

VVWRA Flow Projection Update Update 3 - April 2009

Prepared by:



RBF Consulting
14725 Alton Parkway
Irvine, CA 92618
(949) 472-3505

Contacts:
Kevin Schmidt, PE
Jake Wiley, PE

Prepared for:



Victor Valley Wastewater
Reclamation Authority
20111 Shay Road
Victorville, CA 92394
Contact:
Logan Olds, General Manager

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Mr. Logan Olds
General Manager
Victor Valley Wastewater Reclamation Authority
20111 Shay Road
Victorville, CA 92394-8539

Subject: VVWRA Service Area Flow Projection Study – Update No.3

Dear Mr. Olds:

VVWRA has contracted with RBF Consulting to provide flow projections for its service area that includes: the City of Victorville, the Town of Apple Valley; the City of Hesperia and San Bernardino County Service Areas (CSA) 42 and 64. The service area flow projection will provide important information for the Capital Improvement Plan and Budget.

The original flow projection study was issued on February 14, 2007. The first update was issued in November 2007 and adopted by the VVWRA Board at the December 2007 meeting. The second update was issued in September 2008 and adopted by the VVWRA Board at the October 2008 meeting.

RBF is submitting herein the third update to the Service Area Flow Projection Study for VVWRA. The original study used building activity for a short-term projection and vacant land build-out for a long-term forecast. The first and second updates assessed building activity and member agency master plans for long term growth. This update evaluates current building activity, considers economic trends and inputs research from growth in communities similar to VVWRA.

The data acquired and reviewed for this update is summarized as follows:

- 1) Current subdivision activity from each member agency in four specific land uses:
 - a) Single family residential
 - b) Multi-family residential
 - c) Commercial
 - d) Industrial

- 2) Sewer connection data from VVWRA and building permits issued from each member agency.

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- 3) Historical flow records from four (4) wastewater treatment facilities in Southern California serving communities similar to the High Desert and of similar size to the VVWRA Regional Wastewater Reclamation (RWWRF).
- 4) Dataquick® information regarding recent loan activity, notices of default and bank-owned foreclosures in the High Desert.
- 5) Historical flow meter data from the influent flow meter at VVWRA's RWWRF.
- 6) January 2009 flow monitoring results from Downstream Inc.
- 7) US Census Bureau population data

This data was reviewed, analyzed and compiled to complete the projection using the following general methodology:

- 1) The entire building activity reports were compiled into Microsoft Excel.
- 2) Parcels that are no longer active were deleted.
- 3) Active parcels were categorized by land use and member agency flow generation factors to estimate sewage flow.
- 4) Active parcels were input to update the GIS database.
- 5) Active parcels were assumed to occupy fully over the next 12 years.
- 6) Flow was proportioned by Member Agency utilizing the most recent flow monitoring data
- 7) Recent service area flow growth, building permit activity and housing data were reviewed to generate the near term projection (next 1-2 years).
- 8) The development activity was used to project flow over the long term (next 2-12 years).
- 9) An historical sewer flow growth trend was developed based on similar southern California communities' average growth rates over the past 20+ years to develop an alternative, typical, long term growth curve for comparison purposes.

10) VVWRA sewer connection data from 2005 to 2009 was analyzed vs. sewage flow growth to develop a revised gallon per day per equivalent dwelling unit (gpd/edu) estimate. Population growth was reviewed vs. flow growth from 2000 to 2008 to provide a comparative estimate of gpd/edu. In earlier studies this was assumed as 240 gpd/edu.

Aerial Photograph Based GIS Database

The County of San Bernardino published an aerial photograph of the high desert that was flown in Spring 2007. The County also published an assessor parcel database that was updated in July 2008, was acquired by RBF, and overlaid on the 2007 aerial photo using GIS software.

RBF compiled these databases and attributed parcels with the following information:

- VVWRA Service Area Boundary (updated January 2009)
- Member agency boundaries
- Major geographical and physical landmarks
- Active development projects within the VVWRA service area

Figure 1 shows a graphical depiction of the compiled database. Please note that some of the parcel numbers shown in the member agency activity lists did not correspond to parcel numbers in the county database and, are, therefore not depicted on Figure 1; however, all the active development is included in the flow projection tables.

Maps in Process Database

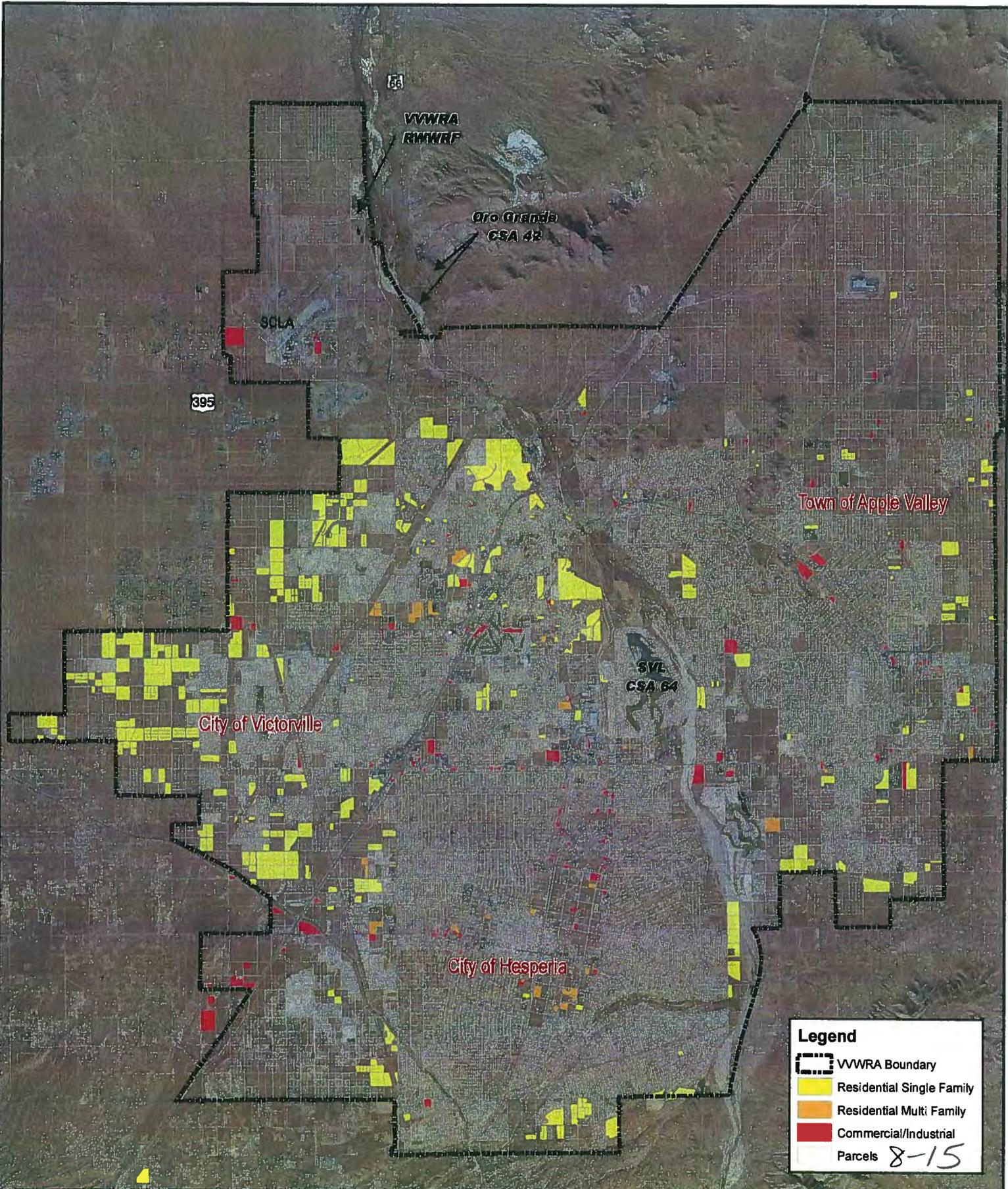
RBF coordinated with each member agency to determine which parcels are currently in the development process. The data consisted of: the December 31, 2008 List of Building Activity obtained from the Planning Department at the City of Victorville; the December 2008 Development Activity Report obtained from the City of Hesperia; and the January 15, 2009 Development Activity Reports, and maps furnished by the Town of Apple Valley. This data was sorted by three land use categories:

