The exhibits in this section characterize the history and current state of land subsidence and ground fissuring in the Chino Basin using data from Watermaster's ground-level monitoring program.

One of the earliest indications of land subsidence in Chino Basin was the appearance of ground fissures in the City of Chino. These fissures appeared as early as 1973, but an accelerated occurrence of ground fissuring ensued after 1991 and resulted in damaged infrastructure.

In 1999, the OBMP Phase I Report (WEI, 1999) identified pumping-induced decline of groundwater levels and subsequent aquifer-system compaction as the most likely cause of land subsidence and ground fissuring observed in MZ1. Program Element 1 – *Develop and Implement a Comprehensive Monitoring Program* called for basin-wide analysis of land subsidence via ground-level surveys and remote sensing (InSAR) and ongoing monitoring based on the analysis of the subsidence data. Program Element 4 – *Develop and Implement a Comprehensive Groundwater Management Plan for Management Zone 1* called for the development and implementation of an interim management plan for MZ1 that would:

- Minimize subsidence and fissuring in the short-term.
- Collect the information necessary to understand the extent, rate, and mechanisms of subsidence and fissuring.
- Formulate a management plan to abate future subsidence and fissuring or reduce it to tolerable levels.

In 2000, the Implementation Plan in the Peace Agreement called for an aquifer-system and land-subsidence investigation in the southwestern portion of MZ1 to support the development of a management plan for MZ1 (second and third bullets above). This investigation was titled the MZ1 Interim Monitoring Program (IMP). From 2001 to 2005, Watermaster developed, coordinated, and conducted the IMP under the guidance of the MZ1 Technical Committee, which was composed of representatives from all major producers in MZ1 and their technical consultants. The investigation methods, results, and conclusions are described in detail in the MZ1 Summary Report (WEI, 2006). The investigation provided enough information for Watermaster to develop Guidance Criteria for MZ1 that if followed, would minimize the potential for subsidence and fissuring in the investigation area. The Guidance Criteria also formed the basis for the MZ1 Subsidence Management Plan (MZ1 Plan) (WEI, 2007b).

The MZ1 Plan was developed by the MZ1 Technical Committee and approved by Watermaster in October 2007. In November 2007, the California Superior Court, which retains continuing jurisdiction over the Chino Basin Adjudication, approved the MZ1 Plan and ordered its implementation. The MZ1 Plan calls for (1) the continued scope and frequency of monitoring implemented during the IMP within the MZ1 Managed Area (see Exhibit 58) and (2) expanded monitoring of the aquifer system and land subsidence in other areas of the Chino Basin where the IMP indicated concern for future subsidence and ground fissuring. Exhibit 58 and Exhibit 59 show the location of the so-called Areas of Subsidence Concern which are: Central MZ1, Northwest MZ1, Northeast, and Southeast Areas.

Watermaster's current ground-level monitoring program includes:

- *Piezometric Levels*. Piezometric levels are an important part of the ground-level monitoring program because piezometric changes are the mechanism for aquifer-system deformation and land subsidence. Watermaster monitors piezometric levels at about 30 wells as part of its ground-level monitoring program. Currently, a pressure-transducer/data-logger is installed at each of these wells and records one water-level reading every 15 minutes. Watermaster also records depth-specific water levels at the piezometers located at the Ayala Park Extensometer and Chino Creek Extensometer facilities once every 15 minutes.
- *Aquifer-System Deformation*. Watermaster records the vertical deformation of the aquifer-system at the Ayala Park Extensometer Facility (see Exhibit 58). At this facility, two extensometers are completed to depths of 550 ft-bgs (Shallow Extensometer) and 1,400 ft-bgs (Deep Extensometer). In 2012, Watermaster installed another extensometer facility south of the Chino Airport in the vicinity of the newly built CCWF (see Exhibit 59): the Chino Creek Extensometer Facility (CCX). The CCX also consists of two extensometers: one completed to a depth of 140 ft-bgs (CCX-1) and the other to 610 ft-bgs (CCX-2). Both facilities record the vertical component of aquifer-system compression and/or expansion once every 15 minutes, synchronized with the piezometric measurements.
- *Vertical Ground-Surface Deformation*. Watermaster monitors vertical ground-surface deformation via the ground-level surveying and remote sensing (InSAR) techniques established during the IMP. Currently, ground-level surveys are being conducted in the MZ1 Managed Area, the Southeast Area, and the Northwest MZ1 Area once per year. InSAR is the only monitoring technique being employed outside of these areas. InSAR data are collected and analyzed once per year.
- *Horizontal Ground-Surface Deformation*. Watermaster monitors horizontal ground-surface deformation across the historical zone of ground fissuring in the MZ1 Managed Area. These data are obtained by electronic distance measurements (EDMs) between benchmark monuments and by a horizontal extensometer and are used to characterize the horizontal component of ground motion caused by groundwater production on either side of the fissure zone.

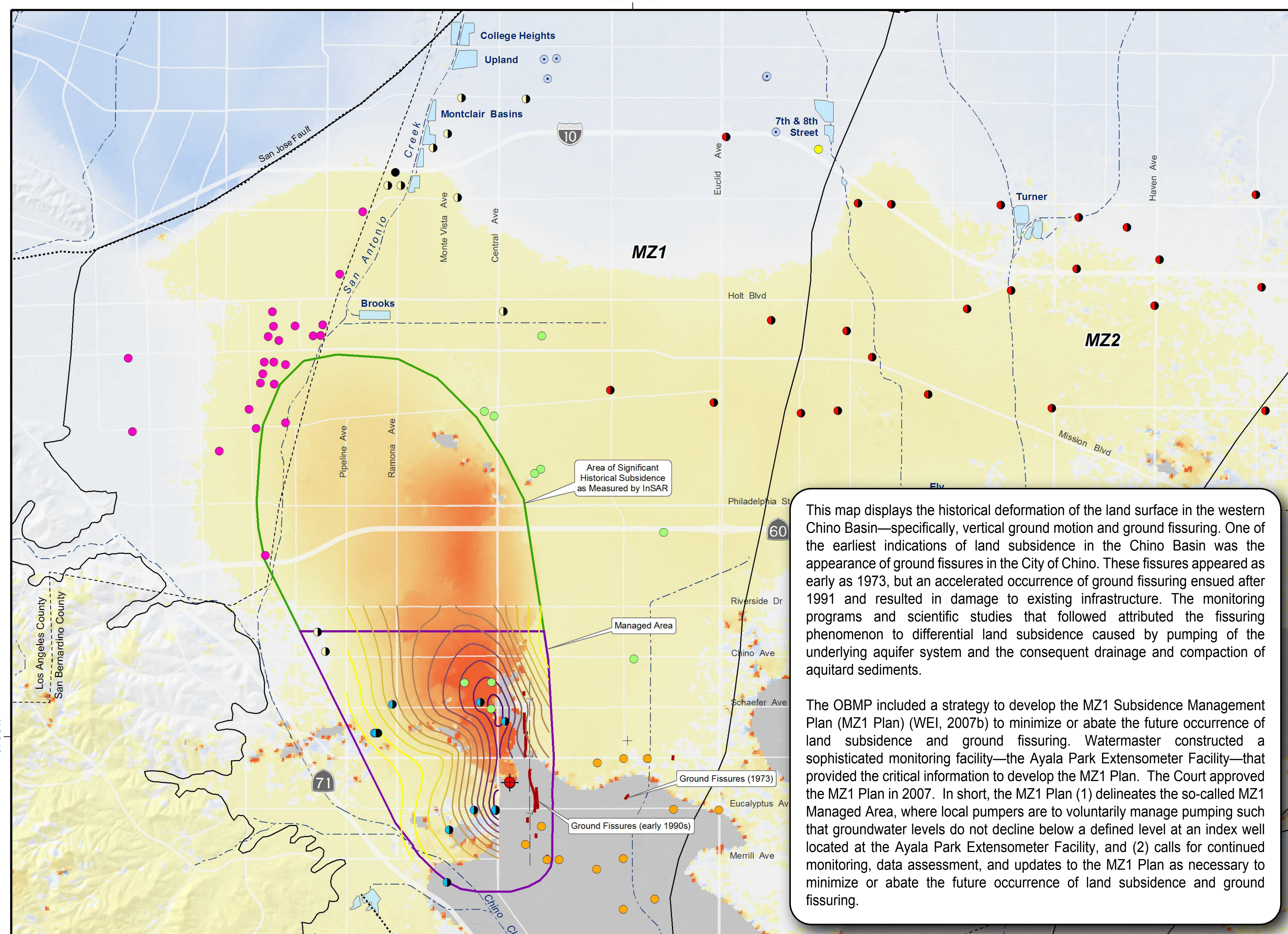
Exhibits 57 through 59 illustrate the historical occurrence of land subsidence in the Chino Basin, as interpreted from InSAR and ground-level surveys. These maps indicate that land subsidence concerns are primarily confined to the west side of the Chino Basin.

