building materials such as cement and concrete. His responses were fairly representative of the industry. The company occasionally uses rail. The company was enthusiastic about the possibility of a transload facility, since it would represent a dedicated location where the company could receive and deliver shipments by rail.

Lumber products could potentially be shipped into Yuma County by rail.

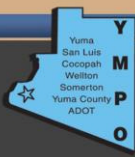
Retail Distribution

One of the target industries for economic development in Yuma County is logistics and distribution. Most consumer products that are shipped by rail are shipped by intermodal service. There are a number of high profile logistics hubs around the country where truck/rail intermodal facilities are combined with logistics/distribution developments. In some cases, truck/rail intermodal service is combined with good highway connections and air cargo, to provide tenants of logistics parks with a full suite of transportation alternatives. These logistics parks frequently serve as inland ports, whereby imported products are brought inland by rail, truck or air cargo. While these logistics parks represent impressive economic development initiatives, there are major questions as to how transferrable these types of developments centered on intermodal rail would be to Yuma County.

Alternatives to Improve Rail in Yuma County

Given freight shipments to and from Yuma County, the dynamics of the Yuma County economy and that of neighboring regions, rail usage by current and prospective industries in Yuma County, typical rail-served publicly available terminals, and this study's requirement to consider rail options to Mexico, several alternatives logically follow:

1. Unit refrigerated train service. Because of the importance of produce and food products to the Yuma Region's economy and the potential of unit train services such as RailEx and RRLX Cold Train to serve as growth business models for shipping produce by rail, this would be a logical alternative to consider for Yuma County. According to local representatives, some discussions



have already occurred between local farmers and transportation providers about the possibility of such a service.

2. Rail served industrial park in Wellton. Industrial parks have become a compelling mechanism by which shippers can share the costs of infrastructure, including roadway, rail, and utilities. Due to the relative lack of developable land in Yuma County, two logical locations for such a development would be large enough for such a new business park. One is in Wellton and would be relatively close to existing rail infrastructure, so no more than a short spur track would need to be built. An industrial park could support the economic development needs of the region.
3. Transload railport facility. This facility would include “team tracks” by which trucks could drive next to railroad cars for truck/rail transfer. It could also include open air and warehouse storage space. Some warehouse space would be temperature controlled, while other warehouse space would not. Because these types of facilities do not require a large area, this facility could be situated at a range of potential locations. One area that has been mentioned is a 700 acre parcel that UP previously used as a rail yard between Redondo Drive and Arizona Avenue. A transload could benefit the region by providing greater access to the rail network than what is currently available.
4. Distribution hub in Wellton. At the Wellton location discussed in Alternative #2 a logistics hub centered on an intermodal terminal would be built. In addition to the intermodal terminal would be distribution centers and other development. The focus of the park would be on providing retail distribution services to Southern California and other parts of Arizona. If successful, a distribution hub could support the economic development needs of the region.
5. Punta Colonet is built. A rail connection is built, and Yuma County attempts to position itself to benefit economically from the new rail infrastructure passing through the county.
6. Rail served industrial park with connecting rail line in San Luis. The other potential location for a rail served industrial park is a 1,000 acre area near the border at San Luis. This would require the construction of a rail line to San Luis. A rail line to the border could also support industrial development in San Luis south of the border and could serve as a first phase in building a rail line to Mexico.
7. New rail alignment between the UP Sunset Route and the Ferromex Calexico subdivision which crosses the border at a location near to the current San Luis II Port of Entry.
8. No build

Of the alternatives listed above, Alternatives #1, #2, #3, and #4 do not involve building a rail line to Mexico. Alternative #6 involves building a rail line to San Luis, but not necessarily across the border. By Alternatives #5 and #7, a new rail connection is built into Mexico.

Evaluation of Potential Rail Improvements

Alternative #1 – Unit Refrigerated Train Service

Leafy greens account for most of the value of crops grown in Yuma County. These vegetables are highly perishable. According to one grower, leafy greens need to be on supermarket shelves within seven days

of harvest. It would therefore be a significant challenge to ship these crops fast enough by rail to avoid spoilage. The unit train produce services such as RailEx or RRLX Cold Train tend to be oriented toward crops such as apples and potatoes, which have a longer shelf life than leafy greens.

While theoretically it may be possible to ship leafy greens fast enough by rail to meet shipper needs, the largest impediment to establishing a terminal to ship unit trains of refrigerated products from Yuma County will be the ability to generate adequate volumes during the peak growing season. Because of the strict transit time requirements, the service would need to operate every day if not nearly every day. Shippers will not wait days for trains to leave if they require a seven day transit from field to grocery shelf. If the service operated seven days per week during peak growing season with 55 car trains, and an equivalent of 3 truckloads of produce per car, the number of diverted trucks would need to be 7 days per week x 26 winter growing season weeks per year x 55 cars per train x 3 truckload per car = 30,030 diverted truckloads. TRANSEARCH data obtained by the YMPO suggests that total Yuma County deliveries to the largest single market, the Northeast, over the entire year is equivalent to about 15,000 truckloads. Yuma County shipments could be combined with shipments from Imperial County, CA and Mexico, but it would be difficult to generate enough traffic for daily service.

On the plus side, a unit train refrigerated service would serve an important and established industry within Yuma County. It would not bring a new industry to the region but would boost the competitiveness of an existing industry. The project would likely have relatively few negative impacts.

Because there were questions about the feasibility of Alternative #1, this alternative was not further evaluated in Technical Memoranda #3 and #4 of the Yuma County Rail Corridor Study.

Alternative #2 – Industrial Park in Wellton

General Discussion

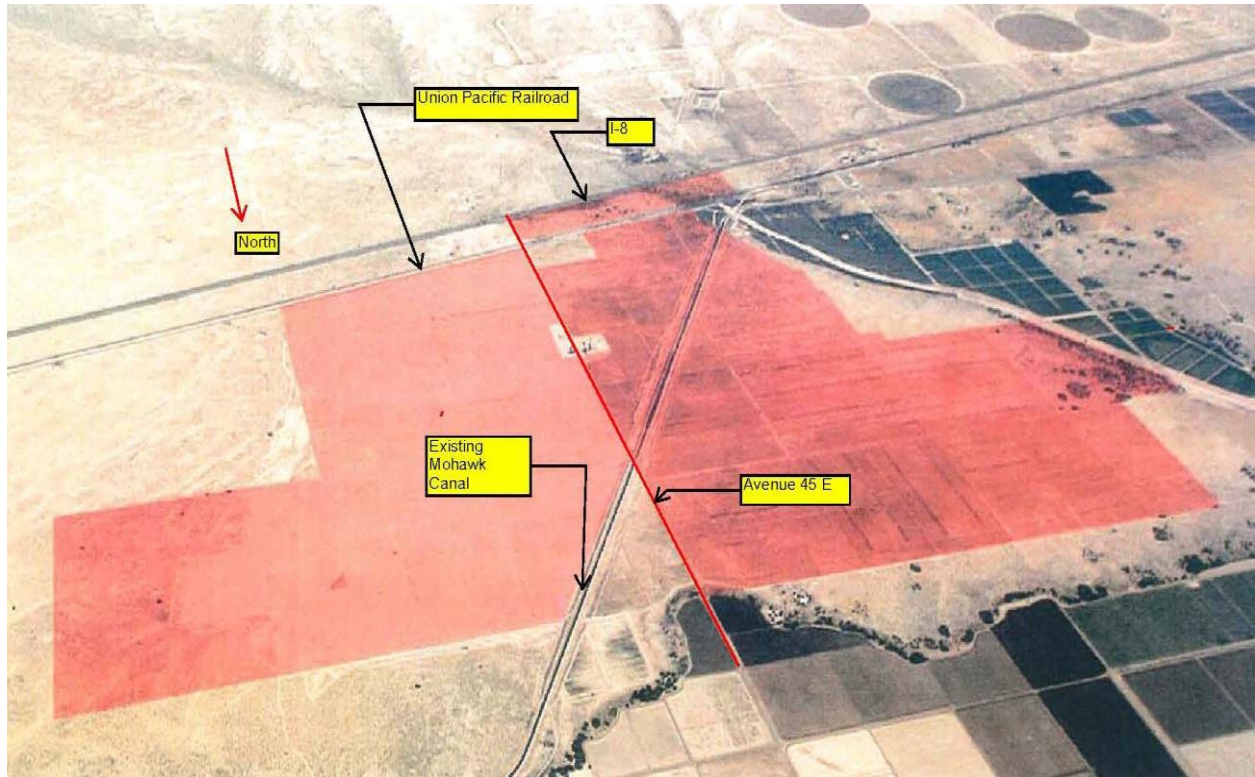
By this alternative, rail would only be one of a series of infrastructure improvements to support an industrial park. Roadway improvements, utility services, zoning would also be important components. The experience of Kingman Industrial Park is encouraging, since Kingman's location is analogous to that of Yuma County. If the prime selling point of Kingman is the ability to serve the California market without being located in California, this could also be a marketing point for Yuma County.

