MAG 208 WATER QUALITY MANAGEMENT PLAN

Comprehensive Amendment for the Town of Buckeye

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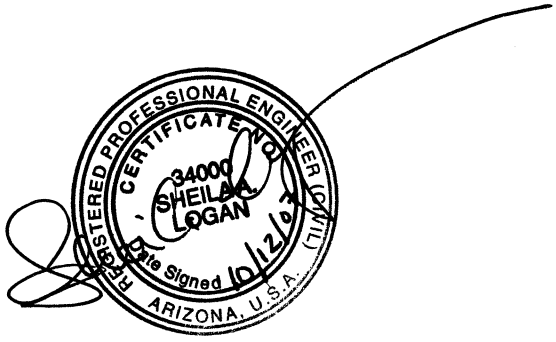

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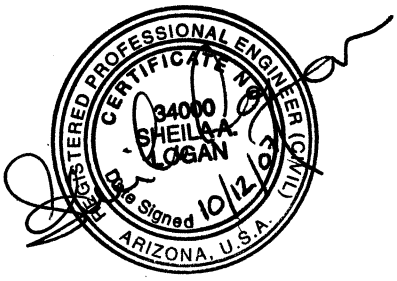

MAG 208 Water Quality Management Plan
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ACRONYMS AND ABBREVIATIONS

AAC	Arizona Administrative Code
ACC	Arizona Corporation Commission
Act	Groundwater Management Act
ADEQ	Arizona Department of Environmental Quality
ADF	average day flow
ADWR	Arizona Department of Water Resources
AGFD	Arizona Game and Fish Department
AMA	Active Management Area
amsl	above mean sea level
ASLD	Arizona State Land Department
ASPC	Arizona State Prison Complex
ASR	Aquifer Storage and Recovery
AZPDES	Arizona Pollutant Discharge Elimination System
bgs	below the ground surface
BLM	Bureau of Land Management
BOD	biological oxygen demand
Buckeye Heading	Buckeye Canal heading
BWCDD	Buckeye Water Conservation and Drainage District
CAP	Central Arizona Project
CAWCD	Central Arizona Water Conservation District
CC&N	Certificate of Convenience and Necessity
CC&R	Covenants, Conditions and Restrictions
CFR	Code of Federal Regulations
CFU	colony forming units
CWA	Clean Water Act
DMA	Designated Management Agency
DPA	Designated Planning Agency
DU	dwelling unit
EPA	Environmental Protection Agency
FCDMC	Flood Control District of Maricopa County
FEMA	Federal Emergency Management Agency
FRS	Flood Retarding Structure
gpad	gallons per acre per day
gpcd	gallons per capita per day
gpd	gallons per day
I-10	Interstate 10
IPP	Industrial Pretreatment Program
LHSB	Lower Hassayampa Subbasin
MAG	Maricopa Association of Governments
MBR	membrane bioreactor
MCESD	Maricopa County Environmental Services Department
MG	million gallons
mg/L	milligrams per liter
MGD	million gallons per day
mL	milliliter
MLE	Modified Ludzak-Ettinger

MLSS	mixed liquor suspended solids
MPA	Municipal Planning Area
MPC	master planned community
mya	million years ago
NH_3	ammonia
NO_2	nitrite
NO_3	nitrate
NTU	Nephelometric turbidity unit
POPTAC	Population Technical Advisory Committee
POTWs	publicly owned treatment works
RAS	return activated sludge
RAZ	Regional Analysis Zone
RID	Roosevelt Irrigation District
RO	reverse osmosis
SBR	sequencing batch reactor
SEBIS	South East Buckeye Interceptor Sewer
SR-85	State Route 85
SRV	Salt River Valley
NdN	Nitrification - Denitrification
TDS	total dissolved solids
TKN	total Kjeldahl nitrogen
TMDL	total maximum daily load
TN	total nitrogen
Town	Town of Buckeye
TSS	total suspended solids
UHSB	Upper Hassayampa Subbasin
USF	Underground Storage Facility
USGS	United States Geological Survey
UV	ultraviolet
WAS	waste activated sludge
WMC	West Maricopa Combine
WRF	water reclamation facility
WS	Water Storage permit
WWTP	wastewater treatment plant

TERMINOLOGY

For consistency throughout this report, the following terms are defined.

Approved	Refers to the projected condition set forth in previously submitted and approved 208 plan amendments. The previously submitted 208 plan amendments to add new wastewater treatment facilities are listed in Table C.2 of Appendix C.
Central Buckeye Region	The portion of the Town planning area between Interstate 10 and the Gila River.
Constructed Capacity	The actual physical capacity of the facility as of August 2007.
Existing Facility	An existing facility that is consistent with the MAG 208 Plan, constructed, and receiving wastewater flows.
Facility	Collectively referring to a number of the water reclamation facilities and wastewater treatment plants within the Town.
Future Facility	A facility proposed through this 208 plan amendment that has not been identified previously.
North Buckeye Region	The portion of the Town planning area north of Interstate 10.
Original Capacity	The ultimate capacity of the facility as defined in the most recent 208 plan amendment that has been approved or submitted to the Town for sponsorship prior to this comprehensive 208 plan amendment (see Section 2.2).
Original Service Area	The service area for the facility as defined in the most recent 208 plan amendment that has been approved or submitted to the Town for sponsorship prior to this comprehensive 208 plan amendment.
Pending Capacity	The pending capacity represents the size of a facility proposed in a draft 208 plan amendment that has been presented to the Town for sponsorship but has not been submitted to nor approved by MAG or other agencies. The pending facility capacities are assumed to represent the latest planning efforts by the Town and are therefore considered throughout this document as such. The pending and approved facility capacities are combined and defined as original capacities for the purposes of this report and the corresponding analyses.
Pending Service Area	The service area for a facility as defined in its draft 208 plan amendment that has been submitted to the Town for sponsorship but not has been presented to nor approved by MAG or other agencies.
Planned Facility	A facility previously identified by the Town. The planned facilities have prepared 208 plan amendments that are in some stage of the MAG 208 approval process (from submittal to the Town for preliminary review and sponsorship to approval by the Environmental Protection Agency).
Proposed Service Area	The service area for the facility as defined in this comprehensive 208 plan amendment.
Service Area	Area contributing flows to a wastewater facility.
Service Area Expansion	The additional area outside of the original service area that is being assigned to the facility as defined in this comprehensive 208 plan amendment.
South Buckeye Region	The portion of the Town planning area south of the Gila River.

Ultimate	Refers to the condition at build out of the Town, as projected by this comprehensive 208 plan amendment.
Ultimate Build Out Population	The estimated population, rounded to the nearest thousand, of the proposed service area at build out.
Ultimate Capacity	The ultimate build out capacity of the facility as defined in this comprehensive 208 plan amendment.

1.0 AUTHORITY

In accordance with Section 208 of the CWA, the Maricopa Association of Governments (MAG) is the Designated Planning Agency (DPA) for Maricopa County, Arizona. The Town of Buckeye (Town) is the Designated Management Agency (DMA) for the Buckeye Municipal Planning Area (MPA) (Appendix A). The letter of sponsorship from the Town for this *MAG 208 Water Quality Management Plan Comprehensive Amendment for the Town of Buckeye* also is included in Appendix A.

This comprehensive amendment for the Town of Buckeye amends the MAG 208 Water Quality Management Plan dated October 2002 to plan for growth in the Town and its MPA, optimize wastewater treatment and collection systems, and develop a framework for the recharge and reuse of treated effluent within the entire MPA for the Town of Buckeye.

2.0 INTRODUCTION

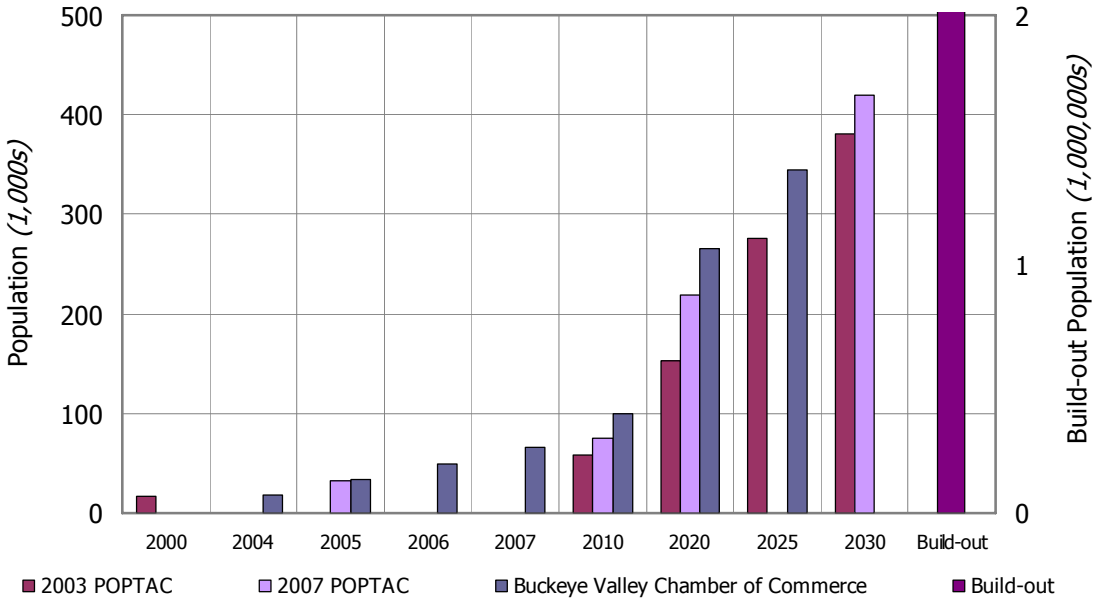
2.1 Purpose and Need

The purpose of this *MAG 208 Water Quality Management Plan Comprehensive Amendment for the Town of Buckeye* is to identify the existing, planned and future wastewater facilities in the Town of Buckeye MPA at build out. The planning area covers approximately 376,900 acres (590 square miles) of land in the western portion of Maricopa County. At build out, the Town is projected to include over 638,600 residential dwelling units (DUs) as well as significant areas of commercial and industrial development.

The goals of this report are to:

- Identify the wastewater facilities that are necessary to meet the anticipated growth of the Town of Buckeye MPA over approximately the next 20 years and ultimately the build out condition of the Town.
- Estimate construction priorities as well as initiation and completion schedules for the development of wastewater facilities.
- Develop an implementation plan and coordinate with other agencies such as MAG, Maricopa County Environmental Services Department (MCESD) and the Arizona Department of Environmental Quality (ADEQ), as needed.
- Identify point and non-point sources of pollution in the Town of Buckeye MPA.
- Identify processes to control residual waste disposal which could affect ground and surface water quality.

Figure 1.1
Town of Buckeye Population Projections



For the Town of Buckeye, planning the locations of future water reclamation facilities (WRFs) needed to meet the projected growth within the MPA for the Town is paramount. As depicted in the graph presented in **Figure 1.1**, the Town of Buckeye is expected to continue rapid population growth and development over the next 20 years (Buckeye Valley Chamber of Commerce 2007; MAG 2003; MAG 2007). The population of the Town at build out is anticipated to approach 2 million people.

Additionally, the Town of Buckeye is concerned with economic sustainability, the preservation of the unique desert environment and the improvement and expansion of existing transportation networks (Town of Buckeye 2007).

2.2 Water Reclamation Facility Summary

Through the development of this report, a total of 18 water reclamation facilities are proposed to serve the Town of Buckeye MPA at build out. This 208 plan amendment compiles approved and pending 208 plan amendments for facilities within the Town of Buckeye. Upon approval, this 208 plan amendment will alter and replace prior approved amendments and propose additional facilities. A summary of the water reclamation facilities and capacities proposed to serve the Town of Buckeye MPA at build out is provided in **Table 2.1**. This table also lists the facility capacities as established by a previously approved 208 plan amendment. The pending capacity represents the size of a facility proposed in a draft 208 plan amendment that has been presented to the Town for sponsorship but has not been submitted to nor approved by MAG or other agencies.

The pending facility capacities are assumed to represent the latest planning efforts by the Town and are therefore considered throughout this document as such. The pending and approved facility capacities are combined and defined as original capacities for the purposes of this report and the corresponding analyses.

TABLE 2.1
TOWN OF BUCKEYE FACILITY CAPACITY SUMMARY

	Approved Capacity (MGD)	Pending Capacity (MGD)	Original Capacity (MGD)	Ultimate Proposed Capacity (MGD)
Existing Facilities				
ASPC-Lewis WWTP	0.75		0.75	0.0
Central Buckeye WWTP	16.6		16.6	45.8
Festival Ranch WRF	4.0	11.0	11.0	17.3
Sundance WWTP	8.9		8.9	13.9
Tartesso West WRF	18.0		18.0	24.2
Verrado WRF	3.35		3.35	3.6
Existing Facilities Subtotal	**51.6**		**58.6**	**104.8**
Planned Facilities				
Anthem at Sun Valley South WRF	4.5		4.5	4.5
Douglas Ranch WRF	N/A	29.0	29.0	31.9
Palo Verde Road WWTP	10.2		10.2	11.7
Tartesso East WRF	9.6		9.6	10.7
Town of Buckeye WRF at Cipriani	N/A	12.0	12.0	12.0
Trillium West WWTF	11.0		11.0	3.2
Planned Facilities Subtotal	**35.3**		**76.3**	**74.1**
Future Facilities				
Gila 85 WRF	N/A		N/A	9.1
Gila Hassayampa WRF	N/A		N/A	7.8
Gila Rainbow WRF	N/A		N/A	13.2
Gila Southwest WRF	N/A		N/A	7.5
Hassayampa North WRF	N/A		N/A	9.4
Sun Valley WRF	N/A		N/A	13.2
Waterman Wash WRF	N/A		N/A	2.2
Future Facilities Subtotal	**N/A**		**N/A**	**62.4**
TOTAL	**86.9**		**134.9**	**241.2**

Note:
1. The ASPC-Lewis WWTP will ultimately be phased out of service. The existing service area for the facility is assumed to be served by the Gila Rainbow WRF.
2. Rounding may cause slight discrepancies in total values.

3.0 BACKGROUND

3.1 Project Location

The Town of Buckeye is located in western Maricopa County, Arizona, as shown in **Figure 1**. As of August 2007, the MPA roughly extends from the Hassayampa River approximately 17 miles to the east, where it shares a border with the City of Goodyear at Perryville Road. From north to south, the Town spans more than 34 miles, from the Black Mountain Road alignment, adjoining the planning areas for the Town of Wickenburg and City of Surprise, to the Woods Road alignment, bordering the planning area for the Town of Gila Bend. Five adjacent MPAs occur within three miles of the Town of Buckeye MPA including the Cities of Glendale, Goodyear, Surprise and the Towns of Gila Bend and Wickenburg. Maricopa County is also responsible for lands within 3 miles of the planning area for the Town.

The approximate 590-square mile planning area for the Town of Buckeye encompasses a portion of each of the Townships and Ranges of the Gila and Salt River Baseline and Meridian listed in **Table 3.1**. As of August 2007, approximately 330.6 square miles (211,604 acres) of the planning area has been annexed into the Town of Buckeye, as shown in **Figure 2**.

TABLE 3.1
TOWN OF BUCKEYE MUNICIPAL PLANNING AREA LOCATION*

Township	Range
5N	5W, 4W, 3W
4N	6W, 5W, 4W
3N	6W, 5W, 4W,
2N	5W, 4W, 3W, 2W
1N	5W, 4W, 3W, 2W
1S	5W, 4W, 3W, 2W
2S	5W, 4W, 3W, 2W
3S	5W, 4W, 3W, 2W

* Gila and Salt River Baseline and Meridian

Within the Town of Buckeye MPA, there is currently one private wastewater provider that has been issued a Certificate of Convenience and Necessity (CC&N) by the Arizona Corporation Commission (ACC) as shown in **Figure 3**. The Arizona American Water Company operates and maintains the wastewater system for the Verrado development, including its water reclamation facility (WRF). The Verrado WRF is the only private wastewater treatment facility within the MPA. The Arizona Department of Corrections operates the Arizona State Prison Complex (ASPC) – Lewis Wastewater Treatment Plant (WWTP). All other facilities within the MPA, whether existing, planned or future, are or will be municipal facilities owned and operated by the Town of Buckeye.

An expansion of the CC&N for the Verrado development to provide wastewater service for the Fireside at Sienna Hills development immediately southwest of the Verrado development has been approved. In addition, the Litchfield Park Service Company is proposing to provide service for a small portion of the Buckeye MPA generally north of Camelback Road and east of 195th Avenue at its Sarival and Palm Valley WRFs.

Natural and man-made features generally divide the planning area into the following three regions, shown in **Figure 4**: North Buckeye, Central Buckeye, and South Buckeye.

- North Buckeye Region: The North Buckeye Region refers to the portion of the MPA north of Interstate 10 (I-10), from as far west as the alignment of 379th Avenue to Perryville Road on the east. The White Tank Mountain Regional Park, owned and operated by Maricopa County, overlaps a small portion of the region. This region is primarily divided among several large, MPCs, including the Douglas Ranch, Festival Ranch, Spurlock Ranch, Tartesso, Anthem at Sun Valley South, Trillium West, Sun Valley and Verrado developments. The Central Arizona Project (CAP) and Beardsley Canals also traverse the North Buckeye Region.

- Central Buckeye Region: The Central Buckeye Region encompasses the area south of I-10 to the east-west segment of the Gila River. The Hassayampa River and Perryville Road bound this area to the west and east, respectively. This region includes the Buckeye Water Conservation and Drainage District (BWCDD), Roosevelt Irrigation District (RID) and Arlington canals, as well as the Buckeye Municipal Airport and the Southern Pacific Railroad. Larger developments within the Central Buckeye Region include the Desert Creek, Cipriani, Johnson Valley, Silver Rock, Sundance, West Park and Westwind MPCs.

- South Buckeye Region: Downstream of the confluence of the Hassayampa and Gila Rivers, the Gila River turns sharply to the south. Hence, the South Buckeye Region is bordered on the north and west by the Gila River. The region extends to the Woods Road alignment in the south and to the Airport Road alignment on the east. The Buckeye Hills mountain range transverses the region south of the Gila River and a portion of the Maricopa Mountains extends into the southeast portion of the region. The ASPC-Lewis is centered south of the Buckeye Hills. The Gila Bend Canal delivers irrigation water to farm lands in the southwestern corner of the region. The Ladera, Insignia, Verma, Knorr Farms and Wyatt developments are also anticipated within the South Buckeye Region. A large portion of this region is federal land, including the Buckeye Hills Regional Park, the Robbins Butte State Wildlife Area and the Sonoran Desert National Monument. In total, approximately 68 percent, or 808,000 acres, of this region is federal property managed by the Bureau of Land Management (BLM). In addition to the federal land, approximately 2,970 acres owned by the City of Phoenix or private

company are either existing landfills or lands set aside for the expansion of the landfills.

3.2 Topography and Hydrology

The planning area for the Town of Buckeye includes several prominent topographic features as shown by the United States Geological Survey (USGS) quadrangle maps presented in **Figures 5, 6 and 7** (USGS 1982; USGS 1984). The MPA includes three mountain ranges: the White Tank Mountains, Buckeye Hills and Maricopa Mountains. Elevations within the MPA range from a high point of approximately 3,670 feet in the White Tank Mountains to a low point of approximately 700 feet at the southwestern-most corner of the MPA along the Gila River.

Two major river corridors exist within the planning area. The ephemeral Hassayampa and Gila Rivers generally flow in response to precipitation events, although reaches of surface flow may occur on a more regular basis due to discharges from canals or effluent from wastewater treatment facilities, as further discussed in the following sections. The Hassayampa River flows in a southerly direction through the North Buckeye Region, migrating slightly westward to eventually become the western boundary of the MPA in both the North and Central Buckeye Regions. The Hassayampa River continues southward until it reaches the confluence with the Gila River. The Gila River flows in a west-southwest direction across the MPA dividing the Central and South Buckeye Regions. After its confluence with the Hassayampa River, the Gila River turns sharply to the south and forms the western boundary of the South Buckeye Region. The majority of washes within the Buckeye planning area are tributary to these rivers.

3.2.1 North Buckeye Region

In the North Buckeye Region, the terrain is generally split by the Hassayampa River, which flows from north to south. The Hassayampa River is a 42-mile long ephemeral tributary to the Gila River. Surface flow from precipitation rarely reaches the confluence of the Hassayampa and Gila Rivers, as the water infiltrates rapidly into the sandy river bed (Brown and Caldwell 2006). West of the Hassayampa River, the land generally slopes to the south or southeast. Several small washes in this area converge into Jackrabbit Wash, which converges with the Hassayampa River just south of the MPA boundary in the North Buckeye Region. These smaller washes include the Beer Bottle, Blue, Coyote, Powerline, Tank, Mill, Star and Box Washes, as well as other unnamed washes. The Daggs Wash in this region also discharges directly into the Hassayampa River.

On the eastern side of the Hassayampa River, the prominent topographic feature is the White Tank Mountains. In general, both the eastern and southern faces of the White Tank Mountains fall to the southeast towards

Perryville Road and I-10. Drainage from the eastern face is collected in the White Tanks Flood Retarding Structure (FRS) #3 and drainage from the south flows to the Buckeye FRSs #1, #2 and #3, all of which are owned and operated by the Flood Control District of Maricopa County (FCDMC), and are depicted in **Figure 4**. The FRSs within the MPA are earthen dams designed to collect stormwater runoff from the north to prevent flooding to I-10 and residential and agricultural areas by detaining water during heavy rainfall. The detention basins are normally dry; following rain events, water infiltrates to the ground or flows to the Hassayampa River at a rate that will not cause flooding in downstream areas (FCDMC 2007). The Buckeye FRSs are located just north of I-10. The White Tanks FRS #3 is located near the intersection of Glendale Road and the Beardsley Canal. This FRS protects I-10, the Perryville State Prison, residential developments and agricultural areas.

The western face of the White Tank Mountains slopes to the west, towards the Hassayampa River. Several smaller washes which include the Bootlegger and other unnamed washes converge to Wagner Wash within the MPA. Several other unnamed washes discharge directly into the Hassayampa River. The CAP Canal traverses the region and supplies water to permitted recharge facilities in the vicinity, including the Hassayampa Recharge Project (formerly the West Maricopa Combine project) along the west side of the MPA at the intersection of the Hassayampa River and CAP Canal (Brown and Caldwell 2006).

The northern face of the White Tank Mountains slopes generally to the northeast towards the Trilby Wash, outside of the Town of Buckeye MPA. This wash then turns in a southerly direction, eventually flowing into the Beardsley Canal and then into the White Tanks FRS #3, on the eastern side of the North Buckeye Region.

3.2.2 Central Buckeye Region

The topography in the Central Buckeye Region is generally flat, falling at a slope of roughly 0.20 percent to the south towards the Gila River. The confluence of the Gila and Hassayampa Rivers occurs in the southwestern portion of the region. Over the region, there is very little slope towards the Hassayampa River, with the ground beginning to fall towards the Hassayampa River west of Johnson Road.

There are few substantial washes in this region due to the FRSs on the north side of I-10 that limit the upstream watershed and prevent flow from continuing southward. Additionally, farming activities have dramatically altered some of the historic washes. The washes that are present are generally small and unnamed, and are tributary to either the Gila or Hassayampa Rivers. Three surface water canals, the Roosevelt, Buckeye and Arlington Canals, traverse the Central Buckeye Region. The canals deliver pumped groundwater and reclaimed effluent to the lands

under cultivation for agriculture and may discharge to either the Gila or Hassayampa Rivers. The White Tanks FRS #4 is situated north of Van Buren Road, south of I-10 and between the Tuthill Road Alignment and Jackrabbit Trail. This FRS provides flood protection for surrounding residences and agricultural areas (FCDMC 2007).

Shallow groundwater permeates the area generally between the Buckeye Canal and the Gila River. The Buckeye waterlogged area is a result of natural and manmade structures downstream of the confluence of the Hassayampa and Gila Rivers as discussed further in Section 3.2.3. Dewatering wells installed in the late 1960s work to control groundwater for agricultural purposes (Brown and Caldwell 2006).

3.2.3 South Buckeye Region

The Gila River flows from east to west as the northern border of this region. At Arlington, the river makes an abrupt, 90-degree turn and flows southward toward Gila Bend. While the Gila River was perennial throughout the state before 1869, currently the flow in the Gila River is perennial in limited reaches due to upstream dams and irrigation projects. Surface flow is generally present in the Gila River from east of the planning area at the confluence of the Salt and Gila Rivers due to the discharge of treated effluent to the Salt River at the City of Phoenix 91st Avenue WWTP to the Buckeye Canal heading (Buckeye Heading). Pumped groundwater is discharged to the Gila River below the Buckeye Heading. Within the planning area, flow in the Gila River may be comprised of storm water runoff, irrigation return flows, contributions from groundwater, water released from upstream dams and treated effluent (Brown and Caldwell 2006).

The Gillespie Dam was constructed in 1921 as a storage and diversion structure south of Arlington on the Gila River. The construction of the dam is reported to have caused a significant rise in water levels along the Gila River corridor near Arlington. The waterlogged area along this stretch of the river has been documented since the early 1920s, and has been attributed to construction of the dam, leakage from unlined irrigation canals, recharge from irrigated lands and discharge from the 91st Avenue WWTP (Brown and Caldwell 2006).

The sharp bend in the Gila River is forced by the constriction of the river between the Buckeye Hills and the Gila Bend Mountains. The Buckeye Hills traverse the planning area from east-northeast to west-southwest. Additionally, at the southeastern end of the South Buckeye Region, the Maricopa Mountains extend into the planning area from the southeast. Between the Buckeye Hills and the Maricopa Mountains lies the Little Rainbow Valley, centered along Rainbow Wash.

