FARMLAND MITIGATION PROGRAMS:
A SURVEY OF CENTRAL VALLEY LOCAL GOVERNMENTS

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THESIS

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FARMLAND MITIGATION PROGRAMS:
A SURVEY OF CENTRAL VALLEY LOCAL GOVERNMENTS

A Thesis

by

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Abstract

of

FARMLAND MITIGATION PROGRAMS:
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California Central Valley cities and counties have faced a significant number of lawsuits and settlements within the last several decades concerning the conversion of farmland. This project explores a dilemma confronting Central Valley local officials of what to do if special interest groups were to demand better farmland protection, such as farmland mitigation programs.

I conducted a survey of Central Valley city and county planning agencies to determine their level of interest in developing a farmland mitigation program, the availability of resources within their jurisdictions for developing a farmland mitigation programs; and whether the lack or presence of these resources acts as an incentive or disincentive for developing a farmland mitigation program. In addition, I use the survey results to inform the California Department of Conservation in deciding whether to assist Central Valley cities and counties with grant funding or other assistance.

The survey results show that 44% of the responding agencies were interested in developing a farmland mitigation program. I perform a binary logistic regression analysis to identify factors that explain variation in the interest level of the planning agencies. Based on this analysis, I find that the more important the planning agency considers the conversion of farmland to urbanization as a problem; the more likely the agency will be interested in developing a farmland mitigation program.

Although there is significant interest in developing farmland mitigation programs within the Central Valley, the timing is poor considering the state's fiscal crisis. I recommend that the California Department of Conservation consider other alternatives including providing technical assistance and supporting grass-roots marketing campaigns to local officials and planning agencies to increase the perceived importance of farmland conversion as a problem within their community.

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Chapter 1

INTRODUCTION

The California local government dilemma: balancing development and farmland protection

Within the last nine years, the Sierra Club reached 14 out-of-court settlements and won one significant lawsuit dealing with the conversion of farmland within the Central Valley. These settlements and lawsuits have resulted in mitigation fees and farmland mitigation program implementation at the Central Valley local government level. In Kern County, the Sierra Club sued nine developers for converting hundreds of acres of farmland to homes (G. Nipp, personal communication, October 21, 2008 & November 5, 2008; Henry, 2007). In *Sierra Club v. San Joaquin Local Area Formation Commission* (1999), the plaintiffs sued over several thousand acres of farmland annexed for a sewage treatment plant. In the settlements and lawsuits, the Sierra Club accused the respective local officials of failing to protect farmland under the California Environmental Quality Act (CEQA). As a result, San Joaquin County has developed a farmland mitigation program to mitigate the loss of farmland and Kern County will introduce a farmland mitigation program in its 2009 update. Also since then, other interest groups have filed several lawsuits similar to the Sierra Club cases. Other Central Valley local officials have followed the settlements and lawsuits and continue to face the dilemma of what to do if special interest groups were to demand better farmland protection, such as farmland mitigation programs.

The dilemma occurs when local officials have to choose between two mutually exclusive goals, development for population increases, and simultaneously protecting their jurisdiction's farmland. Because developers and local officials see neighboring farmland as land banks for new housing and developing needs, protection of the farmland often receives lower priority than accommodating the burgeoning population (Medvitz, Sokolow, & Lemp, 1999). California local officials expect to face this dilemma well into the future. Some of the hardest hit local governments will be those in the Central Valley because the population in this region is expected to grow "50% faster than the rest of the state" (Great Valley Center, 2008, p.8). The expected 60% intrastate migration from the coastal regions in California contributes to the growth rate (Department of Finance, 2008). Because most of Central Valley's cities are

located in the middle or at the edge of high quality farmland, local officials and planners will continue to confront the high rates of farmland conversion to urban land. According to the Farmland Mapping and Monitoring Program as seen on Table 1, Central Valley local officials converted 60,578 acres of farmland to high-density development from 2002 through 2006. During the same period as seen on Table 2, another 26,837 acres of farmland converted to rural residential/commercial and vacant/disturbed land (predevelopment) within just Fresno, Madera, Merced, and Stanislaus Counties (Department of California, 2006 & 2008).

Table 1: Central Valley Sources of Urban Land from Farmland: 2002-2006

County	Shifts to urban and built-up land from:				
	Prime	Statewide & Unique	Total Prime, Statewide, & Unique	Grazing & Local	Total-All farmland
Fresno	2,862	1,611	4,473	2,195	6,668
Kern	6,380	662	7,042	1,531	8,573
Kings	560	469	1,029	84	1,113
Madera	290	369	659	569	1,228
Merced	1,390	806	2,196	1,195	3,391
San Joaquin	3,466	1,909	5,375	1,182	6,557
Stanislaus	4,312	507	4,819	537	5,356
Tulare	2,168	210	2,378	475	2,853
El Dorado	13	-2	11	1,585	1,596
Placer	481	193	674	6,448	7,122
Butte	NA	NA	457	1,006	1,463
Colusa	285	30	315	73	388
Glenn	64	33	97	168	265
Sacramento	838	2,010	2,848	6,674	9,522
Shasta	93	12	105	275	380
Sutter	138	427	565	81	646
Tehama	242	56	298	455	753
Yolo	778	451	1,229	428	1,657
Yuba	217	268	485	562	1,047
Totals	24,704	10,052	35,055	25,523	60,578

Note: Not applicable due to Butte County being only an Interim County this update.

Table 2: Conversions to Rural Land Uses, 2002-2006

County	Land Use Category	Prime Farmland to:	Farmland of Statewide Importance to:	Unique Farmland to:	Farmland of Local Importance to:	Grazing Land to:	Agricultural Land Total to:
Fresno	Rural Residential and Commercial	2,362	1,086	388	2,345	7,279	13,460
	Vacant or Disturbed Land	573	242	237	403	106	1,561
Madera	Rural Residential and Commercial	421	285	541	310	2,823	4,380
	Vacant or Disturbed Land	261	306	379	476	25	1,447
Merced	Rural Residential and Commercial	777	487	162	388	109	1,923
	Vacant or Disturbed Land	197	52	46	19	199	513
Stanislaus	Rural Residential and Commercial	1,362	81	116	209	326	2,094
	Vacant or Disturbed Land	853	50	101	94	361	1,459
						Total:	26,837

Farmland Mitigation Programs defined

Farmland mitigation programs consist of the policies, regulations, and ordinances that require exactions for land dedications from developers to offset the loss of farmland. Other terms for exactions are impact fees, in-lieu fees, and linkage fees. Farmland mitigation programs also offset the amenities, such as habitat loss, related to farmland loss. Farmland mitigation programs go beyond the usual land-use policies intended to protect farmland (e.g., the agriculture element in a general plan) by requiring actual permanent

protection of farmland (land dedications) in relation to the farmland under development. The land dedication vehicle is an agricultural conservation easement. The agricultural conservation easement removes the landowner's development right for the farmland but allows the landowner to continue farming or ranching on the land. California law requires that the landowner must be willing to sell the development rights associated with the property (Land Trust Alliance, 2008). The development rights lost are determined with a fair market value appraisal (California Department of Conservation, California Farmland Conservancy Program, 2006).

The Research Question

The San Joaquin County Farmland Mitigation Program and the proposed Kern County Farmland Mitigation Program provide policy examples that solve the Central Valley local officials' dilemma. For my thesis, I will determine: (a) the overall interest level for other Central Valley local officials to establish farmland mitigation programs within their jurisdiction (dependent variable); (b) the independent variables, if present or absent, that would act as an incentive or disincentive towards implementing farmland mitigation programs; and (c) whether sufficient interest exists to warrant state grant funding or technical assistance for program implementation.

Importance of the Project

This project is important to any public agency, planner, or policy advocate interested in agriculture, land preservation, and alternative programs to mitigate the social costs of losing farmland. More specifically, the California Department of Conservation, Division of Land Resource Protection (DLRP) has a direct interest in the project. DLRP's stated mission is to conserve California's agricultural and natural resources. The DLRP desires to know the local officials' interest level in implementing farmland mitigation programs and whether the interest level warrants assistance and support.

Factors affecting Central Valley Farmland and Their Causes

Up until the 2008 mortgage crisis, Central Valley local officials faced an increased population primarily because of Bay Area and Los Angeles Basin intrastate migration (Institute for Local Self

Government, 2002; Kirkpatrick, Kozloff, & Berwald, 2001). Some planners called the Central Valley the "new suburban frontier" (Fulton & Shigley, 2005, p. 6). Local officials had three options to meet the increased population's needs: to increase infill development, to annex undeveloped county land to adjacent cities for development, and to develop entirely new cities. The latter two choices required either building on prime and statewide farmland adjacent to the cities or building on marginal farmland that typically lacks water. An example of the local officials' decision to annex prime farmland in San Joaquin County is the Califia development. Califia was a project for 11,000 homes and four theme parks as part of annexation to the City of Lathrop requiring development on 7,000 acres of farmland. The theme parks were to provide jobs, making the development a self-sustaining community. However, the developer failed to build the theme parks, and the City is struggling to meet the new community's infrastructure and economic development needs (Carlson, September 19, 2000; Stapley, September 22, 2006). Other examples of recently proposed self contained communities include the 1,250-acre Fox Hills development in Merced County where little infrastructure exists; and the Tracy Hills subdivision in San Joaquin County with golf courses, 5,100 homes, and an industrial park. Local citizens and planning officials raised concerns about the lack of water for these projects (Collins, June 28, 2006; Reilly, June 3, 2008; Carlson, October 18, 2000).

However, the Central Valley faces problems other than the conversion of farmland. It does not have enough low-income housing for its agricultural labor force. Any low-income housing built for the agricultural labor force also meets the needs of the intrastate migration population, resulting in a very competitive low-income housing market. The agriculture labor force typically loses out in this competitive market. Consequently, local officials and developers perpetually look to the lower priced undeveloped farmland to build low-income communities. For example, just outside of Willits, local officials approved the conversion of 160 farmland acres for low-income homes after the developers spent two years searching for inexpensive land (*Friends of East Willits Valley v. County of Mendocino,* 2002).

Farmers, as a specific interest group for farmland mitigation programs, hold varying opinions on the implementation of farmland mitigation programs. As owners of the undeveloped land, they desire to

use all their property rights, including whether to develop the land or keep the land in agriculture. Many farmers argue that development hinders their ability to earn a farming income. Farmer Russ Felch points out:

> When development is plopped down in the middle of agriculture areas, it affects our right to farm. Shortsighted land use decisions make life difficult for everyone and, even though we repeat this over and over again, few in local government hear (Campbell, May 9, 2007).

The public is also concerned about the loss of farmland. According to a Public Policy Institute of California survey, the general public interest on Central Valley farmland loss has increased from 23% in 1999 to 42% in 2006 (Campbell, May 9, 2007). Several other research studies confirm the concern and subsequent preference for preserving farmland and open space. For example, three different studies with three different research methods demonstrate that, despite the socioeconomic status, the public prefers farmland protection (Duke and Hyde, 2002; Kline and Wichelns, 1998; Geoghegan, 2002). Moreover, a 2008 study finds that there is such a significant public preference for farmland protection that some states create a private market for permanently protected farmland (Dorfman, Barnett, Bergstrom, & Lavigno).

Contents of the Remainder of the Project Document

This farmland mitigation program survey project examines the incentives and disincentives for local officials to develop a farmland mitigation program, as well as the interest level of Central Valley local officials to implement a farmland mitigation program. I conducted a survey of Central Valley counties and cities to determine the level of interest and the presence of incentives and disincentives, and compiled the results. Then I developed recommendations for the Division of Land Resource Protection whether there was sufficient interest to warrant assistance in the form of grant funding or transactional expertise. I also present reasons, other than the lack of funding, that would prevent local officials from implementing farmland mitigation programs.

Chapter 2 examines the background for the project. Its three sections discuss the importance of California farmland; pertinent land-use regulations; relevant settlements and lawsuits; current Central Valley farmland mitigation programs; and economic effects of farmland mitigation.

Chapter 3 presents the model and methodology for the project, discussing theory and predicting the incentives that could assist, and disincentives that could prevent farmland mitigation program implementation. Chapter 4 contains the results of the survey I conducted with Central Valley local officials and the regression analysis. The regression analysis highlights the results of the incentives and disincentives towards farmland program implementation and overall interest. Chapter Five further discusses the one independent variable found significantly correlated with the local officials' and planning agencies' interest level for developing farmland mitigation programs. Chapter Five also analyzes the best way for the California Department of Conservation to assist the local officials with program implementation and presents information comparing project findings with the first California conference on farmland mitigation.

Summary

This chapter introduced the project goal of determining the interest level and the incentives and disincentives for Central Valley local officials to implement farmland mitigation programs. This chapter also discussed the importance of this study to the public, the Central Valley, and the Department of Conservation, Division of Land Resource Protection. Summaries of the remainder of the project concluded this chapter.