The land subsidence that has occurred in the Chino Basin was mainly controlled by changes in groundwater levels, which, in turn, were mainly controlled by pumping and recharge. Exhibits 60 through 64 show the relationships between groundwater pumping, recharge, recycled water reuse, groundwater levels, and vertical ground motion in the MZ1 Managed Area and the other Areas of Subsidence Concern. These graphics reveal cause-and-effect relationships, the current state of vertical ground motion, and the nature of the land subsidence.

Watermaster convenes a Ground-Level Monitoring Committee annually to review and interpret the data from the ground-level monitoring program. The committee evaluates the appropriateness of the Guidance Criteria in the MZ1 Plan and recommends changes if appropriate. The committee also recommends appropriate changes to the monitoring program.

Based on the data collected and analyzed for the ground-level monitoring program, the Ground-Level Monitoring Committee has become increasingly concerned with the occurrence of persistent differential subsidence within the Northwest MZ1 Area. Watermaster, consistent with the recommendation of the Ground-

Level Monitoring Committee, has determined that the MZ1 Plan needs to be updated to include a subsidence management plan for the Northwest MZ1 Area with the long-term objective to minimize or abate the occurrence of the differential land subsidence. This effort in the Northwest MZ1 Area is an example of adaptive management of land subsidence based on the monitoring data.



This map displays the historical deformation of the land surface in the western Chino Basin—specifically, vertical ground motion and ground fissuring. One of the earliest indications of land subsidence in the Chino Basin was the appearance of ground fissures in the City of Chino. These fissures appeared as early as 1973, but an accelerated occurrence of ground fissuring ensued after 1991 and resulted in damage to existing infrastructure. The monitoring programs and scientific studies that followed attributed the fissuring phenomenon to differential land subsidence caused by pumping of the underlying aquifer system and the consequent drainage and compaction of aquitard sediments.

The OBMP included a strategy to develop the MZ1 Subsidence Management Plan (MZ1 Plan) (WEI, 2007b) to minimize or abate the future occurrence of land subsidence and ground fissuring. Watermaster constructed a sophisticated monitoring facility—the Ayala Park Extensometer Facility—that provided the critical information to develop the MZ1 Plan. The Court approved the MZ1 Plan in 2007. In short, the MZ1 Plan (1) delineates the so-called MZ1 Managed Area, where local pumpers are to voluntarily manage pumping such that groundwater levels do not decline below a defined level at an index well located at the Ayala Park Extensometer Facility, and (2) calls for continued monitoring, data assessment, and updates to the MZ1 Plan as necessary to minimize or abate the future occurrence of land subsidence and ground fissuring.

Contours of Relative Change in Land Surface Altitude as Measured by Leveling Surveys 1987 to 1999

0.0 ft
-2.2 ft

Relative Change in Land Surface Altitude as Measured by InSAR Oct. 1993 to Dec. 1995

+ 0.5 ft
- 0
- 0.5 ft

InSAR data absent (incoherent)

Active Production Wells by Owner - 1987 to 1999

Ontario, Upland, Chino Hills, Pomona, GSWC, Chino, SAWCo, CIM, MVWD

Ground Fissures

Ayala Park Extensometer (Constructed in 2003)

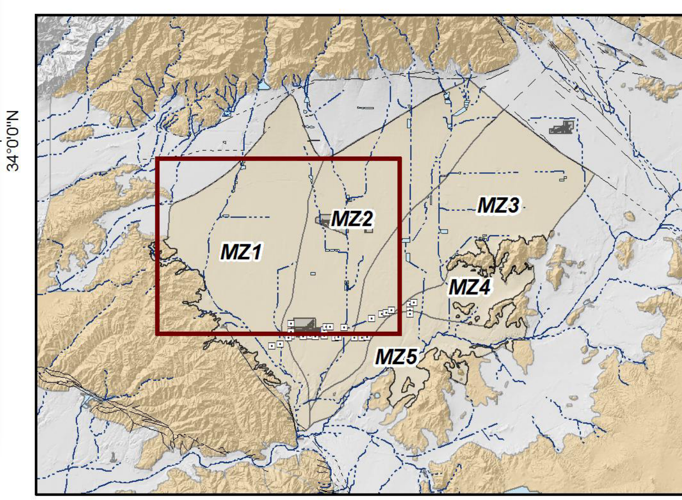
Chino Basin OBMP Management Zones

Flood Control & Conservation Basins

Riley Barrier

Faults

Location Certain
Location Approximate
Approximate Location of Groundwater Barrier
Location Concealed
Location Uncertain