A high point in the Little Rainbow Valley occurs approximately at the intersection of the Rainbow Road and Rainbow Boulevard alignments and divides the area into two watersheds. The area along the eastern edge of the South Buckeye Region (east of the Rainbow Road alignment) and north of the Maricopa Mountains slopes in a northeasterly direction towards Waterman Wash, a tributary of the Gila River. The area west of the Rainbow Road alignment falls to the southwest converging along Rainbow Wash towards the Gila River. Smaller unnamed washes also occur throughout the area, and are tributary to the Rainbow Wash, Waterman Wash or Gila River.

3.3 Land Ownership

Approximately 56 percent of the land within the MPA is held in private ownership, with a large portion of that land being either native desert or land that currently is or previously has been used for agricultural production. Several local, state and federal agencies hold the remaining portions of the land within the MPA, including:

- Arizona State Land Department: The Arizona State Land Department (ASLD) manages the State Trust lands and resources to enhance value and optimize economic return for the residents of the state (ASLD 2007). The ASLD does not develop the land in its possession until the land can be used for the highest and best use to the benefit of the state residents.

- Bureau of Land Management: The mission of the BLM is to balance the nation's public recreational, commercial, scientific and cultural lands while protecting the natural resources of the land. The BLM strives to sustain health, diversity and productivity of the public lands it manages (BLM 2007).

- Bureau of Reclamation: The Bureau of Reclamation owns approximately 505 acres of land associated with the CAP Canal.

- Buckeye Military Reserve: The Arizona Army National Guard established this land as a training site.

- Parks and Recreation: The Town of Buckeye Parks and Recreation Department strives to provide and maintain safe and accessible parks and recreation spaces, to provide services that meet the intellectual, cultural, fitness and leisure needs to all the residents and to preserve the open space and beautiful desert and mountain-scapes through well developed trail and open space projects (Town of Buckeye 2007). The White Tank Mountains Regional Park and the Buckeye Hills Park are owned and operated by Maricopa County. **Figure 10** displays the location of these parks within the Town of Buckeye MPA.

- Arizona Game and Fish Department: The mission of the Arizona Game and Fish Department (AGFD) is to conserve, enhance and restore Arizona's diverse wildlife resources and habitats through aggressive protection and management programs and to provide wildlife resources and safe watercraft and off-highway vehicle recreation for the enjoyment, appreciation and use by present and future generations (AGFD 2007). The areas managed by the AGFD are displayed in **Figure 10**.

Figure 3.1 depicts the distribution of the land ownership in the Buckeye planning area.

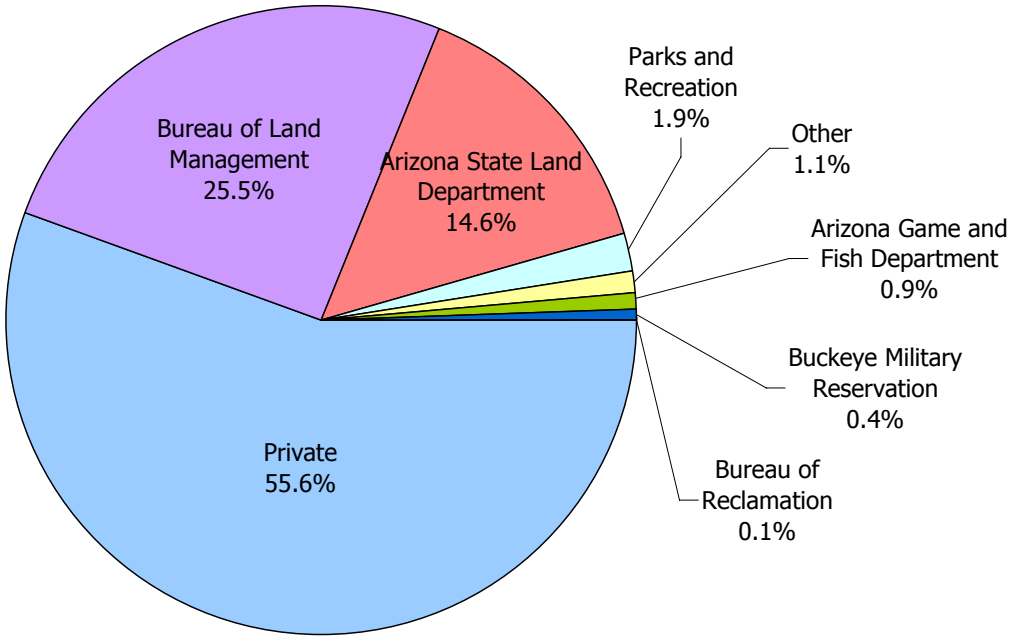


FIGURE 3.1. LAND OWNERSHIP

A large portion of the private land, particularly in the North and Central Buckeye Regions, is in the process of developing into larger MPCs, as described in **Section 3.1**. The majority of the land in the North and Central Buckeye Regions is held under private ownership. The South Buckeye Region includes mostly federal land under the management of the BLM. The southwest portion of the South Buckeye Region includes private lands along the Gila River that are currently in agricultural production.

3.4 Land Use

The Town of Buckeye consists primarily of native desert and areas of irrigated agricultural production. While the 590-square mile area has limited development to date, many MPCs and other developments are amid various stages of planning and construction.

The North Buckeye Region is largely undeveloped at this time, with a few areas of large-lot home parcels. However, homes are being constructed and sold within the Tartesso West and Festival Ranch MPCs. Additional MPCs are planned in this region, as discussed in **Section 3.1**.

In the Central Buckeye Region, the majority of the land has been under agricultural production. The BWCDD and RID have historically conveyed irrigation water to the agricultural lands.

With over 70 percent of the land under federal ownership, the South Buckeye Region is largely undeveloped, native desert land. The Arlington Canal Company delivers water to the private, agricultural lands in the southwest corner of this region. Additionally, this area supports the ASPC-Lewis and two landfills, one owned by the City of Phoenix and the other by a private corporation.

The Town began to revise their General Plan and Development Plan in the spring of 2006, and are anticipated to go though many revisions before public and stakeholder approval targeted in November 2007. A draft General Plan is available on the Town of Buckeye website that incorporates the Town's desire to help guide and shape the physical and socioeconomic development of the MPA (Town of Buckeye 2007). While this document has not been finalized, it was used as a basis of design for this MAG 208 plan amendment in limited areas, as discussed in **Section 4.2**.

In the future, the Town of Buckeye MPA will be comprised of commercial parcels, low to high density residential units, open space and parks, schools, employment corridors and private land. As the growth of the Town of Buckeye continues, employment possibilities may become more prevalent in the areas surrounding the Buckeye Municipal Airport, along I-10 and State Route 85 (SR-85), and along railroad and transportation corridors. The Town's General Plan focuses an employment corridor including industrial and commercial developments in these areas. The Town is working towards providing a balanced transportation system at the build out condition (Town of Buckeye 2007).

The Preliminary Draft of the I-10/Hassayampa Valley Roadway Framework Study dated January 2007 is still in process. The MAG Regional Council is anticipated to take action on the study in December 2007. According to the study, several transportation corridors may be anticipated within the Town of Buckeye. These include:

- State Route 801, an alternate freeway planned to run parallel to I-10 to the south, commonly referred to as the I-10 Reliever;
- The Hassayampa North-South Freeway, a freeway planned mainly west of the Hassayampa River outside of the Town of Buckeye MPA, although entering the MPA in both the North (through the Douglas Ranch Development) and South Buckeye Regions (as it turns in an easterly direction to follow the boundary of the Sonoran Desert National Monument);

- The White Tank Mountains Freeway, planned to connect the Hassayampa North-South Freeway in Douglas Ranch to Grand Avenue/US-60 in the City of Surprise; and
- A portion of State Route 303.

Figure 8 displays the preliminary draft of the anticipated conceptual transportation network for the Town. Although no definite timeframes are available at this time for these improvements, these future means of transportation are being planned to alleviate anticipated traffic on roadways for current and future residents.

3.5 Hydrogeology

In 1980, Arizona made a commitment to the long-term management of its limited groundwater supplies through the passage of the Groundwater Management Act (Act). The Act was enacted in response to significant water level declines in the aquifers in central and southern portions of Arizona, and established the Arizona Department of Water Resources (ADWR) to manage the groundwater resources of the state. The Act defines five Active Management Areas (AMAs) within the state (Phoenix, Pinal, Prescott, Santa Cruz and Tucson), and limits the withdrawals of groundwater within these AMAs. These AMAs are further defined in regard to general topography, geology and hydrogeology in the *Arizona Water Resources Assessment, Volume II*, published by ADWR in 1994. The majority of the Town of Buckeye MPA lies within the Phoenix AMA.

The Phoenix AMA covers approximately 5,646 square miles and consists of seven groundwater subbasins. The MPA for the Town of Buckeye overlies three of these hydraulic subbasins: the Lower Hassayampa, West Salt River Valley (SRV) and Rainbow Valley. In addition to these three groundwater subbasins, the southern portion of the Town of Buckeye MPA is outside of the Phoenix AMA and overlies the Gila Bend Basin, which is part of the Lower Colorado River Planning Area. **Figure 9** displays the locations of these areas in relation to the Town of Buckeye MPA.

3.5.1 Lower Hassayampa Subbasin

The Lower Hassayampa Subbasin (LHSB) covers approximately 1,200 square miles and is a gently sloping alluvial plain bordered on the north by the Vulture and Wickenburg Mountains; on the east by the White Tank Mountains; on the south by the Buckeye Hills and the Gila Bend Mountains; and on the west by the Big Horn Mountains, the Belmont Mountains, and the Palo Verde Hills. The area is drained by the Hassayampa River, which enters the subbasin in the northeast and joins the Gila River east of Arlington. The Gila River crosses the southeastern tip of the subbasin.

The sequence of basin-fill sediments in the LHSB consist of three hydrologic units designated as the upper, middle and lower alluvium.

The upper unit is 30 to 60 feet thick and consists of sand and gravel. The middle unit, 230 to 300 feet thick, consists of clay and silt. The lower unit, from 100 to more than 1,000 feet thick, consists of unconsolidated sand and moderately to well consolidated alluvial fan deposits.

Depths to groundwater may be anticipated from less than 20 feet below the ground surface (bgs) near the confluence with the Gila River to over 700 feet bgs near the Vulture Mountains. Generally, higher quality water is anticipated from the LHSB as compared to the water quality of the West SRV Subbasin (ADWR 1999).

3.5.2 West Salt River Valley Subbasin

The West SRV Subbasin is a broad, gently sloping alluvial plain, covering approximately 1,330 square miles and is bordered on the north by the Hieroglyphic Mountains and Hedgpeth Hills; on the east by Union Hills, Phoenix Mountains and Papago Buttes; on the South by the South Mountains, the Estrella Mountains and Buckeye Hills; and on the west by the White Tank Mountains.

Three hydrologic units are recognized within the basin-fill sequence, including: an upper sand and gravel unit, a middle silt and clay unit, and a lower conglomerate unit. The upper unit ranges in thickness from less than 100 feet near the basin margins to over 500 feet in the Luke Air Force Base area. The middle unit ranges in thickness from less than 100 feet near the basin margins to over 1,300 feet southwest of Glendale. The lower unit ranges in thickness from less than 100 feet near the basin margins to over 10,000 feet southwest of Glendale. A large salt body, know as the Luke Salt Dome, lies within the West SRV Subbasin southeast of the Luke Air Force Base. Hydrogeologic data indicates that the upper part of the salt body has a local effect on the groundwater salinity.

Historically, groundwater within the subbasin flowed toward and along the Salt and Gila Rivers and exited the subbasin into the southern part of the LHSB. Historic groundwater levels in the West SRV Subbasin ranged from 800 feet above mean seal level (amsl) along the western reaches of the Gila River to nearly 1,300 feet amsl in the north. Shallow groundwater conditions occurred in the Buckeye area.

Groundwater pumping for agriculture in the West SRV Subbasin began in the late 1800s from shallow irrigation wells along the Salt and Gila Rivers. Increases in well pumping capacity, expanding agriculture and later, urban development resulted in increased groundwater pumping. Groundwater levels have declined significantly, with two large cones of depression created by groundwater pumping near Luke Air Force Base and in Deer Valley near the Hedgpeth Hills. In 1998, water levels ranged

from 700 feet amsl in the Luke area cone of depression to 1,300 feet amsl in the north with the depth to groundwater during 1998 ranged from less than 5 feet bgs near the Salt and Gila Rivers to over 550 feet bgs near the Union Hills.

As discussed in **Section 3.2.3**, along the Gila River west of Goodyear, the depth to groundwater may be as shallow as 4 to 20 feet bgs, which causes detrimental effects to crops because of the elevated salinity levels in the Buckeye area. This waterlogged area persists despite continued groundwater pumping. Discharges of treated effluent from the City of Phoenix 91st Avenue WWTP and water applied for agricultural irrigation contribute to the shallow groundwater levels.

Although some groundwater flows westward from the West SRV Subbasin into the southern part of the LHSB, much of the groundwater flows toward the two large cones of depression (ADWR 1999).

3.5.3 Rainbow Valley Subbasin

The Rainbow Valley Subbasin covers approximately 420 square miles of land in the Phoenix AMA. The subbasin is mostly undeveloped desert land in the south portion and agricultural land in the north portion. The southeast part of the Town of Buckeye MPA lies within this subbasin.

The Rainbow Valley Subbasin is a gently-sloping alluvial plain. The depth to bedrock in the subbasin ranges from a few feet at the subbasin edges to a maximum of over 1,260 feet deep in the north-central part of the subbasin. The subbasin consists of poorly-sorted gravel, sand, silt and clay (ADWR 1999).

3.5.4 Gila Bend Basin

The Gila Bend Basin is comprised of approximately 1,280 square miles in the Lower Colorado River Planning Area. The south end of the MPA overlaps this basin, which is outside of the boundary of the Phoenix AMA. Major groundwater development began in 1935 when several wells were drilled for water to supplement surface water diverted from the Gila River into two canals at Gillespie Dam. Most of the groundwater pumped in the Gila Bend Basin is used for irrigation.

The basin contains a wide, gently sloping alluvial plain surrounded by low fault-block mountains. The main water-bearing unit in the Gila Bend Basin is the alluvial valley-fill material which is divided into a younger and older alluvial unit. Groundwater in the alluvial aquifer is usually unconfined, but several areas exist where fine-grained layers in the alluvium cause confined conditions. In the alluvium, depth to water is usually shallowest near the Gila River and deepest near the mountain fronts. In 1979, depth to water varied from about 15 feet bgs in the Gila

River floodplain near Gillespie Dam to more than 600 feet below surface level in the southern part of the basin (ADWR 1994).

3.6 Geology

The study area is located within the southern Basin and Range Physiographic Province, which spans southern Arizona and parts of New Mexico, Nevada and southern California. This physiographic region is characterized by northwest-trending mountain ranges separated by alluvial basins. About 15 million years ago (mya), the Basin and Range Disturbance created many deep basins. These basins have since filled with alluvial deposits, forming the present-day alluvial aquifer systems found in the region. The basin deposits come from material that eroded from the mountain ranges and are comprised of unconsolidated to well consolidated clay, silt, sand and gravel. The mountains are composed of Tertiary sedimentary rocks and basalts, older volcanic rocks and granitic and metamorphic rocks (Brown and Caldwell 2006).

The Town of Buckeye MPA contains many geologic features of varying age. Three fault systems associated with the Basin and Range Disturbance created highly fractured mountain ranges within the Town of Buckeye MPA. The fractures roughly correspond to the contacts between rocks of different ages, as volcanic material rose through the crust and intruded existing, older rock types. Alluvial basins occur in between the mountain ranges. **Figure 9** depicts the geology of the region (Reynolds 1992).

Much of the geology of the Town of Buckeye is the result of sand, gravel and debris that was deposited by flowing water, wind and glacial movement. Major portions of North, Central and South Buckeye contain surface deposits from the Holocene to middle Pleistocene epoch (0.1 to 5 mya). These deposits consist of minerals relocated by the three mechanisms described. Much smaller portions of North and Central Buckeye contain older surface deposits from the middle Pleistocene to latest Pliocene epoch (3 to 5 mya). They are formed mainly by alluvium, with less significant deposits from wind and fewer rock fragments. Along the Gila River, which separates the Central and South Buckeye Regions of the Town of Buckeye, the geology is characterized by present-day alluvium. The alluvial deposits provide fill for the basins between the mountain ranges.

One result of alluvial formations is the generation of alluvial fans, which are sedimentary deposits located at a topographic break, such as the base of a mountain front. They are composed of fluvial and/or debris flow sediments, and have the shape of a fan (FCDMC 2005). Alluvial fans may cause a flooding hazard. The Federal Emergency Management Agency (FEMA) defines an active alluvial fan flooding hazard when the following conditions are present:

(a) flow path uncertainty below the hydrographic apex;

(b) abrupt deposition and ensuing erosion of sediment as a stream or debris flow loses its competence to carry material eroded from a steeper, upstream source area; and

(c) an environment where the combination of sediment availability, slope and topography creates an ultra-hazardous condition for which elevation on fill will not reliably mitigate the risk.

FEMA defines an inactive alluvial fan flooding hazard as one characterized by relatively stable flow paths, which may be subject to sediment deposition and erosion, but to a degree that does not cause flow path instability and uncertainty. Alluvial fans occur within the Town of Buckeye MPA, most notably on the western and southern slopes of the White Tank Mountains (CMX 2005). Strategies for alluvial fan mitigation are currently being considered by the FCDMC.

Portions of both North and South Buckeye contain granitic rock formations. These formations are significantly older than the deposits mentioned above and consist of granite and other minerals. The granitic rocks are often foliated, meaning they have many thin, separable layers. Large areas of the South Buckeye region contain granitic formations from the middle and early Proterozoic era (1.40 billion years ago and 1.65 to 1.75 billion years ago). Small areas of the North Buckeye region contain the older granitic formations and younger formations from the early Tertiary to late Cretaceous period (45 to 75 mya) and the early Miocene to Oligocene epoch (18 to 38 mya).

A long strip of sedimentary rock spans the North Buckeye region from north to south. These deposits result from faulting and include sedimentary parts of major formations dating to the Pliocene to middle Miocene epoch (5 to 25 mya). Surface deposits often cap sedimentary rock. The North Buckeye region also contains small pockets of basaltic rocks (8 to 16 million years old), volcanic rocks (15 to 38 million years old) and metamorphic rocks (1.65 to 1.8 billion years old).

4.0 WATER RECLAMATION FACILITIES

The primary goal of this report is to identify the wastewater facilities that are necessary to meet the anticipated growth of the Town of Buckeye MPA over the next 20 years and ultimately at build out. The facilities recommended in this report include existing, planned and future facilities. These terms, used throughout this report, are defined as follows:

- Existing facilities: Facilities that are currently constructed and receiving flow, including facilities collecting low flows and transporting wastewater to another facility for treatment (commonly referred to as vault and haul operation).

  There are currently six existing facilities within the Town of Buckeye MPA. Five of the existing facilities are currently planned to be large facilities and as such are considered to be permanent facilities for the Town. It is anticipated that they will continue to expand to provide the wastewater treatment needs of their respective proposed service areas. The sixth, however, is a package plant that has a small planned ultimate capacity, a limited service area and ultimately will be phased out of service.

  One of the existing facilities has also drafted a 208 plan amendment to expand its service area and ultimate capacity from its originally approved 208 plan amendment. The amendment has been sent to the Town for sponsorship but has not been submitted to or approved by MAG or other agencies.

- Planned facilities: Those facilities that, although not constructed, are foreseen in the near future and have a drafted 208 plan amendment amidst an approval status ranging from a submittal to the Town for review and sponsorship, to having final approval from the Environmental Protection Agency (EPA).

  Six facilities are currently planned. Four of these facilities have approved 208 plan amendments and two have submitted draft 208 plan amendments to the Town for sponsorship. These six facilities will be permanent facilities for the Town.

- Future facilities: Conceptual facilities that previously have not started the 208 plan amendment process. These facilities will ultimately be needed to serve areas within the MPA that have not identified a sewer solution and cannot flow to another facility because of topographic constraints. Seven future facilities are anticipated to be permanent facilities for the Town.

The analysis provided herein supports the estimated 18 WRFs and/or WWTPs, collectively referred to as facilities that are projected to provide wastewater treatment for the Town at build out. This includes 5 existing facilities, 6 planned facilities and 7 future facilities. One of the future facilities ultimately will serve the original service area for the existing facility that will be eliminated. **Figure 10** displays the locations of these facilities within the Town of Buckeye MPA as well as their corresponding ultimate service areas and capacities, as proposed in this report. The service areas and ultimate

capacities for the existing and planned facilities with previously approved 208 plan amendments discussed in this 208 plan amendment and illustrated in **Figure 10** will supersede prior approvals.

Table 4.1 displays a summary of the facilities that are presented in this report. Sections 4.1 through 4.3 provide detailed discussion of the ultimate 18 recommended facilities. The ultimate service area, population and capacities for the existing and planned facilities may not be consistent with their previous approved 208 plan amendments due to changes made within this 208 plan amendment. A more complete summary of the facilities, including the previously approved ultimate service area, population and capacities, is presented in **Table C.1** in Appendix C.

TABLE 4.1
TOWN OF BUCKEYE PROPOSED FACILITY SUMMARY

	Ultimate Proposed Service Area (acres)	Ultimate Projected Population	Ultimate Proposed Capacity (MGD)
Existing Facilities			
ASPC-Lewis WWTP	N/A	N/A	0.0
Central Buckeye WWTP	41,254	439,000	45.8
Festival Ranch WRF	26,849	160,000	17.3
Sundance WWTP	17,522	139,000	13.9
Tartesso West WRF	21,563	173,000	24.2
Verrado WRF	9,242	37,000	3.6
Existing Facilities Subtotal	**116,429**	**948,000**	**104.7**
Planned Facilities			
Anthem at Sun Valley South WRF	7,589	37,000	4.5
Douglas Ranch WRF	41,399	275,000	31.9
Palo Verde Road WWTP	8,473	111,000	11.7
Tartesso East WRF	11,923	86,000	10.7
Town of Buckeye WRF at Cipriani	10,290	85,000	12.0
Trillium West WWTF	3,986	30,000	3.2
Planned Facilities Subtotal	**83,660**	**624,000**	**74.1**
Future Facilities			
Gila 85 WRF	9,573	72,000	9.1
Gila Hassayampa WRF	8,458	70,000	7.8
Gila Rainbow WRF	14,098	56,000	13.2
Gila Southwest WRF	10,112	44,000	7.5
Hassayampa North WRF	11,594	75,000	9.4
Sun Valley WRF	14,455	120,000	13.2
Waterman Wash WRF	2,428	22,000	2.2
Future Facilities Subtotal	**70,717**	**459,000**	**62.4**
TOTAL	**270,806**	**2,031,000**	**241.2**

Notes:
1. The ASPC-Lewis WWTP will ultimately be phased out of service. The existing service area for the facility ultimately is assumed to be served by the Gila Rainbow WRF.
2. Rounding may cause slight discrepancies in total values.

4.1 Facility Locations and Service Areas

Each of the ultimate wastewater facilities in the Town of Buckeye MPA is assigned a proposed service area, as indicated in **Figure 10**, with **Figures 11 through 18** displaying more detailed views of the approximate location and service area for the existing, planned and future facilities. The service areas depicted represent the proposed ultimate condition. At the discretion of the Town, temporary wastewater service may be provided by a particular facility to an area outside the delineated service area. Additionally, adjustments to the service area boundaries presented herein may be approved by the Town. Proposals to allow such temporary service and/or adjustment to the service area will be considered by the Town on a case-by-case basis, with appropriate terms and conditions set forth in a Development Agreement or similar contractual arrangement between the Town and other interested parties, where necessary.

Table 4.2 lists the locations of the facilities and the original service areas contemplated in previous 208 plan amendments, as applicable. As discussed in Section 2.2, the service areas described for the Festival Ranch WRF, Douglas Ranch WRF and Town of Buckeye WRF at Cipriani represent the pending service areas outlined in draft 208 plan amendments that have not been approved by MAG or other agencies. A list of the 208 plan amendments referenced as part of this 208 plan amendment is provided in **Table C.2** in Appendix C. Key components or information from each of these 208 plan amendments are included in the respective appendix for each facility.

The ultimate service area represents the service area proposed as part of this 208 plan amendment and includes a modification to the previously approved or proposed service areas for the majority of the facilities. In whole, the service areas proposed through this comprehensive 208 plan amendment account for wastewater service for nearly all the developable lands with the Buckeye planning area at build out. Detailed discussions of the service areas proposed for each facility are included in the following sections.

Within the MPA there are a few remote locations where it is not practical to plan for wastewater service at one of the municipal facilities provided herein. These limited areas are generally north and west of the Buckeye Hills and south and/or east of the Gila River in the South Buckeye Region. In **Figure 10**, these remote locations are outlined by a solid black line and are labeled with a circled number. Many of the remote locations consist of small areas of ASLD or AGFD land surrounded by federal land and mountainous terrain. **Table 4.3** individually describes the land ownership and size of each of the remote locations as numbered in **Figure 10**. These areas will need to evaluate their wastewater treatment options prior to development. Options may include routing flows into an operating or planned facility or installing septic systems, as allowed by applicable regulations and site conditions.