- Single Family Residential (SFR) parcels
- Multi-Family Residential (MFR) parcels
- Commercial (COM)/Industrial (IND) parcels

Each active development project was attributed with the following data, when available:

- ID (Tentative Tract Number or similar ID)

Map Document: (M:\data\10104467\GIS\Maps in Process Figure1_8x11.mxd) 3/27/09 DJ KO



Legend

- VVRA Boundary
- Residential Single Family
- Residential Multi Family
- Commercial/Industrial
- Parcels 8-15



March 27, 2009

Figure 1
VVRA Service Area Building Activity

Source: Eagle Aerial, San Bernardino County Parcels
City of Hesperia, Town of Apple Valley
City of Victorville

- APN
- Development Type
- Development Lot Count
- Lot Acreage
- Building square footage
- Project Status

Table 1 summarizes the dwelling units and commercial/industrial areas for each member agency. The table lists all activity shown in the member agency lists and does not sort out those projects listed as “Inactive”, “Abandoned”, “Withdrawn” or “Expired”. Table 1 also includes parcels that do not drain to VVWRA. The databases, compiled in Microsoft Excel®, are attached as Appendix A.

Table 1: Summary of Projects in Process

Land Use	Member Agency Activity			Totals
	Apple Valley	Victorville	Hesperia	
Single Family Residential (SFR) Units	2,462	17,557	8,490	28,509
Multi Family Residential (MFR) Units	963	3,154	5,588	9,705
Commercial/Industrial Buildings, ft ²	1,834,285	10,938,362	7,282,863	20,055,510

Unit Flow Verification and Refinement

An analysis was performed to define a more representative flow (gallons per day – gpd) per equivalent dwelling unit (edu) value for VVWRA’s service area. A value of 240 gpd/edu has been used historically by VVWRA. That value was incorporated into previous flow projections. We examined two data sets to estimate this value:

1. We reviewed the recent flow growth history (2004-2008) at the RWWRF vs. the number of actual sewer connections from the same time period. Flow has increased at the plant by 1.80 mgd from 2004 to 2008, with the number of sewer connections totaling 12,847. The calculation of the gpd/edu is as follows:

$$\underline{\underline{gpd/edu = 1,800,000 \text{ gpd} / 12,847 \text{ edu} = 140 \text{ gpd/edu}}}$$

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2. Average annual sewer flow was reviewed from 2000 to 2008 and compared to population growth derived from US Census data in order to create a longer history of growth in the area.

Flow increased at the RWWRF by 4.24 mgd from 2000 to 2008, with a corresponding population growth of approximately 82,000. Appendix B includes a table depicting the population growth data in Victorville, Hesperia and Apple Valley from the US Census Bureau since the last nationwide census in 2000.

Based on this data, and an estimate of 3.50 persons per edu, the calculation of the gpd/edu value is as follows:

$$\underline{\underline{gpd/edu = 4,240,000 \text{ gpd} / 23,430 \text{ edu} = 180 \text{ gpd/edu}}}$$

The unit flow verification indicates that the flow per connection in the high desert averages lower than the value of 240 gpd/edu used in previous flow projections for VVWRA. Given this information, we developed, from a review of the current building activity and the population vs. flow increases described above, a methodology to adjust the unit flow factor assumptions by land use category for this report:

1. Assume Industrial/Commercial unit flow factors remain at common industry standards of 0.25 gal/sf or 250 gpd/ksf.
2. Based on the activity reports determine the percentage split between planned Single Family Residential (SFR) and Multi Family Residential (MFR) units. Based on this review the current split is 72% SFR vs. 28% MFR.
3. Based on member agency master plans, calculate the proportional unit sewage flow factor difference between SFR and MFR units. From the master plans MFR = 82% x SFR.
4. Utilize the calculated planned SFR/MFR units percentage split (Item 2), the proportional MFR/SFR flow difference from the master plans (Item 3) and the 180 gpd value as an average unit flow to determine revised unit flow factors for SFR and MFR units as calculated below:

$$180 \text{ gal/day} = ((\text{SFR} \times 72\%) + (82\% \times 28\% \times \text{SFR}))$$

$$\text{SFR} = 189.7 \text{ gal/day/unit}$$

$$\text{MFR} = 189.7 \times 82\% = 155.5 \text{ gal/day/unit}$$

Based on the methodology described above the revised unit flow assumptions for this flow projection are in Table 2 below:

Table 2: Unit Flow Assumptions

Single Family Residential, gal/day/unit	Multi Family Residential, gal/day/unit	Commercial/ Industrial (gal/sf)
190	156	0.25

Development Activity Adjustment

The development activity shown in Table 1 was reduced to account for areas that are not tributary to VVWRA and development projects that are not currently active. Areas non-tributary to VVWRA fall into two categories: land that is and will continue to be serviced via septic tanks and leach fields; and land that cannot drain to VVWRA because of a physical restriction. The resultant reduction is summarized below:

- For the City of Victorville, land within the San Bernardino County areas was exempted.
- For the City of Hesperia, land currently serviced by septic tanks and a portion of the City in the southern region was exempted.
- For the Town of Apple Valley, maps in process were reviewed individually against a map of sewer service areas within town's boundary. Those developments that are planned or could potentially be served by sewer were included in the flow estimate. All other areas were assumed permanently on septic tank systems.