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File: Exhibit_57_InSAR

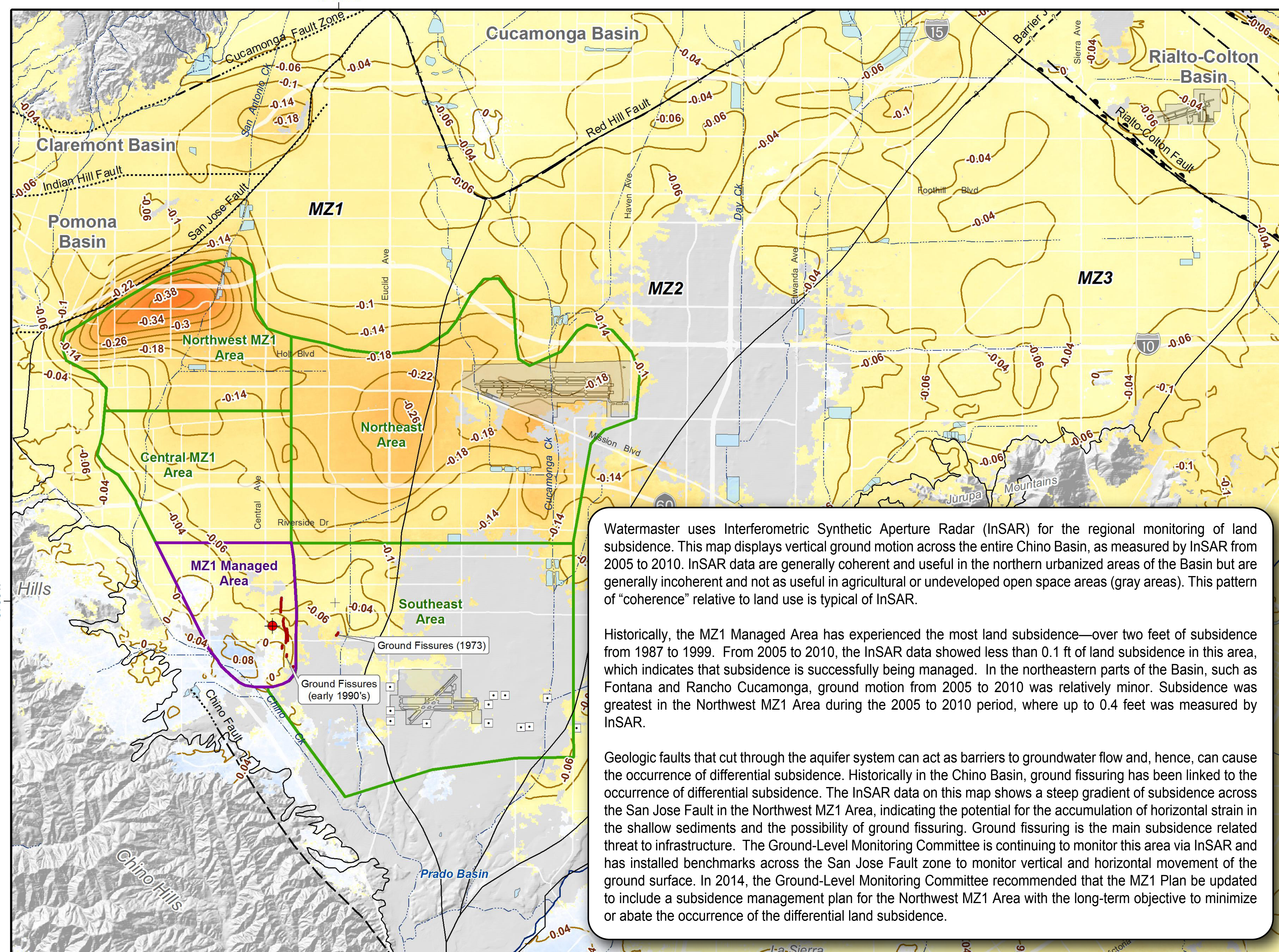
0 1 2 3 Miles
0 1 2 3 4 Kilometers

2014 State of the Basin
Ground-Level Monitoring

Historical Land Surface Deformation in Management Zone 1

Leveling Surveys (1987 to 1999) and InSAR (1993 to 1995)

Exhibit 57



Watermaster uses Interferometric Synthetic Aperture Radar (InSAR) for the regional monitoring of land subsidence. This map displays vertical ground motion across the entire Chino Basin, as measured by InSAR from 2005 to 2010. InSAR data are generally coherent and useful in the northern urbanized areas of the Basin but are generally incoherent and not as useful in agricultural or undeveloped open space areas (gray areas). This pattern of "coherence" relative to land use is typical of InSAR.

Historically, the MZ1 Managed Area has experienced the most land subsidence—over two feet of subsidence from 1987 to 1999. From 2005 to 2010, the InSAR data showed less than 0.1 ft of land subsidence in this area, which indicates that subsidence is successfully being managed. In the northeastern parts of the Basin, such as Fontana and Rancho Cucamonga, ground motion from 2005 to 2010 was relatively minor. Subsidence was greatest in the Northwest MZ1 Area during the 2005 to 2010 period, where up to 0.4 feet was measured by InSAR.

Geologic faults that cut through the aquifer system can act as barriers to groundwater flow and, hence, can cause the occurrence of differential subsidence. Historically in the Chino Basin, ground fissuring has been linked to the occurrence of differential subsidence. The InSAR data on this map shows a steep gradient of subsidence across the San Jose Fault in the Northwest MZ1 Area, indicating the potential for the accumulation of horizontal strain in the shallow sediments and the possibility of ground fissuring. Ground fissuring is the main subsidence related threat to infrastructure. The Ground-Level Monitoring Committee is continuing to monitor this area via InSAR and has installed benchmarks across the San Jose Fault zone to monitor vertical and horizontal movement of the ground surface. In 2014, the Ground-Level Monitoring Committee recommended that the MZ1 Plan be updated to include a subsidence management plan for the Northwest MZ1 Area with the long-term objective to minimize or abate the occurrence of the differential land subsidence.

Relative Change in Land-Surface Altitude as Measured by InSAR
June 2005 to September 2010

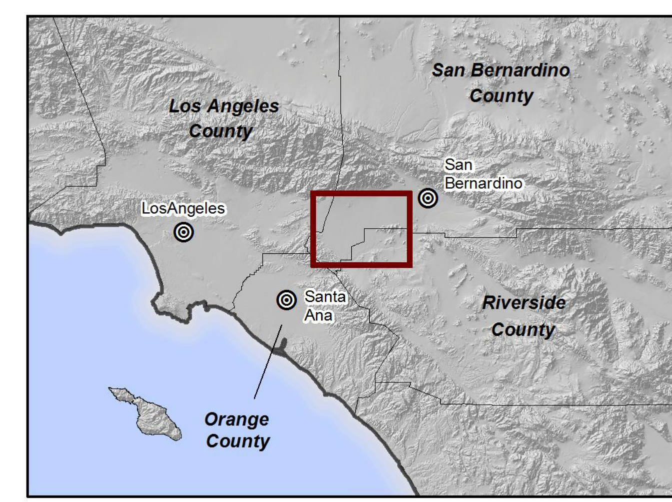
+ 0.5 ft
0
-0.25
- 0.5 ft

InSAR data absent (incoherent)

Chino Basin Desalter Well
Ayala Park Extensometer
Chino Basin OBMP Management Zones
MZ1 Managed Area
Areas of Subsidence Concern
Flood Control & Conservation Basins

Faults

Location Certain
Location Approximate
Approximate Location of Groundwater Barrier
Location Concealed
Location Uncertain