TABLE 4.2
TOWN OF BUCKEYE WRF LOCATIONS AND SERVICE AREAS

Facility	Approximate WRF Location				Service Area	
	Township	Range	Section	Portion	Original (acres)	Ultimate Proposed (acres)
Existing Facilities						
ASPC-Lewis WWTP	3S	4W	3	NW Quadrant	1,978	0
Central Buckeye WWTP	1S	3W	8	NE Quadrant	35,053	41,254
Festival Ranch WRF	4N	4W	28	SW Quadrant	13,423	26,849
Sundance WWTP	1N	3W	13	SW Quadrant	10,715	17,522
Tartesso West WRF	2N	5W	35	SW Quadrant	13,530	21,563
Verrado WRF	2N	2W	31	SE Quadrant	8,800	9,242
Planned Facilities						
Anthem at Sun Valley South WRF	2N	4W	16	NW Quadrant	7,385	7,589
Douglas Ranch WRF	3N	5W	16	W Half	35,250	41,399
Palo Verde Road WWTP	1N	4W	28	NW Quadrant	6,853	8,473
Tartesso East WRF	1N	4W	10	S Half	10,291	11,923
Town of Buckeye WRF at Cipriani	1N	5W	36	NE Quadrant	9,903	10,290
Trillium West WWTF	3N	5W	24	SW Quadrant	3,042	3,986
Future Facilities						
Gila 85 WRF	1S	4W	14	N/A	N/A	9,573
Gila Hassayampa WRF	1S	4W	17	N/A	N/A	8,458
Gila Rainbow WRF	2S	5W	36	N/A	N/A	14,098
Gila Southwest WRF	3S	4W	29	N/A	N/A	10,112
Hassayampa North WRF	4N	4W	4	N/A	N/A	11,594
Sun Valley WRF	3N	4W	31	N/A	N/A	14,455
Waterman Wash WRF	2S	2W	6	N/A	N/A	2,428

Notes:
1. The locations and service areas listed are approximate and subject to change or adjustment.
2. The locations and original service areas for the existing and planned facilities were taken from the corresponding 208 plan amendments, which are listed in Table C.2 in Appendix C. For the facilities with draft 208 plan amendments to the Town for sponsorship, which includes Festival Ranch WRF, Douglas Ranch WRF and Town of Buckeye WRF at Cipriani, the original service areas presented are the pending service areas outlined in the draft amendments (see Section 2.2).
3. Wastewater service to the developable portions of the Town of Buckeye MPA is divided among the 18 facilities.
4. The ASPC-Lewis WWTP, Central Buckeye WWTP, Festival Ranch WRF, Sundance WWTP and Palo Verde Road original service area sizes are estimated; the sizes of the original service areas for other facilities are taken from prior MAG 208 plan amendments.

TABLE 4.3 REMOTE LOCATIONS			
Remote Location	**Area (acres)**	**Township, Range and Section***	**Description**
1	640	Section 16 of T2N R3W	ASLD land within the White Tank Mountains and generally surrounded by BLM land.
2	1,448	Portions of Sections 21 through 28 of T1S R4W	AGFD land adjacent along the south side of the Gila River, partially in the floodway/floodplain and mostly surrounded by BLM land. This land is not likely to develop.
3	643	Portions of Sections 29 and 30 of T1S R4W and a Portion of Section 25 of T1S R5W	Private land adjacent along the south side of the Gila River. Largely within the floodway/floodplain and generally surrounded by BLM land.
4	2,155	Portions of Sections 27, 33 and 34 of T1S R5W and Portions of Sections 2, 3, 4, 9 and 10 of T2S R5W	ASLD and AGFD land at the bend in the Gila River, partially within the floodway/floodplain and surrounded by BLM land.
5	540	Portions of Sections 15, 16 and 22 of T2S R5W	ASLD and AGFD land along the Gila River, partially within the floodway/floodplain and surrounded by BLM land.
Total	**5,427**		
*Based on the Gila and Salt River Baseline and Meridian.			

The planned and future facility locations may be subject to adjustment as further evaluations are performed, including information regarding land ownership and availability.

4.1.1 Existing Facilities

As previously discussed, there are currently six operating wastewater facilities that serve existing developments in the Town of Buckeye. Each of these facilities is described herein:

ASPC-Lewis WWTP. The ASPC-Lewis WWTP is designed to serve the needs of the state prison complex which lies north of Patterson Road and east of Rainbow Wash. The original service area of the facility as established by the approved *ASPC Lewis Prison Complex Wastewater Treatment Facility Revised Feasibility Report for Wastewater Treatment Facility* (Carollo 1998), indicated in a solid green line on **Figure 11**, extends approximately one mile east and one mile west of SR-85. This facility is operated and maintained by the Arizona Department of Corrections and serves the wastewater treatment needs of the ASPC-Lewis.

Based on the limited service area and its elevation in relation to the rest of the developable area in the region, the ASPC-Lewis WWTP will ultimately be eliminated. At build out, the original service area will be served by the Gila Rainbow WRF, a regional municipal wastewater treatment and collection system proposed in the area (described further in **Section 4.1.3**).

Central Buckeye WWTP. In the Central Buckeye Region, the Central Buckeye WWTP is located on 7th Street, south of Beloat Road. The original service area for the facility per the approved *Clean Water Act 208 Plan Amendment for the Central Buckeye Wastewater Treatment Plant* (CDM 2005) is generally defined as the area between I-10 and the Gila River and between Turner and Perryville Roads, as shown in solid green on **Figure 12**. The original service area shown in **Figure 12** does not exactly match the original service area presented in the approved 208 plan amendment. Portions of the original service area for Central Buckeye have been since included in the Sundance service area through the approved Sundance WRF 208 plan amendment.

A consortium of developers within the original Central Buckeye WWTP service area have proposed to construct the South East Buckeye Interceptor Sewer (SEBIS) to collect and convey wastewater flows from the eastern portion of the service area to the Central Buckeye facility. Due primarily to the dewatering costs involved with the installation of sewer line through the waterlogged area in combination with the required sewer depths to convey the flows from the intended service area, alternative sewer solutions for this area have been evaluated as a part of this analysis. The preliminary analysis indicates that the most economical solution for this area is to supplement the existing SEBIS sewer design with interim lift stations to reduce the depth of the sewer system.

The proposed service area for the Central Buckeye WWTP, shown as a black and white boundary on **Figure 12**, now reaches north of I-10 in one area and extends to the Gila River on the south. Historic downtown Buckeye, as well as Shea Homes, Lamb Trimark, Roston Company Southwest and many other developments will be served by this facility.

Festival Ranch WRF. In the northern portion of the North Buckeye Region, the Festival Ranch WRF is located along Wagner Wash near Sun Valley Parkway. This facility was originally designed to handle flows from the Festival Ranch and Spurlock Ranch developments, outlined in solid green in **Figure 13** per the approved *Clean Water Act Plan 208 Amendment for the Town of Buckeye Festival Ranch Water Reclamation Facility* (CVL 2003).

A draft 208 plan amendment for the Festival Ranch WRF, *Festival Ranch Water Reclamation Facility 208 Water Quality Management Plan Amendment* (Fluid Solutions 2006), has been prepared and submitted to

the Town for sponsorship; however the draft 208 plan amendment has not been submitted to nor approved by MAG or other agencies. The service area for the facility proposed under the draft 208 plan amendment is expanded to include the area outlined in the dashed green line in **Figure 13**.

The proposed service area under this 208 plan amendment for the facility, as shown in **Figure 13**, is further extended to include the area between the Hassayampa River and the pending service area from the draft 208 plan amendment north of the CAP Canal. Further, the proposed service area is extended south of the original service area generally to the alignment of Greenway Road, east of the Hassayampa River to service the Vistoso development.

Sundance WWTP. In general, the original service area defined by the approved *MAG 208 Water Quality Management Plan Amendment for the Expansion of the Sundance Wastewater Treatment Plant* (RBF 2005) for the Sundance WWTP, located north of the Roosevelt Canal on Apache Road, includes the area north of the Roosevelt Canal and south of I-10, west of Tuthill Road. East of Tuthill Road, the original service area extends from the Roosevelt Canal north to Camelback Road. Sundance, Blue Horizons and several other developments fall within the Sundance WWTP service area.

The original service area includes the service area which was designated for the Blue Horizons Villages WWTP in a previously approved 208 plan amendment. However, the WWTP was not built and the service area was later incorporated into the Sundance WWTP service area under the approved *MAG 208 Water Quality Management Plan Amendment for the Expansion of the Sundance Wastewater Treatment Plant* (RBF 2005).

The Sundance WWTP in the Central Buckeye Region has a proposed service area roughly limited to the east by Perryville Road, to the south by the Roosevelt Canal and to the west by Miller Road. The northern border of this service area extends north to Northern Avenue, with the exception of the proposed Verrado service area and BLM lands, as shown in **Figure 14**.

A parcel of ASLD land rests along a northeastern slope of the White Tank Mountains which drains via gravity to the White Tanks FRS #3 to the east-southeast. This parcel of land, while included in the service area of the Sundance facility, may require a lift station or other provisions to connect to the wastewater collection system. One particular challenge may be extending a sewer line to the downstream side of the FRS.

Tartesso West WRF. The Tartesso West WRF is located in the North Buckeye Region, and has an original service area that extends north to Glendale Avenue, as far east as Turner Road, as far south as McDowell

Road and almost as far west as the Hassayampa River per the approved *Clean Water Act 208 Plan Amendment Application for Maricopa Association of Governments Prepared for the Tartesso Water Reclamation Facility and the Town of Buckeye* (PACE 2003). The facility itself is roughly located at the intersection of McDowell Road and the 315th Avenue alignment.

The proposed service area extends the northern border to approximately Peoria Avenue and the western border to the Hassayampa River and the MPA boundary. The eastern and southern borders stay roughly the same, as indicated in **Figure 15**. The Tartesso West WRF primarily serves the Tartesso West development; however, the service area is being amended to include the Mirielle development and other private and ASLD land.

Verrado WRF. On the east side of the White Tank Mountains, the Verrado development is served by the privately owned and operated Verrado WRF. The Arizona American Water Company operates and maintains this facility and system to serve the area defined by a CC&N issued by the ACC. The Verrado WRF is the only privately owned and operated facility in the Town of Buckeye MPA, and is depicted in **Figure 14**.

The proposed service area for the Verrado WRF is limited by the extent of the CC&N boundary, which recently has been extended to include the Fireside at Sienna Hills development. **Figure 14** displays the proposed service area for the Verrado WRF.

4.1.2 Planned Facilities

Six wastewater facilities in the Town of Buckeye MPA have completed or are in the process of obtaining approval of a 208 plan amendment. The facilities and the status of their 208 Plan approvals are summarized as follows:

Anthem at Sun Valley South WRF. The 208 plan amendment submitted for the Anthem at Sun Valley South WRF, *MAG 208 Water Quality Management Plan Amendment for Anthem at Sun Valley South and Tartesso East Water Reclamation Facilities* (CMX 2006), was approved by the EPA in April 2007. The original service area outlined in that document stretches from Northern Avenue alignment south to Bethany Home Road alignment, east of the Sun Valley Parkway as shown in **Figure 15**. The facility, located in the North Buckeye Region, is proposed to be constructed on the east side of Sun Valley Parkway south of the Bethany Home Road alignment.

The service area proposed by this 208 plan amendment does not alter the service area delineated in its original 208 amendment. The service

area, outlined in **Figure 15**, includes the Anthem at Sun Valley South development and several parcels of ASLD land.

Douglas Ranch WRF. A draft of the 208 plan amendment for the Douglas Ranch WRF, *Douglas Ranch Water Reclamation Facility Clean Water Act Plan 208 Amendment for the Town of Buckeye* (CVL 2006), has been submitted to the Town for review and sponsorship; however it has not been submitted to nor approved by MAG or other agencies. The facility, located in the North Buckeye Region and planned approximately at the intersection of the 339th Avenue and Waddell Road alignments, has a pending original service area that comprises most of the MPA west of the Hassayampa River. The pending original service area is shown in **Figure 16** outlined in a dashed green line.

The proposed service area for this facility per this 208 plan amendment extends the pending service area to the entire portion of the MPA west of the Hassayampa River. This WRF will primarily serve the Douglas Ranch MPC, although a few parcels of ASLD land will also be included. **Figure 16** displays the proposed service area for the Douglas Ranch WRF.

Palo Verde Road WWTP. In the Central Buckeye Region, the Palo Verde Road WWTP original service area, as defined in the approved *MAG 208 Water Quality Management Plan Amendment Application for the Palo Verde Road Wastewater Treatment Plant* (RBF 2004), is generally limited to the area between I-10 and Southern Avenue, and between Johnson and Turner Roads. The facility is planned along Palo Verde Road approximately one-half mile north of Broadway.

The approved 208 plan amendment for Tartesso East incorporates limited portions of the original, approved service area delineated in the Palo Verde Road 208 plan amendment. As such, these lands have been removed from the Palo Verde Road WWTP service area, causing the original service area for the facility indicated on **Figure 17** to be slightly different from what was previously approved in the Palo Verde Road 208 plan amendment.

In addition, the pending service area for the Town of Buckeye WRF at Cipriani incorporates some areas that are part of the original Palo Verde Road WWTP service area. These areas have also been removed from the original Palo Verde Road WWTP service area.

The proposed service area extends the northern boundary from I-10 to McDowell Road west of Sun Valley Parkway, as shown in **Figure 17**. The service area for the Palo Verde Road WWTP includes, but is not limited to, the Westwind and Silver Rock developments.

Tartesso East WRF. The 208 plan amendment submitted for the Tartesso East WRF, *MAG 208 Water Quality Management Plan*

Amendment for Anthem at Sun Valley South and Tartesso East Water Reclamation Facilities (CMX 2006), was approved by the EPA in April 2007. The original service area stretches from the Bethany Home Road alignment south to I-10, east of the Sun Valley Parkway to the Rooks Road alignment as shown in **Figure 15**. The facility, located in the North Buckeye Region, is proposed to be constructed at approximately the intersection of I-10 and Turner Road.

The proposed service area for this facility adds small parcels of land which were not previously included. The Tartesso East WRF is intended to serve the Tartesso East MPC and a few out-parcels, including ASLD property.

Town of Buckeye WRF at Cipriani. A draft of the *MAG 208 Water Quality Management Plan Amendment for the Town of Buckeye Water Reclamation Facility at Cipriani* (CMX 2006) has been submitted to the Town for review and sponsorship; however it has not been submitted to nor approved by MAG or other agencies. The facility, located in the Central Buckeye Region and planned for the southwest corner of Johnson and Southern Avenues, has a pending original service area that comprises most of the area between the Hassayampa River and Palo Verde Road, between I-10 and Southern Avenue as shown in the dashed green line in **Figure 17**.

The proposed service area per this 208 plan amendment is largely the same as the pending, original service area, with the only difference being the addition of the southwest corner of McDowell and Johnson Roads as shown in **Figure 17**. The service area includes the Cipriani, Desert Creek and other developments.

Trillium West WWTF. The original service area of the approved *Clean Water Act 208 Amendment for the Town of Buckeye Trillium West Wastewater Treatment Facility* (CSA 2005) extends from the Hassayampa River to the Sun Valley Parkway, between Peoria Avenue and Greenway Road. The Trillium West Wastewater Treatment Facility (WWTF) is located within the North Buckeye Region, proposed at the southwest corner of the service area along Peoria Avenue adjacent to the Hassayampa River.

The original service area delineated in the approved 208 plan amendment accounted for only a portion of the ultimate projected capacity of the facility. The approved 208 plan amendment contemplated the potential to serve the Vistoso development to the north, although the corresponding service area was not specifically defined. While the delineated portion of the service area is being expanded slightly to account for the remainder of the area west of Sun Valley Parkway and south of Greenway Road, the ultimate capacity of the facility is reduced through this 208 plan amendment. **Figure 15** illustrates the original and

proposed Trillium West WWTF service areas. This facility will primarily serve the Trillium West MPC, a portion of the Sun Valley development and parcels of ASLD land.

4.1.3 Future Facilities

Additional areas exist within the Town of Buckeye MPA that previously have not identified a solution for wastewater treatment. The following future facilities propose solutions for wastewater service for these areas.

The locations of the future facilities identified herein are approximate and are subject to change within an approximate 1-mile radius from the identified points. Adjustments to the proposed facility locations may be made at the discretion of the Town of Buckeye.

Gila 85 WRF. A large portion of land generally south of Broadway Road and west of SR-85 previously had not identified a wastewater solution. As part of this analysis, several alternatives were evaluated to propose a solution for this area. The topography of this area is fairly uniform, falling towards the Gila River, with only a small portion breaking towards the Hassayampa to the west. Based on this, a facility could be logically located anywhere along the Gila River and be able to sewer the majority of the area by gravity. In addition, a small ridge is present towards the center of the area, providing a natural split at approximately Palo Verde Road. As such, the entire area was divided between two future facilities, the Gila 85 WRF and the Gila Hassayampa WRF.

The Gila 85 WRF is situated in the Central Buckeye Region and is proposed to minimize the extent of lateral trunk line sewers that would need to be installed within the waterlogged area. The proposed service area for the Gila 85 WRF roughly extends from Broadway Road to the Gila River, and SR-85 west to Palo Verde Road, as shown in **Figure 17**. A portion of private land south of the Gila River may also connect to this facility with the use of lift stations. The Benessere development and several smaller employment centers proposed along the alignment of the Southern Pacific Railroad would be served by this facility. Opportunities to locate the facility within land owned by the FCDMC are being explored; however private land in this vicinity may be pursued.

Gila Hassayampa WRF. Also in the Central Buckeye Region, the Gila Hassayampa WRF is proposed to serve an area that extends from Southern Avenue to the Gila River and from Palo Verde Road to the Hassayampa River. **Figure 17** displays the proposed service area for the Gila Hassayampa WRF. Several residential and employment corridor developments are proposed in this service area including the Johnson Valley development. The proposed location for the Gila Hassayampa WRF is near the intersection of Narramore and Bruner Roads outside of the floodways of the Gila and Hassayampa Rivers.

Gila Rainbow WRF. In the southwest corner of the MPA in the South Buckeye Region, there is a large portion of developable land between the Buckeye Hills and Maricopa Mountains along Rainbow Wash. An analysis of the potential wastewater facilities within the area indicates that the area would best be served by two facilities, as the majority of foreseeable development in the area is north of the Rainbow Wash.

Figure 11 shows the proposed service area for the Gila Rainbow WRF, the first of these two municipal facilities. The service area for the facility is generally bound to the north by Ocotillo Road, to the east by Rooks Road, to the south by Patterson Road, and to the west by the Gila River. The Gila Rainbow WRF is proposed to be generally located along the Gila Bend Canal and serve developments such as Insignia, Verma, Ladera and others. Ultimately, the Gila Rainbow WRF will provide municipal wastewater service to a decommissioned ASPC-Lewis WWTP.

Gila Southwest WRF. The second wastewater facility in the southwest corner of the MPA is the Gila Southwest WRF. The proposed location of the facility is in the southwest corner of the Town of Buckeye MPA to provide wastewater service to the service area shown in **Figure 11**. The service area for this facility generally is defined as the area between Patterson Road and Woods Road from the Gila River to the Oglesby Road alignment.

Hassayampa North WRF. A large area of ASLD land is located in the northernmost portion North Buckeye Region with limited amounts of neighboring private land. The Hassayampa North WRF is proposed to serve these areas as indicated in **Figure 13**. The facility is anticipated to be located in the southwest corner of the ASLD land piece closest to the Hassayampa River, which is the most down-gradient location in the proposed service area.

Sun Valley WRF. Located in the North Buckeye Region, the Sun Valley WRF is proposed to serve an area east of Johnson Road to a half-mile east of the Oglesby Road alignment between Northern Avenue and Greenway Road with the exception of the Trillium West service area, as shown in **Figure 15**. The facility is anticipated to be located in the southwest corner of the service area near the intersection of Johnson Road and Northern Avenue. The service area for this facility includes the Sun Valley development and a portion of ASLD land.

Waterman Wash WRF. A relatively limited expanse of private land is situated in the northeast corner of the South Buckeye Region. The Waterman Wash WRF is proposed to serve development in the area depicted in **Figure 18**. The locations of proximate wastewater treatment facilities in the adjacent City of Goodyear planning area are also depicted in this figure. Due to topographic constraints, the Waterman Wash WRF

is proposed to serve the future developments within this limited expanse of the Town of Buckeye MPA.

4.2 Population Projections

According to the assumptions and calculations by the Population Technical Advisory Committee (POPTAC) in the *Socioeconomic Projections of Population, Housing and Employment by Municipal Planning Area and Regional Analysis Zone* prepared by MAG (2007), the MPA for the Town will experience a total population of 419,146 in year 2030. Additionally, the Town of Buckeye MPA is subdivided into Regional Analysis Zones (RAZs) to identify a more detailed view of population projections. The RAZs which encompass the Town of Buckeye MPA are 253, 277, 278, 279, 340, 341 and 343, as depicted in **Figure 4**. The population projections for the individual RAZ and the entire MPA are presented in **Table 4.4**.

TABLE 4.4
POPULATION PROJECTIONS BY YEAR PER RAZ

	2005	2010	2020	2030
RAZ 253	4,223	8,192	19,437	42,815
RAZ 277	2,362	4,331	20,983	57,296
RAZ 278	16,449	34,498	67,056	104,605
RAZ 279	4,442	13,983	40,108	76,513
RAZ 340	49	4,204	41,909	85,360
RAZ 341	257	3,704	21,282	34,255
RAZ 343	4,953	5,994	7,816	18,302
Town of Buckeye MPA	**32,735**	**74,906**	**218,591**	**419,146**

Based on the proposed service areas and the population projections per year per RAZ presented in **Table 4.4**, the population projections for each service area are shown in **Table 4.5**. Detailed calculations are provided in **Table C.3** in **Appendix C**.

TABLE 4.5
POPULATION PROJECTIONS BY YEAR BY PROPOSED SERVICE AREA

	2005	2010	2020	2030
Existing Facilities				
ASPC-Lewis WWTP	N/A	N/A	N/A	N/A
Central Buckeye WWTP	16,671	38,155	84,049	142,804
Festival Ranch WRF	129	2,014	12,393	20,773
Sundance WWTP	4,612	10,689	25,894	49,655
Tartesso West WRF	128	1,184	10,710	22,534
Verrado WRF	1,860	3,650	8,714	19,102
Existing Facilities Subtotal	**23,400**	**55,692**	**141,760**	**254,868**
Planned Facilities				
Anthem at Sun Valley South WRF	325	918	4,421	9,250
Douglas Ranch WRF	84	2,414	19,993	38,356
Palo Verde Road WRF	498	913	4,426	12,082
Tartesso East WRF	1,788	4,108	11,316	20,005
Town of Buckeye WRF at Cipriani	605	1,109	5,375	14,676
Trillium West WWTF	2	198	1,969	4,011
Planned Facilities Subtotal	**3,302**	**9,660**	**47,499**	**98,379**
Future Facilities				
Gila 85 WRF	680	1,120	4,529	12,221
Gila Hassayampa WRF	497	912	4,418	12,064
Gila Rainbow WRF	2,450	2,965	3,866	9,053
Gila Southwest WRF	1,363	1,649	2,151	5,036
Hassayampa North WRF	64	920	5,287	8,510
Sun Valley WRF	8	716	7,139	14,542
Waterman Wash WRF	441	533	696	1,629
Future Facilities Subtotal	**5,503**	**8,816**	**28,086**	**63,054**
Remote Areas				
Remote Area 1	129	250	593	1,306
Remote Area 2	0	0	0	0
Remote Area 3	112	137	195	466
Remote Area 4	221	267	348	815
Remote Area 5	70	85	110	258
Remote Areas Subtotal	**531**	**738**	**1,246**	**2,845**
Total	**32,735**	**74,906**	**218,591**	**419,146**

Notes:
1. Remote Areas are discussed in Section 4.1.
2. Rounding may cause slight discrepancies in total values.

With projected populations in the Town growing from 33,000 persons in 2005 to near 75,000 in 2010, the growth rate experienced by the Town may be anticipated to outpace the MAG projections. In addition, numerous proposed developments have either begun construction or are anticipated to begin construction in the near future. Some of these developments have proposed higher dwelling unit densities than what currently exists or has been previously projected for the Town. As such, the POPTAC population projections may not

accurately reflect the both the scale and timeline of potential future growth in the area.

Population projections within the MPA have been evaluated as part of this study based both on available information from the existing and planned communities and developments and information assembled in previously submitted 208 plan amendments. Each of the existing and planned wastewater treatment facilities has compiled population and/or flow projections for their respective original approved and pending service areas as part of the 208 plan amendment process. For the purposes of this document, these population and flow projections are assumed represent the extent of development for the area they cover, and are used with no alteration to the specific design criteria outlined therein. The relevant information from these previously drafted 208 plan amendments for the existing and planned wastewater facilities is reproduced and provided in each facility's respective appendix.

To evaluate the areas outside of the original approved and pending service areas for each facility (as previously established in relevant 208 Plans), the draft Town of Buckeye General Plan has been used to assign general land use categories of residential, commercial/industrial or open space, as shown in **Figure 19**. The population projected for these service area expansions is calculated by using the residential acreages, reduced by 20% to account for open space and rights-of-way, and applying a dwelling unit density of 3.5 dwelling units per acre and a population density of 3.2 persons per dwelling unit. This results in an estimated build out population of 2,031,000 persons, which is almost five times greater than the 2030 population projections from POPTAC. A summary of the build out populations and projected number of dwelling units for each of the proposed service areas is presented in **Table 4.6**. Detailed calculations are provided in **Table C.4** in Appendix C.