Inactive development projects were also deleted from the estimate. The deleted projects include all those listed as "Inactive", "Abandoned", "Expired" or "Withdrawn" on the member agency lists.

The adjusted building activity was combined with the unit flow assumptions listed in Table 2. Table 3 summarizes the reduced activity and subsequent estimated flow increases.

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Table 3: Reduced Building Activity and Estimated Flow

Land Use	Member Agency			Average Dry Weather Flow (ADWF), mgd			TOTAL
	Victorville	Hesperia	Apple Valley	Victorville	Hesperia	Apple Valley	Flow, mgd
SFR	17,476	3,201	2,147	3.31	0.61	0.41	4.33
MFR	2,436	3,074	963	0.38	0.48	0.15	1.01
Commercial /Industrial, sf	3,538,940	5,032,559	1,331,031	0.71	1.01	0.33	2.05
TOTALS				4.40	2.09	0.89	7.38

If all of the currently active development projects are completed and occupied, the flow will increase by approximately 7.4 mgd in the VVWRA service area, an increase of 60% over current flow (12.26 mgd).

Building Permits and Sewer Connection Data

Table 4 shows the yearly sewer connections and building permit data in the VVWRA service area for the past four years. These values represent the total building permits and total sewer connections for the four land use categories previously discussed with the exception of the City of Hesperia, where commercial and industrial permits are not tracked. For fiscal year 2008/2009, current data was extrapolated based on year to date values to derive the totals shown in Table 4. The data is shown graphically on Figures 2 and 3.

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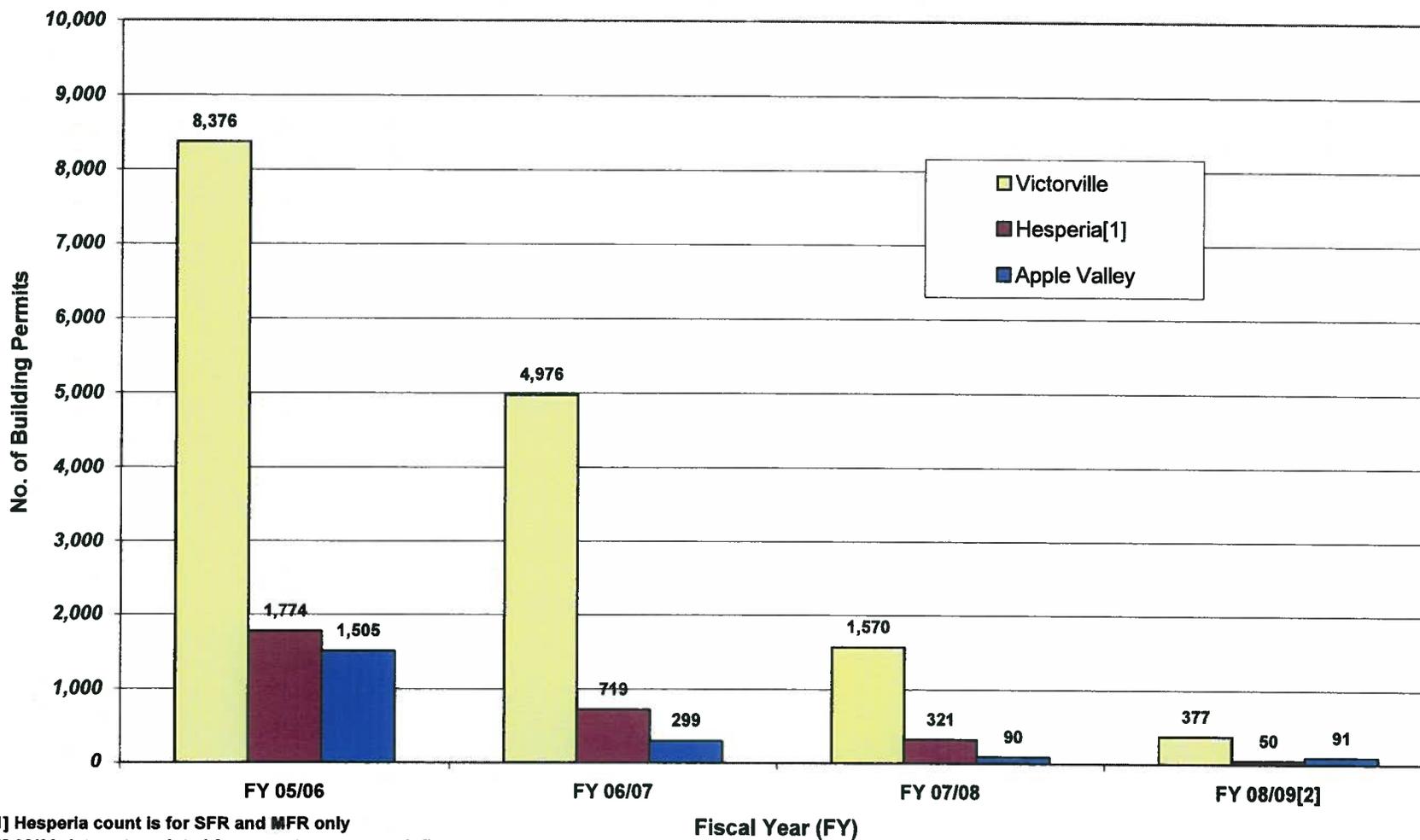
Table 4: 2007 – Building Permits and Sewer Connections

	No. of Building Permits Issued				No. of Sewer Connection Fees Paid			
	FY 05/06	FY 06/07	FY 07/08	FY 08/09 ^[2]	2005	2006	2007	2008
Victorville	8,376	4,976	1,570	377	2,522	3,211	1,373	491
Hesperia^[1]	1,774	719	321	50	679	1,237	477	205
Apple Valley	1,505	299	90	91	1,002	985	430	235
Totals	11,697	6,072	1,946	518	4,203	5,433	2,280	931

[1] Hesperia Totals are for SFR and MFR units only, Hesperia indicated they did not track com/ind building permits

[2] Totals are calculated based on an extrapolation to the end of the fiscal year of most recent permit/connection fee data