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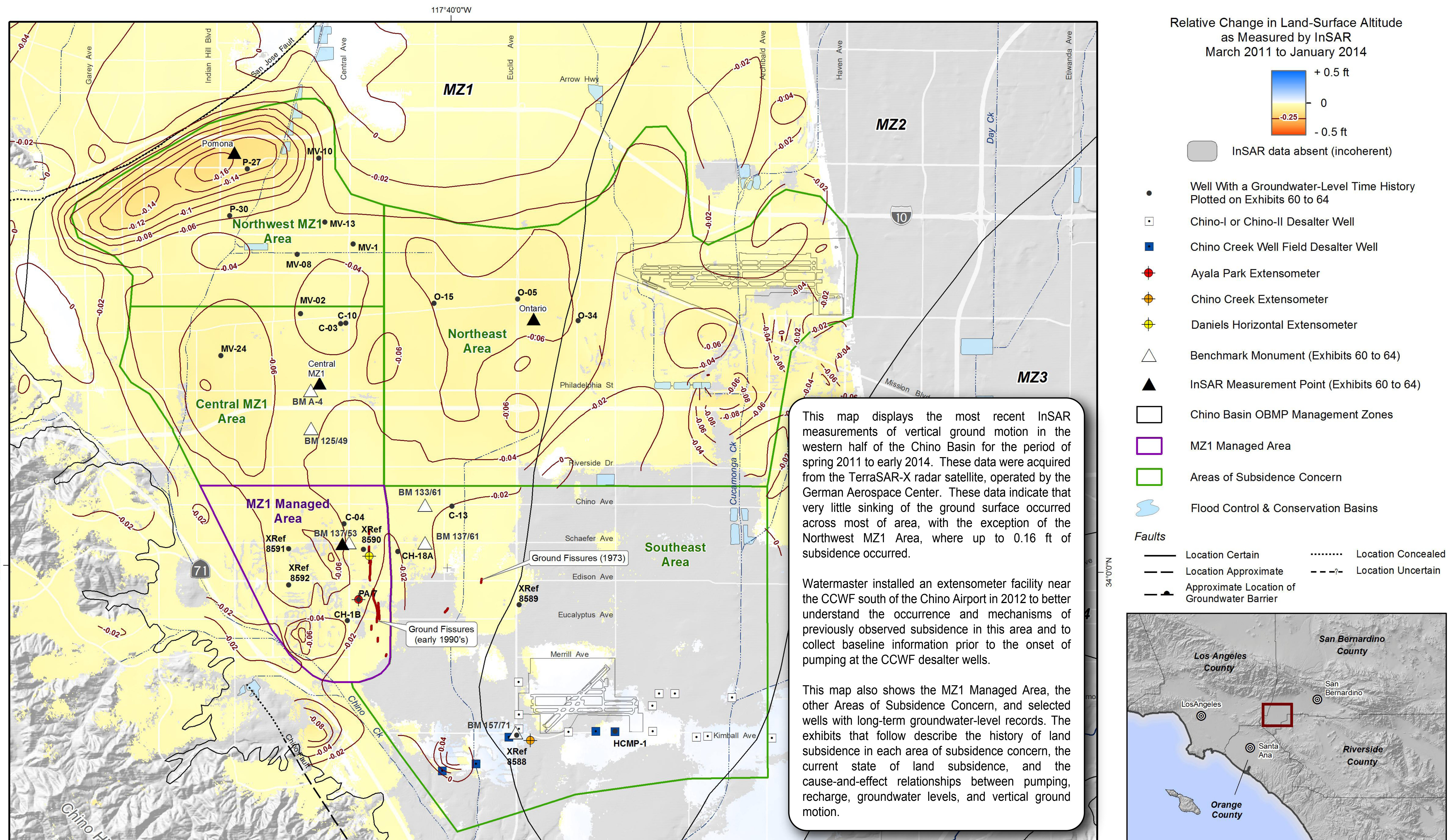
File: Exhibit_58_InSAR

0 1 2 3 4 Miles
0 1 2 3 4 5 6 KM

2014 State of the Basin
Ground-Level Monitoring

Vertical Ground Motion as Measured by InSAR
2005 to 2010

Exhibit 58



This map displays the most recent InSAR measurements of vertical ground motion in the western half of the Chino Basin for the period of spring 2011 to early 2014. These data were acquired from the TerraSAR-X radar satellite, operated by the German Aerospace Center. These data indicate that very little sinking of the ground surface occurred across most of area, with the exception of the Northwest MZ1 Area, where up to 0.16 ft of subsidence occurred.

Watermaster installed an extensometer facility near the CCWF south of the Chino Airport in 2012 to better understand the occurrence and mechanisms of previously observed subsidence in this area and to collect baseline information prior to the onset of pumping at the CCWF desalter wells.

This map also shows the MZ1 Managed Area, the other Areas of Subsidence Concern, and selected wells with long-term groundwater-level records. The exhibits that follow describe the history of land subsidence in each area of subsidence concern, the current state of land subsidence, and the cause-and-effect relationships between pumping, recharge, groundwater levels, and vertical ground motion.

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File: Exhibit_59_InSAR

0 1 2 3 Miles
0 1 2 3 4 KM

2014 State of the Basin
Ground-Level Monitoring

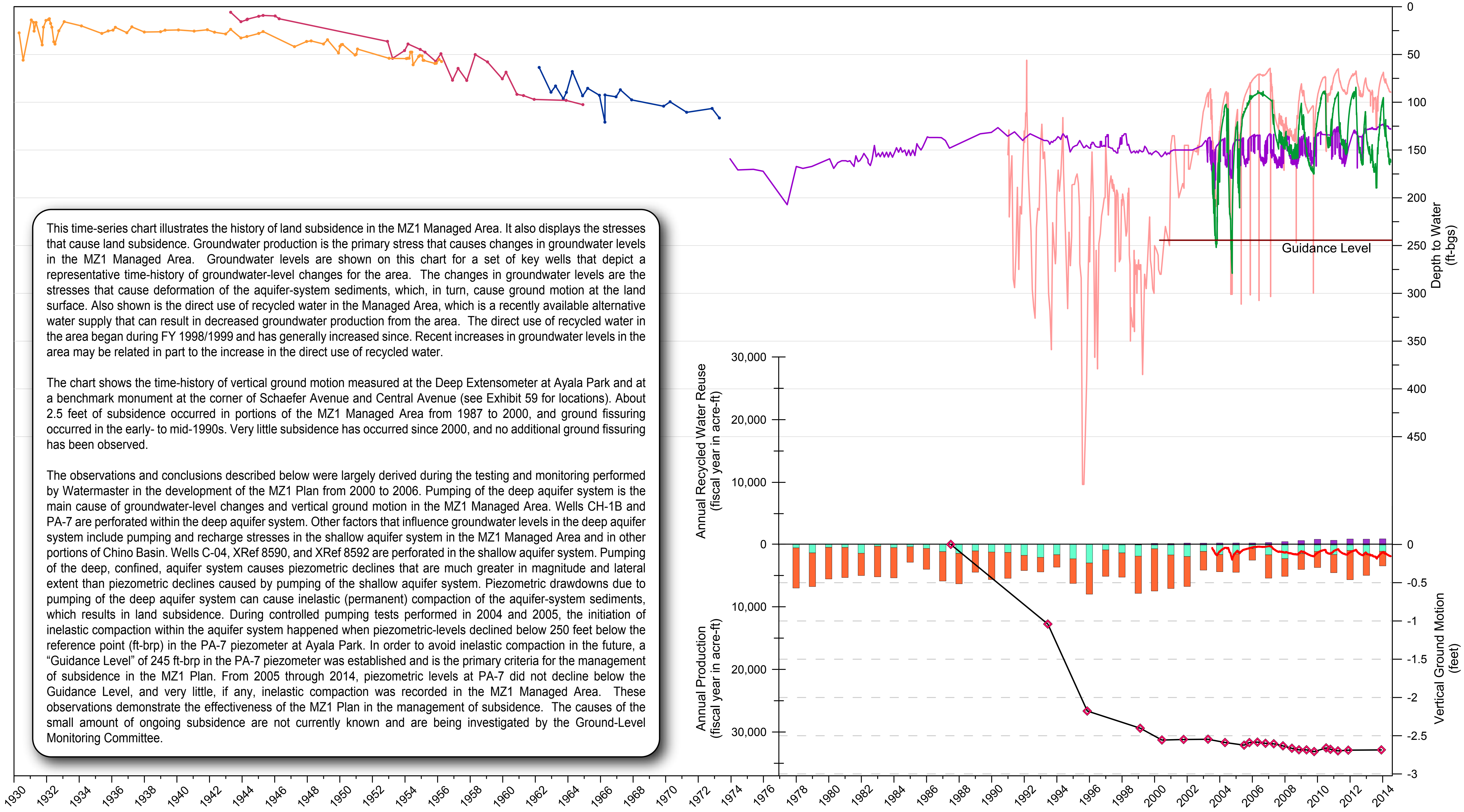
Vertical Ground Motion as Measured by InSAR
2011 to 2014