TABLE 4.6
BUILD OUT POPULATION PROJECTIONS

Facility	Proposed Service Area (acres)	Original Service Areas		Service Area Expansion		Total Dwelling Units	Total Estimated Population
		Dwelling Units	Population	Dwelling Units	Population		
Existing Facilities							
ASPC-Lewis WWTP	0	2,344	7,500	0	0	0	0
Central Buckeye WWTP	41,254	124,179	397,372	13,100	42,000	137,300	439,000
Festival Ranch WRF	26,849	13,038	99,397	19,100	61,000	32,100	160,000
Sundance WWTP	17,522	25,446	89,294	15,600	50,000	41,000	139,000
Tartesso West WRF	21,563	49,649	138,846	10,600	34,000	60,200	173,000
Verrado WRF	9,242	9,560	33,460	1,109	3,058	10,700	37,000
Existing Facilities Subtotal	**116,429**	**224,215**	**765,869**	**59,509**	**190,058**	**281,300**	**948,000**
Planned Facilities							
Anthem at Sun Valley South WRF	7,589	13,226	36,675	0	0	13,200	37,000
Douglas Ranch WRF	41,399	88,875	252,585	6,900	22,000	95,800	275,000
Palo Verde Road WWTP	8,473	33,976	101,928	2,800	9,000	36,800	111,000
Tartesso East WRF	11,923	28,517	81,577	1,300	4,000	29,800	86,000
Town of Buckeye WRF at Cipriani	10,290	27,653	83,085	600	2,000	28,300	85,000
Trillium West WWTF	3,986	8,762	25,566	1,300	4,000	10,100	30,000
Planned Facilities Subtotal	**83,660**	**201,009**	**581,416**	**12,900**	**41,000**	**214,000**	**624,000**
Future Facilities							
Gila 85 WRF	9,573	0	0	22,500	72,000	22,500	72,000
Gila Hassayampa WRF	8,458	0	0	21,900	70,000	21,900	70,000
Gila Rainbow WRF	14,098	ASPC-Lewis WWTP		15,000	48,000	17,300	56,000
Gila Southwest WRF	10,112	0	0	13,800	44,000	13,800	44,000
Hassayampa North WRF	11,594	0	0	23,400	75,000	23,400	75,000
Sun Valley WRF	14,455	0	0	37,500	120,000	37,500	120,000
Waterman Wash WRF	2,428	0	0	6,900	22,000	6,900	22,000
Future Facilities Subtotal	**70,717**	**0**	**0**	**141,000**	**451,000**	**143,300**	**459,000**
Total	**270,806**	**425,224**	**1,347,285**	**213,409**	**682,058**	**638,600**	**2,031,000**

Notes:

1. The proposed service areas for each of the facilities are conceptual and are subject to adjustment at the discretion of the Town.
2. Dwelling unit and population counts for the original service areas are taken from the respective approved 208 plan amendments with no alterations to the specific design criteria outlined therein. The Central Buckeye service area dwelling unit and population counts are based on the Central Buckeye Wastewater Treatment Plant Master Plan (CDM 2006).
3. The populations of the pending original service areas for the Festival Ranch WRF, Douglas Ranch WRF and Town of Buckeye WRF at Cipriani represented are outlined in draft 208 plan amendments submitted to the Town for sponsorship. These draft 208 plan amendments have not been submitted to nor approved by MAG or other agencies (see Section 2.2).
4. Where actual populations and dwelling units for the original service areas are not provided, equivalent populations and dwelling units are used, based on the average daily flow presented in the approved 208 plan amendment and an assumed flow generation rate of 100 gpcd and population density 3.2 persons per dwelling unit. This includes the ASPC-Lewis WWTP, Central Buckeye, Palo Verde Road and Sundance service areas.
5. The ASPC-Lewis WWTP is assumed to be phased out of service; flows from the facility will be treated at the Gila Rainbow WRF.
6. Service area expansion population and dwelling unit counts are based on the net acreage of the expansion area, which takes into account a 20% reduction for open space areas and rights-of-way. The dwelling unit density is assumed to be 3.5 dwelling units per acre and the population density is assumed to be 3.2 persons per dwelling unit.
7. The additional service area for the Verrado WRF is the Fireside at Sienna Hills development. As the population and average daily flows for this facility are calculated in the Fireside at Sienna Hills Wastewater Master Plan (CMX 2007), they are not calculated using the above mentioned assumptions.
8. Detailed calculations are presented in **Table C.4** in Appendix C.
9. Rounding may cause slight discrepancies in total values.

Where actual population and projected dwelling unit counts for the original service areas are not provided in previous 208 plan amendments, equivalent populations and dwelling unit counts are calculated based on the average daily flow (ADF) provided, assuming a flow generation rate of 100 gallons per capita per day (gpcd) and population density 3.2 persons per dwelling unit as required by MCESD. For these original service areas, which include ASPC-Lewis, Central Buckeye, Palo Verde Road and Sundance, the populations presented herein may be inflated as non-residential areas have been converted into populations.

4.3 Flow Generation

As with the population and dwelling unit counts presented in **Section 4.2**, the wastewater flows anticipated from each proposed service area also are based on two separate values. The first of these values is the flow rate presented for the original service area boundaries as given in prior 208 plan amendments and the second is the calculated flow rate based on the acreage and land use type of the proposed service area expansions.

For this analysis, residential, commercial/industrial and open space wastewater generation rates are assumed to be 100 gpcd, 1,500 gallons per acre per day (gpad) and 0 gpad, respectively. Industrial developments typically utilize the same unit wastewater generation rates as commercial developments and as such, for the purposes of this 208 plan amendment, industrial areas are combined with commercial areas when determining wastewater generation and ultimate capacities for the wastewater facilities. The gross area of the service area expansions is reduced by 20% to account for open space area and rights-of-way; population projections are based on the assumptions outlined in **Section 4.2**.

The average daily flows from the original service area and the proposed service area expansions, as summarized in **Table 4.7**, are used to determine the wastewater generation rates anticipated at build out at each of the proposed facilities within the MPA. The ultimate average daily flow presented in the table for a particular facility is also the anticipated maximum capacity for that facility at build out. As indicated in the table, it is anticipated that there will be a total of 18 facilities serving the Town at that time, not including the ASPC-Lewis WWTP which will ultimately be removed from service. The facilities range in size from 2.2 million gallons per day (MGD) for the Waterman Wash WRF to 45.8 MGD for the Central Buckeye WWTP at build out. In total, it is anticipated that the Town of Buckeye MPA could generate as much as 241.2 MGD of wastewater in the future.

TABLE 4.7
FLOW GENERATION

Facility	Original Service Area ADF (MGD)	Service Area Expansion				Ultimate ADF (MGD)
		Residential Net Area (acres)	Residential Population	Commercial Net Area (acres)	ADF (MGD)	
Existing Facilities						
ASPC-Lewis WWTF	0.75	0	0	0	0.0	N/A
Central Buckeye WWTP	39.7	3,750	42,000	1,226	6.0	45.8
Festival Ranch WRF	10.6	5,404	61,000	376	6.7	17.3
Sundance WWTP	8.9	4,459	50,000	0	5.0	13.9
Tartesso West WRF	18.0	3,017	34,000	1,866	6.2	24.2
Verrado WRF	3.35	326	3,058	4	0.2	3.6
Existing Facilities Subtotal	**81.3**	**16,956**	**190,058**	**3,472**	**24.1**	**104.7**
Planned Facilities						
Anthem at Sun Valley South WRF	4.5	0	0	0	0.0	4.5
Douglas Ranch WRF	29.0	2,001	22,000	459	2.9	31.9
Palo Verde Road WWTP	10.2	809	9,000	408	1.5	11.7
Tartesso East WRF	9.5	352	4,000	562	1.2	10.7
Town of Buckeye WRF at Cipriani	11.8	145	2,000	0	0.2	12.0
Trillium West WWTF	2.8	378	4,000	0	0.4	3.2
Planned Facilities Subtotal	**67.8**	**3,684**	**41,000**	**1,430**	**6.2**	**74.1**
Future Facilities						
Gila 85 WRF	N/A	6,392	72,000	1,262	9.1	9.1
Gila Hassayampa WRF	N/A	6,217	70,000	524	7.8	7.8
Gila Rainbow WRF	ASPC-Lewis	4,292	48,000	5,107	12.5	13.2
Gila Southwest WRF	N/A	3,934	44,000	2,064	7.5	7.5
Hassayampa North WRF	N/A	6,692	75,000	1,251	9.4	9.4
Sun Valley WRF	N/A	10,734	120,000	829	13.2	13.2
Waterman Wash WRF	N/A	1,941	22,000	0	2.2	2.2
Future Facilities Subtotal	**N/A**	**40,203**	**451,000**	**11,037**	**61.7**	**62.4**
Total	**149.1**	**60,843**	**682,058**	**15,939**	**92.0**	**241.2**

Notes:
1. The proposed service areas for each of the facilities are conceptual and subject to change over time.
2. ADFs for the original service areas are taken from the respective approved 208 plan amendments with no alterations to the specific design criteria outlined therein. The Central Buckeye service area dwelling unit and population counts are based on the Central Buckeye Wastewater Treatment Plant Master Plan (CDM 2006). Please note that the average daily flow represents the actual anticipated flows at each facility and should not be confused with original facility capacities.
3. The average daily flow from the pending original service areas for the Festival Ranch WRF, Douglas Ranch WRF and Town of Buckeye WRF at Cipriani represented are outlined in draft 208 plan amendments submitted to the Town for sponsorship. These draft 208 plan amendments have not been submitted to nor approved by MAG or other agencies (see Section 2.2).
4. The ASPC-Lewis WWTP is assumed to be phased out of service; flows from the facility will be treated at the Gila Rainbow WRF.
5. Service area expansion population and ADFs are based on net acreage of the expansion area, which takes into account a 20% reduction to account for open space areas and rights-of-way. The dwelling unit density is assumed to be 3.5 dwelling units per acre and the population density is assumed to be 3.2 persons per dwelling unit for residential areas.
6. The additional service area for the Verrado WRF is the Fireside at Sienna Hills development. As the population and average daily flows for this facility are calculated in the Fireside at Sienna Hills Wastewater Master Plan (CMX 2007), they are not calculated using the above mentioned assumptions.
7. Average daily flow is based on flow generation rates of 100 gpcd for residential population, 1,500 gpad for commercial acreages and 0 gpad for open space acreages.
8. Rounding may cause slight discrepancies in total values.

5.0 WASTEWATER SYSTEMS

A summary of the treatment technologies being employed and planned for the existing, planned and future WRFs within the Buckeye MPA is outlined in the following sections.

5.1 Wastewater Treatment Methodology

5.1.1 Overview

Historically, the Town of Buckeye offered wastewater service to a limited area within the Central Buckeye Region. Prior to 1989, the Town utilized a lagoon system to provide wastewater treatment. In 1989, the Central Buckeye WWTP began operations to serve a design population of approximately 15,000. This existing WWTP is part of a sanitary sewer system that receives domestic wastewater from residential and commercial sources in Buckeye. Around December 2005, the capacity of this facility was being exceeded, and the Town embarked on a process to design an expansion to the Central Buckeye WWTP.

Around the same time, development pressures were beginning to be placed in other areas of the Town's planning area. As such, five additional wastewater facilities have been constructed within the planning area. The ASPC-Lewis Prison facility was constructed in the late 1990s, the Festival Ranch WRF began receiving flows in December 2006 and the Sundance WWTP began operation in 2003. The Tartesso West WRF and Verrado WRF began receiving flows in May 2006 and February 2004, respectively.

Through coordinated management, the Town has established an informal preference for particular wastewater treatment technologies. As developments and MPCs propose wastewater treatment facilities to serve their planned developments, the Town outlines that Sequencing Batch Reactors (SBRs) can be used as a treatment process until such time as the facility reaches a capacity of approximately 5 MGD. Beyond this capacity, the Town previously indicated that SBR facilities would then need to convert to the Modified Ludzak-Ettinger (MLE) process. However, with increasing flow and more data available for analysis, the Town recognized that the influent wastewater was generally of a higher strength than originally anticipated. As discussed in the following sections, beyond a capacity of approximately 5 MGD, facilities will plan to convert to a Bardenpho process.

5.1.2 Sequencing Batch Reactor

Several modified SBR treatment facilities exist or are planned within the Buckeye MPA, including the following:

- Existing facilities:
  - Festival Ranch WRF
  - Sundance WWTP
  - Tartesso West WRF
- Planned facilities:
  - Anthem at Sun Valley South WRF
  - Douglas Ranch WRF
  - Palo Verde Road WWTP
  - Tartesso East WRF
  - Town of Buckeye WRF at Cipriani
  - Trillium West WRF

Further, the future facilities discussed in this 208 plan amendment will likely use SBR technology for the first phases of wastewater treatment.

Typically, this technology is used to treat relatively small quantities of wastewater flow. In SBR treatment, a single tank is used to biologically treat the wastewater in an activated sludge process and to produce a relatively clear effluent by liquid-solids clarification with operation in a sequence of treatment steps, including:

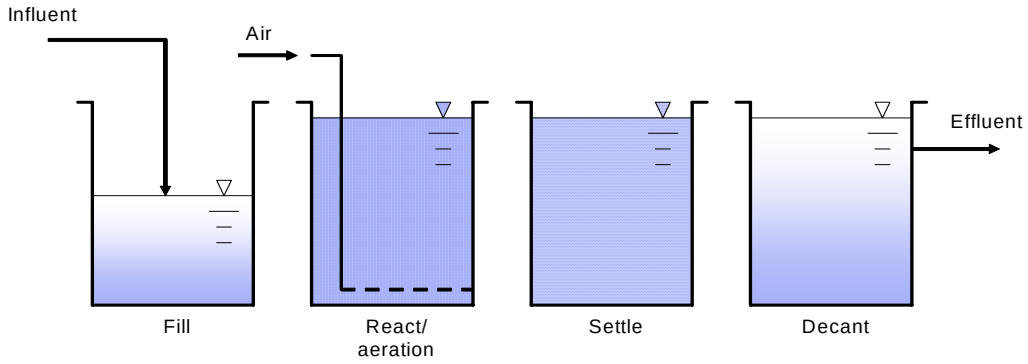
- Fill (wastewater addition),
- React (mixing and aeration, biomass consumes the substrate under controlled environmental conditions),
- Settle (quiescent period to allow solids to settle and leave a clear liquid on top), and
- Decant (clarified effluent is removed).

The SBR process used in the Town of Buckeye facilities varies from the conventional SBR approach in that a common, unaerated mixed tank (anoxic tank) is placed ahead of the SBR aerobic tanks. During aeration of the SBR aerobic tank, mixed liquor containing nitrate nitrogen is recycled at a relatively high rate to the anoxic tank, which also receives the influent wastewater. Under the mixed anoxic conditions, the organic material (biological oxygen demand or BOD) in the influent wastewater is degraded by bacteria that use nitrate rather than oxygen. In doing so,

the bacteria reduce the nitrate to nitrogen gas, thus removing nitrogen from the wastewater.

This modified SBR configuration design results in a lower tank volume requirement than the conventional SBR system, thus reducing capital costs. However, recycling flow to the anoxic tank results in a higher energy/operating cost (Stensel 2006).

FIGURE 5.1 – SBR PROCESS DIAGRAM



5.1.3 Facility Upgrades

Once flows to a SBR system reach 3 to 5 MGD, the relatively large tank volume that would be required for treatment makes it advantageous to consider conversion of SBR systems to continuous flow treatment processes that use less volume and may be more cost effective.

The Town of Buckeye contracted Dr. H. David Stensel from the University of Washington to recommend treatment methodologies for the conversion of SBR facilities. The results of the study are reported in *Upgrading Sequencing Batch Reactor Systems, Town of Buckeye Influent Wastewater Characteristics and Process Alternatives* (Stensel 2006). Key considerations in this evaluation include:

- Producing an effluent quality with a total nitrogen (TN) concentration less than 10 milligrams per liter (mg/L) and suspended solids concentrations less than 5.0 mg/L.
- Ability to treat high strength wastewater in the future due to a trend towards lower water use per capita.

The influent TN concentration can be estimated by the concentration of total Kjeldahl nitrogen (TKN), which includes influent ammonia and organic nitrogen species.

- TN = TKN + nitrite (NO_2) + nitrate (NO_3)
- TKN = ammonia (NH_3) + organic nitrogen (amino acids & proteins, e.g., urea and uric acid)

In the study, Stensel evaluates several treatment processes to determine a standardized methodology for conversion of SBR systems once flows are projected to exceed 3 to 5 MGD. Four alternatives for conversion are recommended in the study, including the following:

- Bardenpho
- Step Feed Bardenpho (Step Nitrification-Denitrification (Step NdN-I))
- Step Feed MLE (Step NdN-II)
- Bardenpho Membrane Bioreactor (MBR) Processes

A brief description of the process for each of the recommended alternatives is presented herein.

Bardenpho. The Bardenpho biological treatment process scheme generally refers to an operating sequence of anoxic-aerobic-anoxic-aerobic reaction zones. This sequence uses separate reaction zones for anoxic denitrification and aerobic BOD oxidation/nitrification. Wastewater initially enters an anoxic zone to which mixed liquor is recycled from a subsequent combined aerobic compartment. Through the addition of anoxic and aerobic zones, the Bardenpho process is capable of meeting the effluent TN concentration for higher strength wastewaters.

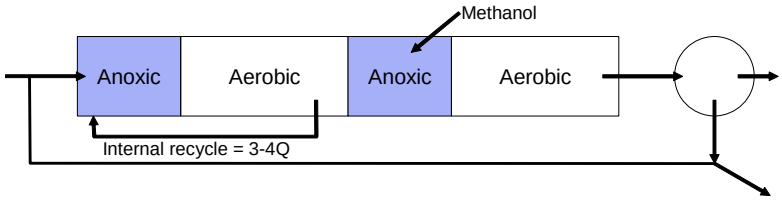


FIGURE 5.2 – BARDENPHO PROCESS DIAGRAM

Existing SBR installations with anoxic-aerobic reactors can increase capacity substantially by the conversion to a Bardenpho process with the addition of secondary clarifiers and polishing filters. Modifications may include adding external downstream anoxic and aerobic tanks, internal mixed liquor recycle piping and pumps, and aeration system upgrades.

In general, the advantages to the Bardenpho process include the following:

1. Effluent TN concentrations less than 8.0 mg/L are achievable for wastewater with very high influent TKN concentrations.
2. Nitrogen removal to a lower effluent TN concentration is possible (to less than 3.0 mg/L) using a polishing filter (in warm climates).
3. The sludge generated has good settling characteristics for a more stable operation.
4. The process can be easily modified to provide enhanced biological phosphorus removal.
5. The process has less energy needs due to the use of nitrate for BOD removal in the first anoxic zone.
6. Well demonstrated technology with over 25 years of operations.

Step Feed Bardenpho (Step NdN-I). A typical step feed nitrification-denitrification (NdN) process splits the influent flow to 4 zones. Under the Step Feed Bardenpho process (or Step NdN-I), the zones consist of the repeating series of anoxic and aerobic zones (anoxic-aerobic-anoxic-aerobic). The division of raw influent water into each of the zones allows BOD to be used for nitrate reduction in anoxic zones and nitrate to be nitrified in the subsequent aerobic zones.

Advantages to this system include: operation at a higher mixed liquor suspended solids (MLSS) concentration reduces the total basin volume required; the step feed eliminates the need for internal recycle pipes and pumps; and energy savings are realized by using the nitrate produced for BOD removal (Stensel 2006).

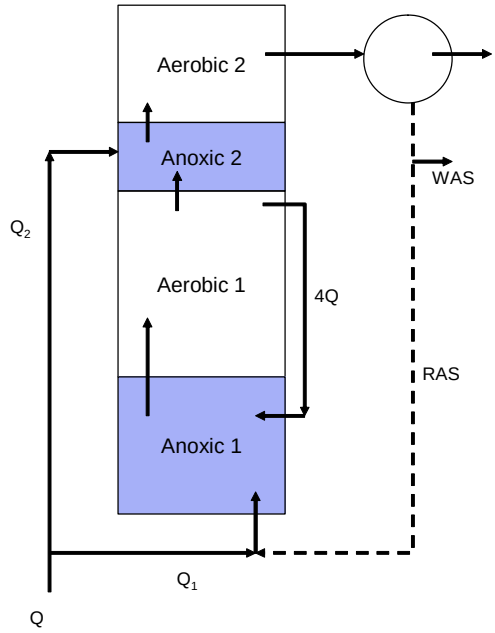


FIGURE 5.3 STEP NDN-I PROCESS DIAGRAM

Step Feed MLE (Step NdN-II). This configuration of this Step Feed NdN process (or Step NdN-II) is similar to the Step Feed Bardenpho process described above, however, it uses an internal recycle system to direct flow from the first anoxic-aerobic pass back to the anoxic zone of the second pass similar to the MLE process. This design does not require additional anoxic or aerobic tanks when converting an SBR system (compared to the Bardenpho processes), but does require baffling of existing tanks and other internal changes to the existing SBR systems.

Advantages to the Step NdN-II process include: additional external tanks are not required; and methanol addition is not necessary.

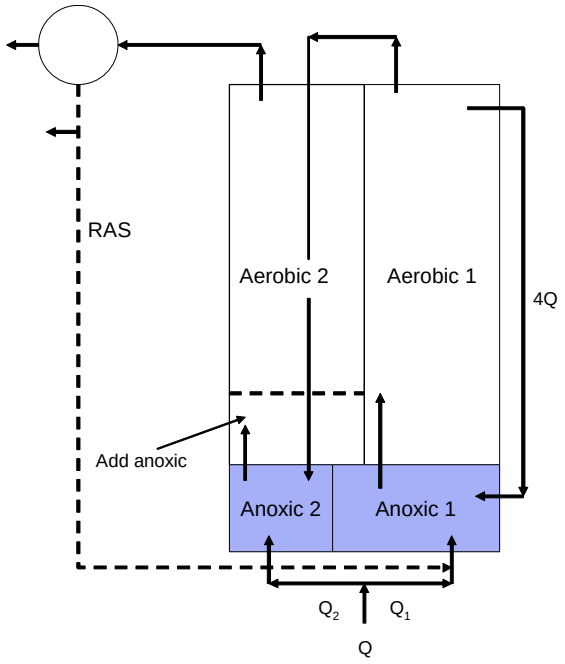


FIGURE 5.4 STEP NDN-II PROCESS DIAGRAM

Bardenpho Membrane Bioreactor Processes. MBRs are activated sludge processes in which a synthetic membrane provides microfiltration of the mixed liquor to produce an effluent essentially void of suspended solids (Stensel 2006). Membrane filtration replaces the need for a secondary clarifier and filter, and yields a higher quality effluent (with turbidity below 5 Nephelometric turbidity units (NTUs)). In a Bardenpho MBR process for nitrogen removal, membrane units are employed in the final aeration zone. The main advantages to the Bardenpho MBR process include a higher treatment capacity for a given activated sludge tank volume, less required space to carry out treatment, easy to retrofit existing plants, and less disinfection costs due to high quality effluent.

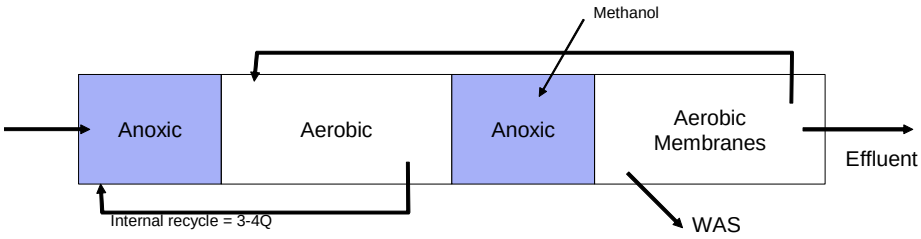


FIGURE 5.5 BARDENPHO MBR PROCESS DIAGRAM

5.1.4 Summary of Biological Treatment Processes

The final selection between these alternatives will depend on costs and specific site needs. Compared to the base Bardenpho process, the alternative processes are summarized as follows:

1. The Step Feed Bardenpho (I or II) would be more favorable to generate higher treatment capacity with comparable tank volumes and has the advantage of requiring no methanol addition for nitrate removal.
2. The Step Feed NdN-II process (or Step Feed MLE) would be more favorable if adding tanks after the existing SBR is problematic; methanol addition would not be needed.
3. The Bardenpho MBR process would be favorable to maximize the treatment capacity using the smallest facility footprint. However, the Bardenpho MBR process would demand higher capital and operating costs.

Upgrading Sequencing Batch Reactor Systems, Town of Buckeye Influent Wastewater Characteristics and Process Alternatives (Stensel 2006) presents the information listed in Table 5.1, which summarizes the modifications required to convert an existing SBR system to one of the Bardenpho treatment processes. Further, advantages and disadvantages of the recommended processes are summarized in **Table 5.2**.