FIGURE 2
Building Permits Issued in the VVWRA Service Area

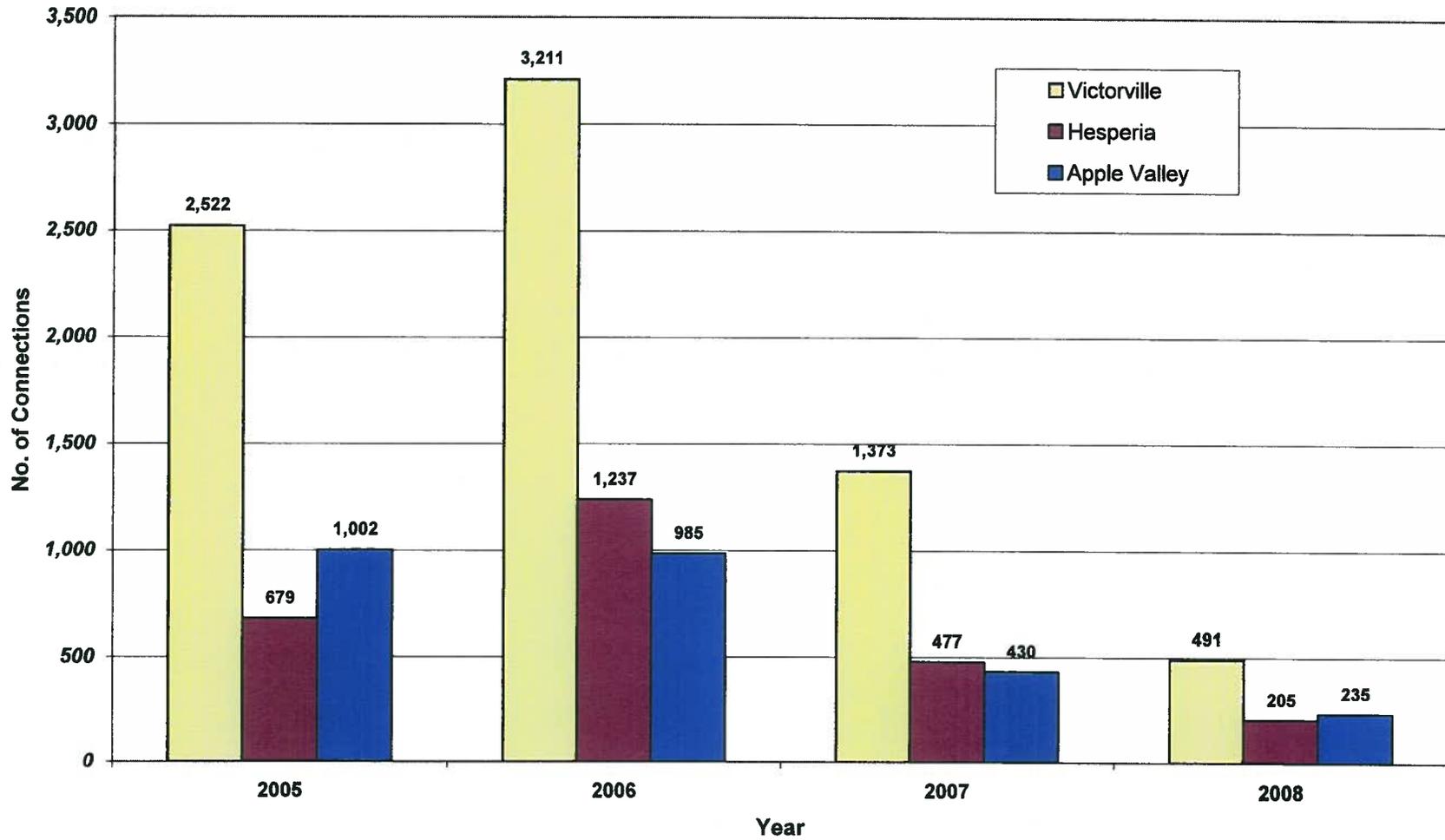


[1] Hesperia count is for SFR and MFR only
 [2] 08/09 data extrapolated from most recent permit figures

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FIGURE 3
VVWRA Sewer Connections Issued



Recent Service Area Flow

The previous flow projection update noted that flow within the service area had decreased in recent years. It was presumed that the recent housing and overall economic downturn has reduced business activity in the area forcing some residents to leave and find work elsewhere. This decrease in flow was first apparent during work on the VVWRA Sewer Master Plan in 2008. Flow monitoring data from the City of Hesperia in 2008 was recorded lower than that recorded in 2007. Any method of flow monitoring produces error. It was estimated that flow in Hesperia had decreased between 2% and 10%.

A flow decrease was corroborated by the VVWRA influent flow meter. This meter is a magnetic type which can be as accurate of 0.50% of the flow rate. Table 5 summarizes the average annual flow data at the plant and corresponding population growth in the service area since 2000.

Table 5 – Average RWWRF Flow and Population Data

Year	Avg Flow, mgd^[1]	% Growth by year	Population Estimate^[2]	Population Growth, %
2000	8.19		182,169	
2001	8.43	2.8%	188,298	3.3%
2002	8.85	4.7%	195,233	3.6%
2003	9.40	5.9%	203,319	4.0%
2004	10.63	11.6%	217,221	6.4%
2005	12.19	12.8%	232,766	6.7%
2006	12.32	1.1%	248,984	6.5%
2007	12.43	0.9%	263,058	5.4%
2008	12.26	-1.4%	265,320	0.9%

1 Based on average annual flow recorded at VVWRA RWWRF

2 Based on US Census Bureau population statistics

Recent Economic Activity

Considerable growth was experienced in the High Desert and reflected in the housing boom that persisted through the first half of this decade. The High Desert communities from 2004 to 2006 were one of the fastest growing areas in the United States, averaging above 6% population growth during this time, with Victorville averaging above 9% growth in 2004 and 2005. Based on US Census Bureau statistics, the high desert has averaged population growth 3.5% annually since 2000. This data is skewed higher by the larger than normal growth increases in 2004-2006. The housing correction began in late 2006. This has caused growth in the community and the resultant sewage flow growth to decrease slightly as shown above in Table 5.

When the construction boom ended, as evidenced by the marked decline in building permits issued, many jobs were lost and consumer spending was impacted. This economic decline was coupled with the much publicized credit issues, in particular with mortgage loans. The credit issues have resulted in historical highs for housing loan delinquencies and defaults. Recent information from DataQuick® was researched to ascertain the magnitude of the economic decline in the High Desert and develop recent trends.