Location of Industrial Park

One of the potential specific locations discussed as an appropriate site for an industrial park is in Wellton located immediately north of I-8 in the vicinity of Avenue 45E. This potential industrial park site (**Exhibit 10**) is owned by Wellton Mohawk Irrigation and Drainage District (WMIDD) and is approximately 450 acres in size.



Exhibit 10: Avenue 45E Site



Source: GYEDC

This location is 45 miles from the City of Yuma, the nearest large population center. But workforce availability is not seen as a barrier, given that people within the region have demonstrated a willingness to commute significant distances. If an industrial park were located this site stimulus may be created for the Wellton/Tacna region, incentivizing people to move there.

Rail Infrastructure Requirements

Preliminary plans were prepared in September 2009 for rail access into the Avenue 45E site. The plans call for two ended sidings with two switches, and approximately 5 miles of track. Trains could enter and leave from the east and west side. The location would be served by a short line rail carrier with a switching locomotive. The siding would have room for at least 100 rail cars.

Site utilities such as water, sewer, and natural gas could be provided, although the availability of power capacity may need to be addressed.

Exhibit 11 shows an order of magnitude cost estimate for rail access based upon the September 2009 Mountain States Contracting preliminary plans. The cost of the rail access is estimated at \$10,560,000.

Exhibit 11: Order of Magnitude Cost for Rail Access to the Avenue 45E Site

Item Description	Units	Quantity	Unit Cost	Cost
Turnout + power switch at UPRR mainline	Each	2	\$250,000	\$ 500,000
Power sliding derail	Each	2	\$30,000	\$60,000
Siding track	Track-Mile	2	\$2,000,000	\$4,000,000
Set-out/pick-up tracks	Track-Mile	1.5	\$2,000,000	\$3,000,000
Turnout + manual switch at set-out tracks	Each	5	\$100,000	\$500,000
Industry track	Track-Mile	1	\$2,000,000	\$2,000,000
At-grade crossings	Each	2	\$250,000	\$500,000
TOTAL				\$10,560,000

Benefit/Cost Analysis

As discussed in Technical Memorandum #3, a detailed feasibility study has not been performed as part of the Yuma County Rail Corridor Study, either for an industrial park in Wellton or an industrial park located in San Luis. Without performing a full feasibility study, it is not possible to present a complete forecast of the benefits and costs for building a rail connection to an industrial park at either location, Alternatives #2 and #6 from Technical Memorandum #2. Rather, the analysis herein presents a hypothetical evaluation of the likely benefits and costs if the Yuma community were to build a rail spur to an industrial park that handled the same volume of rail traffic as the Kingman Industrial Park, owned by the Kingman Airport Authority in Kingman, Arizona.

The purpose of this analysis is to provide a general sense of the types of benefits that rail service to an industrial park could provide. The assessment of benefits is for a “generic” industrial park which replicates Kingman’s rail traffic and is not specific to San Luis or Wellton. However, the costs of constructing a rail line are specific to each location. Under the scenario of an industrial park being constructed in Wellton, a short industrial lead is built to the UP Sunset Route.

The analysis primarily considers the societal benefits of diverting freight from truck transportation to rail transportation. The railroad transportation mode consumes less fuel, does not contribute to highway congestion or highway deterioration, emits fewer greenhouse gases and other emissions per ton-mile, and has relatively favorable safety risks when compared to truck transportation. The benefit/cost analysis compares two scenarios, 1) a Build scenario, 2) a No Build scenario. The benefits of building rail access to an industrial park represent the difference between the Build and No Build scenarios. Under the No Build scenario, all traffic to/from an industrial park is assumed to travel by truck. Under the Build scenario, a portion travels by rail. Economic development impacts are considered separately, since by U.S. Department of Transportation benefit/cost analysis guidance, economic development impacts are not necessarily “benefits” per se.

The construction period is assumed to occur during 2013 and 2014. The industrial park opens in 2015, and the analysis period runs to 2050. The build out of the park is assumed to occur over a ten year period. Rail volumes are assumed to be 60 percent of those at Kingman Industrial Park by 2019 and equal to those of Kingman Industrial Park by 2024. Thereafter, rail volumes are constant. All costs and benefits are discounted to 2012. The real discount rate used for this analysis is 7 percent per U.S. Office of Management and Budget (OMB) guidance.² The 7 percent rate is an estimate of the average before-tax rate of return to private capital in the U.S. economy. Given that funding for the project could otherwise have gone to funding private sector projects and given that 7 percent serves as a “default” discount rate for the U.S. government, this is the most suitable discount rate by which to evaluate the project. An alternative scenario has also been provided which reflects a discount rate of 3 percent.

Forecasted Traffic under Build and No Build Scenarios

According to BNSF Railway documentation provided for the Kingman Airport Authority’s Request for Proposals for Rail Management and Operating Services: Kingman Airport & Industrial Park, the carrier handled an average of 1,267 carloads per year at the park per year between 2008 and 2011. Under the hypothetical scenario described in this analysis, an industrial park in Wellton would handle the same volume as at Kingman once the park is fully built out in 2024. Rail volume up until that time would be proportional to the development of the industrial park (e.g., 60 percent by 2019). After 2024, volumes are forecasted to remain flat. It is assumed that 56 percent of railcars into and out of the park are loaded per the UP R-1 Annual Report filed with the U.S. Surface Transportation Board (STB). The average haul is assumed to be the same as the rail industry average haul of 917.2 miles. The average freight per railcar (including loaded and empties) is assumed to be 41.67 tons per data from the UP R-1 Annual Report.

Benefit/Cost Summary

The benefit-cost ratio of this project is 3.61, suggesting that the present value benefits of the project exceed the present value costs over the analysis period at a 7 percent discount rate. The net present value of the project is approximately \$24.6 million, meaning that present value benefits exceed present value costs by this amount.

Exhibit 12 below outlines the summary results of the benefit cost analysis.

² OMB Circular A-4, http://www.whitehouse.gov/omb/circulars_a004_a-4.

Exhibit 12: Benefit-Cost Analysis Summary – Rail Access to Wellton Industrial Park

Category	Total (7% Discount Rate)	Total (3% Discount Rate)
Discounted Net Benefits		
State of Good Repair		
Reduced Pavement Damage from vehicles	497,460	1,396,765
<i>Subtotal state of good repair</i>	497,460	1,396,765
Economic Competitiveness		
Fuel Savings	19,321,041	54,640,908
Reduction in oil imports - societal benefits	18,354,989	51,908,862
Rail Fuel	(7,942,826)	(22,875,510)
<i>Subtotal economic competitiveness</i>	29,733,204	83,674,260
Environmental Sustainability		
NOX reductions	452,275	1,269,896
PM10 reductions	1,190,097	3,341,547
VOC reductions	15,296	42,947
CO2 reductions	2,104,685	5,909,525
Rail Emissions	(628,930)	(1,371,116)
<i>Subtotal Environmental</i>	3,133,423	9,192,799
Safety Benefits		
Fatality reductions	3,242,805	9,105,133
Injury reduction	23,002	64,584
Property Damage Only	164,468	461,792
Rail Safety	(2,806,248)	(7,879,369)
<i>Subtotal Safety</i>	624,027	1,752,139
Grand Total Benefits	33,988,114	96,015,963
Discounted Net Cost		
Capital Costs	9,546,336	10,103,120
Residual Value	(133,109)	(566,209)
Total Net Cost	9,413,227	9,536,911
B/C Ratio	3.61	10.07
Net Present Value	24,574,887	86,479,052

Source: Parsons Brinckerhoff

Employment Impact

Since no detailed feasibility study has been performed, it is not possible to provide a specific prediction of the employment impact of building an industrial park in Wellton. If the Kingman Industrial Park were replicated in Yuma County, about 70 businesses, employing over 2,100 people would be located at the park. Of these, about 20 percent of the tenants use rail. Assuming the average employment of businesses that use rail is equivalent to the average employment of businesses that do not use rail, $2,100 \times 20\% = 420$ jobs would be impacted by rail. Whether these companies' location decisions are entirely dependent on rail is uncertain. Some shippers may ship railcars only occasionally, so rail could be a minor factor in their decision to locate in Yuma County. For other shippers, rail access may be a key factor in their location decision. Furthermore, for each job located within the industrial park, additional jobs could be created in Yuma County associated with business purchases in the region or employees' consumption spending.