TABLE 5.1 SUMMARY OF SBR MODIFICATIONS	
Process	**SBR System Modifications Needed**
Bardenpho	Add post anoxic and aerobic tanks
	Add internal recycle lines and pumps for each SBR aerobic cell
Step Feed Bardenpho (Step NdN-I)	Add post anoxic and aerobic tanks
	Add internal recycle lines and pumps for each SBR aerobic cell
	Add flow spit before first anoxic cell (90/10 split) and pipe to feed 10% of flow to second anoxic tank
Step Feed MLE (Step NdN-II)	Add internal recycle lines and pumps for each SBR aerobic cell
	Partition first anoxic tank to unequal volumes; modify mixers
	Add pipe to transfer flow from first MLE step to anoxic zone of second MLE step.
	Partition second MLE step aerobic tank to provide additional anoxic volume
Bardenpho MBR	Add post anoxic and aerobic tanks
	Add membrane separation units and membrane cleaning and aeration system to the membrane aerobic cell
	Add internal recycle lines and pumps for each SBR aerobic cell

TABLE 5.2 ADVANTAGES AND DISADVANTAGES FOR SBR UPGRADE ALTERNATIVES		
Process	**Advantages**	**Disadvantages**
Bardenpho	Conventional technology 1st anoxic/ aerobic compatible with existing SBR	Need to add external tanks
		May need methanol
	Can use existing anoxic tank	
Step Feed Bardenpho (Step NdN-I)	Greater treatment capacity	Need to add external tanks
	No need for methanol	Need to add flow split and transfer pipe to second anoxic
	Can use existing anoxic tank	
Step Feed MLE (Step NdN-II)	No need to add external tanks	Need to add effluent pipe from first to second MLE system
	No need for methanol	Internal tank construction needed for anoxic and second aerobic tank
Bardenpho MBR	Small footprint	Need to add external tanks
	Eliminates clarifiers and filters	May need methanol
	Highest capacity for existing SBR	High cost of membrane addition and maintenance
	Provides higher quality effluent	Highest energy process
	Sludge settling not an issue	More complex equipment and maintenance

5.1.5 Additional Treatment Processes

Preliminary Treatment. Preliminary treatment will include screening to remove the coarse solids and processes to macerate, wash, compact and dewater the captured solids. Dewatered screenings will be properly disposed at an approved landfill.

Grit removal may be necessary, but in most cases, it is not anticipated for the initial phases of facility operation.

Tertiary Treatment. If needed, an equalization basin will provide a steady inflow to the downstream unit processes. The secondary treated wastewater will be discharged from the equalization basin to a tertiary filtration system with redundant capacity.

Disinfection. The filtered effluent will be treated with ultraviolet (UV) radiation to disinfect the water for reuse and recharge. The UV system will disinfect the water to the standards required by the Arizona Administrative Code (AAC) Title 18, Chapter 11, Article 3 for Class A+ effluent.

Odor and Noise Control. Facilities presented in this 208 plan amendment may provide noise and odor control to treat off-gases from the influent pump station, screenings facility, treatment basins, sludge holding tanks and solids handling facilities. Basins will be covered to reduce emissions, and ventilation systems will provide a negative pressure to draw off gases from the reactors and be directed to an odor control scrubbing system. Noise control may also be present in the form of setbacks, as required per AAC, Title 18, Chapter 9, and as listed in **Table 5.3**.

TABLE 5.3
NOISE/ODOR CONTROL SETBACK REQUIREMENTS

Treatment Facility Design Flow (gpd)	No Noise, Odor or Aesthetic Controls (feet)	Full Noise, Odor or Aesthetic Controls (feet)
3,000 to < 24,000	250	25
24,000 to < 100,000	350	50
100,000 to < 500,000	500	100
500,000 to < 1,000,000	750	250
≥ 1,000,000	1,000	350

Sludge Treatment. Sludge may be dewatered via belt filter press or other acceptable technology. Aerobic digestion may be provided to meet Class B sludge quality requirements; additional storage space may not be needed for dewatered sludge. Biosolids produced by the Buckeye facilities will be of a sufficient quality to meet the applicable requirements

for the selected final disposition. A licensed sludge hauler and sludge disposal permit will be utilized or obtained, as necessary.

5.1.6 Satellite Water Recycling Facilities

Satellite water recycling facilities, also referred to as scalping plants, remove and treat a portion of the water within the wastewater stream and pass the solids, along with the need for solids treatment processes, to a downstream facility. Scalping plants generate effluent in areas closer to potential effluent users. Correspondingly, the infrastructure required to deliver the effluent to users may be reduced rather than treating the entire wastewater stream at a centralized wastewater facility and distributing effluent from one point. In addition, the economies of scale associated with large centralized wastewater facilities can still be realized with the solids treatment occurring only at select locations.

Each of the facilities proposed in this 208 plan amendment will be required to treat wastewater flows generated by their respective service areas. As the Town of Buckeye continues to develop, there may be opportunities to transform some of the up-gradient wastewater facilities into scalping plants. The Town will evaluate the potential conversion of facilities to scalping plants as facilities within the area begin to expand in response to larger wastewater flows as part of the Town's Reuse Master Plan.

5.2 Existing Facilities

While the existing facilities are constructed and operating under the approval of prior MAG 208 plan amendments, as discussed in **Section 4**, the service areas, and correspondingly, the ultimate facility capacities have been altered. Currently, the majority of the existing facilities utilize the SBR technology, as outlined in **Section 5.1.2**. Originally, these SBR facilities were planned to upgrade to the MLE technology once flows approached approximately 5 MGD. Considering the analysis presented in the report, *Upgrading Sequencing Batch Reactor Systems Town of Buckeye Influent Wastewater Characteristics and Process Alternatives* (Stensel 2006), existing facilities will be planned to upgrade to one of the four alternative Bardenpho technologies, as discussed in **Section 5.1.3**, rather than the MLE process.

The current flow at the existing facilities listed in **Table 5.4** represents the average day flow under current, normal operating conditions.

TABLE 5.4 EXISTING FACILITIES				
Facility	**Current Actual Average Flow (MGD)**	**Constructed Capacity (MGD)**	**Ultimate Capacity (MGD)**	**Treatment Technology**
ASPC-Lewis WWTP	0.75	0.75	N/A	Extended aeration
Central Buckeye WWTP	0.912	4.0	45.8	Oxidation ditch/Bardenpho
Festival Ranch WRF	0.026	1.0	17.3	SBR
Sundance WWTP	0.692	2.4	13.9	SBR
Tartesso West WRF	0.112	1.2	24.2	SBR
Verrado WRF	0.141	0.45	3.6	SBR

Notes:
1. Current actual average flows and constructed capacity represent data from July/August 2007.
2. Detailed information is included in Appendices D-I for these six existing facilities.
3. Ultimate capacity calculated as discussed in Section 4.
4. ASPC-Lewis WWTP is expected to be phased out of service; flows will ultimately be sent to the future Gila Rainbow WRF.

5.2.1 ASPC-Lewis WWTP

The ASPC-Lewis WWTP utilizes the extended aeration, activated sludge process for wastewater treatment. This process is generally stable under varying loading conditions and operation is straightforward. Operating at 0.75 MGD, the facility serves a relatively fixed population, and thus has no plans for expansion. Ultimately, the facility will be decommissioned and flows will be sent to the future Gila Rainbow WRF once wastewater infrastructure is provided in the vicinity of the prison complex.

5.2.2 Central Buckeye WWTP

As outlined in the MAG 208 plan amendment for the Central Buckeye (CDM 2005), the existing Buckeye WWTP began receiving flows as a 0.6 MGD facility. Process improvements and facility expansion brought the capacity to 1.5 MGD. A second expansion was completed in 2007 and increased the total constructed capacity to 4.0 MGD. The current actual average flow for the facility is approximately 0.912 MGD as of July 2007.

The Central Buckeye WWTP was previously equipped with screening facilities, an oxidation ditch with boat clarifier, effluent chlorination and belt filter press. The facility expansion completed in 2007 updates the treatment to consist of the following processes: influent pumping, mechanically and manually cleaned bar screens, grit removal, secondary treatment (Bardenpho process for nitrification/ denitrification), secondary clarification, tertiary filtration and chlorination/ dechlorination. Belt filter presses provide for sludge treatment and handling prior to landfill disposal.

An additional 3.0 MGD facility expansion is currently being designed which will bring the total plant capacity to 7.0 MGD. Future WWTP

expansions will consist of multiple phases of construction, resulting in an ultimate capacity of 45.8 MGD.

5.2.3 Festival Ranch WRF

The Festival Ranch WRF is constructed as a 1.0 MGD SBR facility (CVL 2003) with a current actual average flow of 0.026 MGD as of July 2007.

Phase 1 of the constructed WRF employs fine screens at the headworks followed by a SBR for secondary treatment. Tertiary filtration and UV disinfection also are provided. The effluent quality will meet Class A+ requirements. The WRF is anticipated to have an ultimate capacity of 17.3 MGD.

5.2.4 Sundance WWTP

The first phase of the Sundance WWTP was a 1.2 MGD SBR system with a current actual average flow of 0.692 MGD as of July 2007. Recent upgrades to the facility increased the capacity from 1.2 MGD to 2.4 MGD. Planned upgrades to the facility include increasing the capacity to 3.6 MGD. The Sundance WWTP is anticipated to have an ultimate capacity of 13.9 MGD.

The constructed Phase 1 portion of the Sundance WRF is equipped with a biological treatment process that removes BOD, provides nitrification and denitrification, aerobic sludge digestion, sludge dewatering and a sludge disposal strategy. Effluent is A+ quality and the facility is equipped with odor scrubbing equipment and basin covers.

5.2.5 Tartesso West WRF

The Tartesso West WRF employs an activated sludge process within hybrid SBRs for secondary removal of organics and nutrients (PACE 2003). SBR basins are completely enclosed for the implementation of noise and odor control features. As typical with conventional SBRs, the treatment process utilizes anoxic mixing, aerobic mixing and static reaction capabilities to provide biological oxidation, nitrification/ denitrification, phosphorous removal and clarification within each reactor tank. The hybrid SBR design includes an additional anoxic pre-reactor which functions for flow equalization, denitrification and biological selection for treatment efficiency and ease of operation. The facility design also allows for efficient foam and scum removal from the SBR during RAS periods. Primary treatment within the facility includes screening and grit removal within covered and odor-controlled headworks areas. Following the secondary treatment processes, the facility is equipped with tertiary treatment capabilities including a surge basin, filtration and UV disinfection equipment with back-up chlorination.

The Tartesso West facility is constructed with an average day capacity for Phase 1 of 1.2 MGD. Currently, the facility is receiving approximately 0.112 MGD of flow as of July 2007. The ultimate capacity of the Tartesso West WRF is anticipated to be approximately 24.2 MGD.

5.2.6 Verrado WRF

The Verrado WRF operates as a SBR treatment facility (Malcolm Pirnie 2001) with a current actual average flow of 0.141 MGD as of July 2007. The treatment processes consist of screening, secondary treatment with biological nitrogen removal and chlorination. The facility is owned and operated by the Arizona American Water Company.

Timing of subsequent expansions of the WRF will be based on MCESD requirements, the increase in population within the service area and the resultant wastewater flows. The final build-out capacity is planned to be 3.6 MGD.

5.3 Planned Facilities

The planned facilities listed in **Table 5.5** will begin operations as SBR and extended aeration facilities, with ultimate plans for expansion using one of the Bardenpho treatment processes discussed in **Section 5.1.3**. The Phase 1 capacities listed represents the anticipated size of the initial facility construction.

TABLE 5.5
PLANNED FACILITIES

WRF	Phase 1 Capacity (MGD)	Ultimate Capacity (MGD)	Initial Phase Treatment Technology
Anthem at Sun Valley South WRF	1.125	4.5	SBR
Douglas Ranch WRF	1.0	31.9	Extended Aeration
Palo Verde Road WWTP	0.5	11.7	SBR
Tartesso East WRF	1.2	10.7	SBR
Town of Buckeye WRF at Cipriani	1.2	12.0	SBR
Trillium West WRF	0.32	3.2	SBR

Notes:
1. Detailed information is included in Appendices J-O for these planned facilities.
2. Ultimate capacity calculated as discussed in Section 4.

5.3.1 Anthem at Sun Valley South WRF

The recommended WRF for Anthem at Sun Valley South will be a multi-phase SBR consisting of the following unit processes and other elements: influent wet well and lift station including flow metering, fine screening, grit removal, secondary treatment with biological nitrogen removal, secondary equalization/clarification, tertiary filtration, UV disinfection, nitrification and denitrification, effluent pump station including flow

metering, standby generator, laboratory and control building, effluent reuse and sludge treatment.

The initial capacity of the facility will be 1.125 MGD. Future phasing is anticipated in approximately 1.125 MGD increments. The ultimate facility will be designed to accommodate approximately 4.5 MGD. Facility sizing and phasing is designed to be both modular and flexible depending on the population growth rate within the service area.

Design of subsequent phases will begin when the WRF reaches 70% of its design capacity. Construction of the subsequent phases will commence when the WRF reaches 80% of its designated capacity. Phase 1 of the Anthem at Sun Valley South WRF is expected to be operational in 2008.

5.3.2 Douglas Ranch WRF

The Douglas Ranch WRF will consist of a multi-phased activated sludge treatment process. Initially, the WRF may operate as an extended aeration plant without primary treatment. The 1.0 MGD Phase 1 WRF will include influent pumping, fine screening, extended aeration activated sludge, flow equalization, secondary clarification, filtration, UV disinfection, belt press dewatering, reclaimed water storage and effluent distribution pumping.

Expansions of the WRF will be dependent upon the increase in population within the Douglas Ranch community and the resultant wastewater flows. Facility sizing is modular and accommodates flexibility in phasing (CVL 2006). The ultimate capacity is estimated to be 31.9 MGD.

5.3.3 Palo Verde Road WRF

The Palo Verde Road WWTP will consist of a multi-phased SBR system with average flow capacity of 0.5 MGD for the initial phase (Phase 1A) of facility construction. Further construction is anticipated to proceed so that the full first phase will provide 1.0 MGD of treatment capacity (RBF 2004). At build out, the ultimate facility will provide 11.7 MGD of treatment capacity.

The treatment process will consist of screening, secondary biological treatment using the activated sludge process, secondary clarification, tertiary filtration, UV disinfection, nitrification and denitrification, either aerobic or anaerobic sludge digestion, sludge dewatering, a sludge disposal strategy and flow equalization.

5.3.4 Tartesso East WRF

The Tartesso East WRF will have an ultimate capacity of approximately 10.7 MGD, with an initial phase of approximately 1.2 MGD. Initially, the facility will be designed using an SBR activated sludge treatment system

with advanced tertiary treatment compatible with ADEQ Title 18 Class A+ effluent standards. The Town of Buckeye will have the option to convert the WRF to the Bardenpho process once future expansions bring the capacity to approximately 3 to 5 MGD. The treatment train will ultimately include screening, grit removal, biological nutrient removal through anoxic and aerobic zones, clarification, nitrification/ denitrification, filtration and UV disinfection. The facility will also incorporate sludge storage, treatment and processing capabilities. The plant will be equipped with odor and noise control and other aesthetic measures in accordance with the AAC Title 18.

5.3.5 Town of Buckeye WRF at Cipriani

The Town of Buckeye WRF at Cipriani design will be a 1.2 MGD multi-phase SBR with the capability for future expansion of the facility. The unit processes and other design elements anticipated at the facility include an influent wet well and lift station, fine screening, grit removal, secondary treatment with biological nitrogen removal, secondary equalization/clarification, tertiary filtration, UV disinfection, nitrification and denitrification, effluent pump station including flow metering, standby generator, laboratory and control building, effluent reuse and sludge treatment.

Facility sizing and phasing is designed to be both modular and flexible depending on the population growth rate within the service area, with an ultimate capacity of 12.0 MGD.

5.3.6 Trillium West WRF

The Trillium WRF will be a multi-phase SBR facility consisting of an initial phase anticipated to be 0.32 MGD. The initial phase will include an influent pump station consisting of one duty and one standby submersible pump and a wet well. The lift station will be equipped with an odor control system. Headworks will consist of flow metering and fine screens. Biological treatment will consist of a SBR system. The system will be programmed to include anoxic sequences within the treatment cycles to reduce the nitrogen levels in the mixed liquor. An aerobic digester will be used to further reduce the volatile solids. Thickened sludge will be processed in the sludge handling facility to produce sludge cake that can be safely disposed of in a landfill. Waste activated sludge (WAS) pumping is integral process to the aerobic digester system. Filtration will produce an effluent quality of less than 5 NTUs. UV radiation will be used to disinfect the tertiary effluent in order to meet the requirements of A+ quality. A chlorination system will be provided for backup disinfection. Full noise and odor control will be provided at the facility.

Tertiary Class A+ effluent will be percolated on site. Backup power generation will be provided. The WRF will transition from the initial 0.32

MGD SBR system to a full process capable of handling wastewater flows of 3.2 MGD, to be determined at a later date by the Town.

5.4 Future Facilities

The future facilities for the Gila 85, Gila Hassayampa, Gila Rainbow, Gila Southwest, Hassayampa North, Sun Valley and Waterman Wash areas are projected to utilize the SBR technology in their initial phases. Once flow approaches 3 to 5 MGD, as applicable, the facilities will plan for expansion and upgrade to Bardenpho technology. The first phase of each of the future facilities will have a capacity of approximately 1.2 MGD. The future facilities are anticipated to be multi-phase SBRs with the capability for future expansion. The unit processes and other design elements anticipated at the facilities include an influent wet well and lift station, fine screening, grit removal, secondary treatment with biological nitrogen removal, secondary equalization/clarification, tertiary filtration, UV disinfection, nitrification and denitrification, effluent pump station including flow metering, standby generator, laboratory and control building, effluent reuse and sludge treatment. Facility sizing and phasing will be designed to be both modular and flexible depending on the population growth rate within the service area.

Table 5.6 outlines the ultimate capacity anticipated for each service area, as described in Section 4 of this report.

TABLE 5.6
FUTURE FACILITIES

WRF	Phase 1 Capacity (MGD)	Ultimate Capacity (MGD)	Initial Phase Treatment Technology
Gila 85 WRF	1.2	9.1	SBR
Gila Hassayampa WRF	1.2	7.8	SBR
Gila Rainbow WRF	1.2	13.2	SBR
Gila Southwest WRF	1.2	7.5	SBR
Hassayampa North WRF	1.2	9.4	SBR
Sun Valley WRF	1.2	13.2	SBR
Waterman Wash WRF	1.2	2.2	SBR

Notes:
1. Detailed information is included in Appendices P-V for these future facilities.
2. Ultimate capacity calculated as discussed in Section 4.

5.5 Influent Quality

Influent water quality data from the existing facilities are listed in **Table 5.7**. Influent concentrations for BOD range from 30 to 310 mg/L for the six existing facilities in the Town of Buckeye.

At Tartesso West and Festival Ranch, the influent BOD and total suspended solids (TSS) concentrations are impacted by the low flows being received, the

distance between the existing homes and the facilities, and the larger pipe diameters (and corresponding flatter slopes) feeding the facilities. The biological loading in the wastewater may be settling in the trunk lines to the facilities. Flows to these facilities will continue to increase as new homes are sold and occupied. The remaining existing facilities have BOD concentrations in an expected range of BOD concentrations.

Also, the TKN values reported demonstrate the need for implementation of modified SBR treatment and the Bardenpho process for treatment of the higher strength wastewaters experienced in the Town.

TABLE 5.7
INFLUENT WATER QUALITY AT EXISTING FACILITIES

Facility	Average Daily Flow (MGD)	BOD (mg/L)	TSS (mg/L)	TKN (mg/L)	TN (mg/L)
ASPC-Lewis WWTP	0.75	310	210		
Central Buckeye WWTP	0.912	265	157	N/A	N/A
Festival Ranch WRF	0.026	30	67	N/A	N/A
Sundance WWTP	0.692	295	268	47	
Tartesso West WRF	0.112	81	98	23	
Verrado WRF	0.141	236	163	47	47

5.6 Effluent Quality

The effluent quality for the existing facilities is designated to meet the A+ designation in accordance with AAC Title 18, Chapter 11, Article 3. Effluent quality data reported by the existing facilities is summarized in **Table 5.8**.

TABLE 5.8 EFFLUENT QUALITY AT EXISTING FACILITIES							
Facility	**Average Daily Flow (MGD)**	**BOD (mg/L)**	**TSS (mg/L)**	**TKN (mg/L)**	**TN (mg/L)**	**Fecal Coliform (CFU/ 100 mL)**	**Total Coliform (CFU/ 100 mL)**
A+ Quality Standard	**N/A**			**10**	**10**	**2**	**23**
ASPC-Lewis WWTP	0.75	< 5.0	< 10.0	< 1.3	5.33	< 1	< 1
Central Buckeye WWTP	0.912	< 5.0	< 10	< 1.3	4.6	1	N/A
Festival Ranch WRF	0.026	< 5.0	< 10	N/A	N/A	< 2	< 2
Sundance WWTP	0.692	< 5	1.90	1.75	4.1	< 1	< 1
Tartesso West WRF	0.112	2.5	1.41	1.21	8.1	< 1	< 1
Verrado WRF	0.141	2.4	1.2	< 1.3	< 1.7	< 1	N/A

5.7 Pretreatment Requirements

The Town of Buckeye has implemented an Industrial Pretreatment Program (IPP) in accordance with the regulations outlined in the 1972 Federal Water Pollution Control Act and the General Pretreatment Regulations adopted by the EPA in 1978. The purpose of the IPP is to protect the environment and publicly owned treatment works (POTWs) through the regulation of the discharge of hazardous wastes. The 1972 Federal Water Pollution Control Act, which was later amended by the 1977 CWA and the 1987 Water Quality Act, provides legislation to develop and administer regulations regarding the introduction of pollutants into POTWs. The administrative framework for pretreatment program implementation is set forth by the General Pretreatment Regulations adopted by the EPA in 1978 (40 Code of Federal Regulations (CFR) 403), as revised in 1988. All significant users, as defined in the Town of Buckeye IPP, must obtain an industrial discharge permit in order to discharge wastes into the Town of Buckeye sewer system.

The Town of Buckeye IPP outlines the prohibited substances as well as the maximum concentration of permitted substances for all discharges into a public sewer. While the EPA establishes permissible discharge limitations for industries that fall under specified categories, the discharge limits for other significant users are specified in the Town of Buckeye IPP. In some cases, the local limitations may be more stringent than the federal regulations. Average daily maximum limits for specific pollutants, as defined in the Town of Buckeye IPP, are listed in **Table 5.9**. It should be noted that limitations for specific industrial categories may vary, however none may exceed the average daily maximum values in **Table 5.9**.

TABLE 5.9 DAILY AVERAGE EFFLUENT MAXIMUM LIMITATIONS	
Substance	**Discharge Limitation (mg/L)**
Arsenic	0.1
Barium	10.0
Boron	10.0
Cadmium	0.1
Chromium VI	0.5
Copper	10.0
Cyanide (amenable to chlorination)	0.2
Cyanide, Total	2.0
Dissolved Sulfides	0.5
Lead	0.5
Manganese	0.5
Mercury	0.05
Oil & Grease EPA Method 413.1	100
Oil & Grease EPA Method 418.1	100
Selenium	0.1
Silver	0.5
Zinc	50.5

In addition to average daily maximum limits, two specific compounds, benzene and chloroform, are monitored for instantaneous concentrations. The maximum concentration of these compounds is presented in **Table 5.10**, as set forth in the Town Code.

TABLE 5.10 INSTANTANEOUS EFFLUENT MAXIMUM LIMITATIONS	
Substance	**Limitation (µg/L)**
Benzene	35
Chloroform	2,000

Prohibited substances for discharge into a public sewer system are also listed in the Town of Buckeye IPP.

As mentioned in Section 3.4, the Town of Buckeye plans for industrial development to be concentrated primarily along the Southern Pacific Railroad. In the event that an industrial user requests to discharge to one of the wastewater treatment facilities proposed in this 208 plan amendment, the Town of Buckeye would review the industrial processes involved, evaluate it in accordance with the Town of Buckeye IPP and implement any local limits that may be required. Under no circumstance will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.

6.0 EFFLUENT REUSE, RECHARGE AND DISPOSAL

6.1 Introduction

The Town of Buckeye recognizes that it is imperative to conserve groundwater through the implementation of reuse and recharge programs. This section provides a general background on local reuse and recharge practices and compiles information from existing, planned and future reuse and recharge systems. Groundwater modeling in the region has confirmed that successful reuse and recharge programs are critical in maintaining a 100-year water supply for the Town of Buckeye (Brown and Caldwell 2006). The successful implementation will rely on a series of planning and design steps for the water, wastewater and reclaimed water system infrastructure. Ultimately, this infrastructure will become the backbone of the future water supply for the Town of Buckeye.

6.2 Background

Nationwide, it has been the general practice in the industry to locate wastewater treatment facilities near a receiving stream or river, treat wastewater to a quality exceeding the water in the receiving stream and discharge the treated water into the stream or river. Water reclamation has become a critical component to maintain a sustainable source of municipal water, and municipalities are reconsidering options for the use of treated wastewater effluent. This is particularly true in the desert southwest, where water is a finite resource and should be reclaimed to support a sustainable water supply.

While a reclaimed water master plan has not been developed for the entire Town of Buckeye planning area, the Town is being proactive in the planning for effluent reuse and recharge. The Town requires that an individual MPC develop a plan for the reuse or recharge of effluent that must be approved by the Town. Additionally, the Town reviews and sponsors MAG 208 plan amendments within the MPA which present an overall look at reuse and recharge in the Town of Buckeye. Furthermore, the Town of Buckeye mandates that developments must reuse or recharge their treated effluent within the boundaries of the Town through Town Ordinance 86-06.

6.3 Recharge and Reuse Systems

6.3.1 Recharge Program

ADWR encourages the use of renewable water supplies instead of groundwater through a flexible and effective regulatory program for the underground storage, saving and replenishment of water (ADWR 2007). The goals of the ADWR recharge program include:

- Promoting the use of renewable water supplies, such as effluent, over non-renewable groundwater, by allowing for flexible and effective storage and recovery of renewable water supplies;

- Providing for the efficient use of water resources by allowing water to be stored in one location and recovered elsewhere;

- Extending conjunctive management to reduce aquifer overdraft, through the storage of water to prevent further water level declines;

- Utilizing underground storage to accommodate the seasonal demand for water; and

- Augmenting the water supply.