Chapter 2

PERTINENT BACKGROUND AND LITERATURE REVIEW

Introduction

Why is farmland important in California? What land use regulations and lawsuits provide the background for farmland mitigation programs? What are the Central Valley examples of farmland mitigation programs? What are some of the potential economic implications for using exactions as part of the farmland mitigation program? This chapter answers these questions in three sections.

The first section examines the importance of both California farmland and farmland-related amenities. The second section describes existing regulatory tools that Central Valley local officials can use before considering farmland mitigation program implementation. This section proposes why local officials adopted farmland mitigation programs when they could have used existing regulatory tools to protect farmland.

The third section presents several pertinent settlements and lawsuits that preceded the implementation of two Central Valley farmland mitigation programs. This section concludes with the economic implications for exactions in terms of social costs and benefits; and the recent economic research on exactions.

California Farmland: Why Is It So Important?

California agriculture provides a significant economic base for all of the United States. California is the "leading agricultural state in America and one of the most important food production regions in the world" (ILSG, 2002; American Farmland Trust, 2007). Agriculture is California's fifth largest industry sector (Governor's Office of Planning and Research, California Agriculture: Feeding the Future, 2003). According to the California Department of Food and Agriculture (CDFA), California generated $31.4 billion of agricultural related income in 2007; this was $15 billion more than the next highest-ranking state of Texas (2007). California also exported $9.8 billion worth of agricultural commodities in 2006 (CDFA,

2007). The Central Valley has the best farmland in the state and produces about 54% of the most profitable crops in the United States (California Department of Conservation, 2006; CDFA, 2007)

California farmland provides a stable food source to California and the rest of the United States. Food grown in California undergoes the tough food-safety scrutiny the nation's citizens demand. About half of all U.S.-grown fruit, nuts, and vegetables grow in California (CDFA, 2007). This farmland and food source increases our national security by decreasing the nation's dependence on foreign sources of food and strengthening our economy (Pollan, M. New York Times, October 2008; Norton, 2008; Wassmer, R. Spring, 2006, PPA 220B lecture).

California farmland also provides a system for ground water recharge, flood control, and erosion control. Farmland acts as a ground water recharge system when surface water percolates through the soils, enters large, naturally occurring underground basins, and remains there. As the water moves through the soil, the soil filters contaminants out of the water. Farmland acts as flood control system by soaking up water from storms like a giant sponge. Farmland assists with erosion control by slowing the movement of water as the water crosses its surface. Farmland, acting as a flood and erosion control system, is important near large urban areas because urban surfaces are mostly impervious and unable to slow the storm water's movement and erosion. The California Department of Water Resources considers farmland so important for flood and erosion control that it is spending $40 million to purchase flood-control-related agricultural conservation easements near urban areas (Department of Water Resources, http://www.water.ca.gov/floodmgmt/fpo/sgb/fpcp/prop84/).

Farmland provides several amenities, including scenic views, wildlife habitat, carbon sequestration, biodiversity, cultural landscapes, and multiple health benefits (Bonta & Jordan, 2007; Cronin, 2007; Franklin & Low, 2007; Kuminoff, 2007). Farmland also provides access to open space, relief from urban landscapes, and provides open space learning. It can "strengthen the connection between citizens and the community by helping to define a limit to the area they perceive as their home" (The City of Davis, 2002. p.3).

Current California Land Use Regulatory Tools: Why Aren't They Enough?

Local officials have a variety of land use regulations at their disposal that could be very effective in protecting farmland and managing growth that threatens farmland. This section describes the most significant of these regulatory tools: the general plan, zoning ordinances, Subdivision Map Act, California Environmental Quality Act (CEQA) and urban growth boundaries. Each section will describe why the regulatory tool is not always effective in farmland protection.

General plans.

California law mandates that every city and county has a comprehensive long-term general plan which guides how growth should occur in its jurisdiction. Local officials perform a legislative act when adopting or updating their general plans. General plan adoptions and updates require public meetings for citizens to discuss concerns or give input (Govt. Code § 65300; Fulton, 2005). The plan should have a series of policies, objectives, principles, standards, diagrams, and maps that describe current and future development in the overall planning area. For a city, the planning area consists of the city's boundary, the sphere of influence, and the area beyond the sphere, where the city impacts the local land use (Governor's Office of Planning and Research [OPR], General Plan Guidelines, 2003). County planning areas consist of the lands between the county boundary and the city's boundary. The period for most general plans is 15 to 20 years (OPR, Planners Book of Lists, 2003). Local officials must base all their land use decisions on their current general plan. The plan contains seven mandatory elements including housing, land-use, circulation, noise, safety, conservation, and open-space. Additionally, it may include optional elements such as parks and recreation; and public facilities (OPR, Planners Book of Lists, 2003). Agricultural elements and growth management elements are optional elements that local officials can use for protecting farmland. All general plan elements carry equal weight. Thus, if farmland protection policies in a conservation element were to conflict with economic development policies in the economic element, the economic element would not have precedence over the conservation element and visa versa (Curtin, 1999).

Although all of the mandatory elements affect farmland protection in some form, the housing, land use, conservation, and open-space elements are most important to the protection of farmland. Housing elements must describe the housing needs for all income levels and must list policies and objectives used to meet housing needs. If local officials expect a significant increase in population within the general plan's period, they must have policies and plans to meet the new population's housing needs. These plans often include zoning changes to allow housing density increases on farmland within the city and annexations of adjacent farmland outside city.

Land use elements describe land use in the total planning area for the plan's life. They include current and anticipated population density, building intensity, and public and private land-use (Curtin, 1999).

Conservation elements can address open space, farmland protection, and natural resources components such as endangered species, water, flood control, and air quality. Like the conservation elements, open space elements detail the community's open-space plan. Local officials meet open-space conservation needs by developing large parks, maintaining rural atmosphere, zoning for low-density housing, or protecting the community's farmland (Curtin, 1999).

Agricultural elements include acknowledging the community's agricultural contribution and describing the intent to protect agriculture infrastructure and economy. This element may also describe the jurisdiction's valuable crops, soils, and irrigation water. However, usually the agricultural element states only that local officials should protect prime soils or avoid building on prime farmland.

Local officials must make their general plans consistent throughout the document. A lack of horizontal consistency can nullify the policies that protect farmland. For example, if the housing element states there will be a specific population density and the land use element does not state the same population density; the general plan becomes inconsistent. Plaintiffs have successfully persuaded judges to nullify inconsistent general plans that included farmland protection policies (Fulton, 2005).

Local officials can amend the general plan to include new development, land use, or zoning changes up to four times a year (Curtin, 1999). The Institute for Local Self Government (2002) considers this number of allowed amendments a significant policy flaw because it allows local officials to overlook the general plan's farmland protection policies at the same time. Consequently, farmland will be more exposed to development pressures during the amendment process.

Zoning ordinances.

Zoning ordinances are the specific regulations that local officials use to carry out a community's general plan. Zoning ordinances define what landowners can build on the property, where they can build, what activities they can conduct on the property, and whether they can divide the property into smaller parcels. Local officials group zoning ordinances into use districts, which may include residential, industrial, commercial, and agriculture areas (Fulton, 1999). According to Fulton and Shigley, "The true purpose of many zoning ordinances remains the protection of single-family neighborhoods" (2005, p. 128). Thus, zoning in some communities may protect single-family neighborhoods and not farmland or agriculture infrastructure. Zoning does not prevent the loss of farmland because politicians, developers, and planning officials can change the zoning by a simple majority vote (Smith & Giraud, 2006; Daniels & Bowers, 1997; Coyler, 1998). Agricultural zoning does not prohibit entire areas or zones from annexation (American Farmland Trust, 1998).

Local officials can protect farmland by zoning certain large rural parcels as agricultural preserves. Then the county can accept landowner contracts for use valuation property tax breaks under the Williamson Act. With 16.6 million acres enrolled, the Williamson Act it is the most significant farmland protection policy in California (California Department of Conservation, 2005). Under a Williamson Act contract, the landowner cannot subdivide or develop the property, and must produce a viable income from food or fiber from ranching or farming on the contracted land.

There are two general types of Williamson Act contracts: a 10-year contract and a 30-year contract. The contracts self-renew annually. This provision means that they run perpetually until the

landowner petitions for *nonrenewal*. After petitioning, the landowner must wait nine years before the contract ends. For nonrenewal of the 30-year contract, the landowner must wait 29 years. The landowner has one other recourse for removal: petitioning the county and the Department of Conservation for an immediate cancellation. Under the petition process, the county and the Department of Conservation must make specific findings before granting the petition. If the petition is accepted, the landowner pays a penalty ranging from 12 to 25 % of the property's valuation at the time of cancellation. If the petition is rejected, the landowner remains under contract and undergoes the nine-year or 29-year non-renewal process (California Department of Conservation, http://www.conservation.ca.gov/dlrp/ica/lrcc/Pages/governing_statues.aspx). However, the Williamson Act has its limits with farmland protection. In 2005, landowners and local officials removed 70,334 acres using the public acquisition process, 23,285 acres with the nonrenewal process, and 1,018 acres with the immediate cancellation process (California Department of Conservation, 2006).

Subdivision Map Act.

Under the Subdivision Map Act, "any time land is subdivided in order to be sold, leased, or financed, the subdivision must be approved by the appropriate local government" (Fulton, 1999, p. 145). Local officials may request exactions for community infrastructure during the subdivision application period. The law also mandates a hearing and notice period and during this time, interest groups often voice their concerns. For example, the Sierra Club may have used this hearing and notice period in Bakersfield to request exactions for the conversion of farmland (V. Gennaro, personnel communication, November 6, 2008). Under the Map Act, local officials must deny a subdivision application if they find any of the following: (a) the division leads to environmental damage, (b) the division is inconsistent with the general plan, (c) the division conflicts with public easements, or (d) if the property is not physically suitable for proposed development (Fulton, 1999). Therefore, local officials can protect farmland by making one of these findings. However, local officials may not want to make such findings because subdivisions and commercial developments are a source of tax revenue.

Urban growth boundaries.

Urban growth boundaries (UGBs) are limit lines defining where urban growth can occur. Local officials discourage development outside the UGBs by limiting urban infrastructure, such as sewer and water lines. Two important purposes of UGBs are to control the phasing of urban growth and to establish an open space or *greenbelt* around the city. The greenbelt may consist of farmland, parks, large rural residential development, and wildlife conservation areas.

UGBs can expand to accommodate growth of the city in an orderly, predictable manner. Some cities, such as the City of Davis, require voter approval before the UGB can expand. Other cities, such as Modesto, developed de facto UGBs by requiring their citizens to vote on sewer, water, and road infrastructure improvements. Both cities created UGBs to increase infill and prevent urban sprawl by favoring high-density, multifamily development even in the wealthiest city areas (Sybert, Ross, & Rivasplata, 1991).

However, UGBs have limited usefulness for protecting farmland because their ordinances are difficult to pass, and usually expire after 20 years (American Farmland Trust, 1997). According to Sybert, Poss, and Rivasplata, many Californians dislike the high-density infill and the reduced property values that infill creates (Sybert et al, 1991). Only 85 California cities have UGB ordinances indicating that UGBs are not popular (Gerber & Phillips, 2005).

California Environmental Quality Act.

The California Environmental Quality Act (CEQA) requires local officials to assess how a proposed development or a change in the general plan or zoning affects the environment. The California State Resources Agency and the Governor's Office of Planning and Research conduct general administration and oversight for CEQA but have little oversight of the local officials' follow-through for CEQA requirements. Instead, California citizens must enforce CEQA:

> Citizen enforcement simply means that citizens and citizen groups are supposed to be the watchdogs of the planning process holding local governments accountable. When

> they believe local governments are not following planning laws or CEQA, citizens are supposed to file lawsuits in order to compel local agencies to follow the law (Fulton, p. 88).

Thus, public access and input in the project under the CEQA process are imperative for enforcement.

Under CEQA Guidelines, local officials must ensure developers mitigate or avoid all environmental impacts. However, local officials may approve a development project after finding that there are overriding social and economic conditions per the Public Resources Code §21002.1 (Bass, Herson, & Bogdan, 1999). The public, California State agencies, or interest groups can sue cities or counties for approving projects without mitigating for environmental impacts. CEQA's limitation as a regulatory tool for protecting farmland stems from relying on the public's enforcement and the allowance of overriding social and economic conditions. The settlement and lawsuit section that follows will present some of the few examples when interest groups used CEQA successfully.

What settlements and lawsuits prompted farmland mitigation fees and program implementation?

As discussed in Chapter 1, several settlements and one lawsuit prompted local officials to set up farmland mitigation programs and farmland preservation. The settlements and lawsuit resulted in the developers paying impact fees or preserving comparable farmland within the local officials' jurisdiction.

