Agricultural Viability Analysis for the Manchester Property in Encinitas and the Cannon Road Property in Carlsbad, California for the North Coast Corridor Public Works Plan/ Transportation and Resource Enhancement Program

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TABLE OF CONTENTS

Section **Page No.**

TABLES

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1.0 INTRODUCTION TO THE AGRICULTURAL VIABILITY ANALYSIS

The agricultural viability analysis that follows in this document has been prepared to provide a condensed, but reasoned and detailed examination of two particular properties affected by the North Coast Corridor (NCC) Public Works Plan/Transportation and Resource Enhancement Program (PWP/TREP), referred to as the Manchester property and the Cannon property. The methodology employed in the analysis utilizes information related to a number of factors including underlying soils information and production costs. Information has been retrieved through research, personal communication, the San Diego County Agricultural Commissioner's Office, the San Diego County Farm Bureau, and the University of California Cooperative Extension. When current data could not be retrieved, assumptions have been made based on agricultural industry standards, best management practices and cultivation of the same and/or similar crops in comparable counties. The factors discussed in this analysis are important and necessary to consider when determining the physical viability of agricultural operations on specific parcels and their impact on the larger agricultural context of a particular area or region.

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2.0 AGRICULTURE IN SAN DIEGO COUNTY – OVERVIEW

San Diego County is the southernmost county in California and is essentially, a desert. There is very little water, comparatively to other counties in the state and the soil qualities, in general, are less suitable to large agricultural tracts and intense cultivation. Only 6% of soils within the County are considered Prime soils according to the U.S. Department of Agriculture, Natural Resources Conservation Services. These factors, coupled with variation in topography and resource constraints, create an environment which demands small farms, high value crops, and innovation. These small farms are generally surrounded by various land uses, including rural and urban land uses. However, these limiting factors and constraints have not fettered the ability of San Diego's agriculture to thrive and maintain its place as the 12th largest agricultural economy in among more than 3,000 counties nationwide[1]. In fact, the proximity of growers to large local markets, coupled with state of the art transportation corridors to transport fresh products to even larger markets and distribution centers, provides farmers with the means to remain competitive in an increasingly global economy.

As mentioned, the County has a vast array of topographies and a wide fluctuation of microclimates that give rise to over 30 different varieties of vegetation communities. Today, agricultural commodities in San Diego include over 200 different types of crops and products[2]. The County has more small farms, less than 10 acres in size, than any other county in the State. In fact, 68% of the 6,687 small farms are nine acres or fewer in size with a median farm size of four acres; 90% of the County's farms are under 49 acres[3]. This small farm size is attributable to: 1) the high cost of land; 2) the comparatively inferior soil types; and 3) the low availability of water; frequent drought conditions, and therefore the high cost of water, which priced at more than $600/acre foot requires farmers to utilize smaller acreages and produce high dollar value per acre crops. San Diego County produces the highest dollar value per acre crop statewide.[4] Agricultural innovation and flexibility are at the heart of the industry. From the 1920's to the present, the agricultural industry in the County has adapted and changed. In 1927, which is the first year that statistics were available, the most valuable products were lemons, canning tomatoes, celery, alfalfa, table grapes and navel oranges[5]. Today, the prevailing crops are vastly different and reflect the pressures experienced by growers and market demand. The types of crops grown throughout the county, such as greenhouse products or small-scale row crops, have been and continue to be compatible with the surround land uses, whether they are urban or rural.