To accomplish these goals, ADWR has established a series of permits, including the Underground Storage Facility (USF) and Water Storage (WS) permits. An USF permit allows the permit holder to operate a facility that stores water in the aquifer. The criteria a USF must meet in order to be permitted include:

1. The project must be hydrologically feasible;
2. The applicant must demonstrate financial and technical capability;
3. The applicant must agree in writing to obtain any required floodplain use permit from the county flood control district before beginning any construction activities;
4. The project may not cause unreasonable harm to land or other water users within the area of impact; and
5. The project must be monitored to ensure storage does not cause the migration of poor quality water.

Two types of underground storage facilities (USFs) are allowable under the regulations including constructed facilities and managed facilities. A constructed USF permit allows for water to be stored in an aquifer by using some type of constructed device, such as an injection well or percolation basin. A managed USF permit allows for water to be discharged to a naturally water-transmissive area, such as a streambed, that allows the water to percolate into the aquifer without the assistance of a constructed device.

A WS permit allows the permit holder to store water at a USF. In order to store water, the applicant must demonstrate its legal right to the source water proposed for recharge.

The standard of unreasonable harm to land or other water users within the area of impact to a proposed facility is further defined in ADWR policy guidelines. To demonstrate hydrogeologic feasibility, the applicant must study the hydrogeology of the proposed site to ensure that there are no insurmountable barriers to recharge. The facility must also implement a maintenance, monitoring and operational regime that ensures optimum recharge efficiency (ADWR 2002).

The design of a USF must consider the potential impacts of the facility on the surrounding areas. Adding water to the aquifer and the storage of the water at the USF may cause local and regional water levels to rise, potentially interfering with underground structures such as basements, underground parking structures and building foundations. The USF must be designed, constructed and operated to ensure that neither the integrity nor the function of an existing structure is unreasonably harmed. Applicants must also evaluate the potential of the USF to interfere with existing land uses in the vicinity. For example, surface flooding or waterlogging might result in property damage or interference with agricultural activities. Further, the quality of the water to be recharged must not cause unreasonable harm to the water quality in the aquifer.

To determine the extent of the potential impacts, ADWR considers the maximum amount of water that could be in storage at any one time. Herein, the area of impact is calculated as the full storage volume proposed for the USF being stored each year for the proposed duration of the permit. For example, if a USF permit application requests an annual storage volume of 5,000 acre-feet per year and requests a proposed permit duration of 12 years, the maximum amount of water that could be in storage at any one time is 60,000 acre-feet.

ADWR does allow for applicants to plan to store and/or recover water at the USF on a schedule that limits the amount of water in storage at any one time. To this end, the USF permit may be stipulated to a recovery plan so that a lesser amount of storage may be used to determine the maximum area of impact.

Additionally, ADWR gives consideration to groundwater pumping and recovery of stored water in the area. An applicant may assume that pumping will continue at current levels, and if there is clear evidence of likely future changes in the pumping regime, then this may be considered as well. Further, ADWR considers the effects of ongoing or likely water storage at USFs that have been permitted in the region when established areas of impact may overlap the maximum area of impact of the proposed USF.

Monitoring of water levels and water quality is generally required to demonstrate that an USF is operating in accordance with the terms of permit. Further, ADWR typically institutes both Alert Levels and

Operation Prohibition Limits which require a course of action, and potentially cessation of water storage activities, if water levels reach specified criteria, including coming with in 15 feet of the land surface or within 5 feet of any identified structure. Water quality monitoring requires that the water complies with the Aquifer Water Quality Standards (AWQS).

6.3.2 Reuse Program

ADEQ administers a program to allow for the direct reuse of reclaimed water which recycles treated effluent for beneficial uses, thereby conserving potable water sources for human consumption and domestic uses. Regulations apply to both wastewater treatment facilities applying reclaimed water and to the sites where water is applied or used.

Reclaimed water quality standards establish five classes of reclaimed water expressed as a combination of minimum treatment requirements and a limited set of numeric reclaimed water quality criteria. Class A reclaimed water is required for reuse applications where there is a relatively high risk of human exposure to potential pathogens in the reclaimed water. For uses where the potential for human exposure is lower, Class B and Class C are acceptable.

The Reclaimed Water Quality Standards include two "+" categories of reclaimed water, Class A+ and Class B+. Both categories require treatment to produce reclaimed water with a TN concentration of less than 10 mg/L. These categories of reclaimed water minimize concerns over nitrate contamination of groundwater beneath sites where reclaimed water is applied.

6.4 Recharge and Reuse Constraints

Throughout the MPA there are several constraints to the reuse and recharge of effluent within the Town of Buckeye. These constraints should be evaluated and considered in the analysis of reuse or recharge system, as they can affect the recommended engineering solution for a particular area. Some major constraints are presented in the following section.

6.4.1 Groundwater Hydrogeology

As discussed in **Section 3.5**, the Town of Buckeye planning area overlies several groundwater subbasins. The groundwater subbasins have gradients of flow that recharge the groundwater under the Town planning area from several directions. Additionally, the rate of groundwater pumping in localized areas has the potential to create cones of depression which may alter the direction and rate of groundwater flow. Of specific concern is a scenario where water from the West SRV Subbasin is drawn around the southern end of the White Tank Mountains bringing poorer

quality water into the LHSB. Continued groundwater management and modeling of the hydrogeology will be employed to identify and plan for strategically located recharge systems.

Additionally, the majority of the South Buckeye Region is beyond the boundary of the Phoenix AMA. If recharged locally, effluent produced at the Gila Southwest and Gila Rainbow WRFs would not be able to be credited towards groundwater withdrawn from within the AMA boundaries.

6.4.2 Waterlogged Region

The waterlogged area, as discussed in **Section 3.2.2**, generally extends from the Gila River to the Buckeye Canal, approximately two miles to the north. The depth to groundwater in this area has been reported from less than 4 feet bgs to 20 feet bgs. Aquifer recharge in this area is precluded, as the soil is already saturated by the shallow groundwater.

Recharge outside of the waterlogged area also may be impacted by the shallow groundwater. As discussed in **Section 6.3.1**, ADWR rules associated with USFs focus on the operation and maintenance of a facility based on the maximum amount of water that could be stored in the aquifer at one time. The area of impact calculated likely will not be allowed to increase the water level within the waterlogged area. In order to accomplish this, USFs may be tied closely to existing and demonstrated future groundwater pumping rates.

6.4.3 Physical Features

As discussed in **Section 3.1**, the Town of Buckeye MPA encompasses a large expanse of land, covering 34 miles between the Black Mountain Road alignment and Woods Road alignment and spanning 17 miles at its widest point east to west. Generally, reuse and recharge facilities tend to be localized around treatment facilities to minimize the cost associated with transporting the effluent. In addition, the topography of the area includes two rivers and three mountain ranges. North of the Gila River, land falls generally in a southerly direction at a rate of approximately 30 feet per mile; the confluence of the Gila and Hassayampa Rivers is nearly 800 feet lower in elevation than the elevation at which the Hassayampa River enters the north end of the MPA. One consideration to reuse and recharge within the Town will be the costs required to lift the water to its intended destinations.

The Town of Buckeye also has several major man-made features within its boundaries, including two major highways, several irrigation canals, a cooling water delivery line from the City of Phoenix 91st Avenue WWTP to the Palo Verde Nuclear Station and the series of FRSs owned and operated by the FCDMC. While these features bring benefits to the

Town, they also divide the MPA and cause obstacles to the engineering design of recharge and reuse systems. While obstacles may be present, engineering solutions are available to lessen the impacts of these features, although cost will largely dictate which solutions should be pursued and which physical features within the Town will be a constraint to the design of the effluent recharge and reuse system.

6.4.4 Water Quality

Subbasin Groundwater Quality. The water quality in the West SRV Subbasin historically has been known to be high in total dissolved solids (TDS). The high TDS has been attributed to the regional agricultural practices and production of the land. TDS concentrations found in groundwater drawing from the West SRV Subbasin generally exceed the secondary EPA drinking water standard of 500 mg/L TDS. Conversely, the water quality of the LHSB is anticipated to be of higher quality.

The impact of recharging effluent from wastewater treatment facilities in areas whose water source is of a different baseline quality than that of the intended groundwater subbasin must be considered.

Point-of-Use Potable Water Treatment. In areas within the planning area where potable water may be delivered to consumers with a TDS concentration in excess of the EPA secondary standard of 500 mg/L, some consumers may add reverse osmosis (RO) treatment units to improve the aesthetics of the potable water within their homes. The concentrated salts in the brine reject of RO units may be transported via the wastewater collection system to the wastewater treatment facilities. Thus the effluent available for reuse and recharge may be higher in TDS than the original groundwater source.

This phenomenon can cause several concerns such as:

- The TDS concentration of water intended for reuse is elevated and may limit water uptake by landscape or other plants, and may damage or kill landscaping.
- Recharge water high in TDS can cause soil binding and reduce the life cycle of recharge systems.
- High levels of TDS in irrigation water may require reuse water users to install redundant systems of potable and reclaimed water irrigation systems to flush away salts in the soil from the root zone.
- Over time, the overall TDS concentrations in the groundwater may increase.

A solution for treatment and disposal of RO brine streams should be considered to minimize the TDS concentration conveyed to the wastewater treatment facilities, and thus conveyed through reclaimed water for reuse and recharge.

Municipal Potable Water Treatment. Developments planned within the Town of Buckeye are generally required to install groundwater wells to meet the potable water demands of the planned communities. Where the water quality is below acceptable or legal standards, potable water treatment may be installed at water campuses. Potable water treatment may be anticipated to range from blending, treatment for arsenic and/or fluoride and possibly consideration for larger scale RO treatment plants. As with point-of-use RO water treatment, the discharge of the brine stream wastes must be considered. Because conventional wastewater treatment technologies do not remove TDS, it is recommended that over the long term, RO discharge must either be disposed in evaporation ponds or other method which precludes the potential for increasing the concentration of TDS in the groundwater.

6.4.5 Reclaimed Water Customers

Customers using significant amounts of reclaimed water traditionally include golf courses, agriculture, lake systems and industries with large cooling or process water demands. The reuse of effluent is limited to the location and demands of the reclaimed water users. Further, a seasonal fluctuation in the demand for reclaimed water for irrigation may result in approximately twice the demand for reuse water in the summer compared to winter months.

Within the Town of Buckeye, agricultural land is giving way to residential, commercial and industrial development. As may be mandated by the covenants, conditions and restrictions (CC&Rs) associated with MPCs, new homes generally are limited in the amount of turf that may be installed. Communities also are utilizing xeriscape, consisting of low water use plants, to reduce the demand for water.

There are currently two existing golf courses utilizing reclaimed water for irrigation. One golf course employs effluent from the Sundance WRF; the second uses effluent from the Verrado WRF. More than 9 additional golf courses are anticipated within the MPA which intend to reuse effluent for irrigation of the facilities. The Town of Buckeye is also actively pursuing the development of an industrial corridor along the Southern Pacific Railroad tracks, which may add to the demand for reclaimed water in the area.

6.5 Effluent Discharge

Every two years, ADEQ is required by the federal Clean Water Act to conduct a comprehensive analysis of water quality data associated with Arizona's surface waters to determine whether state surface water quality standards are being met and designated uses are being supported. Additionally, the ADEQ regulates point and non-point discharges to waters of the United States on behalf of the EPA through the Arizona Pollutant Discharge Elimination System (AZPDES) program. Each of the existing, planned and future facilities has or will obtain an AZPDES permit, except for the ASPC – Lewis WWTP, which does not plan to have a point source discharge.

Arizona's Integrated 305(b) Assessment and 303(d) Listing Report describes the status of surface waters in Arizona in relation to state water quality standards. The report also contains a list of Arizona's impaired surface waters, including a list of surface waters requiring the development of a Total Maximum Daily Load (TMDL, the 303(d) List). The surface water assessment program entails analyzing and integrating multiple types of data to address the following primary objectives:

- Determine whether each designated use assigned to an assessment unit is "attaining" or "impaired;"
- If impaired, determine the pollutant(s) causing impairment;
- Compile descriptive information about the surface water; and
- Provide future monitoring priorities (the planning list).

If impaired and development of a TMDL is needed, the surface water is placed on the federal 303(d) List unless alternative pollution control requirements are in place (e.g., a consent decree), an approved TMDL is being implemented, or the impairment is solely due to natural conditions. The assessment process compares monitoring data to standards, identifies impaired waters, indicates where additional monitoring should be targeted, and initiates the TMDL loading analysis process. Site-specific standards can be set during TMDL development when natural background levels are higher than standards. These site-specific standards are considered during ADEQ's review of AZPDES permit requests.

The locations of permitted and planned AZPDES discharges for the facilities are displayed in **Figure 21** and are listed in **Tables 6.2, 6.3 and 6.4**. No restrictions exist for the AZPDES permits currently issued. However, at such time that AZPDES permits are submitted to the ADEQ, the state will need to evaluate the impact of the discharge on the receiving water and ensure compliance with Section 303(d) of the Clean Water Act.

6.6 Effluent Quality and Quantity

It has become widely accepted in the desert southwest to utilize reclaimed water as a supplement to groundwater for activities such as landscape irrigation, crop

irrigation, animal watering, compaction/construction water and car washing. With respect to water conservation, some municipalities in the metropolitan Phoenix area are approving constructed water features such as lakes or ponds only if reclaimed water will be used as the source of water to maintain the feature.

As discussed in **Section 5.6**, the effluent from the WWTPs within the Town of Buckeye will be treated to meet standards required by AAC Title 18, Chapter 11, Article 3 for Class A+ effluent. Effluent treated to this standard can be used for the following, as well as any direct reuse activities permitted for the lower quality B and C classes:

- Irrigation of food crops
- Recreational impoundments
- Residential landscape irrigation
- School ground landscape irrigation
- Open access landscape irrigation
- Toilet and urinal flushing
- Fire protection systems
- Spray irrigation of an orchard or vineyard
- Commercial closed loop air conditioning systems
- Vehicle and equipment washing (not including self serve)
- Snowmaking

To effectively plan for reuse, the quantity of available effluent must be estimated. Assumptions based on previous studies (Brown and Caldwell 2006) within the Town of Buckeye establish an effluent generation value of 38 gpcd, in accordance with ADWR design guidelines. Utilizing this value, the expected effluent generated by the wastewater treatment facilities within the Town of Buckeye may approach 100 MGD, as shown in **Table 6.1**. The anticipated amount of effluent available for reuse/recharge is presented herein for planning purposes only; a water balance must be performed during the design phase of reuse and recharge infrastructure components prior to approval of reuse and recharge infrastructure designs.

TABLE 6.1
EXPECTED EFFLUENT GENERATION BY FACILITY

Facility	Ultimate Capacity (MGD)	Ultimate Equivalent Population	Effluent Generated per ADWR [1] (MGD)
Existing Facilities			
ASPC-Lewis WWTP	N/A	N/A	N/A
Central Buckeye WWTP	45.8	458,000	17.4
Festival Ranch WRF	17.3	173,000	6.6
Sundance WWTP	13.9	139,000	5.3
Tartesso West WRF	24.2	242,000	9.2
Verrado WRF	3.6	36,000	1.4
Planned Facilities			
Anthem at Sun Valley South WRF	4.5	45,000	1.7
Douglas Ranch WRF	31.9	319,000	12.1
Palo Verde Road WWTP	11.7	117,000	4.4
Tartesso East WRF	10.7	107,000	4.1
Town of Buckeye WRF at Cipriani	12.0	120,000	4.6
Trillium West WWTF	3.2	32,000	1.2
Future Facilities			
Gila 85 WRF	9.1	91,000	3.5
Gila Hassayampa WRF	7.8	78,000	3.0
Gila Rainbow WRF	13.2	132,000	5.0
Gila Southwest WRF	7.5	75,000	2.9
Hassayampa North WRF	9.4	94,000	3.6
Sun Valley WRF	13.2	132,000	5.0
Waterman Wash WRF	2.2	22,000	0.8
Total	**241.2**	**2,412,000**	**91.7**

Notes:
1. ADWR guideline for effluent generation is 38 gpcd.
2. Equivalent populations are based on average daily flow and a flow generation rate of 100 gpcd.
3. The ASPC-Lewis WWTP is assumed to be eliminated in the future with flows from the facility being treated at the Gila Rainbow WRF.
4. Rounding may cause slight discrepancies in total values.

6.7 Existing Systems

Within the Town of Buckeye there are six operating water reclamation facilities. **Table 6.2** compiles the information included herein regarding the effluent disposal solution for each existing facility. As shown, the facilities have incorporated some type of effluent reuse and/or recharge as part of their solution. Recharge and discharge locations for each facility are depicted on **Figures 20** and **21**, respectively.

TABLE 6.2
EXISTING FACILITIES EFFLUENT SOLUTIONS

Facility	Facility Status	Constructed Capacity (MGD)	Ultimate Capacity (MGD)	Reuse	Recharge	AZPDES Discharge
ASPC-Lewis WWTP	O	0.75	N/A	Landscape and turf irrigation	N/A	N/A
Central Buckeye WWTP	O	4.0	45.8	TBD	TBD	Arlington Canal
Festival Ranch WRF	O	1.0	17.3	Golf course, park, landscape and turf irrigation	Onsite percolation basins	Wagner Wash (Emergency)
Sundance WWTP	O	2.4	13.9	Golf course irrigation	TBD	Buckeye and Roosevelt Canals
Tartesso West WRF	O	1.2	24.2	Golf course and public park irrigation	Onsite percolation basins	Hassayampa River (Emergency)
Verrado WRF	O	0.45	3.6	Golf course irrigation	Vadose zone wells	White Tanks FRS#4 and Roosevelt Canal

Note:
1. For the facility status, "O" indicates fully operational.
2. "TBD" indicates that the effluent solution is to be determined. This is used for facilities that currently do not have a particular type of effluent solution, although consideration is being given to implement one.
3. The permits for Verrado AZPDES discharge(s) may be pursued in the future. Permits have not yet been obtained.

6.7.1 ASPC-Lewis WWTP

The ASPC-Lewis WWTP reuses effluent from the facility that has been treated to B+ quality. The effluent is reused for irrigation of softball fields, gardens, recreational fields and a turf farm located on prison property. Any effluent in excess of what can be reused for irrigation is land applied on a turf farm.

6.7.2 Central Buckeye WWTP

The Central Buckeye facility discharges effluent treated to A+ quality in the Arlington Canal. The effluent is used downstream for irrigation of non-edible agricultural crops.

The Central Buckeye facility is not currently directly reusing or recharging effluent. Direct reuse could be performed from the facility if reuse infrastructure is constructed to serve potential customers. Recharge will likely need to occur at an off-site location, as recharge at the facility site

is not feasible due to the waterlogged condition; the water table is approximately 15 feet bgs at the facility.

6.7.3 Festival Ranch WRF

The Festival Ranch development will predominately reuse effluent from the WRF that has been treated to A+ quality. The effluent will be reused for irrigation of three golf courses, public access parks, turf facilities at schools and irrigation of rights-of-way landscaping. The Festival Ranch development is constructing reclaimed water infrastructure to deliver the water to reuse locations. The infrastructure includes recharge facilities, a pump station at the WRF, a pipe network throughout the development and storage lakes at the golf courses. Additional booster stations and pipe networks will be constructed as needed to boost system pressure to provide irrigation water to the development reuse sites.

Effluent produced in excess of the reuse demand will be recharged. Additionally, an AZPDES permit has been obtained for emergency discharges to Wagner Wash for use during wet weather or in case of emergency.

6.7.4 Sundance WWTP

The Sundance development predominately reuses effluent from the WRF that has been treated to A+ quality. The effluent is currently reused for irrigation of a golf course. Additionally a 20-inch low pressure effluent line is being constructed to convey 7.6 MGD of effluent to the Buckeye Canal. The line, if pressurized, can convey 8.9 MGD of effluent to the Buckeye Canal. An agreement between the Town and the BWCDD currently exists allowing this discharge. As the facility grows, effluent in excess of what can be reused will be discharged in the Buckeye and/or Roosevelt Canals under the AZPDES program.

The Sundance development will need to explore additional sources of effluent discharge as the facility grows. More direct reuse could be performed from the facility if the reuse infrastructure is expanded to serve additional customers.

Recharge onsite at the facility may not be feasible due to the constrained site conditions. Recharge facilities could be constructed within the reuse piping network to discharge excess effluent and provide the Town with recharge credits. Sundance is located in the northeast corner of the planning area central zone. Groundwater flow in this area is generally to the east-southeast with depths to groundwater of approximately 180 to 200 feet bgs (Brown and Caldwell 2006). Therefore, this area should be investigated further for the potential of a constructed recharge facility.

6.7.5 Tartesso West WRF

The Tartesso West development will predominately recharge effluent from the WRF that has been treated to A+ quality. The effluent will be recharged at a facility adjacent to the WRF site. In case of emergency or wet weather, effluent may be discharged in a local wash that is tributary to the Hassayampa River under the AZPDES program.

Studies determined that the local geology could support a recharge facility capable of recharging over 20 MGD of effluent. Approximately, 160 acres is available for the recharge facility representing approximately 40 acres of recharge basin floor area.

6.7.6 Verrado WRF

Effluent from the first phase of the Verrado WRF meets Class B+ quality, with the ultimate facility anticipated to provide A+ quality effluent. Treated effluent from the first phase is used for groundwater recharge and golf course irrigation. Upon future expansion of the facility, alternative means of discharge will be used, such as irrigation of open space landscaping. As the development grows, additional reuse infrastructure will be constructed as necessary. In the future, effluent may also be used to irrigate a second golf course. Effluent in excess of what can be reused will be recharged through a constructed USF. Additionally, Arizona American may file an application for an AZPDES permit for discharges to the White Tanks FRS #4 and/or the Roosevelt Canal.

6.8 Planned Systems

Within the Town of Buckeye there are six water reclamation facilities in some stage of planning or design. **Table 6.3** compiles the information included herein regarding the effluent disposal solution for each planned facility. As shown, the facilities have incorporated effluent reuse and/or recharge as part of their effluent disposal solution. Recharge and discharge locations for each facility are depicted on **Figures 20** and **21**, respectively.

TABLE 6.3
PLANNED FACILITIES EFFLUENT SOLUTIONS

Facility	208 Status	Planned Phase 1 Capacity (MGD)	Ultimate Capacity (MGD)	Reuse	Recharge	AZPDES Discharge
Anthem at Sun Valley South WRF	Approved	1.125	4.5	Golf course, park, landscape and turf irrigation	Onsite percolation basins	White Tanks Wash (Emergency)
Douglas Ranch WRF	Town	1.0	31.9	Golf course, park and lake irrigation	Douglas Ranch managed USF, onsite recharge basins	Jackrabbit Wash (Emergency)
Palo Verde Road WRF	Approved	0.5	11.7	Public and/or private open space irrigation	Vadose Zone/ASR Wells, onsite recharge basin	Buckeye and Roosevelt Canals Hassayampa River (Emergency)
Tartesso East WRF	Approved	1.2	10.7	Golf course, lake and turf irrigation	Onsite recharge basin	Unnamed wash upstream of FRS #1 (Emergency)
Town of Buckeye WRF at Cipriani	Town	1.2	12.0	Park and turf irrigation	Stone House Wash managed USF	Stone House Wash (Emergency)
Trillium West WWTF	Approved	0.32	3.2	Parks, open space landscaping and school irrigation	Onsite percolation basins	Hassayampa River or Wagner Wash (Emergency)

Note:
1. For the 208 status, "Town" indicates the document was submitted to the Town for sponsorship and "Approved" indicates the document has received final approval from the EPA.

6.8.1 Anthem at Sun Valley South WRF

The Anthem at Sun Valley South development will predominately reuse effluent from the WRF that has been treated to A+ quality. The effluent will be reused for irrigation of landscape areas and open space, community parks, golf courses and other turf managed facilities. The development will construct reuse infrastructure to the deliver the reclaimed water to reuse locations. This infrastructure will include a pump station(s) at the WRF, pipe networks throughout the development and storage lakes at the golf courses. Additional booster stations and pipe networks will be built as needed to boost system pressure to provide irrigation water to the development reuse sites.

Any effluent in excess of what can be reused will be recharged. Any effluent in excess of what can be reused or recharged will be discharged in the local unnamed wash tributary to the White Tanks Wash. Flow from this wash is retained behind FRS No. 1, north of I-10. Flows in excess of a 100-year storm would discharge to the Hassayampa River. The

discharge will only occur during wet weather or emergencies and will be permitted under the AZPDES program.

6.8.2 Douglas Ranch WRF

The Douglas Ranch development will predominately reuse effluent from the WRF that has been treated to A+ quality. The effluent will be reused for irrigation of golf courses, lakes, open space green belt areas, schools, and public access parks. The Douglas Ranch development will construct reuse infrastructure to the deliver the reclaimed water to reuse locations. This infrastructure will include a pump station at the WRF, pipe networks throughout the development and storage lakes at the golf courses. Additional booster stations and pipe networks will be built as needed to boost system pressure to provide irrigation water to the development reuse sites.

Any effluent in excess of what can be reused will be recharged. Any effluent in excess of what can be reused or recharged will be discharged in the local Jackrabbit Wash. The discharge will only occur during wet weather or emergencies and will be permitted under the AZPDES program.

6.8.3 Palo Verde Road WRF

The Westwind and Silver Rock developments will predominately reuse effluent from the WRF that has been treated to A+ quality. The effluent may be reused for irrigation of public and/or private open spaces. The Westwind and Silver Rock development(s) will construct reuse infrastructure to deliver the reclaimed water to reuse locations. This infrastructure will include a pump station(s) at the WRF, pipe networks throughout the developments and storage facilities. Additional booster stations and pipe networks will be built as needed to boost system pressure to provide irrigation water to the reuse sites.