In Kern County, the Sierra Club reached 14 settlements with 10 different developers for building 15,543 homes on about 4,000 acres (G. Nipp, personal communication, October 21, 2008). The largest farmland mitigation fee settlement was for the West Ming Development that will convert 2,182 prime farmland acres into 7,000 homes. As part of the settlement, the City of Bakersfield will collect from the developer an in-lieu fee to offset acreage developed and a transfer fee from the second owners of the home. The in-lieu and transfer fees will add up to approximately $4 million, and the City will use the fees to preserve prime farmland in perpetuity (G. Nipp, personal communication, October 21, 2008).

Kimberley Dellinger, a California Building Industry Association legislative advocate, explained the preference for using the resulting West Ming mitigation fees:

> We view it as a financing tool, a way to finance over time. It's a more equitable way to meet the costs of doing business. At some point, it doesn't make sense to put everything on that first buyer, particularly where there are these large acquisitions of open space (Wasserman, April 7, 2002, p. A1).

In *Sierra Club v. San Joaquin Local Agency Formation Commission* (1999), the Sierra Club objected to the commission's approval of a 7,000-acre farmland annexation to Lathrop for the Califia development project. The San Joaquin County Farm Bureau joined the Sierra Club's lawsuit. In 2006, a citizens' group filed a similar suit, *Citizens for Open Government (Lodi First) v. City of Lodi* (2006), because the City approved the Lodi Shopping Center's use permit. This project included a 227,000 square foot Wal-Mart Supercenter on 36 acres. Lodi First claimed that the City did not mitigate for the farmland loss revealed in the Draft Environmental Impact Report.

Further, in the *Hanford No on Wal-Mart SuperCenter v. City of Hanford* (2006) lawsuit, the plaintiffs objected to the City approving the environmental impact review (EIR) and permit for the Hanford Station Shopping Center. The City concluded, "they could not mitigate" for the 26 acres of farmland needed for the shopping center (p.2). These last two lawsuits demonstrate that the public and special interest groups can organize and educate themselves to follow through with the Sierra Club examples toward demanding farmland protection through CEQA.

What are the Central Valley examples of farmland mitigation programs?

Farmland mitigation programs consist of policies, regulations, and ordinances that offset the loss of farmland to urbanization. Farmland mitigation programs may also offset the amenity loss related to farmland loss. For example, farmland mitigation programs maintain the open space amenity by preventing development from occurring on farmland in perpetuity. Farmland mitigation programs go beyond other land use regulations intended to protect farmland by requiring land dedications for protection of farmland

in perpetuity. Local officials can operate farmland mitigation programs, which include agricultural mitigation fee programs, in conjunction with habitat conservation programs and open space programs. Because farmland mitigation programs affect land use change, they are included in general plan amendments.

In California, farmland mitigation programs occur at the local level. Three examples of Central Valley farmland mitigation programs follow: the City of Davis created the first, San Joaquin County the second, and Stanislaus County the third. As of November 2008, these are the only farmland mitigation programs in the Central Valley.

One of California's oldest farmland mitigation programs is part of the City of Davis Open Space Acquisition and Management Plan. This program pools funds from Ordinance #1823. The Davis City Council adopted Ordinance #1823 in 1995. This ordinance requires in-lieu fees, and, as of 2005, the City has collected approximately $1.2 million of fees. The farmland mitigation program also pools money from Measure O passed in 2000. Measure O required a year and a half of preparation to place on the ballot and a two-thirds majority to pass. Measure O taxes Davis residents and business owners 24 dollars per year for each residential dwelling, 10 to 12 dollars per year for each affordable housing unit, and a comparable square foot rate for commercial development (M. Sears, personal communication, November 7, 2008). The tax will generate approximately $17.5 million by 2028 (City of Davis, 2002). As of 2008, the pooling of taxes from Measure O with the Ordinance #1823 in-lieu fees conserved 3,000 acres of farmland (M. Sears, personal communication, September 12, 2008).

The City's farmland mitigation program requires an agricultural conservation easement at a 2:1 ratio (i.e., two acres of comparable farmland preserved in perpetuity for every one acre of farmland converted to urban use). If the developer is unable to find a willing seller for the land dedication, the City will accept in-lieu fees. The agricultural conservation easement must be within the 160-square-mile Davis Planning Area, and the Yolo Land Trust holds the easements to provide easement stewardship and monitoring (The City of Davis, 2005; American Farmland Trust, 1997). All mitigation projects require the approval of the Open Space and Habitat Commission (The City of Davis, 2002).

The San Joaquin County Agriculture Mitigation program is the second example of a farmland mitigation program in the Central Valley. The County Board of Supervisors adopted the program under Ordinance No. 4308, passed in 2006. The County adopted the program in response to the *Sierra Club v. San Joaquin Local Area Formation Commission* court case (B. Martin, personal communication, August 8, 2008). Unlike the City of Davis program, this program is still working towards completing its first agricultural conservation easement. However, Kerry Sullivan, the director for the program, states it has received several applications to mitigate farmland for proposed development (K. Sullivan, personal communication, September 12, 2008). This program coordinates the San Joaquin County Multispecies Habitat Conservation along with the County's Open Space Plan to accommodate the two additional programs' amenities and requires a 1:1 land dedication ratio. If the developer, after good faith efforts, is unable to find a willing seller for the land dedication, the developer can then pay in-lieu fees to the County. The County keeps the in-lieu fees in a separate account and uses the fees only for the purchase of an agricultural conservation easement (ACE). After the County purchases an ACE, it turns the easement over to a land trust, such as the Central Valley Farmland Trust, for monitoring and stewardship (San Joaquin County, 2007).

The Stanislaus County Farmland Mitigation Program is the last Central Valley program example. Although adopted in December 2007, local officials have not permanently preserved any farmland under the program. The program differs from the City of Davis and San Joaquin County programs because it requires mitigation only for farmland converting to residential development; commercial development is exempt. (A. Freitas, personal communication, October 20, 2008). The Stanislaus County farmland mitigation program requires 1:1 acre land dedication if the total land area is 20 acres or more and requires the developer to buy the agricultural conservation easement directly. If the total land area is less than 20 acres, the developer may either directly acquire an agricultural conservation easement or purchase mitigation credits towards a future agricultural conservation easement. The developer may pay in-lieu fees under two specific conditions: if it is able to prove good-faith effort towards obtaining an easement; or if it is able to prove good faith efforts towards applying for easement mitigation credits. The Board of

Supervisors must approve all mitigation projects within the unincorporated areas of the county (Stanislaus County, 2007). The County is also undergoing an intergovernmental effort with its cities to implement the program fully in a cohesive well thought out effort. On July 31, 2008, the City of Modesto held its first stakeholder review meeting to develop a program (J. Bridegroom, personal communication, July 31, 2008).

Considerations for implementation.

According to the Institute for Local Self Government (2001), an effective farmland mitigation program requires plans that coordinate with long-term land use policies. The absence of this coordination could prove an obstacle to program implementation. For example, if local officials define the program under a county's open space element, the plan must be consistent with all the other long-term policies within this element. Additionally, the farmland mitigation program must be consistent with the fair-share housing policies of the county's general plan or other state-imposed housing requirements (ILSG, 2001, p. 40).

Mitch Sears, the City of Davis Open Space Director, states that local officials must consider the appropriate entity to hold the agricultural conservation easement after the purchase is complete. A public agency or a land trust may hold an agricultural conservation easement. However, the agency or trust must state that protecting agricultural is one of its intended purposes. As organizations, land trusts live up to their reputation for developing conservation easement strategic plans, land acquisition, open space program assistance, and ongoing stewardship for land maintenance. There are more land trusts available to hold agricultural conservation easements than there are qualifying public agencies. Therefore, the absence of a qualified public agency or land trust with a good reputation for holding and stewarding agricultural conservation easements could prove a program obstacle (Sears, personal communication, September 12, 2008).

The ILSG recommends that local officials provide multiple opportunities for public input regarding farmland protection measures, especially in communities where farmland has already become a

priority (ILSG, 2002). This recommendation also applies to farmland mitigation program implementation. Furthermore, Loux, (2000) states that in order to implement farmland mitigation programs, local officials require the consensus of stakeholders, including city and county officials, concerned citizens, farmers, businessmen, developers, land trust representatives, environmentalists, and the local California Building Industry Association chapter. Once stakeholders agree to move forward, local officials provide for public input by opening the meetings. Local officials obtain a final consensus only after several years of stakeholder and public meetings (J. Bridegroom, personal communication, July 31, 2008). Local officials adopt ordinances and regulation as one of the final steps in program implementation. In conclusion, local officials should consider the absence of significant public input for farmland mitigation programs a disincentive to implementation.

Additional Considerations: Exactions

California local officials increased their use of exactions as an alternate method funding infrastructure related to new development after Proposition 13 passed in 1978 (Curtin, 1999; Fulton & Shigley, 2005). Local officials can require exactions through their police powers (California Const. Art. XI, § 7).

Local officials use exactions to ascribe a developer's financial responsibility for the growth-related problems such as paying for new schools, sidewalks, streets, nearby freeway interchanges, and parks. To exercise the police powers, local officials must enact policies and ordinances to make the exactions legal (Sokolow, personal communication, August 12, 2008). In 1987, California voters passed the Mitigation Fee Act, which sets several requirements for exactions. Each exaction must have a direct, reasonable relationship to the development impacts within the community. This requirement is the *nexus* or connection to the project (Fulton & Shigley, 2005). The exaction must be roughly proportional to the project's impact. Local officials must also identify the exaction amount and the fee purpose; assign the fee to a specific project; and segregate the fee from the general fund (Curtin, 1999). Thus, local officials who have implemented farmland mitigation programs apply their police powers to recoup the impact of

farmland loss in their communities. In conclusion, these local officials designate farmland as an important community resource worthy of protecting.

Economic Implications of Exactions

With the onset of exaction use in California, local officials required developers to give exactions to offset the infrastructure costs (marginal costs) of their development projects. This requirement became a way to generate revenue to replace lost tax revenue. Thus, local officials, stakeholders, and the public perceived exactions as a social benefit because exactions replaced lost taxes. Later, the concept of exactions expanded to being a growth management tool, further increasing their perception as a social benefit. However, planners and economists became concerned about effects on economic development. Now local officials and the public perceive exactions as a social cost because they may decrease economic development. The remainder of this section is a partial compilation of economic research expressing the reasoning behind the exactions social cost and benefit.

Traditional economic theory treats exactions as an excise tax on developers that later is partially passed on to the first homebuyer (Skaburskis, 1990; Yinger, 1998). Depending on the elasticity of demand for land, homeowners, landowners, and developers share the burden of the impact fee (Yinger, 1998).

However, Ihlanfeldt & Shaughnessy (2004) considered the traditional economic exaction theory an "old view" replete with theoretical errors. These included the error of omitting from the equation public capital infrastructure (e.g., roads) financed by the fees and omitting the impact the fees would have to "lower the expected future property tax rates (p. 651)". The authors conducted empirical research on all homes in Dade County, Florida to test the old view theory. They found that "the difference in the effect of an additional dollar of real impact fees between new and existing housing is small and statistically insignificant…impact fees are not shifted forward to the new homebuyers" (pp. 658-659). Further, they proposed that because impact fees lower the undeveloped land value, these fees could decrease sprawl by reducing the opportunity cost for farmers by keeping their land in agriculture. The ILSG (2002) adds that

this reduced opportunity cost results in an *impervious syndrome* resulting in farmers keeping their farmland next to cities.

By contrast, Mayer & Somerville's (2000) analysis of new development in 44 U.S. metropolitan areas from 1985 through 1996, supported the idea that impact fees have relatively little impact on new construction whereas *nonfinancial* related regulations, such as zoning and growth controls, negatively impacted new construction by lowering the price elasticity over 20 %. Similarly, Singell and Lillydahl's (1990) statistical analysis suggested that impact fees did not affect the price of new homes, and thus, new homebuyers did not bear the burden of the fee. Burge and Ihlanfeldt's (2005) Florida county study demonstrated that exactions actually increased new suburban single family home construction and that the developers paid the fees, as opposed to the new homeowners. These authors showed that impact fees increased the project approval rates and reduced overall project costs, ultimately resulting in new home construction.

Jeong and Feiock's (2006) economic impact study on exactions in 66 Florida counties over a 10-year time span demonstrated that economic development was not hampered by exactions. In fact, they concluded that exactions increase the economic performance as developers and local governments consider the regulation building revenue less risky than using tax incentives. Nelson, Arthur, and Moody (2003) also found that impact fee regulations were less risky and supportive of economic development. The researchers theorized that developers perceive less risk because the fee system allows them to obtain building permits faster.