Alternative #3 – Transload Railport

Interviews with shippers suggest that a transload facility in Yuma County would not have an enormous usage by any one shipper, but that a range of shippers could use the facility, shipping a carload here and a carload there. Based upon TRANSEARCH data obtained for this study, if a transload facility were to induce two percent of truckloads to shift to rail for the following commodities:

- Gravel and Sand
- Broken Stone and Rip Rap
- Industrial Organic Chemicals
- Petroleum Refining Products
- Miscellaneous Plastic Products
- Lumber or Dimensional Products,

and one were to assume that the average railcar holds the equivalent of four truckloads of freight, the total carload volume would be 575 based upon 2009 traffic levels. At 575 carloads, a transload facility would be feasible.

It would probably be most prudent to phase the construction of a transload facility. At first the facility would consist solely of team tracks where a truck could drive next to a railcar and transfer dry bulk, wet bulk, or dimensional cargo between truck and rail. A private company would operate the facility and provide lifting and transfer equipment. If the terminal is successful, additional features could be added, such as truck scales, warehousing, refrigerated warehousing, etc. The initial investment would be low, perhaps less than \$2 million. Because the terminal would primarily rely on existing rail infrastructure, the disruption to the community would not be very high. This project would provide local shippers with transportation options that they did not have before and could save shippers money by making rail service more accessible. But it would not be a major economic driver. It would be unlikely to attract new employers to Yuma County.

Because the impacts of a transload facility would be relatively minor, this alternative was not selected for further evaluation in Technical Memoranda #3 and #4 of the Yuma County Rail Corridor Study.

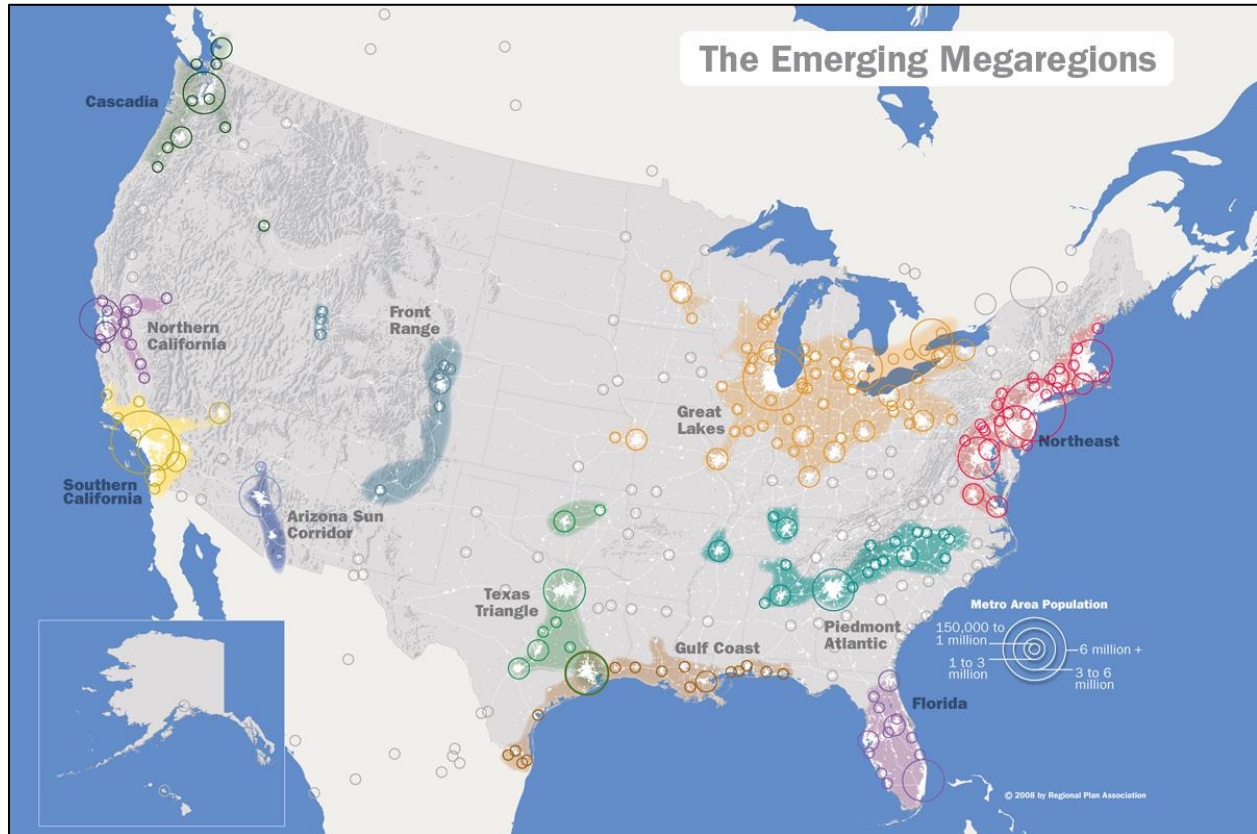


Alternative #4 – Retail Distribution Hub at Wellton

It is difficult to determine with certainty whether and which retailers would use Yuma County as a distribution hub. Each retailer would have different needs depending upon the markets served and the nature of products to be distributed. The logic of locating in Yuma County would be to avoid the congestion of more densely populated areas. Yuma County could serve markets in California, Mexico, and Arizona. As mentioned previously, Yuma County occupies a situation similar to that of Kingman, AZ in that it is close geographical proximity to California without being in California. If businesses locate in Kingman, AZ for this reason, presumably they would locate in Yuma County for similar reasons. But retail distribution appears to follow a slightly different pattern light manufacturing or other sectors at least some of the time.

It is useful to consider Yuma County’s position with respect to megaregions as identified by *America 2050*. Megaregions are large networks of metropolitan regions. Retail distribution centers are often located within a megaregion. For products distributed over a broader area covering a major segment of the United States, distribution centers are often located at a central location, convenient for distribution to a number of megaregions. Yuma County would be somewhat at a disadvantage in distribution networks because it is not located within a megaregion and is a little too far south to effectively serve a range of western megaregions. Retail distribution centers rarely serve markets in both Mexico and the United States. This is not to say that Yuma County would have no role to play in retail distribution, it may. A retailer may want to distribute to California from across the border in Arizona. But Yuma County’s role may end up being somewhat limited, secondary to other areas such as Casa Grande or certain areas of California.

Exhibit 13: Megaregions from America 2050



Source: America 2050

According to stakeholders in the Yuma region, there have been discussions of establishing distribution hubs in Yuma County. It will be important to discriminate between discussions that are likely to come to fruition and those that used for bargaining with other regions. Several years ago, a study was prepared under the U.S. National Academies National Freight Cooperative Research Program (NCFRP) entitled NCFRP 13 *Freight Facility Location Selection: A Guide for Public Officials*. The team was led by Chris Steele of CWS Consulting Group LLC, a company that consults to private sector clients on facility location. The study found that negotiations with local officials typically occur at the very end of the process for site selection. Companies have already identified whether they will move into a given location or not before they enter negotiations. Usually the process is as follows:

1. Define a network strategy and evaluation criteria
2. Use network modeling to develop a universe of potential locations
3. Develop a short list of potential locations based on location screening
4. Conduct field validation and cost modeling to select preferred and alternative
5. Conduct final negotiations and location selection

Usually, companies have decided whether they want to locate in a particular area or not long before they enter into discussions with developers or economic development officials. Hypothetical discussions may simply reflect negotiations with other target regions.