Any effluent in excess of what can be reused will be recharged. Any effluent in excess of what can be reused or recharged will be discharged in the Buckeye or Roosevelt canals. This water will then be used downstream for agricultural irrigation purposes. Discharge may also be sought to the Hassayampa River for flows exceeding the direct reuse, recharge and indirect reuse demand. The discharge will only occur during wet weather or emergencies and will be permitted under the AZPDES program.

6.8.4 Tartesso East WRF

Predominately, the Tartesso East development will recharge A+ quality effluent from the WRF. The effluent may be reused for irrigation, golf courses and lakes, if developed.

Any effluent in excess of what may be reused will be recharged. Any effluent in excess of what can be reused or recharged will be discharged in the local unnamed wash that is retained behind FRS No. 1, north of I-10. Flows in excess of a 100-year storm would discharge to the Hassayampa River. The discharge would only occur during wet weather or emergencies and will be permitted under the AZPDES program.

6.8.5 Town of Buckeye WRF at Cipriani

The Cipriani development will reuse and recharge effluent from the WRF that has been treated to A+ quality. The effluent will be reused for irrigation of parks and turf managed facilities. The development(s) served by the Cipriani WRF will construct reuse infrastructure to the deliver the reclaimed water to reuse locations within their respective developments. This infrastructure will include a pump station at the WRF and a pipe network to convey flow to the reuse and recharge locations.

Effluent also will be recharged at the constructed USF within the Stone House Wash. The Desert Creek development also may plan to construct a recharge facility. Effluent in excess of what can be reused or recharged may be discharged in the local Stone House Wash, a tributary to the Hassayampa River in case of emergency or in wet weather.

6.8.6 Trillium West WWTF

The Trillium development initially will recharge effluent from the WRF that has been treated to A+ quality. As the development progresses, the effluent will be reused for irrigation of gateway entrances, parks, open space landscaping, schools and other amenities. The development(s) will construct reuse infrastructure to deliver the reclaimed water to reuse locations. This infrastructure will include a pump station(s) at the WRF, pipe networks throughout the development and storage facilities. Additional booster stations and pipe networks will be built as needed to boost system pressure to provide irrigation water to the development reuse sites.

Effluent in excess of what can be reused or recharged will be discharged in the Hassayampa River or Wagner Wash. The discharge will only occur during wet weather or emergencies and will be permitted under the AZPDES program.

6.9 Future Systems

Within the Town of Buckeye there are seven additional water reclamation facilities planned to serve areas within the Buckeye MPA that previously did not have wastewater solutions defined. **Table 6.4** compiles the information included herein regarding the effluent disposal solution for each facility. To meet the future needs of the Town, each facility will plan to incorporate effluent reuse and/or recharge. Recharge and discharge locations for each facility are depicted on **Figures 20** and **21**, respectively.

TABLE 6.4
FUTURE FACILITIES EFFLUENT SOLUTIONS

Facility	Facility Status	Planned Phase 1 Capacity (MGD)	Ultimate Capacity (MGD)	Reuse	Recharge	AZPDES Discharge
Gila 85 WRF	Future	1.2	9.1	Irrigation	Recharge basin	Arlington Canal, Gila or Hassayampa River (Emergency)
Gila Hassayampa WRF	Future	1.2	7.8	Irrigation	Recharge basin	Arlington Canal, Gila or Hassayampa River (Emergency)
Gila Rainbow WRF	Future	1.2	13.2	Irrigation	Recharge basin	Gila Bend Canal, Rainbow Wash or Gila River (Emergency)
Gila Southwest WRF	Future	1.2	7.5	Irrigation	Recharge basin	Gila Bend Canal, Gila River (Emergency)
Hassayampa North WRF	Future	1.2	9.4	Irrigation	Recharge basin	Hassayampa River or unnamed tributary wash (Emergency)
Sun Valley WRF	Future	1.2	13.2	Irrigation	Recharge basin	Hassayampa River or White Tanks Wash (Emergency)
Waterman Wash WRF	Future	1.2	2.2	Irrigation	Recharge basin	Waterman Wash (Emergency)

Note:
1. For the 208 status, "Future" indicates the facility is being proposed in this report.
2. The AZPDES discharges listed are currently not in place and permits have not yet been obtained.

6.9.1 Gila 85 WRF

The developments within the Gila 85 service area may either directly or indirectly reuse effluent from the WRF that has been treated to A+ quality. Direct reuse may be through a constructed reuse network used to irrigate landscape areas, open space tracts, community parks, golf courses, lakes or other turf managed facilities. Indirect reuse may utilize the aquifer as the primary reuse network. The reuse infrastructure may employ wells to extract the irrigation water and construct localized pipe networks and storage systems, as required.

Due to the high groundwater present in the area of the Gila 85 WRF, recharge at the facility is not recommended. The Town is currently evaluating other alternatives and locations for the recharge of effluent from this facility.

Effluent in excess of what can be reused (or may be ultimately recharged) will be discharged in the Arlington Canal, Hassayampa River or Gila River. The discharge will be permitted under the AZPDES program.

6.9.2 Gila Hassayampa WRF

The developments within the Gila Hassayampa service area may either directly or indirectly reuse effluent from the WRF that has been treated to A+ quality. Direct reuse may be through a constructed reuse network used to irrigate landscape areas, open space tracts, community parks, golf courses, lakes or other turf managed facilities. Indirect reuse may utilize the aquifer as the primary reuse network.

Due to the high groundwater present in the area of the Gila Hassayampa WRF, recharge at the facility is not recommended. The Town is currently evaluating other alternatives and locations for the recharge of effluent from this facility.

Effluent in excess of what can be reused (or may be ultimately recharged) will be discharged in the Arlington Canal, Hassayampa River or Gila River. The discharge will be permitted under the AZPDES program.

6.9.3 Gila Rainbow WRF

The developments within the Gila Rainbow service area will either directly or indirectly reuse effluent from the WRF that has been treated to A+ quality. As above, direct reuse may be through a constructed reuse network used to irrigate landscape areas, open space tracts, community parks, golf courses, lakes or other turf managed facilities. Indirect reuse may utilize the aquifer as the primary reuse network.

The Town intends to make beneficial use of the effluent from the Gila Rainbow WRF which will include recharge and/or reuse. The configuration of recharge and/or reuse facilities will be determined at a later date when land uses for the area are more defined, and will be in accordance with the Town of Buckeye's Reuse Master Plan.

Effluent in excess of what can be reused will be discharged in the Gila River, Gila Bend Canal or Rainbow Wash. The discharge will be permitted under the AZPDES program.

6.9.4 Gila Southwest WRF

The developments within the Gila Southwest service area may either directly or indirectly reuse effluent from the WRF that has been treated to A+ quality.

The Town intends to make beneficial use of the effluent from the Gila Rainbow WRF which will include recharge and/or reuse. The configuration of recharge and/or reuse facilities will be determined at a later date when land uses for the area are more defined, and will be in accordance with the Town of Buckeye's Reuse Master Plan.

Effluent in excess of what can be reused or recharged will be discharged in the Gila River or Gila Bend Canal. The discharge will be permitted under the AZPDES program.

6.9.5 Hassayampa North WRF

The developments within the Hassayampa North service area may either directly or indirectly reuse effluent from the WRF that has been treated to A+ quality. Direct reuse may be through a constructed reuse network used for the irrigation of landscape areas, open space tracts, community parks, golf courses, lakes or other turf managed facilities. Indirect reuse may utilize the aquifer as the primary reuse network.

The facility will recharge the effluent not able to be reused within constructed USFs. Effluent in excess of what can be reused or recharged may be discharged in the Hassayampa River or an unnamed wash directly tributary to the Hassayampa River. The discharge will only occur during wet weather or emergencies and will be permitted under the AZPDES program.

6.9.6 Sun Valley WRF

The developments within the Sun Valley service area may either directly or indirectly reuse effluent from the WRF that has been treated to A+ quality. Direct reuse may be through a constructed reuse network used for the irrigation of landscape areas, open space tracts, community parks,

golf courses, lakes or other turf managed facilities. Indirect reuse may utilize the aquifer as the primary reuse network.

The facility will recharge the effluent not able to be reused within constructed USFs. Effluent in excess of what can be reused or recharged may be discharged in the Hassayampa River or White Tanks Wash. The discharge will only occur during wet weather or emergencies and will be permitted under the AZPDES program.

6.9.7 Waterman Wash WRF

The developments within the Waterman Wash service area may either directly or indirectly reuse effluent from the WRF that has been treated to A+ quality. Direct reuse may be through a constructed reuse network used to irrigate landscape areas, open space tracts, community parks, golf courses, lakes or other turf managed facilities. Indirect reuse may utilize the aquifer as the primary reuse network.

The facility will recharge the effluent not able to be reused within constructed USFs. Effluent in excess of what can be reused or recharged may be discharged to Waterman Wash. The discharge will only occur during wet weather or emergencies and will be permitted under the AZPDES program.

6.10 Vision for the Future

Direct reuse of reclaimed water relieves stress on the groundwater supplies by supplementing water available for non-potable uses and reducing the water drawn from the aquifer. Application of reclaimed water also provides a source of indirect recharge. Direct recharge, however, is also necessary to maintain an assured water supply within the Town of Buckeye (Brown and Caldwell 2006). To efficiently utilize this critical water resource within the Town of Buckeye and effectively plan for the future, several decisions are required.

6.10.1 Reuse

Determining the design of an effective reuse system is interrelated to the Town wastewater system. The Town of Buckeye will need to establish their reuse customer base such as:

- What potential uses are within the Town for direct reuse?
- Who is or could be a reuse customer?
- Where are these reuse customers located?

In addition, the Town of Buckeye will need to determine the type of system they will construct or require developments to construct to meet the needs of their identified customers. These systems can be:

- High pressure pipe network to deliver reclaimed water to users on a grid.
- Low pressure pipe network to deliver reclaimed water on a grid to a water storage reservoir (tank or lake). Pressurized water delivery systems would then draw from the reservoir.
- Open channel type conveyance system (common practice for agricultural irrigation delivery systems).
- Strictly recharge the reclaimed water for natural aquifer conveyance to reuse customers. Shallow irrigation wells would be installed proximate to the reuse demand.

For the system design, the Town will also need to consider: water quality to be delivered, disinfection, residual usage, system operation and maintenance, and design constraints.

6.10.2 Recharge

Because a number of the existing and planned wastewater treatment facilities are not well situated to recharge the effluent produced in close proximity to the wastewater treatment facility, the Town of Buckeye needs to establish where recharge will be most beneficial. Locations of recharge will most preferably be near sources of effluent generation.

The Town of Buckeye will need to determine the types of systems to be constructed to meet the needs of the selected reuse and recharge systems, and to augment future groundwater supplies. Available options for recharge systems include:

- Recharge basins
- Recharge wells
  - Vadose zone wells
  - Aquifer storage and recovery (ASR) wells
- Linear recharge

To maximize water credits through ADWR, constructed facilities such as wells or basins are required. On a smaller scale, recharge basins are more cost effective. However, as the size of the WRF grows, the amount of land required for basins increases and well facilities become more cost effective.

Vadose zone wells have relatively simple design and construction; however offer a much shorter lifespan before needing rehabilitation compared to ASR wells. ASR wells inject water into the aquifer and can be designed to provide the dual benefit of recharging and withdrawing water from an aquifer.

ADWR also has a policy for multiple benefit USFs. This type of facility provides recreational amenities and operates as a recharge basin. To

obtain credits and qualify as a constructed facility, the ability to perform maintenance, such as dry and wet cycling and basin scour, must be available.

6.10.3 Future Needs

As previously discussed, Town-wide planning must be undertaken to determine where reuse and recharge systems can provide the most benefit to the Town. Recharge should be at locations that help maintain the 100-year assured water supply for the Town of Buckeye. The following items are described in detail in the LHSB Model (Brown and Caldwell 2006) and impact the ideal locations for groundwater recharge:

- The aquifer in the LHSB is hydraulically connected to the other local subbasins such as:
  - The Upper Hassayampa Subbasin (UHSB) – Located to the north with flow being constricted by the Narrows between the Wickenburg and Vulture Mountains. The LHSB receives flow from the UHSB.
  - The West SRV Subbasin – Located to the west with flow being impeded by the White Tank Mountains
  - The Gila Bend Basin – Located to the south with flow being constricted by the Buckeye Hills and Gila Bend Mountains.
- Groundwater flow within the LHSB is traditionally north to south but more specifically:
  - Groundwater flows from the LHSB to the West SRV Subbasin on the north side of the White Tank Mountains.
  - Groundwater flows from the West SRV Subbasin to the LHSB on the south side of the White Tank Mountains.
  - Groundwater flows from the LHSB to the Gila Bend Basin at the Gillespie Dam.
- Groundwater sinks (cones of depression) located at:
  - Confluence of Centennial and Winters Wash, southeast of Palo Verde Hills (west of Arlington).
  - Northeast of Palo Verde Hills (east of Tonopah).
  - East of the White Tank Mountains.
- Waterlogged Gila River region
- The Neck between the White Tank and Belmont Mountains constricts flow from the northern and southern ends of the LHSB.
- Differences of the geology within the LHSB cause differences in the rates of groundwater flow.
- Differences of groundwater quality within each subbasin. Particularly between the West SRV Subbasin and the LHSB where it is generally known that the LHSB has better water quality.

In review of the groundwater flow simulation results in the Hassayampa Model (Brown and Caldwell 2006), the traditional groundwater flow from north to south may be reversed with the increasing development west of the White Tank Mountains. The groundwater from the south half of the LHSB may begin to flow north towards a cone of depression along about 13 miles of the Sun Valley Parkway between I-10 and where the highway turns east near the Bell Road alignment. This region is referred to as the "Neck" in the Hassayampa Model (Brown and Caldwell 2006). This cone of depression is due to the constriction of the aquifer between the White Tanks and Belmont Mountains.

To offset the demand along the Neck and minimize the groundwater subsidence along this portion of the aquifer, recharge is required. Modeling simulations show that without any recharge, a significant portion of the Neck area along the aquifer could run critically dry. To prevent this phenomenon, a regional recharge solution should be established. The Hassayampa Model (Brown and Caldwell 2006) suggests that to provide relief to the predicted simulations, regional recharge would need to be to the north of the Neck region to allow the recharging water to percolate into the usable portion of the aquifer.

A groundwater recharge project may be envisioned as a riparian style restoration of the Hassayampa River. The riparian preserve would be designed so that it could be permitted as a multiple benefit, constructed USF by the Town.

This preserve would serve several purposes such as:

- Provide recharge alternatives to facilities within the waterlogged region.
- Provide recharge credits to the Town of Buckeye.
- Reduce groundwater overdraft.
- Recharge significant amounts of water into the northern zone of the planning area that would benefit all three planning area zones.
- Provide a significant recreational benefit to the Town.
- Provide significant habitat for wildlife and plants.
- Provide a significant educational benefit.
- Provide a high profile project for marketing of the Town.

The multiple benefit facility may also have several avenues for funding. The project would require a significant reclaimed water pumping system to move water from facilities along the waterlogged region to recharge in the riparian preserve.

7.0 REGULATIONS

The construction and/or expansion of the existing, planned and future facilities will require permits from ADEQ, ADWR, Maricopa County Air Quality Department (MCAQD), MCESD and the Town of Buckeye. A partial listing of permits that may be required for each facility and the agency regulating the permits and approvals is shown in **Table 7.1**.

TABLE 7.1
ANTICIPATED PERMIT REQUIREMENTS

Permit Requirement	Regulatory Agency
Approval to Construct	MCESD
Approval of Construction	MCESD
Aquifer Protection Permit	ADEQ
USF and WS Permits	ADWR/ADEQ
Reclaimed Water Reuse Permit	ADEQ
AZPDES Permit	ADEQ
Air Quality Permit	MCAQD
Hazardous Materials Management Plan	Town of Buckeye
Grading and Drainage Permit	Town of Buckeye
Architectural Approval	Town of Buckeye
Building Permit	Town of Buckeye
Certificate of Occupancy	Town of Buckeye

Storm water discharges during construction will be managed in accordance with the Best Management Practices as outlined in a Storm Water Pollution Prevention Plan (SWPPP) under a construction AZPDES permit. Following construction, site storm water discharges will also be managed under AZPDES permits and SWPPPs, as appropriate. Where available, specific details of storm water management for individual facilities are presented in Appendices E through V.

The Town or their designee will be responsible for obtaining the applicable permits. **Table 7.2** presents the identified Town designees for the existing, planned and future municipal facilities. While the specific details of the existing land ownership for facility sites are not listed in the text of this 208 plan amendment, Table 7.2 also indicates the responsible party or land owner for the existing and planned facility sites. Specific sites have not been identified for the future facilities. Ultimately, the Town will be the owner of the facility properties.

TABLE 7.2 TOWN DESIGNEE/RESPONSIBLE PARTY FOR FACILITY PERMITS	
Facility	Town Designee/ Responsible Party
Existing Facilities	
ASPC-Lewis WWTP	Arizona Department of Administration Arizona Department of Corrections
Central Buckeye WWTP	Town of Buckeye
Festival Ranch WRF	Pulte Home Corporation
Sundance WWTP	Town of Buckeye BLMI
Tartesso West WRF	Stardust Development Corporation
Planned Facilities	
Anthem at Sun Valley South WRF	Pulte Home Corporation
Douglas Ranch South WRF	El Dorado Holdings, Inc.
Palo Verde Road WWTP	Westwind/Silver Rock Developments
Tartesso East WRF	Stardust Companies
Town of Buckeye WRF at Cipriani	Cipriani L.L.C.
Trillium West WRF	El Dorado Holdings, Inc.
Future Facilities	
Gila 85 WRF	Town of Buckeye or Designated Agent
Gila Hassayampa WRF	Town of Buckeye or Designated Agent
Gila Rainbow WRF	Town of Buckeye or Designated Agent
Gila Southwest WRF	Town of Buckeye or Designated Agent
Hassayampa North WRF	Town of Buckeye or Designated Agent
Sun Valley WRF	Town of Buckeye or Designated Agent
Waterman Wash WRF	Town of Buckeye or Designated Agent

8.0 CONSTRUCTION

The construction schedule for each facility is dependant on several factors, including the rate at which developments are constructed and occupied, as well as the actual wastewater generation rates of the specific developments associated with each facility. **Table C.5** in **Appendix C** shows the overall anticipated construction schedule for each phase of the existing, planned and future facilities broken down into design, construction and operational timeframes. The anticipated schedule is a projection and is subject to change.

Construction of the facilities is not anticipated to have the potential to contribute significant pollutants to the environment. Fugitive dust, construction related solid waste, inert materials and residual construction materials (such as paint, adhesives and fuels) will be managed appropriately in accordance with a temporary construction general AZPDES permit and Best Management Practices, as outlined in a SWPPP. Wastes generated during construction will be properly managed and disposed in permitted facilities, as needed.

The design and construction of the existing, planned or future facilities will be conducted in accordance with applicable rules and regulations, and coordinated through the Town of Buckeye. In addition, upon completion of the construction, facility ownership, operation and maintenance will be turned over to the Town in accordance with applicable Development Agreements or other contractual arrangements with the Town of Buckeye, except the Verrado WRF, which is privately owned and operated by the Arizona American Water Company.

9.0 FINANCING

The financing model employed by the Town to date for construction of wastewater facilities relies on developer(s) to pay for the design and construction of the facility. Each developer (or group of developers) ultimately would finance their pro rata share of the cost of the facility that serves their area. Future expansions of facilities also are anticipated to be financed by developers in conjunction with the Town of Buckeye. Additional details related to financing of individual facilities are be provided in Appendices E through V.

Developers may establish a community facilities districts (CFD) with the Town as a financing mechanism for the design, construction or expansion of the facilities. The CFDs would issue general obligation bonds or special assessment bonds prior to construction of the facility. Depending on the assessed vales of the benefited properties and market conditions for tax-exempt bonds, the CFDs may issue bonds prior to construction of future phases of the facilities. There are currently nine established CFDs within the Town of Buckeye, per the Town of Buckeye, Arizona Adopted Budget Fiscal Year 2006-07, including:

- Elianto ($20.2M)
- Festival Ranch ($3.9M)
- Sundance ($27.4M)
- Tartesso ($3.1M)
- Trillium ($5.0M)
- Verrado District 1 ($24.1M)
- Verrado Western Overlay ($13.9M)
- Watson Road ($48.4M)
- Westpark ($7.3M)

As each phase of a facility is completed, tested and accepted by the Town, ownership of the facility will be transferred to the Town, and ultimately, the Town will be responsible for operating and maintaining the facilities within the MPA (except Verrado). The Town may operate and maintain the facility with its own qualified personnel or outsource the work to a qualified and licensed operator. User fees will be collected by the Town to fund the operation and maintenance of the facilities.

Alternatively, the Town of Buckeye may elect to construct certain future facilities using municipal bonds.

10.0 IMPLEMENTATION

As with the construction schedule, the implementation schedule for each facility also varies greatly. Subsequent expansions of a facility will be dependant upon the rate of population increase within the proposed service area and the resultant wastewater flow rates. Generally, the design of each additional phase of a facility will begin when 70% of the facility's capacity has been reached based on maximum month flows, and construction will begin when maximum month flows are at 80% of the facility's capacity. **Table 10.1** presents a summary of the current status of each facility, the anticipated ultimate capacity and projected build out date.

The existing, planned and future facilities are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas. The Verrado WRF is owned and operated by the Arizona American Water Company and has a CC&N from the ACC. The Verrado WRF is planned as the only privately owned and operated facility within the Town of Buckeye MPA. As shown on **Figure 3**, a small portion of land in northeastern Buckeye is planning to connect to the Litchfield Park Service Company (LPSCo) wastewater collection and treatment system.

The effluent from the facilities will be used primarily for groundwater reuse and recharge. The high quality effluent will have very little organic content and will therefore be unlikely to produce odors or encourage vectors. The proposed service areas and facility locations are entirely within the Town of Buckeye MPA. Letters of no objection have been obtained from Maricopa County, the Town of Gila Bend, the City of Glendale, City of Goodyear, and the Town of Wickenburg, as their respective MPAs are within three miles of the Buckeye MPA. Copies of the letters of no objection from these communities are included in **Appendix A**. The City of Surprise also is within three miles of the Buckeye MPA, and while there has been ongoing communication, the City of Surprise has declined to provide comments to this document at this time.

The developers associated with some projects may manage the construction and/or expansion(s) of the facilities; however each of the facilities will be a municipal facility with the Town of Buckeye having ownership and responsibility for operation and maintenance, with the exception of the Verrado WRF that is owned and operated by Arizona American Water Company. Also, until such time as the ASPC – Lewis WWTP is decommissioned, the Arizona Department of Corrections will continue to own, manage and operate this facility. The decommissioning of this facility would not be anticipated until such time as the Gila Rainbow WRF was constructed and local sewer service lines were available.

TABLE 10.1 ESTIMATED IMPLEMENTATION SCHEDULE						
Facility	Status	Constructed or First Phase Capacity (MGD)	Year	Total Facility Capacity following Next Planned Expansion (MGD)	Year	Ultimate Capacity (MGD)
Existing Facilities						
ASPC Lewis WWTP	Operational	0.75	1998	N/A	N/A	N/A
Central Buckeye WWTP	Operational	4.0	2007	7.0	2009	45.8
Festival Ranch WRF	Operational	1.0	2005	2.0	2010	17.3
Sundance WWTP	Operational	2.4	2007	3.6	2014	13.9
Tartesso West WRF	Operational	1.2	2006	3.2	2011	24.2
Verrado WRF	Operational	0.45	2003	1.35	2008	3.6
Planned Facilities						
Anthem at Sun Valley South WRF	Planned	1.1	2008	2.25	2016	4.5
Douglas Ranch WRF	Planned	1.0	2009	3.0	2013	31.9
Palo Verde Road WRF	Planned	0.5	2008	1.0	2009	11.7
Tartesso East WRF	Planned	1.2	2010	2.4	2018	10.7
Town of Buckeye at Cipriani WRF	Planned	1.2	2008	2.4	2014	12.0
Trillium West WWTF	Planned	0.32	2008	0.93	2012	3.2
Future Facilities						
Gila 85 WRF	Conceptual	1.2	2011	2.4	2020	9.1
Gila Hassayampa WRF	Conceptual	1.2	2011	2.4	2021	7.8
Gila Rainbow WRF	Conceptual	1.2	2009	2.4	2017	13.2
Gila Southwest WRF	Conceptual	1.2	2015	2.4	2025	7.5
Hassayampa North WRF	Conceptual	1.2	2030	2.4	2037	9.4
Sun Valley WRF	Conceptual	1.2	2009	2.4	2017	13.2
Waterman Wash WRF	Conceptual	1.2	2015	2.2	2040	2.2

11.0 PUBLIC PARTICIPATION

MAG and the Town of Buckeye will follow the applicable procedures for public notification in processing this 208 plan amendment, including:

1. Submittal of a mailing list used to notify the public of the hearing on this 208 plan amendment.

2. Thirty-day public notice of the availability of the documents for review prior to the public hearing.

3. Publication of a public notice posting the date, time, subject and location of the public hearing on this 208 plan amendment at least 45 days prior to the public hearing.