The last six studies support the idea that developers bear the burden of the fee; construction increases; and related economic development improves. A local official or stakeholder that understands these studies may not want impact fees. In the absence of non-financial stringent growth control regulations, the exaction process would actually increase the urbanization of farmland.

Local officials should use caution when applying the findings from these studies to proposed farmland mitigation programs in their jurisdictions. For example, three of the studies that this section

discussed occurred in Florida, which may have a different rate of urbanization or less farmland available. Both factors limit the generalizability of the findings.

Summary

This chapter provided background on Central Valley farmland mitigation programs. This chapter first identified the importance of California farmland and established the background land use regulations, settlements, and lawsuits for farmland mitigation programs. Then this chapter presented Central Valley farmland mitigation program examples and followed with the potential economic implications for using exactions as part of the farmland mitigation program.

Chapter 3

METHODOLOGY

Introduction

Chapter 3 discusses the survey and regression analysis to answer the research questions: (a) what is the interest level of Central Valley cities and counties in implementing farmland mitigation programs? (b) What is the strength of the relationship between the independent variables and, given this relationship, would these variables act as a significant incentive or disincentive for Central Valley local officials to implement a farmland mitigation program? and (c) Does sufficient interest exist to warrant state grant funding or technical assistance for program implementation? Section 1 presents the model's independent and dependent variables for the survey and regression analysis. Section 2 presents the survey and briefly introduces the regression analysis.

Section 1: The Model

Independent and dependent variables.

The model uses two important definitions. I define incentives as variables that motivate the local officials to implement a farmland mitigation program. I define disincentives as variables that must motivate the local officials to consider non-implementation of a farmland mitigation program. As revealed in the literature review, three groups of variables have a significant effect on the interest level for program development: politics; consensus of stakeholders and public perceptions; and previous plans and policies. The disincentive and incentive variables act as the independent variables in the research. The dependent variable is the Central Valley city and county interest level in developing a farmland mitigation program. The remainder of this model section will present the independent variables, which will be used for the backbone of the survey, the correlation matrix, and the regression analysis.

Independent variables: politics affecting collaboration, timing, agendas, and perceptions.

A charged political atmosphere may sway local officials to vote for or against a farmland mitigation program. For example, in conservative Republican Kern and Tulare Counties, voting patterns tend towards viewpoints supportive of landowner rights and against any interference from environmental

groups. However, the local Sierra Club chapter has collaborated with some farm interest groups, as evidenced in the settlements in Kern County and the *Hanford No on Wal-Mart Supercenter v. City of Hanford* (2006) lawsuit in Tulare County. Accordingly, the political atmosphere can change based on the issues at hand and the common desires of normally opposing interest groups.

Kingdon (1995) and Zahariadis (2003) present politics as the third element or stream in all policy implementation; farmland mitigation programs are no exception. These authors suggest that since politicians (local officials) have a limited amount of time and ability to attend to all problems, they attend only to the most important problems. Therefore, in order for local officials to adopt farmland mitigation programs, the problems resulting from not having a farmland mitigation program would have to be more prominent than most other problems at hand (Zahariadis, 2003). In addition, if local officials perceive the farmland mitigation problem to be a prominent problem, any related political pressure would be an incentive. Conversely, the lack of political pressure may be a disincentive (Loux, 2000).

Independent variables: consensus and perceptions of stakeholders and the public.

Local officials implement farmland mitigation programs under the general plan's open space element or the agricultural element in cooperation with public input and consensus. Local officials may believe that a lack of consensus is a disincentive attributable to the stakeholders' and public's perceptions. As discussed in the literature review, disparate perceptions center on several issues. These perceptions include whether the developers bear the burden from the impact fees; whether the impact fees flow to accounts separate from the general plan; and whether the proposed land dedication ratios or impact fees would be sufficient. Furthermore, they can disagree on whether there is a nexus to the impact fee and the farmland lost; whether the current land use regulations are sufficient for farmland protection; and whether the holding agency is qualified to hold an agricultural conservation easement.

Independent variables: previous plans and policies.

The literature review provides three examples of potential incentives or disincentives dealing with previous general plans, exactions, and land dedication policies. As presented in Chapter 2, each local government has a general plan governing its jurisdiction's land use. If the local officials have established sufficient farmland protection policies in the general plan, they will have less difficulty adding a farmland mitigation program because the background policies already exist. For example, if the open space element states only that prime farmland should not be developed and has no land dedication policies, then the local officials would need to establish land dedication policies before implementing the farmland mitigation program policies. The public and stakeholders would need to approve these additional policies under the general plan amendment. In essence, the local government would need to take one additional step to implement the program. Likewise, if the local officials have already required exactions for urban infrastructure needs and the public has accepted this exaction policy, the local officials would have an easier time extending the exactions to farmland mitigation programs.

Finally, if the local officials have established policies and processes for land dedications, such as habitat conservation easements, they will have an easier time establishing a process for agricultural conservation easements. If no such policies and processes are in place, they must develop the new processes and policies and consider all the stakeholders involved (e.g., land trust or public agency) which may have an interest in the policies.

Consideration of criteria and variables.

I have presented variables demonstrating potential incentives and disincentives for implementing farmland mitigation programs. However, the variables lack quantitative value and assignment of a quantitative ranking. Any quantitative ranking at this point would be arbitrary and distorting to the survey results. For instance, the importance of stakeholders' consensus may vary compared to the importance of the farmland protection policies in different counties. Thus, I applied no relative weights and relied on the survey to distinguish the importance of each variable.

Table 2 provides a brief description of independent variables, the coding of the variable, the source of each variable. I also hypothesize the expected direction of the independent variable on the dependent variable. The minus (-) sign indicates that the presence of this variable will be a disincentive for planning agencies to develop a farmland mitigation program (FMP), whereas a plus (+) sign indicates that the variable will prove an incentive to development. The question mark (?) indicates uncertainty on whether the presence or absence of this variable will prove to be an incentive or disincentive.

Table 3: Summary of Independent Variables - Incentives and Disincentives

Variable	Description	Expected Outcome (Incentive/Disincentive)	Source
1. Urban Growth Boundary	City urban growth boundaries, urban limit lines, or greenbelts. 1= Yes 0= No	**(-)** The presence of a well established policy with these may decrease the need or interest in developing a FMP.	Survey Question 2
2. Other Growth Control Measure	Other growth control measures that restrict development on farmland, including initiatives adopted by voters, regulatory ordinances. Excludes resolutions, zoning, Williamson Act, or policy statements. 1= Yes; 0= No; 2 = Unknown	**(-)** The presence of other growth control measures may decrease the perceived need for, or interest in, developing a FMP.	Survey Question 3
3. Exactions Required	The city or county's requirement that developers pay exactions (impact, in-lieu, or linkage fees etc) to mitigate for the development proposed. 1= Yes; 0= No	**(?)** The established use of exactions may decrease the developer's agreement for additional exactions for farmland mitigation but may be perceived as a faster way to get development approved.	Survey Question 4
4. Farmland Importance-Officials	The importance of farmland conversion per the local officials, as perceived by the planning agency. 10-point scale: Not Important to Very Important	**(+)** Local officials who view farmland conversion to non-agricultural use as a problem may have a significant interest in developing FMP.	Survey Question 5
5. Farmland Importance-Agency	The importance of farmland conversion as a problem as perceived by the planning. 10-point scale: Not Important to Very Important	**(+)** Planning agencies that view farmland conversion to non-agricultural use as a problem may have a significant interest in developing FMPs.	Survey Question 6
6. Knowledge -FMP	Knowledge or expertise in FMPs. 5-point scale: Not Available to Highly Available	**(+)** Greater knowledge of FMP development process may have a positive impact on interest level	Survey Question 13a
7. Knowledge -Conservation Easement	Knowledge or expertise in developing agricultural conservation easements. 5-point scale: Not Available to Highly Available	**(+)** Greater knowledge of agricultural conservation easements may have positive impact on interest level	Survey Question 13b

8. Knowledge -Exaction	Knowledge or expertise in exactions (e.g., developer fees, impact, in-lieu, linkage fees). 5-point scale: Not Available to Highly Available	**(?)** Planning agency may be against exactions because they can increase rate of development.	Survey Question 13c
9. Time	Availability of planning agency time to develop a FMP. 5-point scale: Not Available to Highly Available	**(+)** The more time available, the more likely staff has been able to build consensus and policies.	Survey Question 13d
10. Knowledge-Agriculture	Knowledge of agricultural operations or agricultural related issues. 5-point scale: Not Available to Highly Available	**(+)** The more knowledgeable the staff is about agricultural issues, the better able to build stakeholder consensus.	Survey Question 13e
11. Funding	Availability of funding to develop and implement a FMP. 5 point scale: Not Available to Highly Available	**(+)** The more funding available for program development, the better.	Survey Question 13f
12. Public Support Farmland	Public support for preserving farmland within the community. 5-point scale: Not Available to Highly Available	**(+)** The more public support for farmland preservation, the easier to garner public support for FMP.	Survey Question 13g
13.Stakeholder Support Farmland	Stakeholder support for preserving farmland within the community. 5 point scale: Not Available to Highly Available	**(+)** The more stakeholder support for farmland preservation, the easier to garner support for FMP.	Survey Question 13h
14. Political Leadership	Political leadership to support and begin developing a FMP. 5-point scale: Not Available to Highly Available	**(+)** The more political leadership available, the easier to push the FMP through bureaucratic levels.	Survey Question 13i
15. Consensus Stakeholder	Consensus among stakeholders on the value of a FMP in the community. 5-point scale: Not Available to Highly Available	**(+)** The more consensus available, the greater the interest will likely be in developing a FMP.	Survey Question 13j
16. Established Policies	Established policies within the open space or agricultural element aligning policies for developing a FMP. 5-point scale: Not Available to Highly Available	**(+)** The more policies established in these elements, the more likely the interest.	Survey Question 13k
17. Qualified Agency/Land Trust	The presence of a qualified entity to hold the agricultural conservation easement. 5-point scale: Not Available to Highly Available	**(+)** If the planning agency perceives the entity to be very qualified and established, the greater the interest will be for a FMP.	Survey Question 13l
18. Knowledge in Soliciting Public Input	The knowledge level of the planning agency for soliciting public input into FMP development. 5-point scale: Not Available to Highly Available	**(?)** Uncertainty about the effect of having more knowledge in soliciting public input about FMP development.	Survey Question 13m
19. Resource-Solicit Public	Additional resources for soliciting public input into the development of a FMP. 5-point scale: Not Available to Highly Available	**(?)** Having resources for soliciting public input may help toward implementing meetings. However, the presence of this resource does not imply increased support.	Survey Question 13n

Section 2: The Survey and Introduction to the Regression Analysis

Survey construction and distribution.

Through my employment at the California Department of Conservation, Division of Land Resource Protection, I had the opportunity to design a survey, a two-page questionnaire, determining the status of Central Valley farmland mitigation programs. A cover letter describing the survey's purpose accompanied the survey. A definition of a farmland mitigation program was included in the survey's introduction. I conducted a pre-test of the survey by sending it to two planning agencies. One planning agency had an established farmland mitigation program; the other was just developing one. I integrated the comments from these pre-tests into a revised survey.

I sent 103 surveys to the Central Valley's city and county planning agencies. All 19 county planning agencies received surveys. However, due to the constraints of time and money, I sent surveys to only 84 city planning agencies. I limited the city selection to those that were incorporated and those that had prime, statewide, unique, or farmland of local importance within or adjacent to their city boundaries. I determined the cities using the ArcView Geographical Information System computer program. I merged shapefiles from the California Department of Conservation, Farmland Mapping and Monitoring Program's Important Farmland data and 2006 California city boundary data.

In order to increase the response rate, I included a self-addressed and stamped envelope. I sent a follow-up cover letter and survey to those planning agencies that had not responded one week after the initial mailing.

Survey questions.

This section describes the survey questions, the process of changing the survey questions into usable data, and the questions' use towards answering the research questions. Appendix A presents the survey. Table 3 presents a description of the variables, the coding, and the identifying question in the survey

Question 1 allows anonymity for the respondents, if desired. I included the option of anonymity to increase survey response. Questions 2 and 3 established the presence of the independent variable Urban Growth Boundary and Other Growth Control Measures in Table 3. Glickfeld and Levine first used these two questions in their research (1992). The Urban Growth Boundary was coded 1 for "yes" and 0 for "no". I had difficulty with defining the Other Growth Control Measures variable in the survey; thus, I provided a third response, "unknown" in case the city planners likewise had difficulty. "Unknown" was coded 2.

Question 4 established the independent variable of Exactions-Required in Table 3. It was coded 1 for "yes" and 0 for "no". Because exactions have been a widely used source of revenue, I expected a high response rate. Thus, the Exactions Required variable may not adequately explain the planning agency's interest level in the regression analysis. I considered previous use as a possible incentive.