In terms of building a retail distribution hub in conjunction with an intermodal terminal in Yuma County, a few factors could challenge the success of this endeavor. The UP Railroad would need to be willing to add the facility to its intermodal network. But a UP spokesperson with whom the study team spoke was unenthusiastic about the possibility of establishing a new intermodal terminal in the region. A terminal within Yuma County would compete with established nearby terminals in Tucson, Phoenix, and Los Angeles. Yuma County occupies an awkward location for handling imported goods coming through the Ports of Los Angeles and Long Beach, since it is only about 270 miles from Long Beach. This distance is highly truck competitive, and is much shorter than the typical distance over which UP Railroad is usually willing to provide intermodal service.

A logical progression would be to establish a truck-served distribution hub. Once the distribution hub is well established and appears to be generating large volumes of freight, intermodal rail service could be added. An intermodal terminal would be costly. Based upon other intermodal terminals around the country, the cost would be at least \$25 or \$30 million. Given UP's reluctance to add a Yuma County ramp to its intermodal network, this investment would likely be borne by the public sector.

Because of questions about the feasibility of establishing a rail-served distribution hub in Yuma County, this alternative was not selected for further evaluation in Technical Memoranda #3 and #4.

Alternative #5 – Punta Colonet Land Rail Connection

Alternative #5 will be discussed later under a scenario by which Alternative #5 is combined with Alternatives #6 and #7.

Alternative #6 – Industrial Park in San Luis with New Rail Line

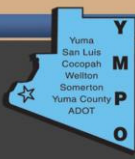
General Discussion

Logically, San Luis could be a relatively promising location within Yuma County for a rail line and for an industrial park. Large parcels of land are available. A rail line could support not only companies on the U.S. side of the border, but also provide raw materials to maquiladoras on the Mexican side of the border. The City of San Luis has been discussing the development of the Gary Magrino Industrial Park near to the San Luis II Port of Entry. The International Industrial Park in San Luis Rio Colorado is planned on the Mexican side of the border.

Location of Industrial Park

One site that has been identified as a promising location for an industrial park consists of 1,000 acres in South County near San Luis. The site is located immediately north of the Port of Entry II. This property has existing utilities in place and fronts the SR195 Area Service Highway for good accessibility.

Another potential location is a 240 acres site owned by the Greater Yuma Port Authority (GYPA) located near the San Luis Port of Entry II. The available site is located within the San Luis area. GYPA is



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interested in leasing the 240 acre property, but wants to maintain its ownership. There currently is no infrastructure to support the property, but a study is being conducted to investigate the feasibility of providing roadways and utilities to make it attractive for investors. The site would be developed as a Greenfield development. One of the benefits of the location is its close proximity of the Rolle Airfield, which could serve as small hub for private aircraft.

There has been discussion about the development of a strategic plan for the region for an industrial park. The study would not be location-specific but would be generalized for the region.

Rail Infrastructure Locations

During discussions with Technical Advisory Committee members and the general public, the preferred location for a rail alignment to San Luis (and potentially continuing to Mexico) was most often identified as along the SR195 Area Service Highway. **Exhibit 14** shows a two (2) mile wide swath where such a new rail line may be located.

Exhibit 14: Area for Potential New Rail Line



The study team conducted a stakeholder meeting with the Marine Corps Air Station (MCAS) to discuss potential rail alignments along the SR195 Area Service Highway. The MCAS made it very clear that they will not support any rail alignment that traverses along the Barry Goldwater Range (owned by the Department of the Navy). The following constraints were provided by the MCAS if any rail alignment is located within the Range.

- Flat-tailed horn lizard mitigation requirements. The Department of the Navy will not compensate for mitigation.
- By Presidential direction, a 1-Gigawatt Renewable Energy facility is planned and will be sited west of the SR195 Area Service Highway between County 19th Street and County 14th Street on what is known as the orphan parcels. The National Environmental Policy Act (NEPA) process on these parcels will be starting in September 2012.
- Emission Response Program – any construction along the Range would be required to go through the remediation process which requires an extensive munitions survey and lead remediation activity.
- There are three (3) former WWI Training Ranges that cannot be impacted.
- The SR195 Area Service Highway Easement indicates that no rail line would be accepted within the easement. MCAS staff was instrumental in getting the language put in the agreement that prohibit rail lines and utility lines from being located within the easement.
- Any construction that impedes the ability to get Marines to and from work adjacent to County 14th Street would not be favorable. A new rail line on Range land would not be viewed as favorable.
- The Range land immediately east of the SR195 Areas Service Highway is proposed to be used as an F-35 training area. Construction is underway for the F-35 air strip.
- County 14th Street would need to be grade separated to prevent interruption of traffic.
- The property east of the Gila Mountain Range on the Range (near the Town of Wellton) is owned in fee-title held by the U.S. Air Force. There was a strong indication that the U.S. Air Force would be strongly opposed to impacts to their land.
- The rifle range is immediately east of the SR195 Area Service Highway at County 19th Street and cannot be impacted.

The MCAS is not totally opposed to rail as long as it is compatible with their uses on the Range. The MCAS is unlikely to use rail in the area as evidenced by disuse of current rail assets in the area as well as the closure/abandonment by a rail line located at Camp Pendleton. In the event that as diesel prices continue to rise causing trucking to not be a competitive option to rail, the MCAS could transport spare parts and materials for staging to the eastern and western US using rail.

Rail Infrastructure Requirements

The study team contacted the Union Pacific Railroad (UP) to obtain technical guidance and gain an understanding of the requirements if one were to locate a new rail line between the Sunset Route near I-8 to the Mexico border at the San Luis Port of Entry II. The new rail line would be constructed to at least Federal Railroad Administration (FRA) Class 1 rail and meet UP design requirements.



For a single track connection with the Sunset Route on the north, the best area for tying into the existing UP line is in the area located between Avenue 3E and Avenue 8E. A power wye connection is required to allow a train from the south to continue east or west onto the UP main line. A new rail line approaching the UP Sunset Route from the south would need to be situated on 6-miles of relatively flat land. Therefore, major existing roadways would need to be grade separated over the new rail line (e.g., 2 - SR195, 1 - 32nd Street, 1 - County 14th Street).

A single siding approximately 1 mile in length would need to be located between County 14th Street and County 19th Street. This siding is required to allow trains travelling in opposite directions to safely pass each other. It is assumed that a new rail line would cross County 19th Street at grade with crossing gates and signals.³ At grade crossings would also be required at County 15th Street, County 16th Street, County 17th Street and County 18th Street.

Exhibit 15 shows an order of magnitude cost estimate for a rail connection between the Sunset Route near I-8 to the San Luis Port of Entry II. The estimated cost of constructing such a rail line is \$101,915,000, which includes the cost of land acquisition and assumes a basic 100-ft wide right-of-way (except at the wye track where additional right-of-way is required).

³ A grade separation may be necessary for 19th Street, since it is a key access point for the Marine Corps Air Station (MCAS) to the Barry M. Goldwater Range. SR 195 was built under a requirement to be grade separated from 19th Street. A rail line may be subject to the same requirement. This would add an approximately \$10 million to the cost of the project and should be investigated further if there are additional studies.