[1] http://sdfarmbureau.org/SD-Ag/Ag-Facts.php
[2] http://www.sdcounty.ca.gov/reusable_components/images/awm/Docs/2011_Crop__Report_WEB.pdf
[3] http://www.sdcounty.ca.gov/reusable_components/images/awm/Docs/stats_sdagriculture.pdf
[4] http://sdfarmbureau.org/SD-Ag/Ag-Facts.php
[5] http://www.sdcounty.ca.gov/reusable_components/images/awm/Docs/stats_sdagriculture.pdf

According to the most recent 2011 Crop Statistics and Annual Report[6] (Crops Report), prepared by the County of San Diego Department of Agriculture, Weights and Measures, the top ten crops in the County are:

- ornamental trees and shrubs;
- indoor flowering and foliage plants;
- colored bedding plants;
- avocados;
- tomatoes;
- eggs;
- lemons;
- cactus and succulents;
- herbaceous perennials; and
- foliage.

Field crops, which are the types of crops grown on the parcels included in this analysis (strawberries and Asian vegetables at the Manchester property, and various row crops at the Cannon property), account for less than 1% of all major crops in the County given the limiting factors discussed previously. As compared to 2010, the total value of field crops in the county has fallen from $5,117,287 to $5,038,735 in 2011, which has an indirect relationship with the increase in field crop acreage from 247,565 acres in 2010 to 248,089 acres in 2011.

[6] http://sdfarmbureau.org/SD-Ag/Ag-Facts.php

3.0 BASELINE INFORMATION

3.1 Soils – Overview

The soils information presented in this analysis is derived from statewide soils maps that have been prepared by both State and Federal government entities. The California Department of Conversation, Division of Land and the United State Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), both conduct regular and on-going assessments of soil types and then prepare detailed soil maps. Once soils are mapped, they are grouped into the following categories that have specific definitions. The categories and definitions are presented below:

- Prime Farmland – In California, California Department of Conservation, Division of Land Resource Protection, Farmland Mapping and Monitoring Program (FMMP) maps all statewide farmlands. The FMMP's soils study area is contiguous with modem soil surveys developed by the USDA. The FMMP requires that any land designated as Prime must meet the following criteria, which are related to Land Use and Soils. Under the category of Land Use, the following criterion is applied: 1) the land has been used for irrigated agricultural production at some point during the four years prior to the Important Farmland Map date; Irrigated land use is determined by FMMP staff by analyzing current aerial photos, local comment letters and related GIS data, supplemented with field verification. Under the category of Soils, the following criteria are applied: 1) the soil must meet the physical and chemical criteria for Prime Farmland or Farmland of Statewide Importance as determined by the NRCS. The NRCS compiles lists of which soils in each survey area meet the quality criteria. Factors considered in qualification of a soil by NRCS include: a) water moisture regimes, available water capacity, and developed irrigation water supply; b) soil temperature range; c) acid-alkali balance; d) water table; e) soil sodium content; f) flooding (uncontrollable runoff from natural precipitation); g) erodibility; h) permeability rate; i) rock fragment content; and j) soil rooting depth[7]. As such, farmland with the optimal combination of physical and chemical features to sustain long-term agriculture is described as Prime. The land has been determined to have the soil quality, growing season and moisture supply needed to produce sustained high crop yields[8].
- Farmland of Statewide Importance – As with Prime Farmland, Farmland of Statewide Importance must also meet both the criteria described above with respect to Land Use and Soils and is similar to the Prime Farmland category. The difference is that Farmland of Statewide Importance tolerates greater shortcoming with the soil such as greater slopes or less ability to store moisture, for example[9].

[7] http://www.conservation.ca.gov/dlrp/fmmp/overview/Pages/prime_farmland_fmmp.aspx
[8] http://www.conservation.ca.gov/dlrp/fmmp/mccu/Pages/map_categories.aspx
[9] Ibid.

- Unique Farmland – This category of farmland is categorized as having lesser quality soils, but is still used for the production of leading agricultural crops. This farmland is typically irrigated, but can also include non-irrigated orchards or vineyards found in some climatic zones in the state. These lands must have been used for irrigated agricultural production at some time during the four years prior to the mapping date[10].
- Farmland of Local Importance – Lands that have been determined by local jurisdictional authorities such as county boards of supervisors or local advisory committees to have a specific importance to the local agricultural economy, are considered Farmland of Local Importance[11].