Questions 5 and 6 denote whether the local officials and planning agency consider the conversion of farmland to be important and the range of importance. I used these questions to determine the politics affecting collaboration, timing, agendas, and perceptions. These questions define the independent variable of Farmland-Importance-Officials and Farmland-Importance-Agency. The response category was a standard ordinal 10-unit scale, which ranged from "not important to very important". All response categories were mutually exclusive while maintaining an inclusive range of responses. I transformed and re-coded the scale into three units to increase my understanding of the data. I assigned codes 1 to 4 to represent "not important to little importance", code 5 to represent "neutral", and codes 7 to 10 to represent "important to very important".

Question 7 identified whether the agency had a farmland mitigation program. I used this question to isolate all cities and counties that had farmland mitigation programs from various crosstab comparisons, a correlation matrix, and a regression analysis. I also used question 7 as a source of information for future research on farmland mitigation program models. Question 8 determined the dependent variable: whether the agency was interested in developing a farmland mitigation program. I directed respondents to answer question 8 only if their jurisdiction did not already have a farmland mitigation program.

I designed questions 9 through 12 to determine more information about the dependant variable. For example, on questions 11 and 12, I asked whether the city or county planning department was more interested in state technical assistance or grant funding to develop a farmland mitigation program. The answers will help the California Department of Conservation determine how best to expend its resources towards providing technical support or grant funding. I directed respondents to answer only questions 9 through 12 if their jurisdictions did not already have farmland mitigation programs and only if their planning agencies were interested in developing them.

Question 13 reveals the planning agency's access to additional resources. These resources were identified in the literature review and pre-test survey. Inadequate availability of these resources to the planning agency could be a disincentive to developing a farmland mitigation program. I grouped these questions together to simplify response categories and to increase the rate of return. The response category used an ordinal scale ranging from "not available to highly available" and coded on the scale 1 to 5. I later transformed the responses into just three response categories. Codes 1 to 3 were transformed into "not available-little availability" and coded 1. The response "adequately available" remained coded as 3, and response codes 4 and 5 were transformed into "highly available" and coded as 3.

Introduction to the regression analysis.

In order to determine the strength of the relationship between the independent variables and agency interest, I used a correlation matrix and binary logistic regression analysis. Specifically, I used the regression analysis to determine whether the independent variables act as a disincentive or incentive for Central Valley cities and counties to implement a farmland mitigation program. Table 3 presents the independent variables.

The regression analysis is a common statistical analysis tool that researchers use to test a hypothesis. The regression analysis demonstrates the level of effect that the independent variables will have on the dependent variable. Hence, the independent variables are the explanatory factors, which may affect the dependent variable. Because the dependent variable is coded 1 or 0, I used a binary logistic

regression analysis. The results chapter that follows discusses the binary logistic regression analysis further.

Chapter 4

RESULTS

Introduction

This chapter presents the survey, correlation matrix, and binary logistic regression analysis results. Section 1 discusses the response rate and initial outcomes from the survey questions in relationship to the research questions. Section 2 presents the regression analysis.

Section 1: Survey Response Rate and Frequencies of Variables

I sent out 103 surveys and received 64 surveys back for an overall response rate of 62%. The 103 surveys included 19 mailed to counties (14 completed) and 84 to cities (50 returned). Seventeen surveys returned were from the North San Joaquin Valley, 16 were from the Sacramento Metropolitan Region, 12 were from the Sacramento Valley, and 15 were from the South San Joaquin Valley. Because 11 respondents desired anonymity, I gathered no additional demographic data.

Table 4 presents descriptive statistics for all variables used in the regression analysis. Appendix B presents the Pearson's correlation coefficients for all variables. I present some of the more noteworthy variables in the following discussion. Fourteen percent of the planning agencies had farmland programs; thus, 86% did not. Originally, two additional agencies responded that they had farmland mitigation programs. However, when interviewed later, they changed their responses to "No." At first, they considered CEQA mitigation the same as a farmland mitigation program, but with my clarification of the definition, changed their response. Of the 55 agencies that did not already have farmland mitigation programs, 44% (24 out of 55) stated that they were interested in developing a farmland mitigation program and 56% stated that they were not. In addition, of the planning agencies interested in program development, 38% had considered a farmland mitigation program within the last year.

Fifty-six percent of the respondents stated that they had urban growth boundaries and only 19% stated that they had other growth control measures. A very high percentage, 97%, stated that they required development fees. Because of the high affirmative response, the Exactions-Required variable may not

explain the interest level in the regression analysis. However, the high rate of response demonstrates that the respondents would be familiar with using exactions, and this familiarity may motivate the agencies to use them.

One hundred percent of the planning agencies with farmland mitigation programs stated that they considered the conversion of farmland to be important to very important problem in their jurisdiction. Further, 89% of the planning agencies stated their local officials considered the conversion of farmland to be an important to very important problem. However, Figure 1 below demonstrates that the planning agencies without farmland mitigation programs had a greater dispersion rate of responses than those with farmland mitigation programs. Of the planning agencies not interested in developing farmland mitigation programs, 35% stated farmland conversion was not an important problem or was a problem of little importance. Sixteen percent were neutral, and 49% stated farmland conversion was an important to very important problem in their jurisdictions. These agencies also stated that 79% of their local officials considered the conversion of farmland to be important to very important. Conversely, 4% of the planning agencies interested in farmland mitigation programs stated that farmland was not an important problem or had little importance. Four percent were neutral, and 92% stated that farmland conversion was an important to very important problem. Only 42% of their local officials considered the conversion of farmland to be important to very important.

Figure 1-Importance of Conversion of Farmland to All Planning Agencies Surveyed

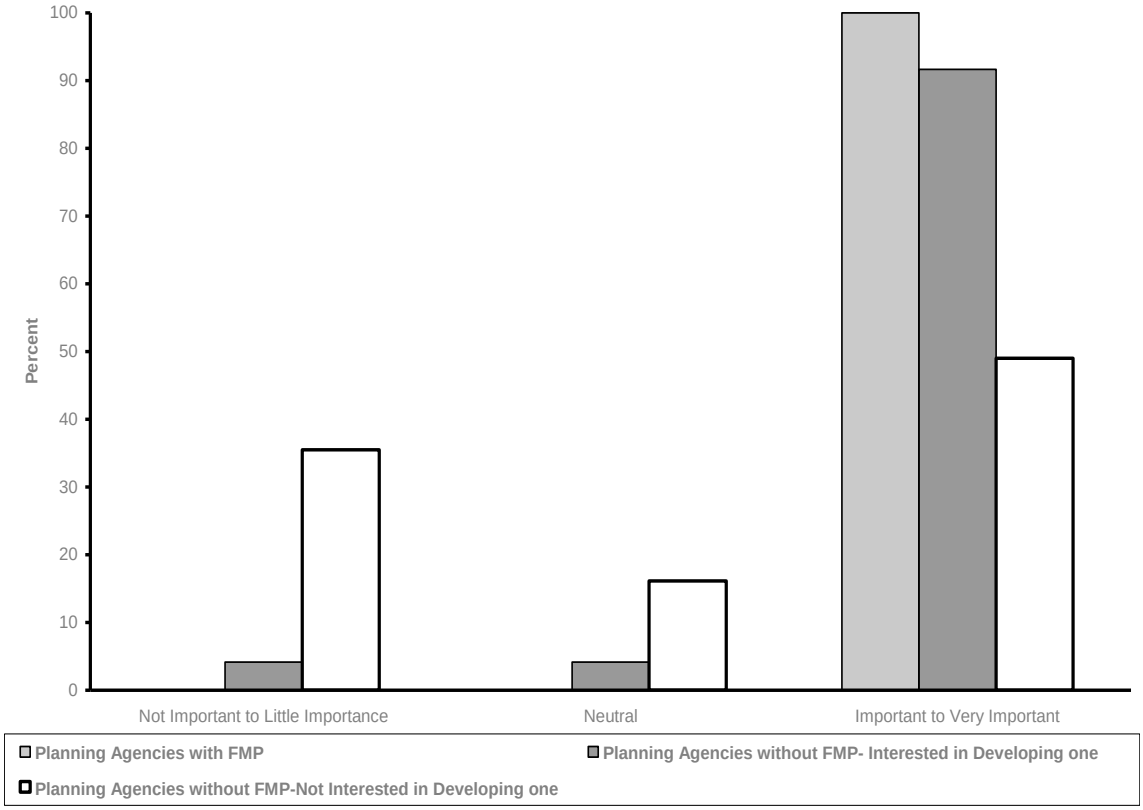

Figure 2 presents a list of resources revealed through the literature review and pilot survey interviews. These resources represent the independent variables 6 through 19 on Table 2 and question 13a through 13n on the survey. Inadequate access to these resources could prove a disincentive to developing a farmland mitigation program and, conversely, if present these resources could be an incentive to development. Figure 2 shows that, for the planning agencies without programs, having the availability of funding and time for farmland mitigation program development; a qualified entity to hold the agricultural conservation easement; and the resources for soliciting public input were the least available resources. The least available resource for agencies with a program was funding for developing a farmland mitigation program.

Figure 2: Resources Present at Agencies with and without Farmland Mitigation Programs

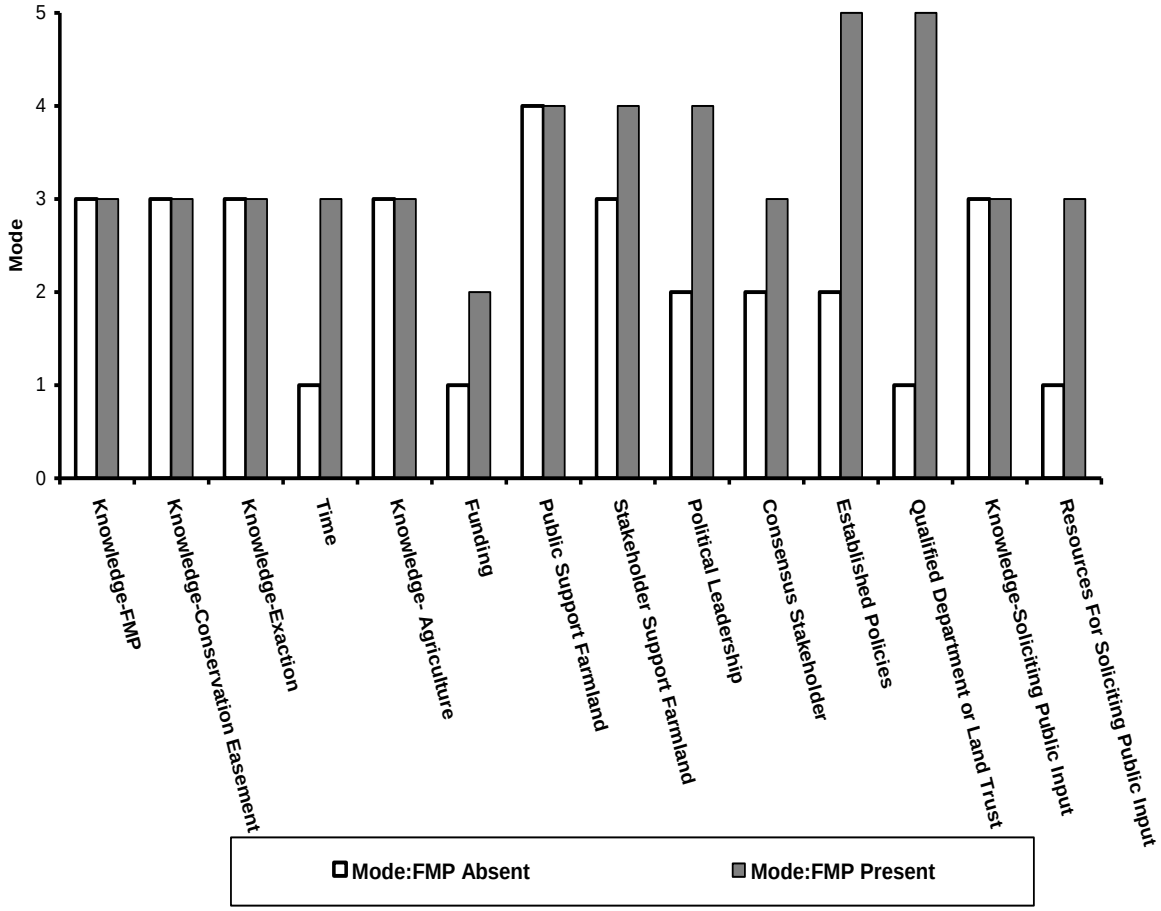

Table 4: Descriptive Statistics for Regression Analysis

Variables	Mean	Standard Deviation	Minimum	Maximum
Agency Interest FMP*	0.43	0.501	0	1
Urban Growth Boundary	0.53	0.504	0	1
Other Growth Control Measure	0.13	0.336	0	1
Exactions Required	0.96	0.189	0	1
Farmland Conversion Problem Importance-Planning Agency	6.80	2.738	1	10
Knowledge-FMP	2.67	1.037	1	5
Knowledge-Conservation Easement	2.93	0.997	1	5
Knowledge-Exaction	3.55	1.033	1	5
Time	1.89	1.066	1	4
Knowledge- Agriculture	3.02	1.122	1	5
Funding	1.51	0.940	1	4
Public Support Farmland	2.93	1.069	1	5
Stakeholder Support Farmland	2.82	1.056	1	5
Political Leadership	2.69	1.103	1	5
Consensus Stakeholder	2.31	0.940	1	4
Established Policies	2.58	1.100	1	5
Qualified Department or Land Trust	2.00	1.232	1	5
Knowledge-Soliciting Public Input	2.65	1.262	1	5
Resources For Soliciting Public Input	2.64	1.250	1	5

Section 2: Regression Analysis

I chose to use the binary, logistic regression analysis because the dependent variable is binary, meaning it only has two possible outcomes—each agency is either interested in FMP or not interested.[1] To select variables for inclusion into the regression model, I examined Figure 1 and Figure 2, and identified a sub-group of independent variables that appeared to be strong candidates for having an effect on agency interest in FMP. This sub-group included Farmland-Importance-Agency, Funding, Timing, Qualified Department-Land Trust, and Resources for Public Input. These variables were significantly different in

value between the local governments that did and did not have farmland mitigation programs. I also examined the correlation matrix (Appendix B) to avoid multicollinearity by excluding highly correlated pairs of variables.[2] Tables 4 and 5 present the results of the regression.