Exhibit 59

This time-series chart illustrates the history of land subsidence in the MZ1 Managed Area. It also displays the stresses that cause land subsidence. Groundwater production is the primary stress that causes changes in groundwater levels in the MZ1 Managed Area. Groundwater levels are shown on this chart for a set of key wells that depict a representative time-history of groundwater-level changes for the area. The changes in groundwater levels are the stresses that cause deformation of the aquifer-system sediments, which, in turn, cause ground motion at the land surface. Also shown is the direct use of recycled water in the Managed Area, which is a recently available alternative water supply that can result in decreased groundwater production from the area. The direct use of recycled water in the area began during FY 1998/1999 and has generally increased since. Recent increases in groundwater levels in the area may be related in part to the increase in the direct use of recycled water.

The chart shows the time-history of vertical ground motion measured at the Deep Extensometer at Ayala Park and at a benchmark monument at the corner of Schaefer Avenue and Central Avenue (see Exhibit 59 for locations). About 2.5 feet of subsidence occurred in portions of the MZ1 Managed Area from 1987 to 2000, and ground fissuring occurred in the early- to mid-1990s. Very little subsidence has occurred since 2000, and no additional ground fissuring has been observed.

The observations and conclusions described below were largely derived during the testing and monitoring performed by Watermaster in the development of the MZ1 Plan from 2000 to 2006. Pumping of the deep aquifer system is the main cause of groundwater-level changes and vertical ground motion in the MZ1 Managed Area. Wells CH-1B and PA-7 are perforated within the deep aquifer system. Other factors that influence groundwater levels in the deep aquifer system include pumping and recharge stresses in the shallow aquifer system in the MZ1 Managed Area and in other portions of Chino Basin. Wells C-04, XRef 8590, and XRef 8592 are perforated in the shallow aquifer system. Pumping of the deep, confined, aquifer system causes piezometric declines that are much greater in magnitude and lateral extent than piezometric declines caused by pumping of the shallow aquifer system. Piezometric drawdowns due to pumping of the deep aquifer system can cause inelastic (permanent) compaction of the aquifer-system sediments, which results in land subsidence. During controlled pumping tests performed in 2004 and 2005, the initiation of inelastic compaction within the aquifer system happened when piezometric-levels declined below 250 feet below the reference point (ft-brp) in the PA-7 piezometer at Ayala Park. In order to avoid inelastic compaction in the future, a "Guidance Level" of 245 ft-brp in the PA-7 piezometer was established and is the primary criteria for the management of subsidence in the MZ1 Plan. From 2005 through 2014, piezometric levels at PA-7 did not decline below the Guidance Level, and very little, if any, inelastic compaction was recorded in the MZ1 Managed Area. These observations demonstrate the effectiveness of the MZ1 Plan in the management of subsidence. The causes of the small amount of ongoing subsidence are not currently known and are being investigated by the Ground-Level Monitoring Committee.



Prepared by:

WEI
Wildermuth Environmental, Inc.

Author: NWS
Date: 06/24/2015
File: Exhibit_60_Managed.grf

Groundwater Levels at Wells (Top-Bottom Screen Interval)

Shallow Aquifer System
- C-04 (160-275 ft-bgs)
- XRef 8590 (80-225 ft-bgs)
- XRef 8591 (unknown)
- XRef 8592 (90-230 ft-bgs)

Deep Aquifer System
- CH-1B (440-1,180 ft-bgs)
- PA-7 (438-448 ft-bgs)

Vertical Ground Motion
- BM 137/53 Cumulative Displacement
- Ayala Park Deep Extensometer Measurements Between 30 and 1,400 ft-bgs

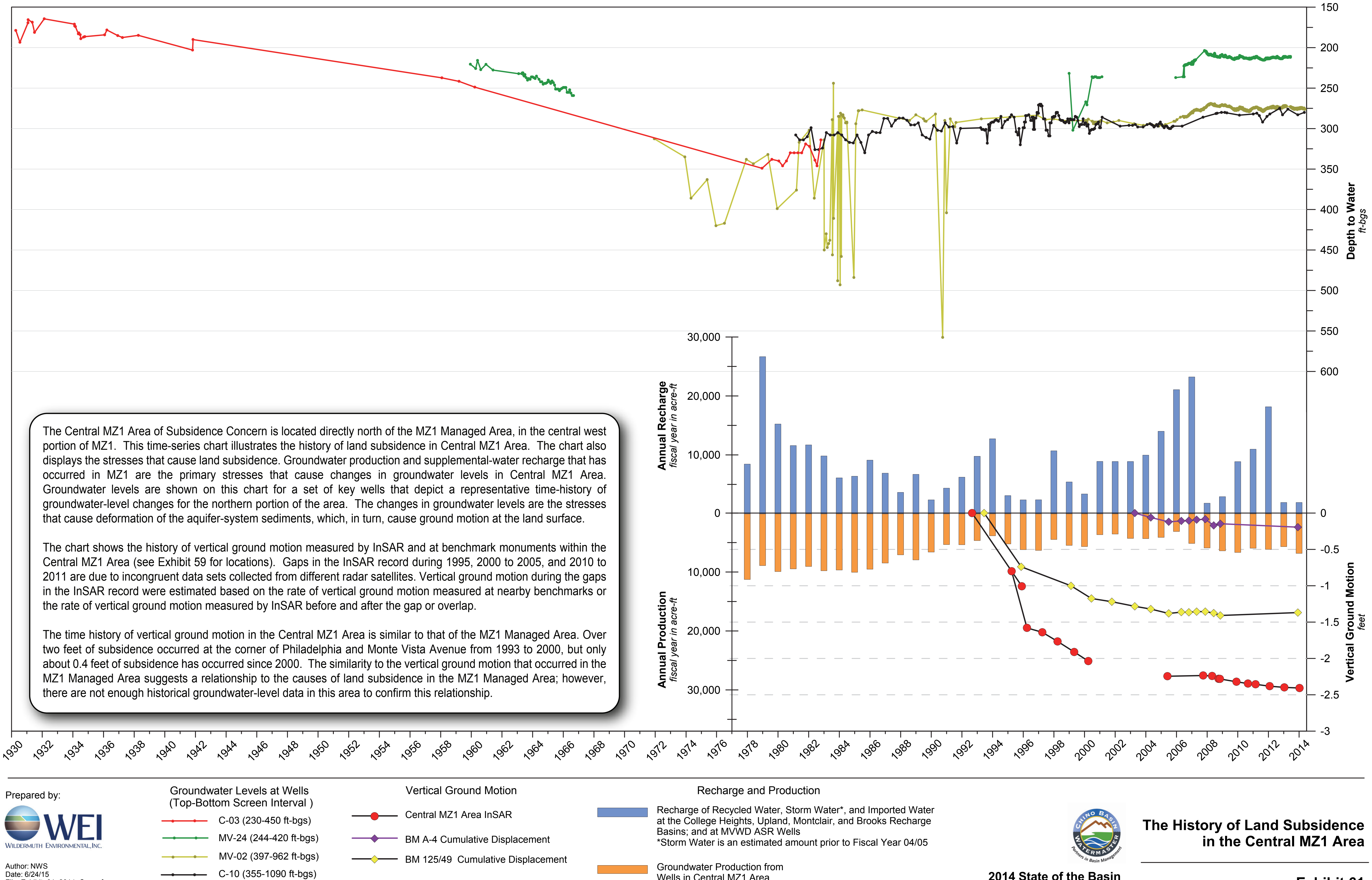
Recharge and Production
- Recycled Water Reuse Applied in the MZ1 Managed Area