Exhibit 15: Order of Magnitude Cost for a Rail from Sunset Route to Port of Entry II

Item Description	Units	Quantity	Unit Price	Price
Turnout + power switch at UPRR mainline	Each	2	\$250,000	\$500,000
Wye track	Track-Mile	0.5	\$3,000,000	\$1,500,000
Equilateral turnout + power switch at wye	Each	1	\$300,000	\$300,000
Power sliding derail	Each	1	\$30,000	\$30,000
Mainline track	Track-Mile	17	\$2,500,000	\$42,500,000
Turnout + power switch at siding	Each	2	\$250,000	\$500,000
Siding track	Track-Mile	1	\$2,000,000	\$2,000,000
Grade separation at 32nd Street	Each	1	\$10,000,000	\$10,000,000
Grade separation at SR 195	Each	2	\$10,000,000	\$20,000,000
Grade separation at County 14th Street	Each	1	\$10,000,000	\$10,000,000
At-grade crossings	Each	5	\$250,000	\$1,250,000
Land (agricultural)	Acre	99	\$25,000	\$2,475,000
Land (developed)	Acre	46	\$150,000	\$6,900,000
Land (residential)	Acre	24	\$150,000	\$3,600,000
Land (undeveloped)	Acre	72	\$5,000	\$360,000
Total				\$101,915,000

Benefit/Cost Analysis

The benefit assumptions for building rail access to a hypothetical industrial park in San Luis are the same as the assumptions for rail access to a hypothetical industrial park in Wellton. The volume of rail traffic under each scenario is assumed to be the same as well as the average distance hauled. All costs and benefits are discounted to 2012. The real discount rate used for this analysis is 7 percent per U.S. Office of Management and Budget (OMB) guidance.⁴ An alternative scenario has also been provided which reflects a discount rate of 3 percent.

Benefit-Cost Summary

The benefit-cost ratio of this project is 0.37, suggesting that the present value benefits of the project do not exceed the present value costs over the entire analysis period at the analysis 7 percent discount rate. The net present value of the project is approximately -\$57.1 million, meaning that present value costs exceed the present value benefits.

Exhibit 16 below outlines the summary results of the benefit cost analysis.

⁴ OMB Circular A-4, http://www.whitehouse.gov/omb/circulars_a004_a-4.

Exhibit 16: Benefit-Cost Analysis Summary – Rail Access to San Luis Industrial Park

Category	Total (7% Discount Rate)	Total (3% Discount Rate)
Discounted Net Benefits		
State of Good Repair		
Reduced Pavement Damage from vehicles	497,460	1,396,765
<i>Subtotal state of good repair</i>	<i>497,460</i>	<i>1,396,765</i>
Economic Competitiveness		
Fuel Savings	19,321,041	54,640,908
Reduction in oil imports - societal benefits	18,354,989	51,908,862
Rail Fuel	(7,942,826)	(22,875,510)
<i>Subtotal economic competitiveness</i>	<i>29,733,204</i>	<i>83,674,260</i>
Environmental Sustainability		
NOX reductions	452,275	1,269,896
PM10 reductions	1,190,097	3,341,547
VOC reductions	15,296	42,947
CO2 reductions	2,104,685	5,909,525
Rail Emissions	(628,930)	(1,371,116)
<i>Subtotal Environmental</i>	<i>3,133,423</i>	<i>9,192,799</i>
Safety Benefits		
Fatality reductions	3,242,805	9,105,133
Injury reduction	23,002	64,584
Property Damage Only	164,468	461,792
Rail Safety	(2,806,248)	(7,879,369)
<i>Subtotal Safety</i>	<i>624,027</i>	<i>1,752,139</i>
Grand Total Benefits	33,988,114	96,015,963
Discounted Net Cost		
Capital Costs	92,132,086	97,505,632
Residual Value	(1,278,765)	(5,439,508)
Total Net Cost	90,853,321	92,066,124
B/C Ratio	0.37	1.04
Net Present Value	(56,865,207)	3,949,839

Source: Parsons Brinckerhoff

Alternative #7 – New Rail Alignment to Connect to Ferromex

Port of Entry II Requirements

This rail line is an extension of the rail line from Alternative #6 and would extend from the Port of Entry II at San Luis to the Ferromex line located approximately 24 miles south of the US/Mexican Border. Port of Entry II improvements would consist of gamma ray scanning equipment for screening trains from Mexico as well as miscellaneous structures to serve as a ready room for the U.S. Department of Agriculture, Customs and Border Patrol, equipment inspectors, and crew change.

A new rail yard located in both on the U.S. and Mexico would consist of quarantine tracks, turnout and manual switches at the quarantine track, inspection tracks and manual switches at the turnout tracks. The rail yard would be secured with fencing, lighting, cameras and utilities.

The study team estimates that if a rail line were to open in the year in 2015, the railroad would carry an average of four cars per train in each direction across the border, an average of 2.4 of which are loaded.

It is estimated that the average train size will grow to 8 cars in the year 2035 with 5 loaded cars per train. On the U.S. side of the border, the study team estimates that five (5) people would be required to man the gamma equipment, watch the gate, manually inspect trains (if necessary) and closely inspect suspect cars (if necessary). On the return trip of a train from the U.S. entering Mexico, there would be a need for two (2) people open the gate and watch it. Inspection procedures on the Mexico side of the border are currently unknown but for purposes of this study they are assumed to be similar to that on the U.S. side of the border. The specific of inspection procedures on the Mexico side would need to be investigated in future studies.

New Rail Line to Mexico

For an FRA Class 1 single track connection to the Ferromex line in Mexico, a power wye connection is required to allow a train from the north to continue east or west onto the Ferromex line. A new rail line approaching the power wye from the north would need to be situated on 6-miles of relatively flat land. The new rail line would be located with a 100-ft right-of-way except at the power wye connection on the south where additional right-of-way would be required.

A single siding approximately 1 mile in length would need to be located midway between the Ferromex line on the south and the San Luis Port of Entry II. The siding is required to allow trains travelling in opposite directions to safely pass each other.

Exhibit 17 shows an order of magnitude cost estimate for a rail connection between the San Luis Port of Entry II and existing Ferromex line in Mexico. The cost of constructing such a rail line in Mexico, including infrastructure cost associated with the border crossing located within the US is estimated at \$43,970,000. In addition to the costs shown in **Exhibit 17**, inspection at the border would be required as an ongoing expenditure. The study team estimates that the inspection costs for the labor work force would be approximately \$2,400 per week as shown below.

First crew: \$40/hour x 5 hours x 5 people = \$1,000/train x 2 trains per week = \$2,000/week

Second crew: \$40/hour x 2.5 hours x 2 people = \$200/train x 2 trains per week = \$400/week

Total Cost per week = \$2,000 + \$400 = \$2,400/week

Exhibit 17: Order of Magnitude Cost for a Rail from Port of Entry II to Ferromex Line

Item Description	Units	Quantity	Unit Price	Price
Turnout + power switch at Ferromex mainline	Each	2	\$187,500	\$375,000
Wye track at Ferromex track	Track-Mile	0.5	\$1,500,000	\$750,000
Equilateral turnout + power switch at Ferromex wye	Each	1	\$225,000	\$225,000
Power sliding derail on Ferromex wye	Each	1	\$22,500	\$22,500
Mainline track (Mexico)	Track-Mile	24	\$1,250,000	\$30,000,000
Turnout + power switch at siding (Mexico)	Each	2	\$187,500	\$375,000
Main siding track (Mexico)	Track-Mile	1	\$1,000,000	\$1,000,000
Inspection siding tracks (Mexico)	Track-Mile	2	\$1,000,000	\$2,000,000
Turnout + manual switch at inspection track (Mexico)	Each	4	\$75,000	\$300,000
Quarantine track (Mexico)	Track-Mile	1	\$500,000	\$500,000
Ready room for USDA, Customs, crew change, etc. (Mexico)	Square Foot	600	\$150	\$90,000
Fencing, lighting, and utilities (Mexico)	Lump Sum	1	\$112,500	\$112,500
Turnout + manual switch at quarantine track (USA)	Each	4	\$75,000	\$300,000
Inspection siding tracks (USA)	Track-Mile	2	\$2,000,000	\$4,000,000
Turnout + manual switch at inspection track (USA)	Each	4	\$100,000	\$400,000
Quarantine track (USA)	Track-Mile	1	\$1,000,000	\$1,000,000
Turnout + manual switch at quarantine track (USA)	Each	4	\$100,000	\$400,000
Scanning equipment and structures (USA)	Lump Sum	1	\$1,300,000	\$1,300,000
Ready room for USDA, Customs, crew change, etc. (USA)*	Square Foot	600	\$200	\$120,000
Fencing, lighting, and utilities (USA)	Lump Sum	1	\$150,000	\$150,000
Land (undeveloped, Mexico)	Acre	300	\$1,500	\$450,000
Land (undeveloped, USA)	Acre	20	\$5,000	\$100,000
Total				\$43,970,000