Goodness of Fit Statistics.

A number of diagnostic statistics are available for logistic regression models to shed light on how well a model fits the data. Two pseudo-R-square tests, the Cox-Snell R-square and the Nagelkerke R-square, return values between 0 (no relationship) and 1 (perfect relationship). The R-squares in this regression were .371 and .498 respectively indicating that there was a relationship explaining the dependent variables with the independent variables, but not a perfect one.

The Overall Model Correct percentage on Table 5 indicates how well the model correctly estimates whether each city or county is interested in FMP. In this regression, the overall percentage is 78%. This percentage is decent compared to a baseline of 50% for random classification.

The Hosmer and Lemeshow Goodness of Fit test was used to predict the probability that the model is a good fit, meaning that there will be no difference between the observed and expected outcome. If the Hosmer and Lemeshow Goodness of Fit returns a p-value less than .05, then there is no difference between the observed and predicted values on the dependent variable. Conversely, if the p-value is greater than .05, the observed and predicted values for the model would be valid to an acceptable level. Table 6 reveals the p-value of .929, and thus the fit of the model is acceptable. (http://faculty.chass.ncsa.edu/garson/PA765/logispss.htm).

Hypothesis Tests.

Although the regression model fits the data reasonably well, only one independent variable had a statistically significant effect on the dependent variable ($p = .009$). [3] This is the variable from Question 6 of the survey, "How important of a problem does your city [or county] planning department consider farmland conversion to non-agricultural use?" The odds ratio of 1.809 indicates that a one-point change

on the 10-point response scale for this question corresponds to an 80% increase in the odds that an agency will report having an interest in FMP.

Table 5: Final Regression Results

Variable N=55	B	Standard Error	Sig.	Exp. (B)
UGB*	-.192	.762	.801	.825
Other Growth Control Measure*	-.451	1.118	.687	.637
Importance of Farmland Conversion Problem-Planning Agency	.593	.228	.009	1.809
Knowledge-FMP	-.594	.755	.432	.552
Knowledge-ACE	.510	.636	.423	1.665
Knowledge-Exactions	-.107	.487	.825	.898
Time	.427	.615	.487	1.533
Knowledge-Agriculture	.376	.578	.516	1.456
Funding	.461	.677	.496	1.586
Public Support Farmland	-.225	.628	.720	.798
Stakeholder Support Farmland	-.296	.575	.607	.744
Political Leadership	.541	.546	.322	1.717
Stakeholder Support FMP	-.683	.680	.315	.505
Established Policies	.217	.519	.677	1.242
Qualified Department or Land Trust	-.254	.438	.562	.776
Knowledge-Soliciting Public Input	.714	.492	.146	2.043
Constant	-6.609	2.552	.010	.001
Model Summary	**Value**	**Significance**		
Chi-Square	25.528	.061		
Nagelkerke R Square	.498			
Cox & Snell R Square	.371			
Overall Model Correct Percent	78%			

Note. *Entered categorically.

Table 6: Contingency Table for Hosmer and Lemeshow Test

		Q8AgencyShownInterestFMP = No		Q8AgencyShownInterestFMP = Yes		Total
		Observed	Expected	Observed	Expected	Observed
Step 1	1	6	5.945	0	.055	6
	2	6	5.656	0	.344	6
	3	5	4.861	1	1.139	6
	4	4	4.401	2	1.599	6
	5	3	3.502	3	2.498	6
	6	3	2.728	3	3.272	6
	7	1	2.045	5	3.955	6
	8	2	1.308	4	4.692	6
	9	1	.553	6	6.447	7
Hosmer and Lemeshow Test					Significance	.929

Chapter 5

CONCLUSION

Introduction

In the previous chapter, I presented the frequencies of some of the more noteworthy variables and found the independent variable, Farmland-Importance-Agency, significantly correlated with Interest Level. In Section One of this chapter, I discuss why this variable may be the only significant one found in this study. In Section Two, I answer the final research question of whether sufficient interest exists to warrant state funding or technical assistance for program implementation. Finally, in Section Three, I present information from the first California conference devoted to farmland mitigation program development and conclude with recommendations for future research and a project summary.

Section 1: Survey Design Flaw and Significantly Correlated Variable Relationship

There are two possible reasons why the Farmland-Conversion-Problem Importance-Planning-Agency is the only variable significantly correlated with Interest Level. First, the survey design and sample size may have been insufficient to detect other significant relationships. Secondly, the variable may indeed have overriding importance in comparison to all the other variables in the model.

Survey design ─ limitations of my research.

The survey design may have suffered from (1) an insufficiently clear definition of farmland mitigation program, (2) unclear description of the survey's objectives, or (3) response ranking categories that were too broad. These are the limitations of my research.

First, I realized that the farmland mitigation program definition might not be specific enough when two planning agencies stated that they had farmland mitigation programs, when they did not. They thought following CEQA was a farmland mitigation program. I failed to state in the definition that the occasional mitigation for CEQA was not the same as the routine mitigation required by farmland mitigation programs. Likewise, I did not state that a planning agency's jurisdiction included its sphere of

influence and planning area. Several of the cities stated that they no longer had farmland within their city boundaries.

Second, there is evidence that some respondents misinterpreted the description of the survey objectives. Although I performed a pilot survey, I chose planning agencies already somewhat familiar with farmland mitigation programs. I might have expanded the pilot survey to several agencies that were unfamiliar with the farmland mitigation program. The planning agencies could misconstrue the true purpose of the survey and therefore could have given incomplete or guarded responses. This problem was evident in one city's response that the survey purpose proved that "California state agencies wanted to start a statewide farmland mitigation program" as opposed to allowing local governments to determine their own land use regulation. Thus, my survey objective "to determine the overall level of interest for developing or expanding farmland mitigation programs within the Central Valley and to determine whether the level of interest is sufficient to warrant assistance by the Division of Land Resource Protection" was not specific enough.

Third, the ranking questions were problematic, especially with the listing of resources available for a farmland mitigation program. One survey response was habitual, meaning that the subject gave the same response to all 14 available resource questions (Question 13a through 13n). As a result, I eliminated this survey. Additionally, the ranking of importance of farmland conversion on a scale of one to ten proved problematic. I assigned corresponding qualifiers only for rank 1 ("not important") and 10 ("very important"). As designed, there was no way to determine the ranking difference between two to three, three to four, and so on up to rank nine, resulting in few mutually exclusive responsive categories. I collapsed the ranks into category groups, as discussed in Chapter 3, but the survey should have had more value anchors, such as "little importance" assigned to these ranking numbers.

The survey design was also limited in terms of sample size. Although I was able to send the survey to all 19 Central Valley counties, I was unable to send the surveys to all Central Valley cities. I included only cities that were incorporated and had important farmland within their spheres of influence or planning areas as of 2004. Thus, the survey was not wholly random and unbiased. Likewise, I limited the

survey to planning agencies, which eliminated the responses from other land-use-related agencies in the Central Valley. A more encompassing survey sample would have included responses from members of local area formation commissions (LAFCOs), city councils, county board of supervisors, and area councils of government.

Implications of the significantly correlated independent variable.

The Farmland-Importance-Agency variable may be significantly correlated with Interest Level because there is an overriding concern or disinterest with the conversion of that jurisdiction's farmland. Possibly, for those interested agencies, the conversion of farmland has become a significant agenda setting item. These agencies and their local officials have decided that the conversion of farmland is a prominent problem worthy of policy change. They are willing to face political discontent from interest groups and resulting political pressures against the program. Conversely, for disinterested agencies, the farmland conversion problem is not prominent among the jurisdictions' other problems, and these agencies may have given in to political pressure against the programs or have had their attention diverted entirely. In some cases, as three of the survey responses indicated, because they have no farmland within their city boundaries, farmland conversion was not a problem. The perceived importance of farmland conversion as a problem had become a sufficient agenda setting item leading to policy changes only for those agencies with farmland mitigation programs and for interested agencies.

Section 2: Does sufficient interest exist to warrant state grant funding or technical assistance for program implementation?

Twenty-four of the 55 planning agencies that did not already have farmland mitigation programs stated that they were interested in implementing them. Considering that a farmland mitigation program could decrease the amount of development in a given county or city, and that city councils and county board of supervisors typically encourage new development because it provides a revenue stream, this number shows a significant amount of interest. Up until this survey, California state agencies did not see a significant amount of local government interest in farmland mitigation programs. For example, the

Division of Land Resource Protection has fielded only a few local government inquiries for farmland mitigation programs (C. Tyson, personal communication, July 10, 2008). The Institute for Local Self Government (2002) even developed and presented a book to guide local governments' preservation efforts and included a section on farmland mitigation programs, but there has been little interest. The California Farmland Conservancy Program (CFCP) has even advertised policy/technical assistance grants since 1994 that could fund these program's implementation with minor modifications to the grant's purview (C. Tyson, personal communication, July 10, 2008). It was not until 2008 that the first local government submitted a grant application specifically for farmland mitigation program implementation. The project was ill suited for funding because the grant requires an easement acquisition as an end product, and the grant's life was only two years. However, this grant application and the few recent inquiries to the Division of Land Resource Protection prompted consideration of grant funding solely for farmland mitigation implementation.

Because the State of California desires farmland preservation and there is a method of providing assistance, through the minor modification of CFCP planning/technical assistance grant's review criteria, the interest of 24 local governments warrants assistance. Moreover, another important factor supports the argument to provide assistance ─ the potential to cut Williamson Act subvention program funds from the California State Budget. The California State legislators and the governor have attempted to cut the Williamson Act subvention funds four times in the last five years (J. Ramsey, personal communication, June 1, 2008). The most recent attempt in January 2008 was such a serious consideration that counties were already eliminating the funds within their budgets (P. Leary, Spring, 2009). Governor Schwarzenegger did not remove the funds (blue line) in the January 2008 budget. Nevertheless, the California legislators and the governor will continue to threaten the county subvention funds because they consider the funds discretionary in difficult budget years. Given the city and county current interest in farmland mitigation programs and frequent threats to stop allocating Williamson Act subvention funds, I recommend limited grant funding support to local governments for implementing farmland mitigation programs. My rationale for this limited support follows.

The legal constraints and time required for implementing the programs would be prohibitive for the State to fund, if it were relying wholly on the CFCP planning/technical assistance grants. Local governments must allow time to develop stakeholder consensus, farmland preservation objectives within their general plan, nexus studies, and general plan amendment approval. For example, the City of Davis required several years to build sufficient stakeholder consensus just to consider putting forth the program in its general plan amendment (M. Sears, personal communication, November 7, 2008). Although the CFCP allows two consecutive grants towards the same project for a total of four years, this would still not be sufficient time for local governments to implement the program fully. The only alternative would be to have certain requirements met before approving the grant funds. These requirements could include having the program implemented to a specific level before applying for grant funds. For example, CFCP could require letters of intent indicating stakeholder consensus from prominent landowners and county farm bureaus. Likewise, the CFCP could require a resolution of support from the board of supervisors or city council members. The CFCP could also require that the local government submits its general plan elements and that CFCP legal counsel reviews and approves the grant once convinced that the elements could withstand a lawsuit challenging the nexus.