The Farmland Mapping and Monitoring Program (FMMP) has three other categories of land including:

- Grazing Land – Land that is particularly suited to the grazing of livestock given existing vegetation. This particular designation was developed in concert with the California Cattlemen's Association, the University of California Cooperative Extension and a host of other groups with an interest in grazing and livestock[12].
- Urban and Built-up Land – This category refers to land that is occupied by structures with a building density of at least one unit to 1.5 acres or 6 structures to a 10-acre parcel. This category includes land uses such as residential, industrial, commercial, construction, institutional, public administration, railroad and other transportation yards, cemeteries, airports, golf courses, sanitary landfills, sewage treatment plants, water control structures, and other developed purposes[13].
- Other Land – All other lands that do not fall into the categories above are subsumed into this category. Examples of these lands include low-density rural developments, brush, timber wetland, riparian areas not suitable for livestock grazing, confined livestock poultry or aquaculture facilities, strip mines, borrow pits, and water bodies smaller than 40 acres. In addition, vacant and non-agricultural land surrounded on all sides by urban development and greater than 40 acres is mapped as Other Land[14].

The California Coastal Act also has specific language and standards applicable to agricultural lands. Coastal Act Section 30241states that farmland within the Coastal Zone must meet any of the following in order to be designated as Prime: 1) have a soil classification of Class 1 or II soils as defined by the NRCS; 2) have a Storie Index Rating of 80 through 100; 3) have the ability to support livestock, at least one animal unit per acre as defined by the USDA; or 4) have been

[10] Ibid.
[11] Ibid.
[12] Ibid.
[13] Ibid.
[14] Ibid.

planted with fruit or nut bearing trees, vines, bushes or crops that have a nonbearing period of fewer than five years and that will normally return during the commercial bearing period on an annual basis from the production of unprocessed agricultural plant production not less than $200 per acre. In cases where land does not meet the definition of Prime Agriculture per Section 30241, Section 30242 of the Coastal Act applies to other agricultural lands suitable for agricultural use, and limits conversions of such lands to non-agricultural uses unless continued agricultural use is not feasible, or the conversion would preserve prime agricultural land or concentrate development consistent with Section 30250. Any permitted conversion of agricultural land pursuant to Section 30242 must be compatible with continued agricultural use on surrounding lands.

3.1.1 Soils on Identified Parcels in the Study Area

As discussed, this analysis is germane to two distinct properties, the Manchester property and the Cannon Property. Per the FMMP maps, the soils identified on the Manchester site are classified as Class III soils with a Storie Index Ration of 61. The specific soils on the site are Corralitos loamy sand, 2–5% slopes. According to the Natural Resources Conservation Service (NRCS), Class III soils have severe limitations, which reduce the choice of plants or require special conservation practices or both. Hence, these are not strictly Prime soils under the California Department of Conservation or the USDA's definitions, unless they are irrigated. The FMMP has classified the Manchester property as Prime, if irrigated. Under Coastal Act definitions, these soils are not classified as Prime. Corralitos loamy sand is not suitable for livestock grazing; the parcel is currently cultivated in strawberries and Asian vegetables.

The Cannon property is primarily underlain with Class III soils that have a Storie Index Rating of 54 (56.7 acres), and is partly underlain with Class IV soils that have a Storie Index Rating of 15 (14.3 acres). Specifically, the soil types are Marine loamy coarse sand, 2–9% slopes (Class III) and Carlsbad gravelly loamy sand, 15–30% slopes (Class IV). Although not strictly prime soils, the FMMP has classified the Cannon property as Prime, if irrigated. The FMMP has also categorized the property as Farmland of Statewide Importance and Unique Farmland. Under the Coastal Act definitions, these soils do not qualify as Prime, nor are marine loamy coarse sand suitable for livestock grazing. After laying fallow for a few seasons (approximately two years) due to the high cost of water, the property is currently being recultivated to strawberries and potentially other row crops.[15]

[15] Personal communication with the farmer, March 2013

3.2 Geographical and Historical Information

The Manchester Property

The Manchester property consists of 30.5 acres located in the City of Encinitas. The property is bounded by residential uses to the north and east, by Manchester Ave and San Elijo Lagoon to the south and 1-5 to the west. The current agriculture on the parcel is cultivated field crops, strawberries and Asian vegetables, but the parcel has also produced flowering plants in the past.