Groundwater Production from Wells in the MZ1 Managed Area
- Deep Aquifer or Both Aquifers
- Shallow Aquifer or Unknown Aquifer

2014 State of the Basin
Ground-Level Monitoring

The History of Land Subsidence in the MZ1 Managed Area

Exhibit 60



The Central MZ1 Area of Subsidence Concern is located directly north of the MZ1 Managed Area, in the central west portion of MZ1. This time-series chart illustrates the history of land subsidence in Central MZ1 Area. The chart also displays the stresses that cause land subsidence. Groundwater production and supplemental-water recharge that has occurred in MZ1 are the primary stresses that cause changes in groundwater levels in Central MZ1 Area. Groundwater levels are shown on this chart for a set of key wells that depict a representative time-history of groundwater-level changes for the northern portion of the area. The changes in groundwater levels are the stresses that cause deformation of the aquifer-system sediments, which, in turn, cause ground motion at the land surface.

The chart shows the history of vertical ground motion measured by InSAR and at benchmark monuments within the Central MZ1 Area (see Exhibit 59 for locations). Gaps in the InSAR record during 1995, 2000 to 2005, and 2010 to 2011 are due to incongruent data sets collected from different radar satellites. Vertical ground motion during the gaps in the InSAR record were estimated based on the rate of vertical ground motion measured at nearby benchmarks or the rate of vertical ground motion measured by InSAR before and after the gap or overlap.

The time history of vertical ground motion in the Central MZ1 Area is similar to that of the MZ1 Managed Area. Over two feet of subsidence occurred at the corner of Philadelphia and Monte Vista Avenue from 1993 to 2000, but only about 0.4 feet of subsidence has occurred since 2000. The similarity to the vertical ground motion that occurred in the MZ1 Managed Area suggests a relationship to the causes of land subsidence in the MZ1 Managed Area; however, there are not enough historical groundwater-level data in this area to confirm this relationship.

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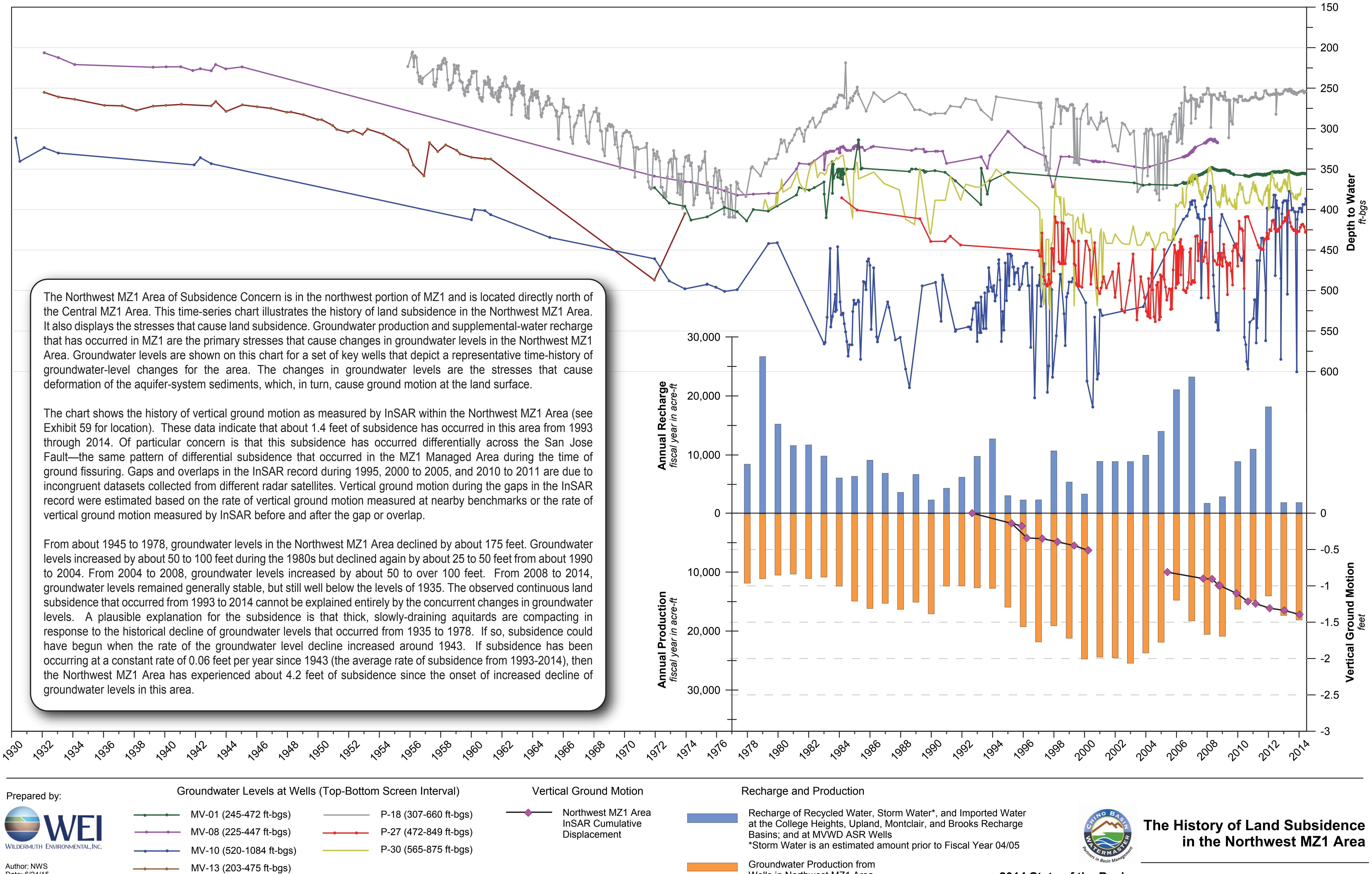
File: Exhibit_61_2014_Cen.grf

2014 State of the Basin
Ground-Level Monitoring

The History of Land Subsidence in the Central MZ1 Area

Exhibit 61



The Northwest MZ1 Area of Subsidence Concern is in the northwest portion of MZ1 and is located directly north of the Central MZ1 Area. This time-series chart illustrates the history of land subsidence in the Northwest MZ1 Area. It also displays the stresses that cause land subsidence. Groundwater production and supplemental-water recharge that has occurred in MZ1 are the primary stresses that cause changes in groundwater levels in the Northwest MZ1 Area. Groundwater levels are shown on this chart for a set of key wells that depict a representative time-history of groundwater-level changes for the area. The changes in groundwater levels are the stresses that cause deformation of the aquifer-system sediments, which, in turn, cause ground motion at the land surface.