Benefit/Cost Analysis

The benefits of this scenario include those listed above for Alternative #2 and #6, a generic industrial park built in Yuma County. In addition to those benefits, this scenario includes the benefits of international trade that would divert to rail as a result of the project. International rail traffic in the Build scenario is based upon San Luis truck crossings and truck/rail modal share at Calexico. This is equal to 686 railcars. This traffic is assumed to grow at rate consistent with the overall forecasted growth of freight traffic across the border at San Luis as shown in Tables 21, 22, and 24 of Technical Memorandum #1. This growth rate is forecast to continue past 2035 to the end of the analysis period in 2050. The average haul for cross border rail freight is assumed to be equivalent to the U.S. average rail freight length of haul for 2011, 917.2 miles.⁵ Of these, half are assumed to occur within the United States, so the average haul within the U.S. is assumed to equal 458.6 miles. For this benefit/cost analysis, the study area is defined as the United States. Only the benefits and costs that occur in the United States are counted in the analysis. The logic of selecting this study area relates to probable funding. Most likely, funding for the construction of new rail facilities in Yuma County would at least partially come from the U.S. Federal government, which would seek to understand U.S. benefits and costs of the project. Although a portion of the benefits and costs of the project may occur in Mexico, these are excluded from this analysis because they would occur outside the jurisdictions from which YMPO would reasonably seek funding.

The average number of tons per car is estimated to be 41.67 per the ratio of UP railroad ton-miles to car-miles from the UP Railroad 2011 R-1 Annual Report filed with the U.S. Surface Transportation Board (STB). The average railcar has a much higher payload capacity than 41.67 tons, but this amount reflects empty as well as loaded railcars. About 56 percent of UP's car-miles are empty.

All costs and benefits are discounted to 2012. The real discount rate used for this analysis is 7 percent per U.S. Office of Management and Budget (OMB) guidance.⁶ An alternative scenario has also been provided which reflects a discount rate of 3 percent.

The benefit/cost ratio of the combined Alternative #6 and Alternative #7 would be 0.49 at a 7 percent discount rate, suggesting that the present value benefits of the project do not exceed the present value costs over the entire analysis period. The net present value of the project is approximately -\$50.8 million, meaning that costs exceed the calculated benefits. As mentioned previously, the benefits of constructing a rail line to an industrial park in San Luis are purely hypothetical and based upon rail volumes at the Kingman Industrial Park in Kingman, AZ. **Exhibit 18** below outlines the summary results of the benefit/cost analysis.

⁵ <http://www.aar.org/~/media/aar/Industry%20Info/AAR-Stats-2012-05-10.ashx>

⁶ OMB Circular A-4, http://www.whitehouse.gov/omb/circulars_a004_a-4.

Exhibit 18: Benefit-Cost Analysis Summary – Rail Line to Mexico combined with Hypothetical Industrial Park

Category	Total (7% Discount Rate)	Total (3% Discount Rate)
Discounted Net Benefits		
State of Good Repair		
Reduced Pavement Damage from vehicles	708,607	1,838,261
<i>Subtotal state of good repair</i>	708,607	1,838,261
Economic Competitiveness		
Fuel Savings	27,401,468	71,649,294
Reduction in oil imports - societal benefits	26,031,395	68,066,828
Rail Fuel	(11,087,048)	(29,688,430)
<i>Subtotal economic competitiveness</i>	42,345,815	110,027,692
Environmental Sustainability		
NOX reductions	644,243	1,671,291
PM10 reductions	1,695,234	4,397,758
VOC reductions	21,788	56,522
CO2 reductions	2,998,019	7,777,434
Rail Emissions	(861,206)	(1,838,385)
<i>Subtotal Environmental</i>	4,498,078	12,064,620
Safety Benefits		
Fatality reductions	4,619,214	11,983,124
Injury reduction	32,765	84,998
Property Damage Only	234,276	607,757
Rail Safety	(3,997,359)	(10,369,914)
<i>Subtotal Safety</i>	888,896	2,305,965
Grand Total Benefits	48,441,396	126,236,538
Discounted Net Cost		
Capital Costs	99,156,236	104,939,462
Cost of CBP Personnel	1,420,905	2,568,258
Residual Value	(1,362,850)	(5,797,185)
Total Net Cost	99,214,291	101,710,535
B/C Ratio	0.49	1.24
Net Present Value	(50,772,895)	24,526,003

Source: Parsons Brinckerhoff



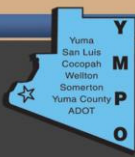
Alternative #5 – Punta Colonet Rail Connection Combined with Alternative #6 and Alternative #7

General Discussion

The proposed megaport project at Punta Colonet had originally been envisioned as a solution to address a forecasted capacity shortfall of U.S. and Canadian West Coast ports. Punta Colonet would provide an alternative to the ports of Los Angeles and Long Beach (San Pedro Bay ports), which were perceived as increasingly congested. The Port at Punta Colonet would primarily handle Asian imports to the United States.

The recession that began in 2008 depressed the level of international trade that flowed through West Coast ports. At the same time, West Coast ports have significant capacity additions planned, either on their existing footprints or by expanding into new areas. Capacity shortfalls appear to be less likely, at least in the short-term. Because of the changed circumstances, the Mexican government announced on November 30, 2012 that it was cancelling the tender to build a new port at Punta Colonet as well as a rail link to the United States. The project would have relied on investment from private sources, so the project's profitability would have had to be sufficient to be attractive to potential investors. But prospective investors did not show significant interest in the project, given the new market dynamics. Some question whether the new Mexican administration may revive the project, while others believe that the port's window of opportunity has passed.

A key question was raised during this study is the extent to which economic development in Yuma County would benefit if a rail connection were built through Yuma County between a new megaport at Punta Colonet, Mexico and the UP Sunset Route. The issue hinges upon whether trains would stop in Yuma County and whether containers would be unloaded in the county. If trains were to pass from Punta Colonet and points east without stopping in Yuma County, the rail connection would provide negligible economic benefit to the county. However, if trains were to stop and containers were unloaded in Yuma County, it may make sense to unload containers bound for the Southwest in Yuma County. Once containers are unloaded it may be logical that companies establish a distribution presence in Yuma. The rail connection would probably be an economic benefit to the county, at least in terms of jobs associated with transportation and logistics.



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Exhibit 19: Proposed Connection between Punta Colonet and the UP Sunset Route



Source: Maricopa Association of Governments, excerpt from “Arizona Deep Water Ports”

The study team has spoken with an expert on cross border logistics and a representative from U.S. Customs and Border Protection (CBP). Based upon these discussions, it is probable that value added activities would occur in Yuma County were a new Port-of-Entry built in Yuma County to serve a Punta Colonet rail connection. Several activities would have to be performed at Yuma County: 1) crew change between Mexican and U.S. train crews and 2) safety inspection of the rail equipment. The CBP would scan all containers through non-intrusive scanning equipment, and some containers would likely be unloaded for visual inspection. The CBP would also probably not be the only organization inspecting railcars at the station. For agricultural products, the USDA may inspect railcars as well. Since some containers would need to be unloaded for inspection anyway, it would probably be logical to establish an intermodal terminal in Yuma County to unload containers for regional markets.



Exhibit 20: Cross Border Scanning Equipment



Source: CBP Document, Photo Courtesy of SAIC

Forecasted Punta Colonet Traffic

Originally, the Mexican government had forecasted that in the 20th year of operations, the Port of Punta Colonet could handle as many a 6 million twenty foot equivalent units (TEUs).⁷ In October of 2009, the Mexican government estimated that the Port of Punta Colonet would likely handle about 1 million TEUs initially.⁸ Representatives at the SCT were contacted in January 2013, but the SCT did not provide a new forecast for the Port of Punta Colonet. One official suggested that the Port of Prince Rupert in British Columbia, Canada could be used as a guideline.