Although the interest is piqued and sufficient, the CFCP can change the grant review criteria, and can require local governments to prove work completed at a specific level; a major funding issue remains. The Pooled Money Investment Board (PMIB) has suspended, possibly permanently, funding for CFCP planning/technical grants. At the beginning of this research project, there was sufficient funding for planning/technical assistance grants. Now there is no funding because the PMIB has not sold any bonds. When the PMIB begins to sell the bonds, the planning/technical assistance grants may not be a part of the approved bond funding.

The alternative is to provide state technical assistance for developing farmland mitigation programs. Eighty-nine percent of the interested planning agencies stated they would consider using state technical assistance, whereas only 75% stated that they were interested in grant funding. Thus, providing state technical assistance could successfully meet the local governments' needs. Technical assistance

could take the form of state sponsored workshops, web-based models of farmland mitigation programs, or access to California state legal counsel who specialize in land-use regulations. Additionally, the Division of Land Resource Protection could commission the Institute of Local Governments, California State Association of Counties, or League of California Cities to publish a farmland mitigation program workbook.

The Division has one other option. Because the Farmland-Importance-Agency is a significantly correlated variable with Interest Level, the Division could use this correlation to justify a more hands off, but still supportive, approach. The Division could support a local grass-roots effort to increase the planning agencies' and local officials' perception that farmland conversion is an important problem. The grass-roots effort could serve as a marketing campaign having the communities' prominent citizens and local farmland preservation groups educating the planning agencies and local officials. The emphasis would need to be so great as to make the issue an agenda-setting problem, and it would need to occur before a general plan update.

Section 3: The Central Valley Land Trust Council Conference

The Central Valley Land Trust Council held the first California conference devoted to farmland mitigation programs on February 27, 2009. This conference occurred two weeks after I compiled my surveys. I present this conference information to highlight the similarities and differences between my research findings and the conference experts' cumulative experience, as well as to highlight potential areas for future research.

The following were similarities concerning why and how local governments implement farmland mitigation programs. Local governments develop farmland mitigation programs to avoid lawsuits and to regulate land use at the local level for CEQA requirements. Broad police powers, the Williamson Act, the CEQA, and the California Farmland Conservancy Program statutory mandates support California local governments in their efforts toward farmland preservation. There are three essential elements to consider for successful farmland mitigation program implementation: building stakeholder consensus; obtaining

public input and support; and establishing a thorough formal nexus to the community. Building stakeholder consensus includes inviting the farmers, landowners, the California Building Industry Association, environmental protection groups, watershed/resource conservation districts, LAFCOs, and county and city agency representatives that are involved in one's community. Moreover, building stakeholder consensus takes years to develop. Local governments establish a nexus ultimately to avoid lawsuits and when demanding exactions. The nexus demonstrates the legal authority to impose the exaction, that the local government is properly exercising its authority when imposing the exaction, and that there is a reasonable relationship between the exaction and the public needs created by development. The local government established a nexus stage through its general plan's policies and objectives, and farmland mitigation program by clearly indicating how farmland and agriculture are important to the community's economy and how the farmland holds additional amenities. The amenities include watershed protection, viewshed, and open space. The local government needs to conduct a formal nexus study and document the study's findings in its general plan.

Concerning the actual farmland mitigation program requirements from the developer, I found the following similarities. The jurisdiction must decide whether the developers should find their own willing landowners and fund conservation easements on their own or, with help of a land trust, pay an exaction (e.g., in-lieu fee, mitigation fee, linkage fees). If the city council or board of supervisors requires the developers to pay exactions, the jurisdiction should consider realistic fees that would actually purchase the same amount of farmland that is being developed. The jurisdiction should consider whether to index the exactions with inflation. Farmland appraisers and the land trusts can give estimates on the full costs and local officials should reflect these costs in the exactions. The jurisdiction can also require that developers pay exactions only after proving that they have been unable to find a willing seller for the conservation easement.

The local government also can choose from various offset ratios for the developer to meet. It can require a 1:1, 2:1, or even 3:1 offset ratio for prime farmland and lower ratios for lessor-quality land, such as farmland of local importance. For example, if prime farmland was developed and if only farmland of

statewide importance was available, the developer could offset at the higher or 2:1 or 3:1 offset ratio. However, the local government should keep in mind how to qualify the land when water is not readily available and how it should consider all the components required for a healthy agriculture economy. Likewise, the local government should consider whether it could place a conservation easement far away from the community and whether such a placement would comply with the nexus connection. The jurisdiction must also decide whether this placement meets its 20 to 50 year long-term needs.

The local government must determine what agency or entity will hold and manage the conservation easement. Public agencies and land trusts can hold agricultural conservation easements, but they must state that the agricultural preservation is part of their mission to meet the legal requirements for holding an agricultural conservation easement in California. Conference experts highly recommended that the land trusts hold the easement because the land trusts have a respected reputation for providing high quality stewardship. Moreover, they also recommended that the city, county, or LAFCO co-hold the easement in conjunction with the land trust or the public agency to validate the nexus to the community.

Conference experts also highly recommended that local governments consider using revenue agreements to decrease the fiscalization of land use. Revenue agreements help decrease the risk of the adjacent cities or counties competing for development projects to increase community revenue (Parfrey, 2009).

Differences between conference experts' experience and my research.

I did not consider the following requirements presented at the conference in my research and, as such, these requirements warrant consideration for future research. These additional considerations range from when to require the mitigation to the stacking of easements.

Martin (2009) recommended that the local governments consider the problems with requiring mitigation only after the housing development, as opposed to a condition of tentative subdivision map. He stated that the mitigation fees required at the completion of a large development might not be sufficient for purchase of comparable land 10 to15 years from now when the developers finally complete the project.

Moreover, due to the current California housing market and poor economy, many San Joaquin County developers have not paid their exactions because they have not been able to sell the first-phase homes in their large developments. Consequently, the local officials have not required the developers to mitigate fully for the farmland at the time they take the land out of production.

The conference experts warned against requiring farmland mitigation programs to require mitigation only during general plan updates (Swanson, Parfrey, and Martin, 2009). For example, the San Joaquin County Agriculture Mitigation program, adopted in 2006, requires the developers to mitigate under the program only during general plan updates. Thus, the San Joaquin County Board of Supervisors will not require the developers to mitigate for the Mountain House development because the first phase of the development started in 2001 before the general plan update. However, the local officials should require the developers to mitigate for the later phases, which occurred during the general plan update.

Local governments should also consider sources of matching funding that they can use specifically to increase the size or quality of farmland conserved. These sources have their own requirements. For example, the National Resource Conservation Service, Federal Ranchland Protection Program (NRCS-FRPP) and the Wildlife Conservation Board funds agricultural conservation easements but have different requirements. The Wildlife Conservation Board can fund a small percentage of an intensive agriculture area as part of a larger rangeland project. The NRCS-FRPP can fund up to 50% of the cost of a conservation easement, but only if there is a memorandum of understanding signed between the local government and the NRCS-FRPP. Conceivably, a farmland mitigation program policy may conflict with these match-funding source requirements. Thus, the local government's flexibility on the transaction approval would be prudent (Martin, 2009).

The conference experts recommended that the local government consider allowing the stacking of conservation easements to fit other needs, such as green belts or habitat conservation plans. The local government can work with the LAFCOs and joint powers authority to protect larger areas of farmland by pooling resources with a habitat conservation plan. However, the local governments and land trusts must ensure that the terms of the easement do not conflict. For example, the farmland mitigation program can

allow Swainson's hawk habitat conservation easements to be *stacked* or layered its agricultural conservation easements, but only if the landowner agrees not to plant permanent crops. The value of the Swainson's hawk conservation easement must cover this additional restriction. In addition, many match funders allow layering of a habitat conservation easement on top of the agricultural conservation easement only if the habitat conservation easement is subordinate to the terms of the agricultural conservation easement. The conservation experts stated that these dual-purpose conservation easements can provide more value-added feature to the agricultural conservation easements, but the scenario requires expertise to complete.

Additional recommendations for future research.

In order to test the reliability of the relationship between the independent variable, Farmland-Importance-Agency, with the dependent variable, Interest Level, further, I recommend that future researchers expand the scope of their studies to include all Central Valley city planning agencies, and members of LAFCOs, city councils, county board of supervisors, and area councils of governments. At the minimum, future researchers should search for different independent variables to add to the current model. Future researchers should also consider the outcome of the current lawsuit between Stanislaus County and the California Building Industry Association (CBIA). This lawsuit deals with the Stanislaus County Farmland Mitigation Program only requiring developers to mitigate for housing development and not for industrial or commercial development. The CBIA considers this exclusion of industrial and commercial development unfair (J. Weach, personal communication, February 1, 2009).

Conclusion

The purpose of this study was to determine (a) the Central Valley local governments' overall interest level in establishing farmland mitigation programs; (b) the variables, if present or absent, that would act as an incentive or disincentive to Central Valley cities and counties towards implementing farmland mitigation programs; (c) whether sufficient interest exists at the local government level to warrant state grant funding or technical assistance for program implementation. In order to address these

questions, I conducted a survey and a performed regression analysis on the survey results. I conclude that (a) there is significant interest level in implementing farmland mitigation programs because there is 44% (24 out of 55 possible) Central Valley local government interested in the program; (b) per the regression analysis, the planning agency's perceived importance of farmland conversion as a problem is positively correlated with the interest level of developing a farmland mitigation program. An increased interest level increases the chances that Central Valley planning agencies will develop a farmland mitigation program; (c) there are no significant negatively correlated variables that would prevent Central Valley local governments from implementing farmland mitigation programs; and (d) sufficient interest exists at the local government level to warrant state grant funding or technical assistance for program implementation. However, because California State is having a budget crisis, the timing for grant funding is poor and the Division of Land Resource Protection should consider other alternatives. Potential alternatives include providing technical assistance and supporting grass-roots marketing campaigns to local officials and planning agencies to increase the perceived importance of farmland conversion as a problem within their communities.

APPENDIX A

Farmland Conversion Mitigation Program Survey

Introduction:

This survey is being sent to city and county planning directors within the Central Valley. Please draw upon your unique understanding of your jurisdiction's political and land use planning environment to answer the questions. The following fourteen questions explore your jurisdiction's availability of resources and interest level for establishing or expanding a local farmland mitigation program. A farmland mitigation program is a set of policies or regulations requiring a developer to partially mitigate the loss of farmland when it is converted to non-agricultural uses (e.g., urban development). Mitigation typically requires a specific ratio of farmland permanently protected by a conservation easement for each acre converted, or mitigation fees (e.g., exactions, impact, in-lieu fees) used for the purchase of conservation easements.

Thank you in advance for your time and serious consideration to each question. All answers will remain confidential.

Instructions:

- Unless instructed otherwise, please select only ONE answer per question.
- Please return only one survey per planning department.
- When you have completed this survey, please place it in the enclosed envelope and place it in the mail. A return address and stamp are already on the envelope.

If you or your department desires to remain anonymous, please skip question 1.

1. Which city [or county] planning department do you represent?

   _____

For each question below, please select the best answer that most accurately applies to your department and fill in the bubble for that answer:

2. Does your city [or county] currently have an urban limit line, growth boundary, or greenbelt, other than the boundaries of your city [county], beyond which development is discouraged?

   ○ Yes ○ No

3. Does your city [or county] currently have any other measure that restricts development on farmland within your jurisdiction? A measure includes initiatives adopted by the voters or regulatory ordinances adopted by the city council or county board of supervisors. It excludes resolutions, zoning, Williamson Act, or other policy statements. For example, measures that require a specific population level before expanding the city boundary may also restrict development on farmland.

   ○ Yes ○ No ○ Unknown

4. Does your city [or county] currently require development fees or exactions for infrastructure (e.g., sewers, schools, roads)?

   ○ Yes ○ No

5. How important of a problem do your city [or county] elected officials consider farmland conversion to non-agricultural use?

Not Important Very Important

○1 ○2 ○3 ○4 ○5 ○6 ○7 ○8 ○9 ○10

6. How important of a problem does your city [or county] planning department consider farmland conversion to non-agricultural use?

Not Important Very Important

○1 ○2 ○3 ○4 ○5 ○6 ○7 ○8 ○9 ○10

7. Does your city [or county] currently have a farmland mitigation program as defined in the introduction, complete with policies, regulations, and ordinances?

○ Yes ○ No

If yes, please skip to question 13.

8. Has your city [or county] planning department discussed or shown an interest in developing a farmland mitigation program as defined in the introduction?

○ Yes If yes, please continue with questions 9 to 14 below.
○ No If no, please skip to question 13 below.