Historically, agricultural products in Encinitas have been horticultural, including flowers and flowering plants such as poinsettias, which are native to Mexico and Central America. Production of poinsettias as the main agricultural commodity in the City began in the early 1920's and the City was at one time known as the "Flower Capital of the World." Over the past 90 years, these nurseries and greenhouse products have been the agriculture of choice for a number of reasons:

1. the method of production is highly compatible with a variety of differing surrounding land uses;
2. there is little or no use of machinery typical in large-scale farming;
3. there is little usage of pesticides typically applied on large farms or in other intensively cultivated uses; and
4. the lack of dust and odors associated with large-acreage farming.

The nurseries and greenhouse remain the predominant agriculture in the City of Encinitas. Although in comparison to other coastal communities the northern portion of the County retains a decent amount of land in agriculture use, there is also increasing pressure to relocate operations to other regions. The combination of land costs, water costs, and labor costs, are pushing growers and operators out of the country. A good example of this is the once indomitable poinsettia industry, much of which is now located in central and south America, a trend that began in the 1990's and continues today.

The Cannon Property

The Cannon property is located in the City of Carlsbad. The entire property is owned by San Diego Gas and Electric (Sempra Utilities) and is leased out to different growers for cultivation. Presently, there are 106.2 acres of agriculture on the parcel in various row crops. These crops rotate. The parcel is bounded by Agua Hedionda Lagoon to the north, I-5 to the west, Cannon Road to the south, and open space to the east. The parcel has been in active

cultivation, mainly strawberries and other assorted row crops, since the 1920's. Between 2009 and the present, portions of the parcel had been rendered fallow due to the high cost of water and inability to invest in capital improvements. Recently, in March of 2013, the farmer has expressed an ability to potentially re-invest in the portion of the parcel that has lain fallow and restart strawberry cultivation[16].

The historic agriculture in the City of Carlsbad is varied. In the 1880's most agricultural land was in orchards of citrus, avocados and olives. Over the next decades, the agricultural production shifted to assorted row crops, strawberries, and production in greenhouses. The trend of greenhouses remains today. As discussed above, the ability of greenhouses to remain compatible with other non-agriculture uses is high given the low disturbance to other uses, i.e., pesticides, dust, noise.

[16] Personal communication with Farmer, March 2013

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4.0 PRODUCTION OPERATING COSTS

The production operating costs associated with growing strawberries and row crops vary throughout the state. In general, most studies cite costs from between $30,000 and $40,000 in production costs per acre, including harvest costs[17]. Production operating costs include the land preparation and soil bed up, plant establishment, fertilization, irrigation, pest management, and harvest. The second category of expenses includes labor and equipment.

The following information and assumptions included in the analysis are based on typical farm operation and production practices standard in well-managed fields. The overhead and calculations are derived from the Department of Agricultural and Resource Economics, University of California Davis, the UC Cooperative Extension, and specific information on the subject parcels.

4.1 Land Preparation and Bed Up

Land preparation and bed up is a rather consistent and fixed cost in the industry. In order to cultivate successfully, growers conduct a series of operations such as discing and ringrolling. Typically, discing and ringrolling is conducted over the field a series of five times, and then the subsoil is ripped in order to loosen the compacted soils to a depth beyond the cultivation layer to aerate soils, increase filtration rates, and decrease erosion. The fields are then smoothed over with a triplane, beds are shaped, pre-plant fertilizer is incorporated and drip tape is buried in the bed and a plastic mulch layer is applied. Costs associated with this are labor, which entail the renting of a tractor or the grower will contract out for a custom operator[18].