The Port of Prince Rupert provides shippers with transit time advantages that a port at Punta Colonet would not. Prince Rupert is geographically closer to U.S. trading partners in Asia. Because of its location, the Port of Prince Rupert can save shippers up to three days in ocean transit time when compared to other West Coast ports. Once in North America, the Canadian National Railway (CN) provides single-carrier service from Prince Rupert to major North American gateways such as Chicago, IL. By contrast, the Port of Punta Colonet would be slightly farther from Asian trading partners when compared to the San Pedro Bay ports, thus requiring shippers to experience longer ocean transit times. Furthermore, rail service to/from the Port of Punta Colonet would likely involve two rail carriers: the Ferromex in Mexico

⁷ Mexican Secretaria de Comunicaciones y Transportes (SCT) (August 2009), *Punta Colonet Multimodal Project in Baja California*.

⁸ *Longshore and Shipping News* (October 9, 2009), “New Punta Colonet Target: 1 Million Containers/Year Initially.”



and the Union Pacific in the United States. The transfer of trains between the carriers may add additional transit time to shippers using Punta Colonet. Punta Colonet would need to compete on advantages such as lower port fees, close proximity to markets in the southern portion of the United States.

Punta Colonet's primary connection to inland markets was originally conceived as a rail line. At one point the preferred alternative was for the rail line to pass through Yuma County. Identifying an alignment that would be acceptable to the inhabitants of Yuma County in the event Punta Colonet were built is one of the motivations for this study.

Benefit/Cost Analysis

Under the Punta Colonet rail connection scenario, the Port of Punta Colonet and its associated rail connection are assumed to be constructed during 2013 and 2014. The analysis period stretches from 2015 to 2050. Punta Colonet is assumed to handle the same traffic as the Port of Prince Rupert per the Mexican SCT. Specifically, the port handles 181,890 TEUs the first year of operation. By the fifth year of operation, the port handles 564,857 TEUs. Afterward, container volume continues to grow in a linear pattern, increasing each year by 91,117 containers until maximum capacity of 2 million TEUs is reached in 2036. Volumes thereafter remain constant through the end of the analysis period in 2050. The ratio of containers to TEUs is assumed to be similar to that of the Port of Long Beach, 55 containers for every 100 TEUs handled (most containers are 40 feet). Each container is assumed to carry an average payload of 12 tons. This average includes both loaded and empty containers and is based upon the average tonnage per container handled ratio for all United States ports that handle containers. All containers handled by the Port of Punta Colonet are assumed to be transported by rail over the port's rail connection to the United States. Punta Colonet handles no traffic destined for California, since containers destined for California are handled by California ports. Punta Colonet's traffic base is exclusively focused on the United States, with all traffic travelling by rail to/from Arizona and points east of Arizona in the United States.

Under the No Build scenario, a rail link between Punta Colonet and the Ferromex Calexico Subdivision is constructed. Once Punta Colonet traffic merges onto the existing Ferromex line, it travels north and crosses into the United States at Calexico. From Calexico, traffic travels north to Niland, CA and then along the UP Sunset Route through Yuma County. Under the Build scenario, a new rail line is constructed between the Ferromex Calexico Subdivision and a new rail Port of Entry near the existing San Luis II Port of Entry as described in Alternative #7. This new alignment in Mexico connects to a new rail line in the United States that connects to the UP Sunset Route as described in Alternative #6. Under the Build scenario, Punta Colonet trains travel 88 fewer miles within the United States than under the No Build scenario, because they can travel on a new rail line built through Yuma County.

Exhibit 21: Map of Punta Colonet Rail Line under Build and No Build Scenarios



Exhibit 22 below displays the benefits and costs combining three alternatives from Technical Memorandum #2.

- 1) Alternative #5 – Punta Colonet Rail Line. Punta Colonet is built. A new rail alignment through Yuma County enables trains to save 88 miles compared to using existing infrastructure.
- 2) Alternative #6 – Industrial Park in San Luis with New Rail Line. A new industrial park is built in San Luis that generates an equivalent amount of rail traffic to the Kingman Industrial Park in Kingman, AZ.
- 3) Alternative #7 – New Rail Alignment to Connect to Ferromex. The new rail alignment to Mexico also handles international trade unrelated to Punta Colonet.

With a benefit/cost ratio of 2.11, these results suggest that the benefits of constructing a rail line to Mexico could significantly outweigh the costs if the Port of Punta Colonet were built and if the port's rail connection carried the assumed level of container traffic. The net present value is \$110.3 million.

Exhibit 22: Benefit/Cost Analysis of Yuma County Rail Line to Mexico if Punta Colonet is Built

Category	Total (7% Discount Rate)	Total (3% Discount Rate)
Discounted Net Benefits		
State of Good Repair		
Reduced Pavement Damage from vehicles	708,607	1,838,261
<i>Subtotal state of good repair</i>	708,607	1,838,261
Economic Competitiveness		
Fuel Savings	106,997,125	251,345,828
Reduction in oil imports - societal benefits	31,178,823	79,379,485
Rail Fuel	-11,087,048	-29,688,430
<i>Subtotal economic competitiveness</i>	127,088,899	301,036,883
Environmental Sustainability		
NOX reductions	5,315,489	11,941,964
PM10 reductions	37,209,360	82,482,699
VOC reductions	259,702	579,624
CO2 reductions	9,215,719	21,448,297
Rail Emissions	-861,206	-1,838,385
<i>Subtotal Environmental</i>	51,139,064	114,614,199
Safety Benefits		
Fatality reductions	33,102,170	74,608,626
Injury reduction	1,228,801	2,714,722
Property Damage Only	234,276	607,757
Rail Safety	-3,997,359	-10,369,914
<i>Subtotal Safety</i>	30,567,888	67,561,192
Grand Total Benefits	209,504,459	485,050,535
Discounted Net Cost		
Capital Costs	99,156,236	104,939,462
Cost of CBP Personnel	1,420,905	2,568,258
Residual Value	-1,362,850	-5,797,185
Total Net Cost	99,214,291	101,710,535
B/C Ratio	2.11	4.77
Net Present Value	110,290,168	383,340,000



Economic Impacts

The status of an intermodal terminal in Yuma County would be in some ways analogous to that of the Virginia Inland Port (VIP) in Front Royal, VA. The VIP was originally constructed by the Port of Virginia to compete with the Port of Baltimore. Containers enter and leave the Port of Virginia not at the seaport in Hampton Roads, but at the VIP, 220 miles inland from Hampton Roads. Similar to Yuma, the VIP is not located within a large city. Similar to the case for Yuma County, the distance between the VIP and Hampton Roads is relatively short for an intermodal rail move. As would be the case for an intermodal terminal in Yuma County, the location of the VIP is dictated by highway connections rather than proximity to large population centers. The VIP is next to I-81 and I-66, major freight corridors for the eastern seaboard. Similarly, a terminal in Yuma County would provide a connection to the U.S. interstate highway system in the form of I-8.

The VIP handles about 3 percent of the Port of Virginia’s containers. Similarly, an intermodal terminal in Yuma County might handle about 3 percent of Punta Colonet’s container traffic. Per estimates presented in Technical Memorandum #4, Punta Colonet might handle roughly the same number of containers in 2036 as the Port of Virginia handled in 2012. The VIP has generated economic development to the area around it. According to the Port of Virginia, 39 major companies have located near the VIP. These companies have invested \$748 million in the area, built 8 million square feet, and employed 8,000 people. While specific circumstances influence the economic impacts of inland ports, if all of the assumptions included herein were to come to pass, it is conceivable that a terminal in Yuma County could generate a comparable order of magnitude of economic impacts.

Summary of Alternatives

Exhibit 23 is a summary of alternatives and their evaluations.