9. How long ago did your city [or county] planning department consider a farmland mitigation program?

○ 5 to 10 years ago ○ 2 to 4 years ago ○ 6 months to 1 year ago
○ Within the last 6 months

10. Is your city [or county] planning department more interested in developing a farmland mitigation program that requires developers to:

a. negotiate and purchase an easement themselves (with department approval) or
b. pay an alternative exaction or impact fee towards the department's future purchase of conservation easements?

○ More interested in a. than b.
○ More interested in b. than a.
○ Equally interested in a. and b.
○ Unknown level of interest.

11. Would your city [or county] planning department consider applying for a state grant to fund developing a farmland mitigation program?

○ Yes ○ No ○ Unknown

12. Would your city [or county] planning department consider utilizing state technical assistance (e.g., state sponsored workshops) to develop a farmland mitigation program?

○ Yes ○ No ○ Unknown

13. Below is a list of resources that could be valuable for implementing a new or established farmland mitigation program. Please rank the availability of each resource below to your department.

	Not Available		Adequate Availability		Highly Available
a. Knowledge or expertise in farmland mitigation programs	○1	○2	○3	○4	○5
b. Knowledge or expertise in conservation easements or other conservation vehicles	○1	○2	○3	○4	○5
c. Knowledge or expertise in impact or in-lieu fees	○1	○2	○3	○4	○5
d. Staff time to devote to develop a farmland mitigation program	○1	○2	○3	○4	○5
e. Staff knowledge of agricultural operations and agriculture related issues	○1	○2	○3	○4	○5
f. Funding for development a farmland mitigation program	○1	○2	○3	○4	○5
g. Public support for preserving farmland within your community	○1	○2	○3	○4	○5
h. Stakeholder support for preserving farmland within your community (e.g., farmers, developers, environmental groups)	○1	○2	○3	○4	○5
i. Political leadership for developing farmland mitigation programs	○1	○2	○3	○4	○5
j. Consensus among stakeholders on the value of farmland mitigation programs (e.g., farmers, developers, environmental groups)	○1	○2	○3	○4	○5
k. Established policies within your jurisdiction's open space or agricultural element aligning with a farmland mitigation program	○1	○2	○3	○4	○5
l. A qualified department to hold land dedications (e.g., land trust or land conservancy that has recognized knowledge in agriculture)	○1	○2	○3	○4	○5
m. Knowledge or expertise in soliciting public input for the development or implementation of a farmland mitigation program	○1	○2	○3	○4	○5
n. Resources for soliciting public input into the development or implementation of a farmland mitigation program	○1	○2	○3	○4	○5

14. Would you be interested in further contributing to this research by being interviewed at a later date?

○ Yes ○ No

If yes, please print your name, title, and contact information. We would especially appreciate your e-mail address. Alternatively, you may directly contact Larelle Burkham-Greydanus at lburkham@conservation.ca.gov or (916) 322-1831.

Name: Title
Email: Phone: ( )

Please place any comments you may have here:

Thank you for taking the time to complete this questionnaire.
Please mail this survey in the attached self-addressed and stamped envelope

APPENDIX B

Correlation Coefficients Tables

Variables	Agency Interest FMP	Urban Growth Boundary	Other Growth Control Measure	Exactions Required	Farmland Importance-Officials	Farmland Importance-Agency
Agency Interest FMP	1	.099	.104	.171	.370(**)	.457(**)
Urban Growth Boundary	.099	1	.143	.205	.165	.105
Other Growth Control Measure	.104	.143	1	.074	.207	.209
Exactions Required	.171	.205	.074	1	-.121	-.050
Farmland Importance- Officials	.370(**)	.165	.207	-.121	1	.799(**)
Farmland Importance-Agency	.457(**)	.105	.209	-.050	.799(**)	1
Knowledge-FMP	.280(*)	.053	.015	.033	.383(**)	.361(**)
Knowledge-Conservation Easement	.139	-.070	-.248	-.014	.077	.035
Knowledge-Exaction	.033	-.171	-.203	.104	.068	.000
Time	.299(*)	.282(*)	.091	-.020	.298(*)	.138
Knowledge-Agriculture	.342(*)	.017	.055	-.003	.634(**)	.543(**)
Funding	.228	.244	-.033	-.102	.260	.112
Public Support Farmland	.303(*)	.244	.026	-.013	.622(**)	.469(**)
Stakeholder Support Farmland	.188	.114	-.038	-.034	.533(**)	.365(**)
Political Leadership	.282(*)	.232	.108	-.055	.386(**)	.218
Consensus Stakeholder	.102	.275(*)	.049	-.040	.346(**)	.240
Established Policies	.304(*)	.205	-.004	-.075	.356(**)	.316(*)
Qualified Department or Land Trust	.150	.089	-.223	-.080	.291(*)	.154
Knowledge-Soliciting Public Input	.304(*)	.059	-.202	-.054	.322(*)	.190
Resources For Soliciting Public Input	.372(**)	.182	-.156	.031	.309(*)	.170

** Correlation is significant at the .01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Correlation Coefficients Table continued

Variables	Knowledge-FMP	Knowledge-Conservation Easement	Knowledge-Exaction	Time	Knowledge - Agriculture	Funding
Agency Interest FMP	.280(*)	.139	.033	.299(*)	.342(*)	.228
Urban Growth Boundary	.053	-.070	-.171	.282(*)	.017	.244
Other Growth Control Measure	.015	-.248	-.203	.091	.055	-.033
Exactions Required	.033	-.014	.104	-.020	-.003	-.102
Farmland Importance - Officials	.383(**)	.077	.068	.298(*)	.634(**)	.260
Farmland Importance-Agency	.361(**)	.035	.000	.138	.543(**)	.112
Knowledge-FMP	1	.603(**)	.342(*)	.403(**)	.579(**)	.364(**)
Knowledge-Conservation Easement	.603(**)	1	.507(**)	.132	.114	.238
Knowledge-Exaction	.342(*)	.507(**)	1	.105	.151	-.024
Time	.403(**)	.132	.105	1	.290(*)	.685(**)
Knowledge- Agriculture	.579(**)	.114	.151	.290(*)	1	.218
Funding	.364(**)	.238	-.024	.685(**)	.218	1
Public Support Farmland	.312(*)	.099	.037	.415(**)	.627(**)	.351(**)
Stakeholder Support Farmland	.283(*)	.093	.228	.361(**)	.571(**)	.337(*)
Political Leadership	.460(**)	.215	.216	.443(**)	.456(**)	.351(**)
Consensus Stakeholder	.428(**)	.202	.338(*)	.330(*)	.406(**)	.342(*)
Established Policies	.348(**)	.343(*)	.237	.324(*)	.292(*)	.389(**)
Qualified Department or Land Trust	.362(**)	.377(**)	.160	.324(*)	.199	.320(*)
Knowledge-Soliciting Public Input	.568(**)	.410(**)	.421(**)	.374(**)	.467(**)	.121
Resources For Soliciting Public Input	.390(**)	.237	.257	.587(**)	.258	.339(*)

** Correlation is significant at the .01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Correlation Coefficients Table continued

Variables	Public Support Farmland	Stakeholder Support Farmland	Political Leadership	Consensus Stakeholder
Agency Interest FMP	.303(*)	.188	.282(*)	.102
Urban Growth Boundary	.244	.114	.232	.275(*)
Other Growth Control Measure	.026	-.038	.108	.049
Exactions Required	-.013	-.034	-.055	-.040
Farmland Importance-Officials	.622(**)	.533(**)	.386(**)	.346(**)
Farmland Importance-Agency	.469(**)	.365(**)	.218	.240
Knowledge-FMP	.312(*)	.283(*)	.460(**)	.428(**)
Knowledge-Conservation Easement	.099	.093	.215	.202
Knowledge-Exaction	.037	.228	.216	.338(*)
Time	.415(**)	.361(**)	.443(**)	.330(*)
Knowledge- Agriculture	.627(**)	.571(**)	.456(**)	.406(**)
Funding	.351(**)	.337(*)	.351(**)	.342(*)
Public Support Farmland	1	.759(**)	.640(**)	.520(**)
Stakeholder Support Farmland	.759(**)	1	.571(**)	.580(**)
Political Leadership	.640(**)	.571(**)	1	.647(**)
Consensus Stakeholder	.520(**)	.580(**)	.647(**)	1
Established Policies	.446(**)	.380(**)	.547(**)	.503(**)
Qualified Department or Land Trust	.323(*)	.370(**)	.340(*)	.320(*)
Knowledge-Soliciting Public Input	.383(**)	.400(**)	.458(**)	.297(*)
Resources For Soliciting Public Input	.281(*)	.301(*)	.277(*)	.186

** Correlation is significant at the .01 level (2-tailed).

* Correlation is significant at the .05 level (2-tailed).

Correlation Coefficients Table continued

Variables	Established Policies	Qualified Department or Land Trust	Knowledge-Soliciting Public Input	Resources For Soliciting Public Input
Agency Interest FMP	.304(*)	.150	.304(*)	.372(**)
Urban Growth Boundary	.205	.089	.059	.182
Other Growth Control Measure	-.004	-.223	-.202	-.156
Exactions Required	-.075	-.080	-.054	.031
Farmland Importance-Officials	.356(**)	.291(*)	.322(*)	.309(*)
Farmland Importance-Agency	.316(*)	.154	.190	.170
Knowledge-FMP	.348(**)	.362(**)	.568(**)	.390(**)
Knowledge-Conservation Easement	.343(*)	.377(**)	.410(**)	.237
Knowledge-Exaction	.237	.160	.421(**)	.257
Time	.324(*)	.324(*)	.374(**)	.587(**)
Knowledge- Agriculture	.292(*)	.199	.467(**)	.258
Funding	.389(**)	.320(*)	.121	.339(*)
Public Support Farmland	.446(**)	.323(*)	.383(**)	.281(*)
Stakeholder Support Farmland	.380(**)	.370(**)	.400(**)	.301(*)
Political Leadership	.547(**)	.340(*)	.458(**)	.277(*)
Consensus Stakeholder	.503(**)	.320(*)	.297(*)	.186
Established Policies	1	.587(**)	.378(**)	.294(*)
Qualified Department or Land Trust	.587(**)	1	.517(**)	.585(**)
Knowledge-Soliciting Public Input	.378(**)	.517(**)	1	.736(**)
Resources For Soliciting Public Input	.294(*)	.585(**)	.736(**)	1

**Correlation is significant at the .01 level (2-tailed). *Correlation is significant at the .05 level (2-tailed).

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FOOTNOTES

[1] A binary logistic regression result assumes a linear relationship between the dependent variable, Agency Interest FMP, and the logged odds of the independent variable. This regression formula was as follows:

Logged odds (Agency Interest FMP) = a + b1 + b2 + ….

where a is the constant or intercept which the dependent variable when the independent variable equals zero; and b1 and b2 are the change in the logged odds for each 1 unit of independent variable. Because there are several independent variables used in this regression, the logistic regression would estimate the effect of controlling for b2. Conversely, the regression analyzes b2 controlling for b1. The regression cannot prove that a hypothesized theory is correct, but it can reject the given hypothesis with a certain level of statistical significance (Pollock, 2005). For example, the regression cannot prove the hypothesis that the availability of funding will cause the planning agency to be interested in farmland mitigation programs. However, it can reject the hypothesis with a certain level of statistical significance.

[2] Multicollinear variables measure the same factor in the regression analysis. I removed three variables for the regression analysis. The first variable removed was Farmland-Importance--Officials. It had a shared coefficient of .799 with Farmland-Importance-Agency variable. Likewise, I removed the variable Resource-Public-Support because it was multicollinear with Knowledge-Soliciting-Public-Input, having a .736 coefficient. Although, Exactions-Required was not multicollinear, I removed this variable from the regression because 97% of the planning agencies without farmland mitigation programs required exactions. Thus, this particular independent variable would be a poor explanatory variable for the dependent variable. Additionally, I removed nine surveys from the regression analysis. These represented the planning agencies that had farmland mitigation programs. As demonstrated by Figure 2, these planning agencies had an overall higher percent of resources, possibly because they had already developed farmland mitigation programs. I removed these surveys because they considered farmland conversion an important to very important problem. This eliminated the bias towards having a higher availability of these resources. In all, I used 55 surveys for the regression.

[3]The Sig. value column in Table 4 represents the P-value for all the independent variables. This is the first value to consider when determining which specific independent variables had a statistically significant effect on the dependent variable. The P-value presents the probability of obtaining the results if the null hypothesis is correct. If the P-value is greater than .05, then the observed results would occur too frequently by chance, and the researcher should not reject the null hypothesis. In addition, if the P-value "is less than or equal to .05, then the null hypothesis represents an unlikely occurrence and may be rejected" (Pollock, 2005). Only one variable was under .05 controlling for all other variables, indicating that only this variable significantly correlates with Interest Level. This variable was Farmland-Conversion-Problem Importance-Planning-Agency ($p = .009$).