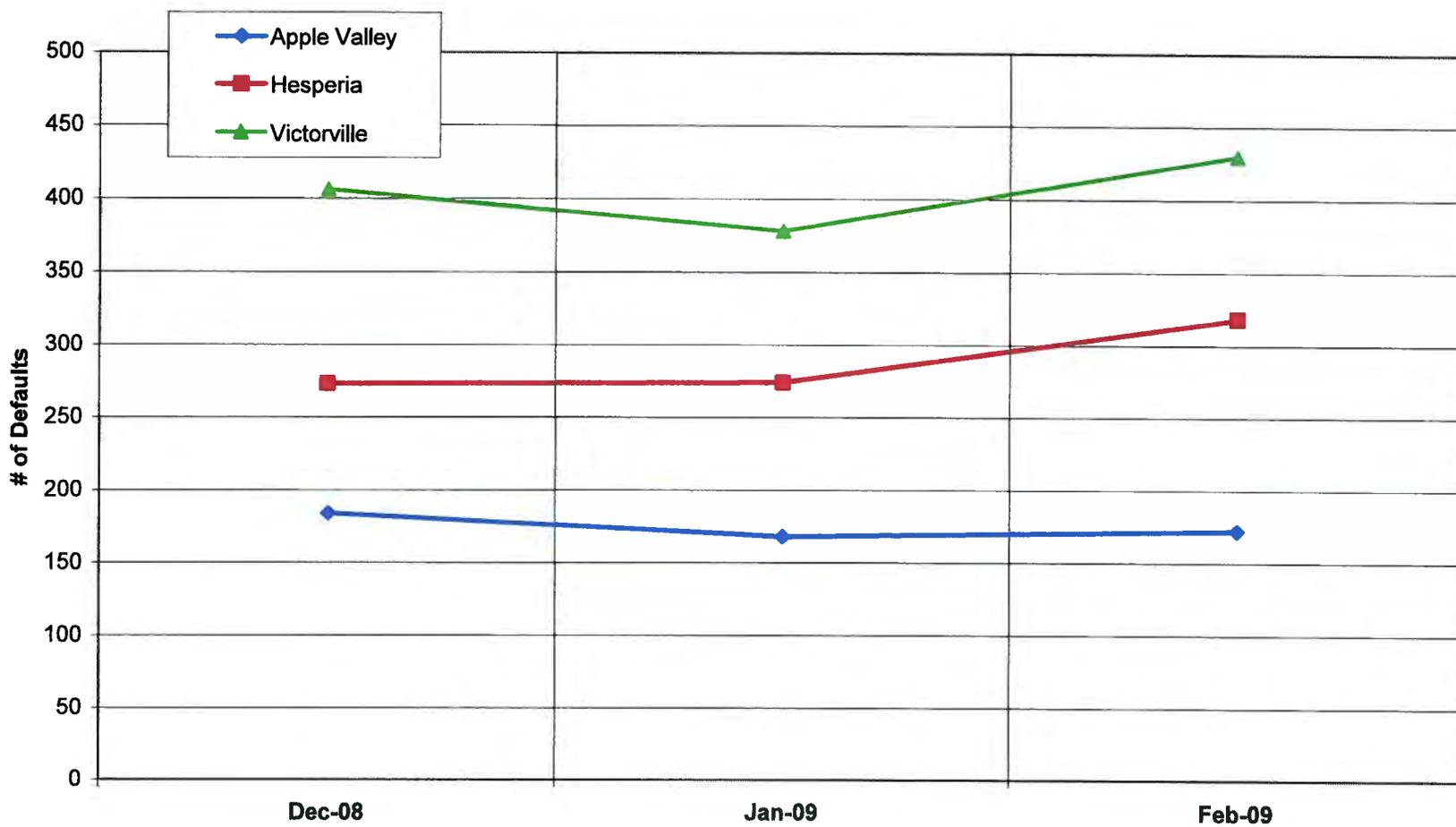
Figure 4 shows the notice of defaults that have been issued in the past three months for Apple Valley, Hesperia and Victorville. This data represents those homeowners that are at least 30 days late on a mortgage payment, but have not yet been foreclosed. The trend demonstrates a relatively flat curve from January to March. This is in line with the number of defaults cited in the previous update, which spanned from April 2008 to June 2008.

Figure 5 shows bank owned foreclosures from August 2007 through February 2009. Foreclosures have, in recent months, remained relatively flat and are well off the peaks experienced in the second and third quarters of 2008. A second order trend line has been added to this graph to depict the overall foreclosure trend. This trend downward in foreclosures may be a result of the efforts by the United States government and the mortgage lenders to keep homeowners, who have slipped into default, from ending up in foreclosure. These efforts have been deployed as a stabilizing measure for the overall economy.

Figure 6 shows loan activity for Apple Valley, Hesperia and Victorville combined. This activity shows an increase in loan activity in the area over the past few months. This increase indicates that, with the severe decline in housing prices, the available empty lots are beginning to attract buyer interest. This trend has been noted in many local media sources throughout the Riverside/San Bernardino County areas that have been the worst hit by the housing downturn.

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FIGURE 4
Notice of Default's in Apple Valley, Hesperia, and Victorville
December 08 through February 09



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FIGURE 5
Bank Owned Forclosures by Month