4.2 Plant Establishment

Once beds are made, the entire length of the field is fumigated, and a tracklayer tractor with a blade makes roads and divides the field into smaller blocks, generally 200–300 feet long. Holes are punched in the plastic mulch using a mechanical punch, and the plants are delivered to the beds for planting in the punched holes. Typically, there are 25,000 plants per acre. Costs associated with this include the plants and the labor.

4.3 Fertilization

Slow release fertilizers are typically used in conventional farming, which is how both of the subject parcels are farmed. Slow-release is applied at 500 pounds per acre, and another fertilizer application is broadcast pre-planting. The slow release fertilizer is drilled pre-plant in the bed with a fertilizer drill with a bed shaper. Throughout the season, growers continue to apply various types of liquid fertilizers through the drip line or with foliar spray.

[17] Personal communication with Grower, July 2013
[18] http://sfp.ucdavis.edu/crops/coststudieshtml/

4.4 Irrigation

The growers rent sprinkler pipe for the pre-plant and the establishment of sprinkler irrigations. Prior to planting, the field is irrigated for 12 hours. Typically, two to three laborers, in addition to the tractor driver, lay and pick up the pipe. After planting, sprinkler pipe is laid out and the field is sprinkled two hours per day for 15 days. There are two to four irrigators who manage the sprinkler and drip irrigation system. Rainfall has not been taken into account in irrigation.

4.4.1 Water

Approximately 80% of the water in San Diego County is imported from the Colorado River and through the State Water Project[19]. The remaining ~20% is derived from local groundwater and surface water sources, in addition to recycled water, and water from conservation measures. In large part, however, growers in the County are dependent on non-local sources and they pay some of the highest rates in the State for their water. Compared to the Central Valley and neighboring Imperial County, growers in the County pay 30 times more for their water.[20] Hence, the opportunity cost for growers is significantly higher than in other parts of California. The price of water is a significant factor driving the ability of agriculture to remain both sustainable and competitive and is decisive in determining the amount of acreage grown and the type of crop cultivated.

The Manchester Property

The Manchester property is made up of two APNs served by the San Dieguito Water District, which obtains their potable water from Lake Hodges in the form of local runoff and imports of raw water from the San Diego County Water Authority. All water is treated at a filtration plant (R.E. Badger Filtration Plant) prior to distribution. The current agricultural rate for water supplied by the district is $2.80 per 100 cubic feet or $985 per acre-foot of water, however, agricultural rates are proposed to increase to $3.13 per 100 cubic feet in September 2013, and to $3.40 per 100 cubic feet in July 2014, which is less than a year away[21]. While the cost increase is graduated over time to allow for growers to adapt and adjust, the already comparatively high rates put growers at a disadvantage and adds pressure to the types of crops cultivated.

The most recent documented water usage on the larger parcel (18.683 acres) was recorded in July and August of 2012, and the water usage at that time was 71 units of water, where one unit equals 100 cubic feet or 748 gallons of water. There is no current water usage information on the smaller parcel (16.098) or more recent water usage date on the larger 18-acre property.[22]

[19] http://www.sdcwa.org/frequently-asked-questions-and-key-facts#t7n115
[20] http://www.sdcounty.ca.gov/reusable_components/images/awm/Docs/stats_sdagriculture.pdf
[21] http://www.carlsbadca.gov/services/departments/finance/Documents/APPROVED%20WATER%20SEWER%20RATES%20JAN%202013.pdf
[22] Personal communication with the San Dieguito Water District

The Cannon Property

The Cannon property is served by the Carlsbad Municipal Water District, which is a subsidiary district of the City of Carlsbad. The District provides 100% of its water from the Colorado River through the Colorado River Aqueduct and from Northern California through the California Aqueduct, or more commonly known as the State Water Project. The current agricultural rate for water is $3.70 per 100 cubic feet[23]. As the property owner could not be reached for current water usage numbers, this analysis presumes that the water usage on the Cannon property is similar to the water usage on the Manchester property given the similar cultivation. Therefore, projections have been made.