The chart shows the history of vertical ground motion as measured by InSAR within the Northwest MZ1 Area (see Exhibit 59 for location). These data indicate that about 1.4 feet of subsidence has occurred in this area from 1993 through 2014. Of particular concern is that this subsidence has occurred differentially across the San Jose Fault—the same pattern of differential subsidence that occurred in the MZ1 Managed Area during the time of ground fissuring. Gaps and overlaps in the InSAR record during 1995, 2000 to 2005, and 2010 to 2011 are due to incongruent datasets collected from different radar satellites. Vertical ground motion during the gaps in the InSAR record were estimated based on the rate of vertical ground motion measured at nearby benchmarks or the rate of vertical ground motion measured by InSAR before and after the gap or overlap.

From about 1945 to 1978, groundwater levels in the Northwest MZ1 Area declined by about 175 feet. Groundwater levels increased by about 50 to 100 feet during the 1980s but declined again by about 25 to 50 feet from about 1990 to 2004. From 2004 to 2008, groundwater levels increased by about 50 to over 100 feet. From 2008 to 2014, groundwater levels remained generally stable, but still well below the levels of 1935. The observed continuous land subsidence that occurred from 1993 to 2014 cannot be explained entirely by the concurrent changes in groundwater levels. A plausible explanation for the subsidence is that thick, slowly-draining aquitards are compacting in response to the historical decline of groundwater levels that occurred from 1935 to 1978. If so, subsidence could have begun when the rate of the groundwater level decline increased around 1943. If subsidence has been occurring at a constant rate of 0.06 feet per year since 1943 (the average rate of subsidence from 1993-2014), then the Northwest MZ1 Area has experienced about 4.2 feet of subsidence since the onset of increased decline of groundwater levels in this area.

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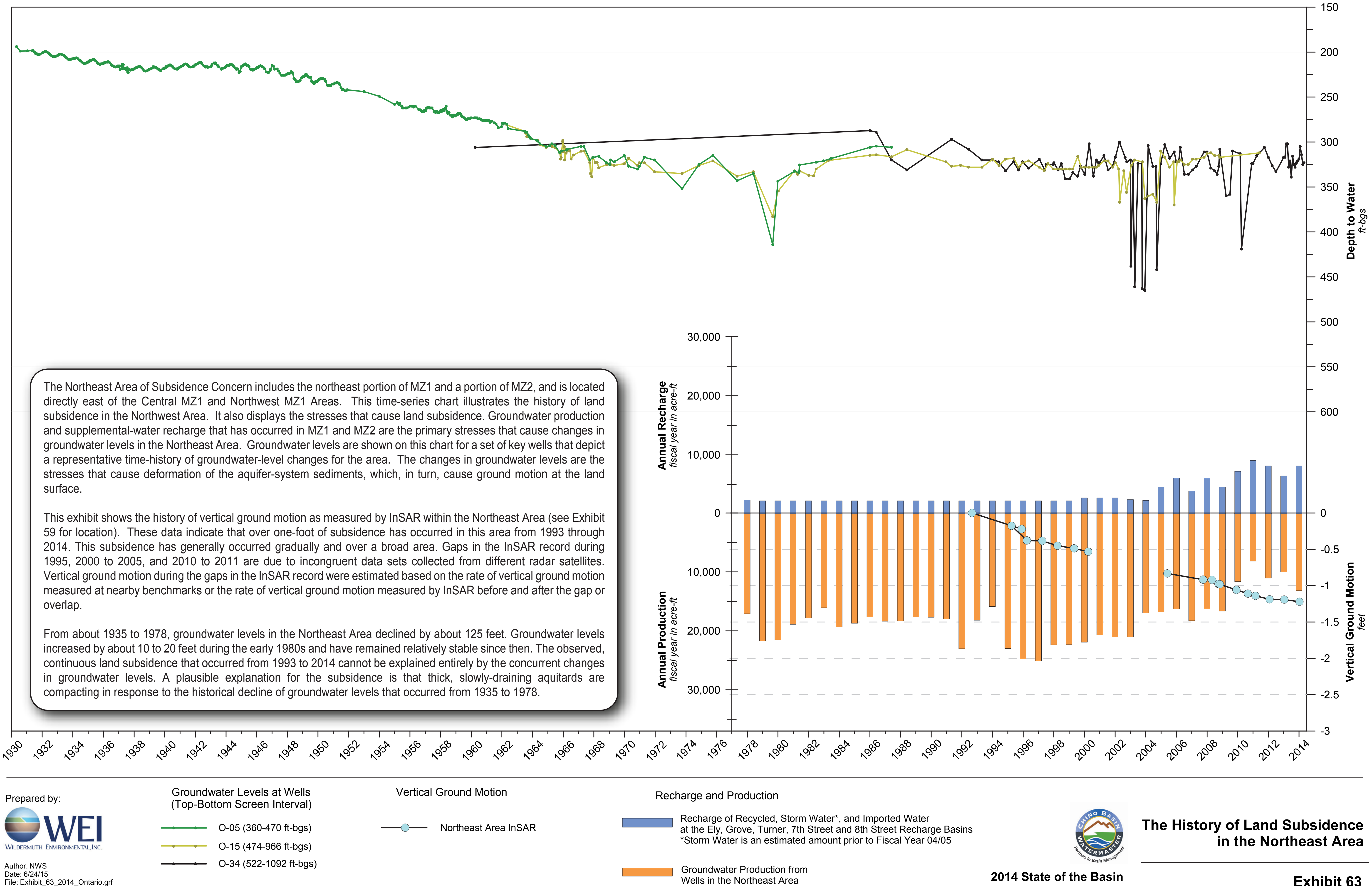
The History of Land Subsidence in the Northwest MZ1 Area

2014 State of the Basin
Ground-Level Monitoring

Exhibit 62



The Northeast Area of Subsidence Concern includes the northeast portion of MZ1 and a portion of MZ2, and is located directly east of the Central MZ1 and Northwest MZ1 Areas. This time-series chart illustrates the history of land subsidence in the Northwest Area. It also displays the stresses that cause land subsidence. Groundwater production and supplemental-water recharge that has occurred in MZ1 and MZ2 are the primary stresses that cause changes in groundwater levels in the Northeast Area. Groundwater levels are shown on this chart for a set of key wells that depict a representative time-history of groundwater-level changes for the area. The changes in groundwater levels are the stresses that cause deformation of the aquifer-system sediments, which, in turn, cause ground motion at the land surface.

This exhibit shows the history of vertical ground motion as measured by InSAR within the Northeast Area (see Exhibit 59 for location). These data indicate that over one-foot of subsidence has occurred in this area from 1993 through 2014. This subsidence has generally occurred gradually and over a broad area. Gaps in the InSAR record during 1995, 2000 to 2005, and 2010 to 2011 are due to incongruent data sets collected from different radar satellites. Vertical ground motion during the gaps in the InSAR record were estimated based on the rate of vertical ground motion measured at nearby benchmarks or the rate of vertical ground motion measured by InSAR before and after the gap or overlap.

From about 1935 to 1978, groundwater levels in the Northeast Area declined by about 125 feet. Groundwater levels increased by about 10 to 20 feet during the early 1980s and have remained relatively stable since then. The observed, continuous land subsidence that occurred from 1993 to 2014 cannot be explained entirely by the concurrent changes in groundwater levels. A plausible explanation for the subsidence is that thick, slowly-draining aquitards are compacting in response to the historical decline of groundwater levels that occurred from 1935 to 1978.