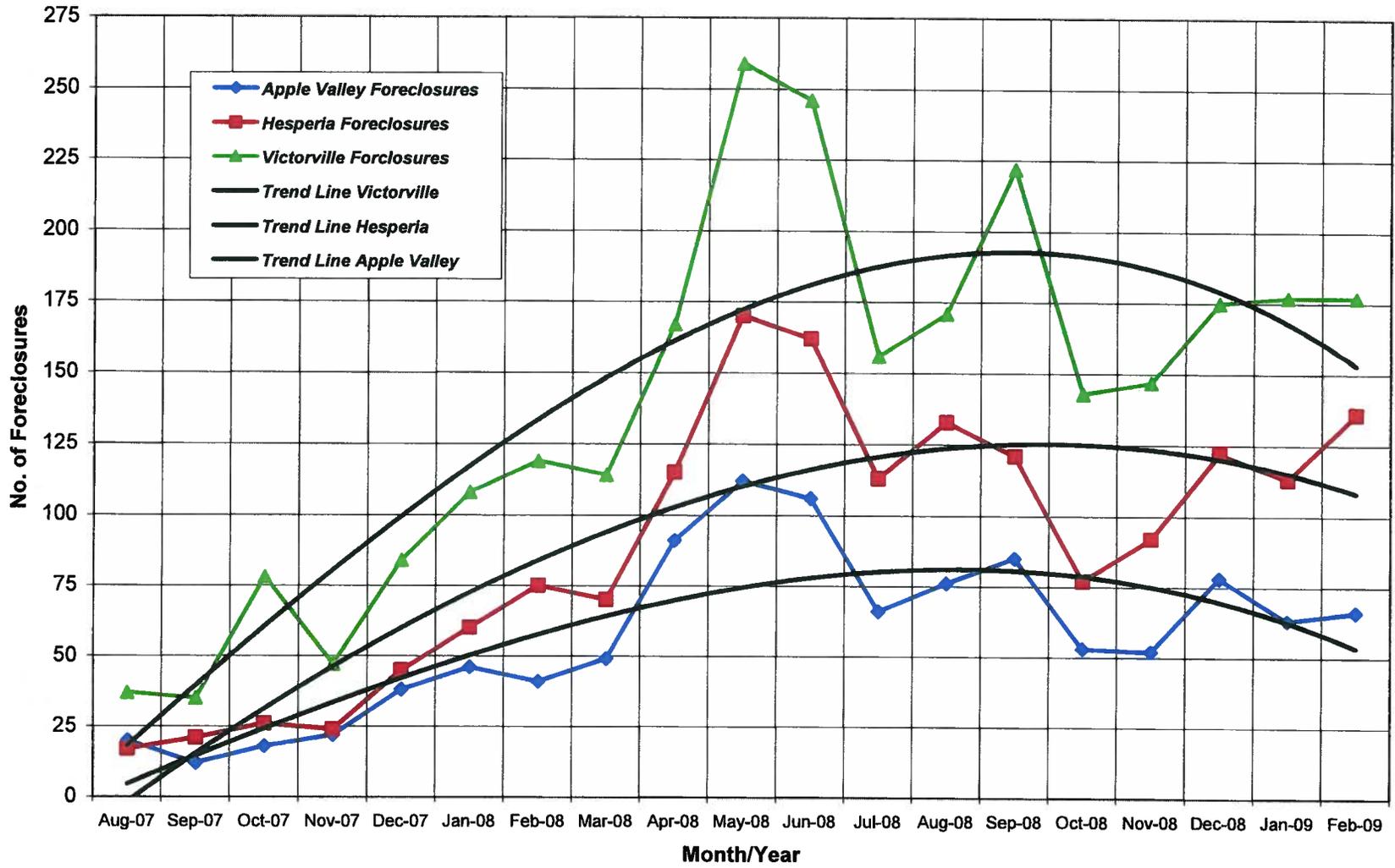
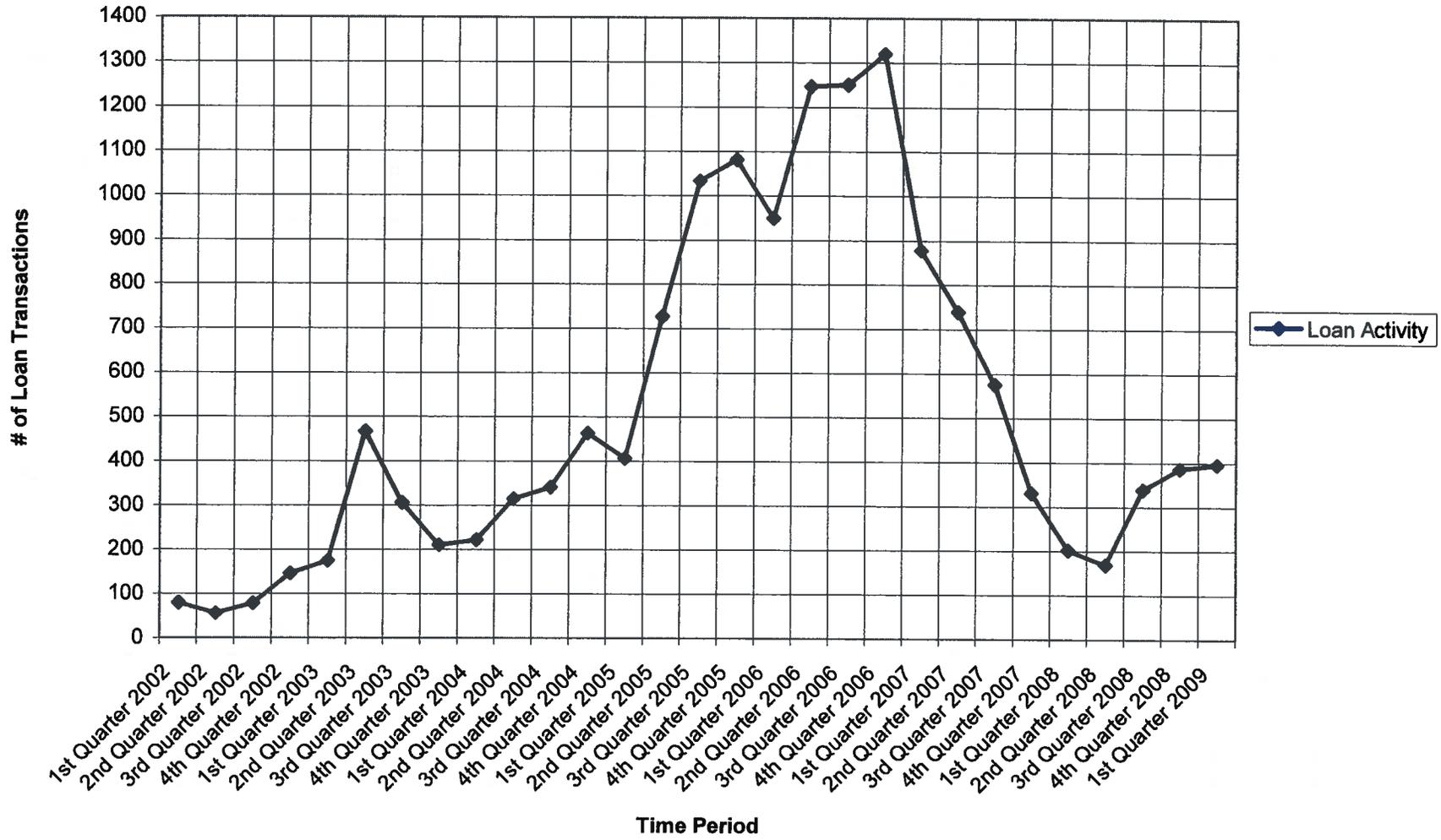


FIGURE 6
Loan Activity by Quarter for Apple Valley, Hesperia, and Victorville



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Historical Growth Analysis

Sewage flow growth data from Southern California communities that are similar to the VVWRA Service Area were researched. Data over the past 20 years was acquired and compiled. The criteria for selection of the representative communities were as follows:

5. Population served and/or sewage flow rate is similar to that of VVWRA's RWWRF (approximately 10-20 MGD).
6. The city has experienced similar population growth and declines over the past decade.
7. The community has large sections of developable vacant land.
8. The Community has similar climate and demographics.