4.5 Pest Management

The pesticide costs included in this analysis have been considered at the full retail price and the pesticide program typical for row crops/vegetables and strawberries. Fumigants are approximately $2,900 per acre. Weed management is generally controlled by hand weeding, and the analysis assumes a rate that totals 76 hours per acre over a period of eight months. This analysis also assumes insects and diseases are also treated through insecticide and fungicide treatments.

4.6 Harvest

The crop cycles for the harvest are July and June for strawberries, and December and January for other row crops and vegetables.[24] The early harvests of crops go directly to fresh markets, and as other growing areas come into production, the growers tend to shift to the frozen markets. During harvest time, growers run 30–40 person crews with a general foreman for crew supervision, and one field checker on smaller acreages to two field checkers on the larger parcels, to check the field for proper picking. There is also one picking card puncher for smaller parcels and two picking card punchers for the larger parcels per crew to count out the boxes by each picker. For fresh market distribution, crops are picked by hand and then placed into one-pound containers, which are located in container trays that hold 8-one pound containers. Picking rates per day range according to picker from three trays per hour early and late in the seasons, and five to eight trays during the peak season. Growers use 2-ton flatbed trucks that hold 116 pallets of 110 fresh market trays per pallet, or 1,760 fresh trays per load or 960 freezer trays per load. Once the fields are harvested, they need to be cleaned through mowing, removing mulch, and discing.

[23] http://www.carlsbadca.gov/services/departments/finance/Documents/APPROVED%20WATER%20SEWER%20RATES%20JAN%202013.pdf

[24] Communication with farmer on one of the parcels on the Cannon property

4.7 Yield

Row crops and strawberries are measured in the trays per acre for the fresh and frozen market. Tray weights are used to convert the yield to weight per acre. Standard consumer trays hold 8-one pound containers, which typically range from 9.5 to 10.5 pounds per tray. This analysis uses 10 pounds per tray for fresh market products and 18 pounds per tray for the freezer market. Once trays are collected, they are delivered to coolers; trays usually weigh 10–20 pounds. Based on research[25], the total per acre yield is 65,000 pounds delivered to the fresh market and 20,800 pounds delivered to the freezer.

4.8 Cooling

Average cooling costs are $0.50 per tray.

4.9 Selling Costs

Selling costs are market dependent, but according to 2011 figures, these have been estimated at $0.66 per tray.

4.10 Labor and Equipment

Presently, the labor costs associated with agriculture are some of the most variable and unstable costs industry wide, and current trends indicate they are also increasing rapidly.

4.10.1 Labor

Labor costs are variable, but range between $13 and $14 per hour for machine operators, to $11 and $12 per hour for general labor.

4.10.2 Equipment Operating Costs

Equipment repair costs were based on the purchase price, annual hours of use, total hours of life, and repair coefficients formulated by the American Society of Agricultural Engineers (ASAE). Fuel and lubrication costs have been determined by the ASAE and are based on the maximum power takeoff, horsepower, and fuel type. Prices for on-farm delivery of diesel and gasoline have been estimated at $3.44 and $3.85 per gallon, respectively.

[25] http://fruitsandnuts.ucdavis.edu/datastore/?ds=391&reportnumber=612&catcol=2806&categorysearch=Strawberry

5.0 ESTIMATED PRODUCTION COSTS PER ACRE

The following summary table on the production costs per acre (Table 1) have been prepared with information derived from the agricultural industry, information provided from the UC Cooperative Extension, and the preparer's estimates. Most information is based on 2011 data.