Prepared by:
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File: Exhibit_63_2014_Ontario.grf

2014 State of the Basin
Ground-Level Monitoring

The History of Land Subsidence in the Northeast Area

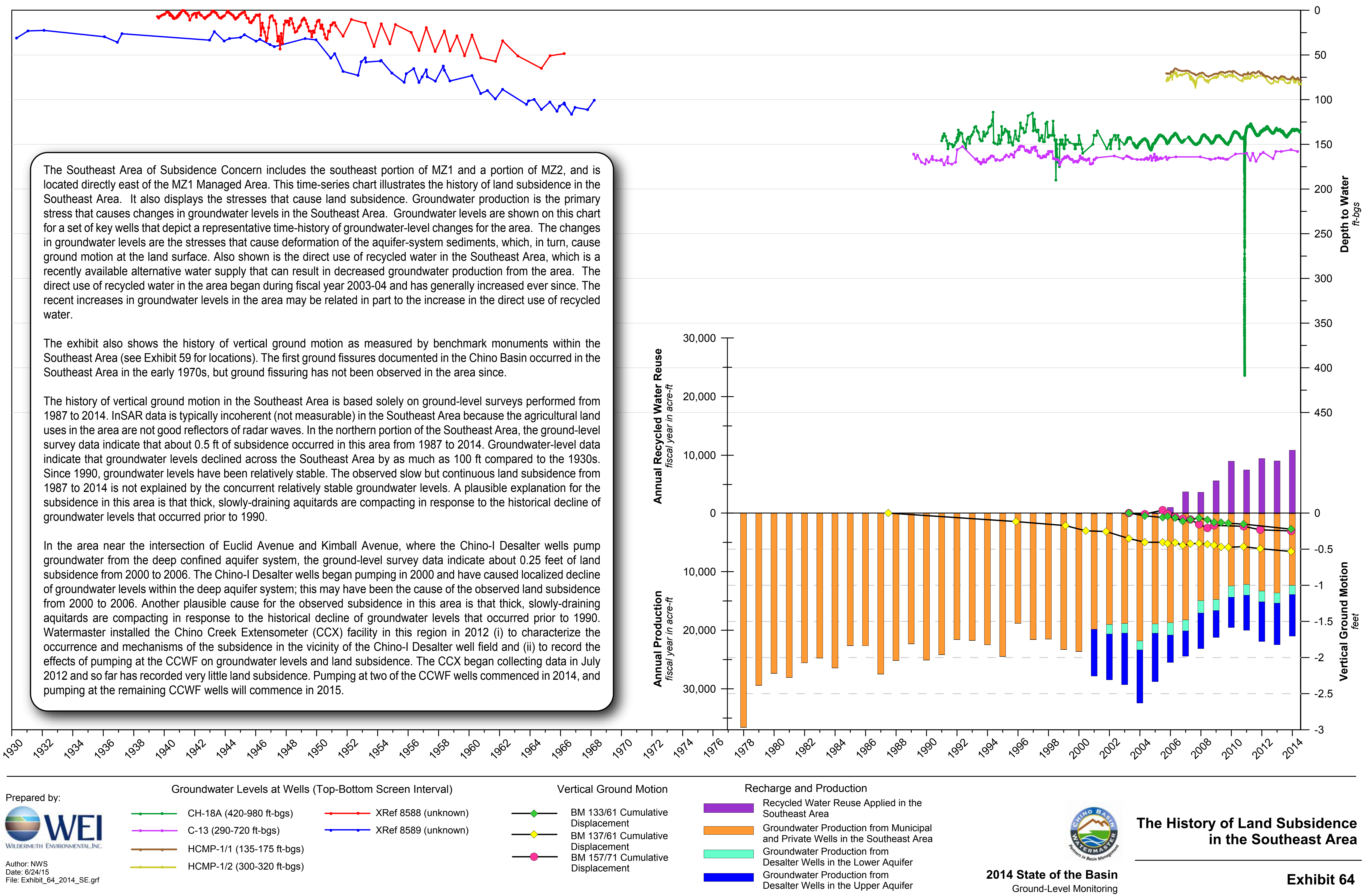
Exhibit 63

The Southeast Area of Subsidence Concern includes the southeast portion of MZ1 and a portion of MZ2, and is located directly east of the MZ1 Managed Area. This time-series chart illustrates the history of land subsidence in the Southeast Area. It also displays the stresses that cause land subsidence. Groundwater production is the primary stress that causes changes in groundwater levels in the Southeast Area. Groundwater levels are shown on this chart for a set of key wells that depict a representative time-history of groundwater-level changes for the area. The changes in groundwater levels are the stresses that cause deformation of the aquifer-system sediments, which, in turn, cause ground motion at the land surface. Also shown is the direct use of recycled water in the Southeast Area, which is a recently available alternative water supply that can result in decreased groundwater production from the area. The direct use of recycled water in the area began during fiscal year 2003-04 and has generally increased ever since. The recent increases in groundwater levels in the area may be related in part to the increase in the direct use of recycled water.

The exhibit also shows the history of vertical ground motion as measured by benchmark monuments within the Southeast Area (see Exhibit 59 for locations). The first ground fissures documented in the Chino Basin occurred in the Southeast Area in the early 1970s, but ground fissuring has not been observed in the area since.

The history of vertical ground motion in the Southeast Area is based solely on ground-level surveys performed from 1987 to 2014. InSAR data is typically incoherent (not measurable) in the Southeast Area because the agricultural land uses in the area are not good reflectors of radar waves. In the northern portion of the Southeast Area, the ground-level survey data indicate that about 0.5 ft of subsidence occurred in this area from 1987 to 2014. Groundwater-level data indicate that groundwater levels declined across the Southeast Area by as much as 100 ft compared to the 1930s. Since 1990, groundwater levels have been relatively stable. The observed slow but continuous land subsidence from 1987 to 2014 is not explained by the concurrent relatively stable groundwater levels. A plausible explanation for the subsidence in this area is that thick, slowly-draining aquitards are compacting in response to the historical decline of groundwater levels that occurred prior to 1990.

In the area near the intersection of Euclid Avenue and Kimball Avenue, where the Chino-I Desalter wells pump groundwater from the deep confined aquifer system, the ground-level survey data indicate about 0.25 feet of land subsidence from 2000 to 2006. The Chino-I Desalter wells began pumping in 2000 and have caused localized decline of groundwater levels within the deep aquifer system; this may have been the cause of the observed land subsidence from 2000 to 2006. Another plausible cause for the observed subsidence in this area is that thick, slowly-draining aquitards are compacting in response to the historical decline of groundwater levels that occurred prior to 1990. Watermaster installed the Chino Creek Extensometer (CCX) facility in this region in 2012 (i) to characterize the occurrence and mechanisms of the subsidence in the vicinity of the Chino-I Desalter well field and (ii) to record the effects of pumping at the CCWF on groundwater levels and land subsidence. The CCX began collecting data in July 2012 and so far has recorded very little land subsidence. Pumping at two of the CCWF wells commenced in 2014, and pumping at the remaining CCWF wells will commence in 2015.



Prepared by:

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Date: 6/24/15
File: Exhibit_64_2014_SE.grf

2014 State of the Basin
Ground-Level Monitoring

The History of Land Subsidence in the Southeast Area

Exhibit 64