The following cities and their corresponding wastewater treatment facilities were selected:

1. Temecula, California - Temecula Valley Regional Wastewater Reclamation Facility
2. Lancaster, California -LACSD's Lancaster Wastewater Treatment Plant
3. Palmdale, California – LACSD's Palmdale Water Reclamation Plant
4. Bakersfield, California – Bakersfield Wastewater Treatment Plant No.3

Table 6 shows rated and current flow at the treatment facilities:

Table 6: Representative WWTF Information

Plant ID	Rated Capacity, mgd	Current Flow, mgd
Bakersfield Plant No.3	24.0	16.3
Palmdale WRP	15.0	9.9
Lancaster	16.0	14.6
Temecula WRP	18.0	13.4

Tables 7 through Table 10 show the average annual sewage flow for each of the treatment facilities and the calculation of the corresponding growth rate:

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Table 7 – Bakersfield WRP

Year	Avg Flow, mgd	% Growth by year
1972	3.00	
1984	6.00	3.8%
1999	11.13	2.9%
2000	11.40	2.4%
2001	11.53	1.1%
2002	11.83	2.5%
2003	13.11	9.8%
2004	14.36	8.7%
2005	15.17	5.3%
2006	15.83	4.2%
2007	15.81	-0.1%
2008	16.32	3.1%
Average Growth per year 72-08		2.2%

1972 flow assumes plant at 60% capacity

1984 flow assumes expansion of plant at 75% capacity

Table 8 - Palmdale WRP

Year	Avg Flow, mgd	% Growth by year
1988	4.81	
1989	6.46	25.7%
1990	7.16	9.8%
1991	7.86	8.9%
1992	7.19	-9.4%
1993	7.35	2.2%
1994	7.70	4.6%
1995	7.82	1.6%
1996	7.95	1.6%
1997	8.26	3.7%
1998	8.32	0.7%
1999	8.57	2.9%
2000	9.06	5.4%
2001	9.17	1.2%
2002	8.90	-3.0%
2003	9.20	3.3%
2004	9.43	2.4%
2005	9.73	3.1%
2006	9.86	1.4%
2007	9.69	-1.8%
2008	9.49	-2.1%
Average Growth per year 88-08		2.4%

Table 9 - Lancaster WRP

Year	Avg Flow, mgd	% Growth by Year
1988	6.39	
1989	7.65	16.4%
1990	8.35	8.3%
1991	8.09	-3.2%
1992	8.37	3.3%
1993	8.65	3.3%
1994	9.08	4.7%
1995	9.46	4.0%
1996	9.87	4.1%
1997	10.07	2.0%
1998	11.27	10.7%
1999	11.82	4.6%
2000	12.28	3.8%
2001	12.44	1.2%
2002	12.77	2.6%
2003	13.19	3.2%
2004	13.34	1.1%
2005	13.64	2.2%
2006	14.90	8.5%
2007	15.17	1.8%
2008	14.63	-3.7%
Average Growth per year 88-08		2.7%

Table 10 – Temecula WRP

Year	Avg Flow, mgd	% Growth by Year
1985	0.61	
1986	1.05	41.8%
1987	1.25	16.1%
1988	1.66	24.7%
1989	2.69	38.3%
1999	6.08	5.1%
2000	6.51	6.7%
2001	7.23	10.0%
2002	8.26	12.4%
2003	9.56	13.7%
2004	11.31	15.4%
2005	12.27	7.8%
2006	12.58	2.5%
2007	13.09	3.9%
2008	13.89	5.7%
2009	13.35	-4.0%
Average Growth per year 85-08		3.8%

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Based on the data from the similar communities the average annual flow growth averages 2.76%. This growth rate was applied to the current flow at the VVWRA RWWRF and is shown in Table 11. The graph of this growth curve is included on the flow projection graph (Figure 7) in the next section.

Table 11 - Projected VVWRA Flow based on Historical Growth Rates

Year	Flow, mgd	Growth, %
2008	12.26	
2009	12.60	2.76%
2010	12.95	2.76%
2011	13.30	2.76%
2012	13.67	2.76%
2013	14.05	2.76%
2014	14.44	2.76%
2015	14.84	2.76%
2016	15.25	2.76%
2017	15.67	2.76%
2018	16.10	2.76%
2019	16.55	2.76%
2020	17.01	2.76%
2021	17.48	2.76%
2022	17.96	2.76%

*Average Annual Flow Recorded at the RWWRF in 2008

Flow Projection

Three factors will be the cornerstones of economic growth and, subsequently, sewage growth over the next 10 years in the High Desert:

1. Hesperia, Victorville and Apple Valley all have near term plans for major commercial/industrial development, which will provide for many jobs in the High Desert. These jobs will provide a solid foundation for long term flow growth in the VVWRA Service Area.
2. From our research, the amount of available housing inventory has been declining as properties in Southern California attract buyers because of the large price declines in desirable communities.
3. The SCLA project along with the plans for job creating industries in Hesperia and Apple Valley will establish the High Desert as a logistical hub for Southern California; capitalizing on the local skilled labor pool and relatively affordable housing for a California community.

With the above-listed cornerstones in mind, we project that growth will take the following general pattern in the immediate period ahead:

1. Growth will be very slow in the short term 2009-2010, as the industrial and commercial projects currently underway come on line.
2. Once on line, jobs will be created that may quickly deplete the inventory of unsold properties. This could result in a quick increase in sewage flow as houses that are connected to the sewer, but currently vacant, begin to occupy.
3. When unsold properties approach normal historical levels of inventory, new building activity will be revitalized, returning to more historically average levels of growth.

The building activity was compiled to estimate the general growth pattern cited above. The compilation utilized the following methodology and assumptions:

- 1) Current building activity will fully occupy over the next 12 years.
- 2) Growth will be very slow through 2010, until commercial and industrial projects generate meaningful job growth-we project a rate of approximately 1.5 percent flow growth per year.
- 3) The meaningful job growth could quickly exhaust existing housing inventories, creating sudden flow growth in 2011-2012.
- 4) New building activity will then resume to more historical norms for the area (2-4%).
- 5) Include, in a separate curve, the historic growth rates from similar Southern California for comparison purposes.

Table 12 shows the year-by-year average flow growth derived from the methodology described above. Figure 7 shows the projection on a graph. Historical average yearly flow at the RWWRF is also shown on the graph from 2000 through 2008.