Table 1
Per Acre Production Costs[26]

Operation – Cash and Labor Costs Per Acre							
Operation	*Time – Hours*	*Labor Cost – in dollars*	*Fuel – in dollars*	*Equipment – Lube and Repair – in dollars*	*Material Cost – in dollars*	*Custom/Rent – in dollars*	*Total Cost*
Disc/Roll	0.50	8	26	9	0	0	44
Subsoil	0.90	15	47	13	0	0	76
Plow	0.27	4	14	5	0	0	23
Level/Smooth	0.50	8	20	5	0	0	33
Fertilize – Custom	0	0	0	0	184	15	199
Land Prep Chisel	0.30	5	16	4	0	0	25
Irrigate – Layout	4.00	308	31	10	107	0	456
Shape beds	0.90	15	47	18	0	0	80
Fertilize/Pre-Plant	0.25	4	4	1	290	0	300
Irrigate – Install drip	0.14	2	2	1	327	0	332
Weed bed tops	0	123	14	4	0	0	140
Lay Mulch	0.41	12	6	2	572	0	592
Cut roads	0.62	123	14	4	0	0	140
Lay laterals and connect drip	18.0	202	0	0	0	0	202
Cultivate furrows	0.69	11	12	3	0	0	26
Weed furrows	0	0	0	0	9	23	32
Irrigate through drip	29	325	0	0	393	0	718
Punch holes	0.69	11	5	1	0	0	18
Transplant	42	471	0	0	2,925	0	3,396
Hand weeding	76	853	0	0	0	0	853

[26] Estimated (based on UC Extension, 2011 Figures)

Table 1
Per Acre Production Costs[26]

Operation – Cash and Labor Costs Per Acre							
Operation	*Time – Hours*	*Labor Cost – in dollars*	*Fuel – in dollars*	*Equipment – Lube and Repair – in dollars*	*Material Cost – in dollars*	*Custom/Rent – in dollars*	*Total Cost*
Worms	0.58	10	6	2	42	0	60
Drip fertilizer	0	0	0	0	79	0	79
Drip fertilizer	0	0	0	0	210	0	210
Disease – Botrytis/mildew	1.17	19	12	4	157	0	192
Insect mite	2.40	27	0	0	120	0	147
Disease – Botrytis/mildew	1.17	19	12	4	265	0	300
Disease - mildew/mites	.58	10	6	2	152	0	169
Disease - mildew	.58	10	6	2	10	0	27
Disease – Botrytis/mildew	.58	10	6	2	157	0	175
Disease Botrytis/Lyngus /Mite	.58	10	6	2	138	0	156
Disease Botrytis/Lyngus /Mite	.58	10	6	2	150	0	168
Harvest	704.22	12,059	33	15	7,514	0	19,621
Field Clean Up	1.94	245	30	10	0	23	308
Cooling	0	0	0	0	0	2,210	2,210
Selling Costs	0	0	0	0	0	2,917	2,917
Fruit/Vegetable Commission/ Association Assessment Fees	0	0	0	0	98	0	96
Interest on Operating Costs @ 5.75%	0	0	0	0	0	0	634
Total operating costs/acre	**889.57**	**$14,808**	**$368**	**$121**	**$13,924**	**$6,411**	**$36,264**

6.0 ESTIMATED REVENUE RETURNS

The Table 2 below provides an estimate or the revenue returns for the parcels and operations analyzed.

Table 2
Costs and Returns Per Acre[27]