Exhibit 23: Summary of Evaluation of Alternatives

Alternative	Summary of Project Evaluation
#1 Unit Refrigerated Train Service	Generating enough traffic to support the service frequency that would be required to serve Yuma County produce shippers would be a challenge.
#2 Industrial Park in Wellton	Depending upon the overall success of the industrial park, this project could yield significant benefits and economic development stimulus. Under scenario analyzed, benefit/cost ratio is 3.61.
#3 Transload Railport	This project could yield benefits in excess of costs and could be worthwhile, but the impact would be minor.
#4 Distribution Hub at Wellton	Generating enough traffic to support this project and gaining acceptance by UP would be a challenge.
#5 Punta Colonet Rail Connection	Depending upon the overall success of the Punta Colonet megaport, this project could yield significant benefits and economic development stimulus. Under scenario analyzed, benefit/cost ratio is 2.11.
#6 Industrial Park in San Luis with New Rail Line	It would be difficult to justify the construction of a rail line to San Luis unless shippers located in San Luis generated very large volumes of rail traffic. Under scenario analyzed, benefit/cost ratio is 0.37.
#7 New Rail Alignment to Connect to Ferromex	It would be difficult to justify the construction of a rail line across the border into Mexico unless a new development such as Punta Colonet could bring traffic to the line. Under scenario analyzed, benefit/cost ratio is 0.49.
#8 No Build	No build appears to be preferable to alternatives #4 #6 and #7. In addition, due to concerns over project feasibility, no build could be preferable to Alternatives #1 and #4.

Funding of Potential Rail Improvements

Federal Grant Programs

U.S. Department of Commerce Economic Development Administration (EDA)

The U.S. Department of Commerce provides EDA grants for projects in economically distressed industrial sites that promote job creation or retention. Eligible projects must be located within EDA-designated redevelopment areas or economic development centers, for which Yuma County qualifies. Eligible rail projects include railroad spurs and sidings.



U.S. Department of Agriculture Programs

The U.S. Department of Agriculture Community Facility Program and Rural Development Program provide grant or loan funding mechanisms to fund construction, enlargement, extension or improvement of community facilities providing essential services in rural areas and towns. Grant assistance is available for up to 75 percent of the project cost. Eligible rail-related community facilities include transportation infrastructure for industrial parks and municipal docks. The program is oriented toward communities with populations less than 20,000, so smaller communities within Yuma County would be eligible.

Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grants Program

As a result of the economic recession of 2008, the federal government approved the American Recovery and Reinvestment Act (ARRA) in February, 2009 to stimulate the economy partly through the funding of infrastructure projects which could be initiated in the short term. As one aspect of ARRA, the Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grants Program allowed local and state governments to apply for discretionary funding. Grants were eligible for capital investment in rail, highway, bridge, public transportation, and port projects and awarded by USDOT on a competitive basis. There were four rounds of grant funding under this program. The TIGER program's future is uncertain, but this type of recovery-oriented funding could occur again.

Federal Financing Programs

Rail Rehabilitation and Improvement Financing (RRIF)

The RRIF program provides loans and credit assistance to both public and private sponsors of rail and intermodal projects. Eligible projects include acquisition, development, improvement, or rehabilitation of intermodal or rail equipment and facilities. Direct loans can fund up to 100 percent of a capital project with repayment terms of up to 25 years and interest rates equal to the cost of borrowing from the government. Eligible borrowers include railroads, state and local governments, government sponsored authorities and corporations, and joint ventures that include at least one railroad.

Transportation Infrastructure Finance and Innovation Act (TIFIA)

This program provides credit assistance to large scale projects (over \$50 million or one-third of a state's annual federal-aid funds) of regional or national significance that might otherwise be delayed or not constructed because of risk, complexity or cost. A wide variety of intermodal and rail infrastructure projects are eligible and can include equipment, facilities, track, bridges, yards, buildings and shops. The interest rate for TIFIA loans is the U.S. Treasury rate and the debt must be repaid within 35 years.

Arizona State Programs

Currently, few Arizona funding sources can be used for rail. ADOT's state funding comes primarily from the Arizona Highway Users Revenue Fund (HURF), which is funded through motor fuel excise taxes, truck fees, vehicle registration fees and taxes, other charges. Currently, HURF funds can only be used for highways, streets and highway patrol. The Arizona State Infrastructure Bank (SIB) is similarly geared toward highway investments, the Highway Extension and Expansion Loan Program (HELP). The State of

Arizona may appropriate funds for commuter rail service from its general fund. These funds may be made up of revenues from a number of sources including state sales taxes, property taxes and income taxes.

Organization of Potential Rail Improvements

This section investigates the likely ownership of a rail line to an industrial park in San Luis, a rail line that provides access to an industrial park in Wellton, and a rail line that connects the UP Sunset Route to the Ferromex and crosses the border in Yuma County at a location near the San Luis II Port of Entry.

Rail Access to Industrial Park in San Luis

The construction of a rail line to access an industrial park to San Luis would almost certainly be funded using public monies. With hypothetical traffic levels commensurate to that of the Kingman Industrial Park, it would be impossible for a private operator to recoup the required investment through freight revenues. Given the major public investment, a rail line to San Luis would likely remain in public sector ownership. A broad range of public entities own rail lines, including states, port authorities, counties, cities, coalitions of multiple jurisdictions. In terms of who would own a rail line to San Luis, the logical owners would coincide as closely as possible to those jurisdictions that have a vested interest in the line. The Greater Yuma Port Authority (GYPA) could be a good candidate organization.

While the public entity would be responsible for capital investments in track and structures, as well as rolling equipment, a private entity would most likely operate the line. An existing rail operator would have the requisite experience in rail operations. This private operator would lease or gain a concession from the public owner for some nominal fee. This division between rail line owner and operator is common for industrial parks. For example, the San Pedro & Southwester Railroad, owned by ARG Trans provides rail service to the Central Arizona Commerce Park in Casa Grande, which is owned by a private investor. A subsidiary of Patriot Rail Corporation provides service to the Kingman Industrial Park, which is owned by the Kingman Airport Authority.

Rail Access to Industrial Park in Wellton

The construction of a rail spur to an industrial park in Wellton would be funded either by a private investor or a public entity, or some mixture of both. Probably, an existing rail carrier would obtain a concession to provide switching service within the park, similar to the case for rail access to an industrial park in San Luis.

New Rail Line to Mexico

Based upon forecasted traffic, the construction of a new rail line to Mexico would most probably be funded by public investment. Because of the investment, the ownership of the line would remain in public hands. Most likely two public entities would own the line. A public U.S. entity would own the line north of the border, and a Mexican government entity would own the line south of the border. The funding sources would be different on each side of the border, so the ownership would differ as well. Logically, a single operator would operate over the entire length of the rail line. The Carrizo Gorge

Railway (CRZY) is an example of a rail carrier that operates on both sides of the border. This carrier’s line runs between San Diego, CA and Plaster City, CA, crossing the border at both Tijuana and Tecate.

Conclusions of the Study and Next Steps

- If the Port of Punta Colonet were built and handled significant container volumes, the benefits of building a rail line through Yuma County would likely justify the investment. This rail line could help to generate employment within the county.
- If a rail line to Mexico were built, most stakeholders support an alignment that roughly parallels the Area Service Highway. However, representatives from the U.S. military have indicated that there would be a number of obstacles to building a rail line along this alignment. The alignment of a rail line to Mexico may need to be constructed through populated areas west of the Area Service Highway.
- If a rail line to Mexico were built, most stakeholders support a crossing located near the San Luis II Port-of-Entry.
- The largest parcels of land available for development, either associated with a rail line to Mexico, or other commerce, are located near the U.S./Mexico border in San Luis or in Wellton.
- If the Port of Punta Colonet is not built, international trade by rail with Mexico will not justify the cost of constructing a rail alignment to Mexico. Yuma County trade with Mexico is too small, and much of the trade that passes over the border consists of highly perishable produce, which is poorly suited to railroad transportation.
- With an unemployment rate around 30 percent, economic development is a major issue for Yuma County. A planned development such as an industrial park could help to attract employers to the area. Rail access could be an attractive component an economic development package.
- Projects that rely on existing railroad infrastructure rather than major additions to the railroad network will be more likely to justify the cost of investment.
- Building rail access to an industrial park located close to existing rail infrastructure appears to be the most promising railroad investment for Yuma County. Such a project could bring jobs to the county without necessitating an investment in a major new alignment. It is recommended that a feasibility study for an industrial park within Yuma County be conducted.
- A transload facility could provide additional points of access for Yuma County businesses to the rail network. It is recommended that Yuma County promote the development of a transload facility.