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Table 12: Year-by-Year Service Area Growth

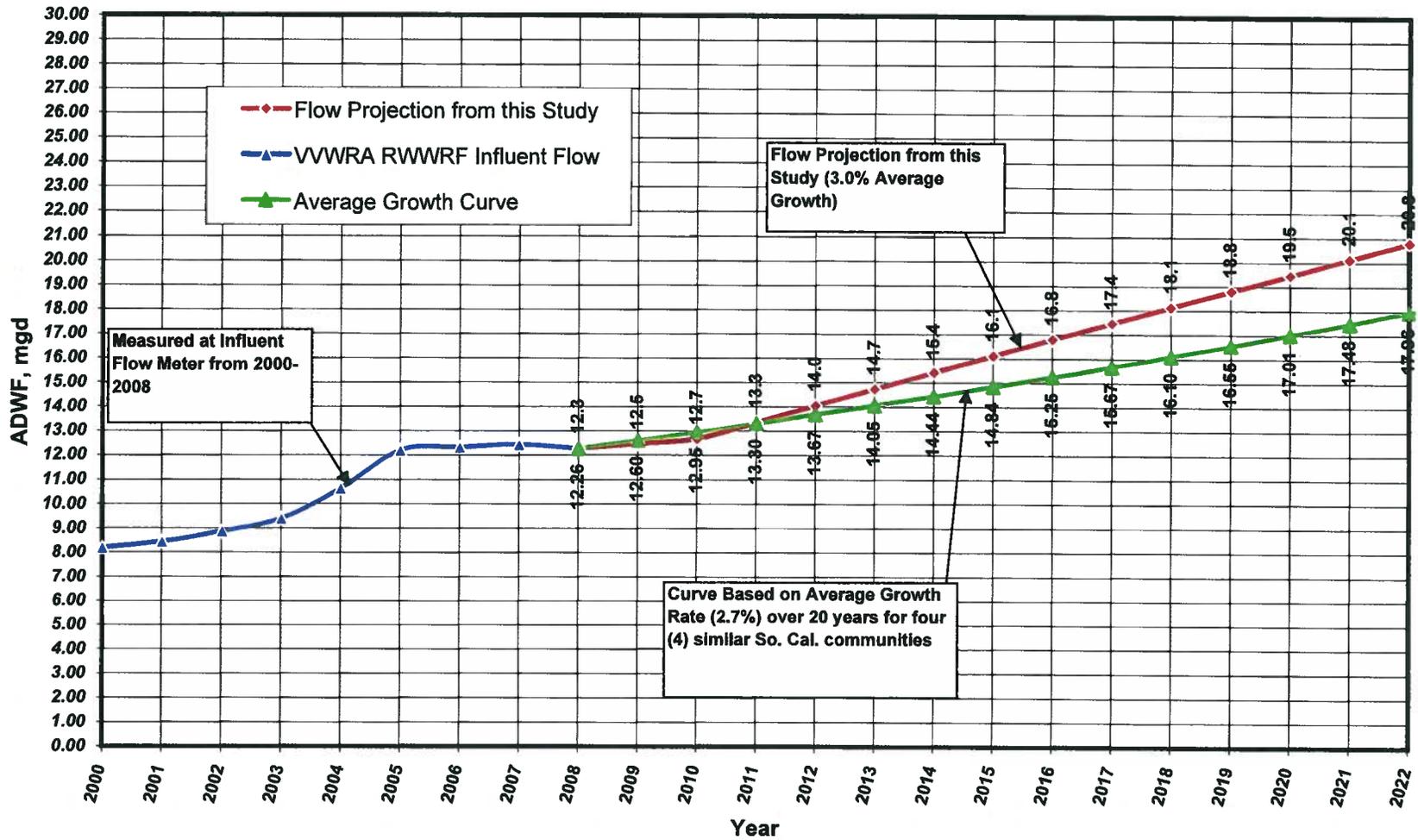
Year	Victorville		Hesperia		Apple Valley		SVL/Oro Grande		Totals		
	ADWF, mgd	Additional EDUs	ADWF, mgd	Additional EDUs	ADWF, mgd	Additional EDUs	ADWF, mgd	Additional EDUs	ADWF, mgd	Additional EDUs	Annual Growth, %
2008	7.81	0	1.77	0	1.80	0	0.88	0	12.26	0	
2009	7.91	572	1.82	293	1.82	111	0.90	111	12.46	1,088	1.6%
2010	8.02	572	1.87	293	1.84	111	0.92	111	12.65	1,088	1.5%
2011	8.41	2,175	2.07	1,113	1.92	423	0.94	111	13.34	3,822	5.2%
2012	8.80	2,175	2.28	1,113	1.99	423	0.96	111	14.03	3,822	4.9%
2013	9.19	2,175	2.48	1,113	2.07	423	0.98	111	14.72	3,822	4.7%
2014	9.58	2,175	2.68	1,113	2.14	423	1.00	111	15.40	3,822	4.5%
2015	9.97	2,175	2.88	1,113	2.22	423	1.02	111	16.09	3,822	4.3%
2016	10.37	2,175	3.08	1,113	2.30	423	1.04	111	16.78	3,822	4.1%
2017	10.76	2,175	3.28	1,113	2.37	423	1.04	0	17.45	3,711	3.8%
2018	11.15	2,175	3.48	1,113	2.45	423	1.04	0	18.11	3,711	3.7%
2019	11.54	2,175	3.68	1,113	2.52	423	1.04	0	18.78	3,711	3.6%
2020	11.93	2,175	3.88	1,113	2.60	423	1.04	0	19.45	3,711	3.4%
2021	12.32	2,175	4.08	1,113	2.68	423	1.04	0	20.12	3,711	3.3%
2022	12.71	2,175	4.28	1,113	2.75	423	1.04	0	20.79	3,711	3.2%

¹ Additional EDU's calculated based on flow of 180 gpd/edu

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FIGURE 7
VVWRA - Service Area Flow Projection



Summary

The VVWRA Service Area experienced rapid growth from 2001-2006. The growth yielded sharp increases in sewage flow to the Regional Wastewater Reclamation Facility (RWWRF-Westside Plant). The growth from early 2007 to the present has been relatively flat and has resulted recently in decreased flows to the RWWRF.

The decrease in service area flow has occurred during a period when new loan activity has fallen and foreclosures have increased dramatically. The most current trends show some signs of stabilization in the housing market; however, new building permits continue to be a fraction of what they were during high growth years. Similarly, new connections to the sewer collection system of the member agencies have markedly slowed. Connections for all of 2008 were approximately 20% of the average from 2005-2006. In our opinion, the marked slowdown, in particular for building permits, which are a good indicator of near term growth, will yield much slower flow increases in the high desert for the next 1-2 years.

This revised projection estimates very slow growth through 2010; whereupon commercial and industrial development in the area is anticipated to spur job creation, economic growth and an increase in sewage flow within the VVWRA Service Area. After job growth is spurred, we anticipate that the existing housing inventory could be exhausted quickly, resulting in increased demand, setting the stage for new development.

The next few years of slower growth will afford VVWRA and its member agencies the opportunity to plan for and expand infrastructure. The High Desert offers affordable living in a high quality environment; therefore, we anticipate a resumption of more typical growth rate once the current slowdown ends.

We hope that this analysis helps VVWRA in its strategic planning for capital improvement projects. Please do not hesitate to contact me if you have any questions or comments regarding this analysis or require further assistance.

Sincerely,



Kevin Schmidt, P.E.
Senior Project Manager
Water Resources