Gross Returns	Quantity/Acre	Unit	Price or Cost/Unit – in dollars	Value or Cost/Acre – in dollars
Fresh (10 pound tray)	4,4200	tray	$8.25	$36,465
Freezer (19 pound tray)	1,156	tray	$5.40	$6,242
Total Gross Returns	5,576	tray		$42,707
Operating Costs				
Insecticide – aggregated				$475
Fungicide – aggregated				$596
Bio- Control - aggregated				$120
Herbicide – aggregated				$35
Fertilizer- aggregated				$763
Custom Fertilizer/Drip				$6,411
Material - aggregated				$8,413
Water	28	acin (acre inch)	17.86	500
Plants	25,000	thousand	117	$29,000
Assessment				
Fresh (10 pound tray)	4,420	tray	0.02	77
Freezer (14 pound tray)	1,156	tray	0.02	20
Labor				
Equipment Operator	26.63	hours	13.84	369
Field Labor	1,286.87	hours	11.22	14,439
Machinery				
Fuel - Gas	10.48	gallon	3.85	40
Fuel - Diesel	95.13	gallon	3.44	327
Lube				55
Machinery Repair				66
Interest on Operating Capital				634
Total Operating Costs/Acre				**$36,264**
Net returns above operating costs				**$6,443**

[27] Estimated (based on UC Extension, 2011 Figures)

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7.0 CONCLUSIONS

The analysis above has taken into consideration the following information in the determination that the impacts of the project would not impair the viability of the parcels to remain in active agricultural production.

- soils and farmland classifications;
- historic and current agricultural production and practices in the County;
- per acre production cost estimates; and
- estimated revenue returns.

Soils and Farmland Classifications

As discussed earlier in the analysis, the soils on the subject parcels are primarily Class III soils, and to lesser extent, Class IV soils on the Cannon property, and are therefore not strictly considered Prime soils under the FMMP classifications and categories, unless they are irrigated. In the case of The Coastal Act, these soils are not considered Prime.

Historic and Current Agricultural Practices in San Diego County

Agriculture in the County is conducted on small farms (with a median farm size of four acres; 90% of the County's farms are under 49 acres28) and demands high value crops. The high cost of land and the high cost of water, as well as the lack of superior soil quality and the prevalence of slopes unsuitable to large-scale cultivation, necessitate this growing situation. The agricultural economy in the County is highly dependent on greenhouse crops, which are compatible with surrounding non-agricultural uses, and the row crops grown on the subject parcel account for less than 1% of the overall County agricultural revenue. Agriculture in the County has survived and thrived in large part throughout the last century and a half by innovating and responding to changing market demands and environmental situations.

Agriculture on the subject parcels, which are of acreages over the County average, is existing and persists to this day, however, as briefly mentioned, one of the growers on the Carlsbad parcel was forced to leave fields fallow given the high water costs.

Per Acre Production Cost Estimates

Per acre production, cost estimates for the crops on the subject parcels are $36,264.

[28] http://www.sdcounty.ca.gov/reusable_components/images/awm/Docs/stats_sdagriculture.pdf

Per Acre Estimated Revenue Returns

The per acre estimated revenue returns above the operating costs for the subject parcels and crops is $6,443.

Acreage Impact of North Coast Corridor Project on the Agricultural Viability of the Parcels

According to analysis provided in the March 2013 Draft North Coast Corridor PWP/TREP, the impacts to the Manchester and Carlsbad properties are 8.4 acres and 2.3 acres. On the Manchester property, approximately 28% of the current acreage would be impacted by the project, and on the Carlsbad property, approximately 2% of the property would be impacted by the project. Strictly comparing these parcels to the overall County average of parcel size and production viability, the answer of continued agricultural viability is positive. The impacts of the project would not impair the viability of the parcels to remain in active agricultural production.

Based upon the analysis provided in the per acre production cost estimates and the per acre estimated revenue returns, the answer is not quite as clear, but is dependent on the individual grower and efficiency of their respective farm management plans. Determination of profitability of the individual parcels at present would be speculative, however, anecdotal evidence based on the 150 year trend of types and acreage in agriculture in San Diego County as well as recent discussions, assessments and personal communications, indicates that the growers will remain in production given the fact that historical crop production rotates on the sites, and that crop production has changed over time consistent with the prevailing trends. Historical evidence also supports the viability of the parcels and products in their proximity to large markets and articulated transportation networks with access to even larger distribution centers.