4. Submittal of an affidavit of the publication of the public notice.

5. Submittal of a responsiveness summary for the public hearing.

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APPENDIX A

DOCUMENTATION

A1. Town of Buckeye Resolution No. 10-78

A2. Town of Buckeye Sponsorship Letter

A3. Town of Buckeye Financial Capability Assurance

A4. Maricopa County Letter of No Objection

A5. Town of Gila Bend Letter of No Objection

A6. City of Glendale Letter of No Objection

A7. City of Goodyear Letter of No Objection

A8. Town of Wickenburg Letter of No Objection

RESOLUTION NO. 10-78

RESOLUTION AGREEING TO PARTICIPATE IN THE MARICOPA COUNTY AREA WASTE TREATMENT MANAGEMENT SYSTEM.

WHEREAS, the Town of Buckeye is aware that provisions of the Federal Water Pollution Control Act of 1972, (Public Law 92-500) Section 208 require development of an Areawide Waste Treatment Management Plan and, further, require the State of Arizona Water Quality Control Council, the Governor of Arizona and the U.S. Environmental Protection Agency, Region IX administrator to designate official management agency(s) to carry out appropriate sections of the law, and;

WHEREAS, the Maricopa Association of Governments (MAG) has been designated by the Governor of Arizona and the U.S. Environmental Protection Agency Region IX Administrator as the agency responsible for preparing the Area-wide Waste Treatment Management Plan in accordance with provisions of Section 208 of Public Law 92-500, and:

WHEREAS, the Regional Council of the Maricopa Association of Governments (MAG) has approved a Waste Treatment Management System Plan for the Maricopa County Area, and;

WHEREAS THE Maricopa Association of Governments (MAG) was formed by local governments of the Maricopa County Area to study area-wide problems and facilitate the development of solutions to joint and interrelated problems.

NOW, THEREFORE BE IT RESOLVED THAT THE MAYOR AND TOWN COUNCIL OF THE TOWN OF BUCKEYE hereby:

1. Request the Maricopa Association of Governments to undertake the following duties and responsibilities for the Maricopa County Area:

   a. Adopt and assure implementation of the Areawide Waste Treatment Management Plan.

b. Assure the effective management of waste treatment works and related facilities in conformance with the plan.

c. Assure in implementation of an Areawide Waste Treatment Management Plan that each participating community pay its proportionate share of treatment costs.

d. Adopt construction priorities for Waste Treatment facilities for the region and make recommendations to the State of Arizona.

e. Adopt an annual update of the Waste Treatment Management Plan.

f. Arbitrate disagreements among local governments or private agencies for non-compliance with the adopted Waste Treatment Management Plan.

g. Make recommendations to the State of Arizona and U.S. EPA on water quality and reuse standards and regulations.

h. Authorize Subregional Operating Groups, designate members of each group and approve selection of "Lead Agency."

i. Approve industrial waste standards for the Region.

j. Coordinate public information programs on waste treatment management.

k. Coordinate communication between local governments and private agencies with U.S. EPA and State of Arizona agencies regarding Waste Treatment Management.

2. Request the MAG Regional Council to designate the Town of Buckeye as the single member of the Sub-Regional Operating Group.

3. Agree to carry out the following duties and responsibilities as the Sub-Regional Operating Group.

a. Identify projects for inclusion in the Areawide Waste Treatment Management Plan.

b. Operate the treatment plants and pump stations to insure compliance with NPDES (National Pollution Discharge Eliminations System) permits and water quality criteria.

c. Maintain plants and pump stations in operable condition and good appearance.

d. Insure adequately trained and certified staff for plant operation.

e. Conduct monitoring program for treatment facilities for compliance with permits and reuse needs.

f. Conduct monitoring program for community and industrial discharges to the system.

g. Review monitoring data to insure compliance with applicable EPA and State of Arizona standards.

h. Coordinate with U.S. Environmental Protection Agency and State Department of Health Services and Maricopa County Health Department on monitoring and enforcement provisions.

i. Work with Maricopa Association of Governments members and staff to insure uniformity in integration of the various wastewater management functions.

j. Refuse to receive wastes from agencies, or subdivisions not in compliance with the adopted Areawide Waste Treatment Management Plan.

Resolution No. 10-78

k. Assure that each participating community pay its proportionate share of treatment costs.

Approved this 19th day of December 1978.

John B. Hawley
Mayor

ATTEST:

Steven L. Thompson
Town Manager / Clerk

Town of Buckeye

September 13, 2007

Ms. Julie Hoffman
Maricopa Association of Governments
302 North 1st Avenue, Suite 300
Phoenix, Arizona 85003

Subject: Water Quality Management Plan Comprehensive Amendment for the Town of Buckeye

Dear Ms. Hoffman:

The Town of Buckeye is submitting a MAG 208 Plan Amendment for Town of Buckeye municipal planning area (MPA). In accordance with the MAG 208 Water Quality Management Plan, we are officially requesting that you initiate the amendment process to consider incorporating the changes as outlined in the MAG 208 Water Quality Management Plan Comprehensive Amendment for the Town of Buckeye. This amendment addresses the existing, planned and future wastewater treatment facilities within the Town of Buckeye MPA and identifies wastewater solutions for the majority of the developable land within the Town of Buckeye. The following is a summary of the wastewater solutions proposed:

Facility Name	**Ultimate Capacity (MGD)[4]**
Existing Facilities[1]	
ASPC Lewis Complex WWTP[5]	0.0
Central Buckeye WWTP	45.8
Festival Ranch WRF	17.3
Sundance WWTP	13.9
Tartesso West WRF	24.2
Verrado WRF	3.6
Planned Facilities[2]	
Anthem at Sun Valley South WRF	4.5
Douglas Ranch WRF	31.9
Palo Verde Road WWTP	11.7
Tartesso East WRF	10.7
Town of Buckeye WRF at Cipriani	12.0
Trillium West WWTF	3.2
Future Facilities[3]	
Gila 85 WRF	9.1
Gila Hassayampa WRF	7.8
Gila Rainbow WRF	13.2
Gila Southwest WRF	7.5
Hassayampa North WRF	9.4
Sun Valley WRF	13.2
Waterman Wash WRF	2.2

Notes:
1. Existing facilities are facilities that are consistent with the MAG 208 Plan and are constructed and receiving wastewater flows.
2. Planned facilities are those facilities that, although not constructed, are foreseen in the near future and have either an approved 208 Plan Amendment or a draft 208 Plan Amendment that has been presented to the Town for sponsorship, but has not been presented to nor approved by MAG.
3. Future facilities are conceptual facilities that have not previously been identified in a 208 Plan Amendment.
4. Ultimate capacity is the ultimate build out capacity as defined in this 208 Plan Amendment.
5. The ASPC-Lewis WWTP is assumed to be phased out in the future with flows from the facility being treated at the Gila Rainbow WRF.

The 18 wastewater treatment facilities within the Town of Buckeye planning area include five of the six existing facilities, six facilities that have previously been identified but not yet constructed and seven additional facilities, one of which will ultimately replace the need for the existing treatment plant at the Arizona State Prison Complex (ASPC) – Lewis facility. The Town of Buckeye MPA may generate as much as 241.2 MGD of wastewater at build out.

The service areas for these facilities are entirely within the Town of Buckeye MPA and it is the intention of the Town that all of these facilities (with the exception of the privately owned Verrado WRF) will be municipal facilities that will ultimately be owned and operated by the Town of Buckeye. The Town plans to maximize opportunities for the reuse and recharge of treated effluent to both reduce the burden on the aquifer and sustain water production capabilities.

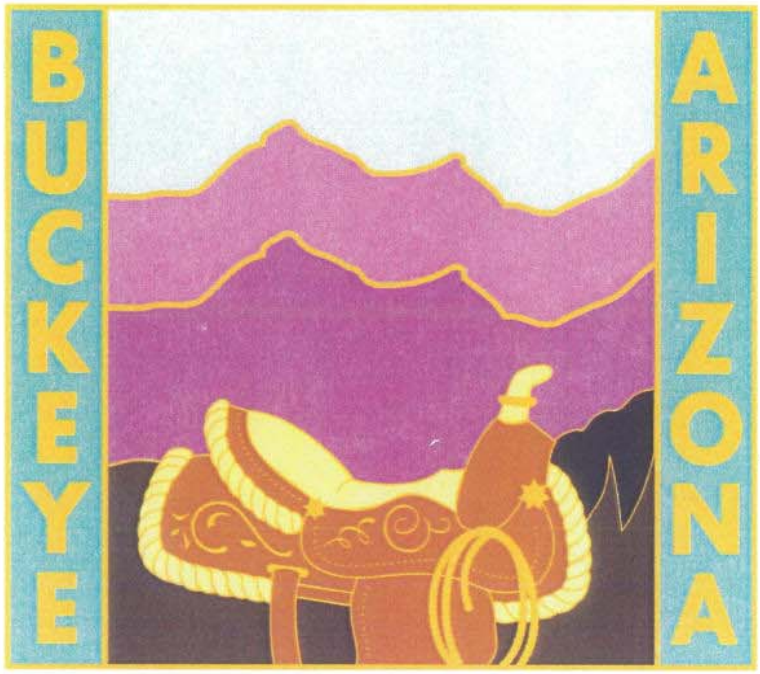
We look forward to working with you and appreciate your assistance to facilitate the MAG approval process for this MAG 208 Plan Amendment. Assuming that the attached, revised document meets your approval, we look forward to beginning the public notice and scheduling a presentation to the Water Quality Advisory Committee as soon as possible.

Sincerely,
Town of Buckeye

David W. Wilcox
Town Manager

cc: Mayor Bobbie Bryant, Town of Buckeye
Vice Mayor Levi Beard, Town of Buckeye
Councilmember Dave Rioux, Town of Buckeye
Councilmember David Hardesty, Town of Buckeye
Councilmember Elaine May, Town of Buckeye
Councilmember Dr. Robert Doster, Town of Buckeye
Councilmember Robert Garza, Town of Buckeye
Assistant Town Manager Shane Dille, Town of Buckeye
Public Works Director Scott Lowe, Town of Buckeye
Engineering Manager Steven Borst, Town of Buckeye
Environmental/Regulatory Program Coordinator Lucky Roberts, Town of Buckeye
Sheila Logan, CMX

TOWN OF BUCKEYE, ARIZONA



Comprehensive Annual Financial Report

For The Fiscal Year Ended June 30, 2006

TOWN OF BUCKEYE, ARIZONA

COMPREHENSIVE ANNUAL FINANCIAL REPORT

FOR THE

FISCAL YEAR ENDED JUNE 30, 2006

The full version of this report is available at www.buckeyeaz.gov.

Prepared by
Finance Department

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TOWN OF BUCKEYE, ARIZONA
COMPREHENSIVE ANNUAL FINANCIAL REPORT
FISCAL YEAR ENDED JUNE 30, 2006

INTRODUCTORY SECTION

FINANCIAL SECTION

Basic Financial Statements

Combining and Individual Fund Statements and Schedules

TOWN OF BUCKEYE, ARIZONA
COMPREHENSIVE ANNUAL FINANCIAL REPORT
FISCAL YEAR ENDED JUNE 30, 2006

STATISTICAL SECTION

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Cronstrom
Osuch & Company
Certified Public Accountants

8706 E. Manzanita Drive, Suite 100
Scottsdale, Arizona 85258
(480) 348-1102 • Fax (480) 348-1104

INDEPENDENT AUDITOR'S REPORT

The Honorable Mayor and the Town Council of the
Town of Buckeye, Arizona

We have audited the accompanying financial statements of the governmental activities, the business-type activities, each major fund, and the aggregate remaining fund information of the Town of Buckeye, Arizona (Town), as of and for the year ended June 30, 2006, which collectively comprise the Town's basic financial statements as listed in the table of contents. These financial statements are the responsibility of the Town's management. Our responsibility is to express opinions on these financial statements based on our audit.

We conducted our audit in accordance with auditing standards generally accepted in the United States of America and the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the basic financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the basic financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall basic financial statement presentation. We believe that our audit provides a reasonable basis for our opinions.

In our opinion, the financial statements referred to above present fairly, in all material respects, the respective financial position of the governmental activities, the business-type activities, each major fund, and the aggregate remaining fund information of the Town of Buckeye, Arizona, as of June 30, 2006, and the respective changes in financial position and cash flows, where applicable, thereof and the respective budgetary comparison for the General Fund for the year then ended in conformity with accounting principles generally accepted in the United States of America.

The management's discussion and analysis on pages 15 - 26 and the Public Safety Personnel Retirement System Schedule of Funding Progress on page 70 are not a required part of the basic financial statements but are supplementary information required by the Governmental Accounting Standards Board. We have applied certain limited procedures, which consisted principally of inquiries of management regarding the methods of measurement and presentation of the required supplementary information. However, we did not audit the information and express no opinion on it.

Our audit was conducted for the purpose of forming opinions on the financial statements that collectively comprise the Town's basic financial statements. The introductory section, combining and individual fund financial statements and schedules and statistical section are presented for purposes of additional analysis and are not a required part of the basic financial statements. The combining and individual fund financial statements and schedules have been subjected to the auditing procedures applied in the audit of the basic financial statements and, in our opinion, are fairly stated in all material respects in relation to the basic financial statements taken as a whole. The introductory and statistical sections have not been subjected to the auditing procedures applied in the audit of the basic financial statements and, accordingly, we express no opinion on them.

In accordance with *Government Auditing Standards*, we have also issued our report dated February 16, 2007 on our consideration of the Town's internal control over financial reporting and our tests of its compliance with certain provisions of laws, regulations, contracts and grant agreements and other matters. The purpose of that report is to describe the scope of our testing of internal control over financial reporting and compliance and the results of that testing, and not to provide an opinion on the internal control over financial reporting or on compliance. That report is an integral part of an audit performed in accordance with *Government Auditing Standards* and should be considered in assessing the results of our audit.

Cronstrom, Osuch & Company, P.C.

Cronstrom, Osuch & Company, P.C.

February 16, 2007

Management's Discussion and Analysis

As management of the Town of Buckeye, Arizona, we are pleased to provide an overview of our financial activities for the fiscal year ended June 30, 2006. The intended purpose of Management's Discussion and Analysis (MD&A) is to provide an introduction to the basic financial statements and notes, that provides an objective and easy to read analysis of our financial activities based on currently known facts, decisions, and conditions, by providing an easily readable summary of operating results and reasons for changes, which will help to determine if our financial position improved or deteriorated over the past year. This report addresses current operational activities, the sources, uses, and changes in resources, adherence to budget, service levels, limitations, significant economic factors, and the status of infrastructure and its impacts on our debt and operation. When referring to prior year data in this analysis we will be drawing upon information from last years' audited financial reports.

Financial Highlights

- The assets of the Town of Buckeye, Arizona exceeded its liabilities at the close of the most recent fiscal year by $155,953,168 (net assets). Of this amount $81,216,433 (unrestricted net assets) may be used to meet the government's ongoing obligations to citizens and creditors.
- As of the close of the current fiscal year, the Town of Buckeye, Arizona's governmental funds reported combined ending fund balances of $99,397,966, an increase of $59,853,828 in comparison with the prior year. This increase was mainly due to the Town issuing bonds and carrying forward a portion of the proceeds.
- At the end of the current fiscal year, unreserved fund balance for the General Fund was $19,867,167 or 66 percent of total general fund expenditures.
- General Fund revenues (on a budgetary basis) exceeded budgeted revenues by $17,226,814 for the fiscal year ending June 30, 2006. Additionally, budgetary basis expenditures exceeded the final budget by $1,243,565.
- General Fund revenues exceeded expenditures by $11,425,131; a positive variance of $15,983,249 from the original budget.
- The Town includes one type of separate legal entity in its report - Community Facilities Districts. Although legally separate, these "component units" are important because the Town is financially accountable for them. A description of these component units is available in Note 1 on page 43. Separate financial statements are not available for these entities.

Overview of the Financial Statements

The financial section of the Comprehensive Annual Financial Report (CAFR) for the Town of Buckeye, Arizona consists of this discussion and analysis, the basic financial statements and the required supplementary schedules presented after the basic financial statements. The basic financial statements include the government-wide financial statements, fund financial statements, including the budgetary statements for the General Fund, and notes to the basic financial statements.

Government-wide financial statements. The government-wide financial statements are designed to provide readers with a broad overview of the Town of Buckeye, Arizona's finances, in a manner similar to private-sector business.

The statement of net assets presents information on all of the Town of Buckeye, Arizona's assets and liabilities, with the difference between the two reported as net assets. Over time, increases or decreases in net assets may serve as useful indicators of whether the financial position of the Town of Buckeye, Arizona is improving or deteriorating.

The statement of activities presents information showing how the government's net assets changed during the most recent fiscal year. All changes in net assets are reported as soon as the underlying event giving rise to the change occurs, regardless of the timing of related cash flows. Thus, revenues and expenses are reported in this statement for some items that will only result in cash flows in future fiscal periods (e.g., uncollected taxes and earned but unused vacation leave).

Both of the government-wide financial statements distinguish functions of the Town of Buckeye, Arizona that are principally supported by taxes and intergovernmental revenues (governmental activities) from other functions that are intended to recover all or a significant portion of their costs through user fees and charges (business-type activities). The governmental activities of the Town of Buckeye, Arizona include general government, public safety, highways and streets, culture and recreation, community development, economic development, and health and welfare. The business-type activities include the Town's water and sewer operations.

The government-wide financial statements can be found on pages 28 - 29 of this report.

Fund financial statements. Also presented are the traditional fund financial statements for governmental funds. The fund financial statements now focus on major funds of the Town. A fund is a grouping of related accounts that is used to maintain control over resources that have been segregated for specific activities or objectives. The Town of Buckeye, Arizona, like other state and local governments, uses fund accounting to ensure and demonstrate compliance with finance-related legal requirements. All of the funds of the Town of Buckeye, Arizona can be divided into three categories: governmental funds, proprietary funds and fiduciary funds.

Governmental funds. Governmental funds are used to account for essentially the same functions reported as governmental activities in the government-wide financial statements. However, unlike the government-wide financial statements, governmental fund financial statements focus on near-term inflows and outflows of expendable resources, as well as balances of expendable resources available at the end of the fiscal year. Such information may be useful in evaluating a government's near-term financing requirements. Since the governmental fund financial statements focus on near-term expendable resources, while the governmental activities on the government-wide financial statements have a longer term focus, a reconciliation of the differences between the two is provided with the fund financial statements.

The basic governmental fund financial statements can be found on pages 30 - 35 of this report.

Proprietary funds. The Town of Buckeye, Arizona maintains one type of proprietary fund. *Enterprise funds* are used to report the same functions presented as *business-type activities* in the government-wide financial statements. The Town of Buckeye, Arizona uses enterprise funds to account for its water and sewer operations.

Proprietary funds provide the same type of information as the government-wide financial statements, only in more detail. The proprietary fund financial statements provide information for the Water and Sewer Funds of the Town of Buckeye, Arizona.

The basic proprietary fund financial statements can be found on pages 36 - 39 of this report.

Fiduciary funds. Fiduciary funds are used to account for resources held for the benefit of parties outside the government. Fiduciary funds are not reflected in the government-wide financial statement because the resources of those funds are not available to support the Town of Buckeye, Arizona's own programs. The accounting used for fiduciary funds is much like that used for proprietary funds.

The basic fiduciary fund financial statements can be found on pages 40 - 41 of this report.

Notes to the basic financial statements. The notes to the basic financial statements (pages 43 - 67) provide additional information that is essential to a full understanding of the data provided in the government-wide and fund financial statements and should be read with the financial statements.

Required supplementary information other than MD&A. Governments have an option of including the budgetary comparison statements for the general fund and major special revenue funds as either part of the fund financial statements within the basic financial statements, or as required supplementary information after the footnotes. The Town has chosen to present these budgetary statements as part of the basic financial statements. Additionally, governments are required to disclose certain information about employee pension funds. The Town has disclosed this information in Note 4.E. to the basic financial statements and required supplementary information on page 70.

Government-wide Financial Analysis

Net assets may serve over time as a useful indicator of a government's financial position. The following table reflects the condensed Statement of Net Assets of the Town for June 30, 2006 showing that assets exceeded liabilities by $155,953,168.

Town of Buckeye, Arizona
Condensed Statement of Net Assets
June 30, 2006 and 2005

	Governmental Activities		Business-type Activities		Total	
	2006	2005	2006	2005	2006	2005
ASSETS						
Current and other assets	$201,157,581	$ 74,828,870	$ 14,073,933	$ 6,327,786	$215,231,514	$ 81,156,656
Capital assets						
Non-depreciable	12,812,825	4,791,225	24,503,097	5,297,850	37,315,922	10,089,075
Depreciable (net)	57,930,950	48,451,602	22,671,610	20,623,312	80,602,560	69,074,914
Total assets	271,901,356	128,071,697	61,248,640	32,248,948	333,149,996	160,320,645
LIABILITIES						
Other liabilities	22,704,965	6,524,451	750,065	937,787	23,455,030	7,462,238
Non-current liabilities						
Due within one year	3,339,050	1,406,758	131,239	105,350	3,470,289	1,512,108
Due in more than one year	147,942,471	79,667,057	2,329,038	2,415,731	150,271,509	82,082,788
Total liabilities	173,986,486	87,598,266	3,210,342	3,458,868	177,196,828	91,057,134
NET ASSETS						
Invested in capital assets, net of related debt	525,156	(10,645,987)	44,788,086	23,451,396	45,313,242	12,805,409
Restricted	29,423,493	9,137,217	-	-	29,423,493	9,137,217
Unrestricted	67,966,221	41,982,201	13,250,212	5,338,684	81,216,433	47,320,885
Total net assets	$ 97,914,870	$ 40,473,431	$ 58,038,298	$ 28,790,080	$155,953,168	$ 69,263,511

The net assets of the Town are $155,953,168 in fiscal year 2006 for both governmental and business-type activities.

Net assets consists of three components. One portion of the Town of Buckeye, Arizona's net assets (29%) reflects its investment in capital assets (e.g., land, buildings, machinery and equipment), less any related debt used to acquire those assets that is still outstanding. The Town of Buckeye, Arizona uses these capital assets to provide services to citizens; consequently, these assets are not available for future spending. Although the Town of Buckeye, Arizona's investment in its capital assets is reported net of related debt, it should be noted that the resources needed to repay this debt must be provided from other sources, since the capital assets themselves cannot be used to liquidate these liabilities.

An additional portion of the Town of Buckeye, Arizona's net assets (19%) represents resources that are subject to external restrictions on how they may be used. The remaining balance of unrestricted net assets ($81,216,433) may be used to meet the government's ongoing obligations to citizens and creditors.

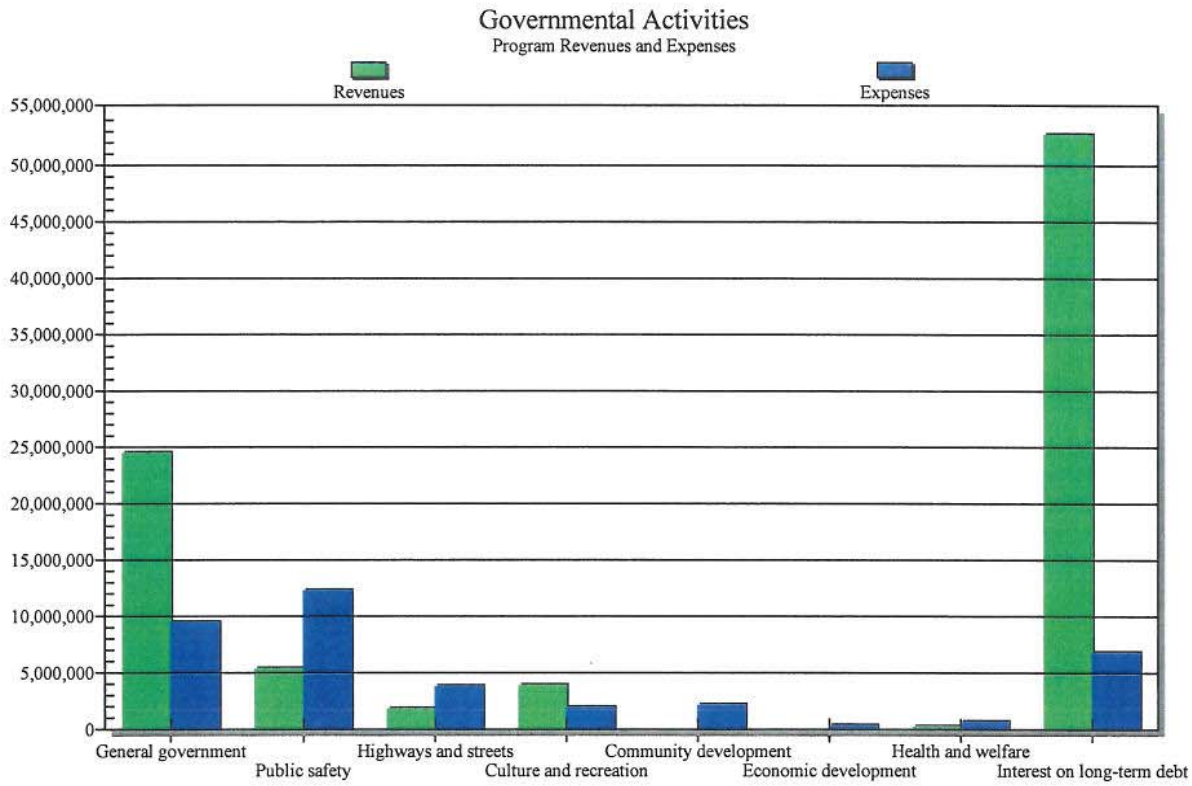
At the end of the current fiscal year, the Town of Buckeye, Arizona is able to report positive balances in all three categories of net assets for the government as a whole.

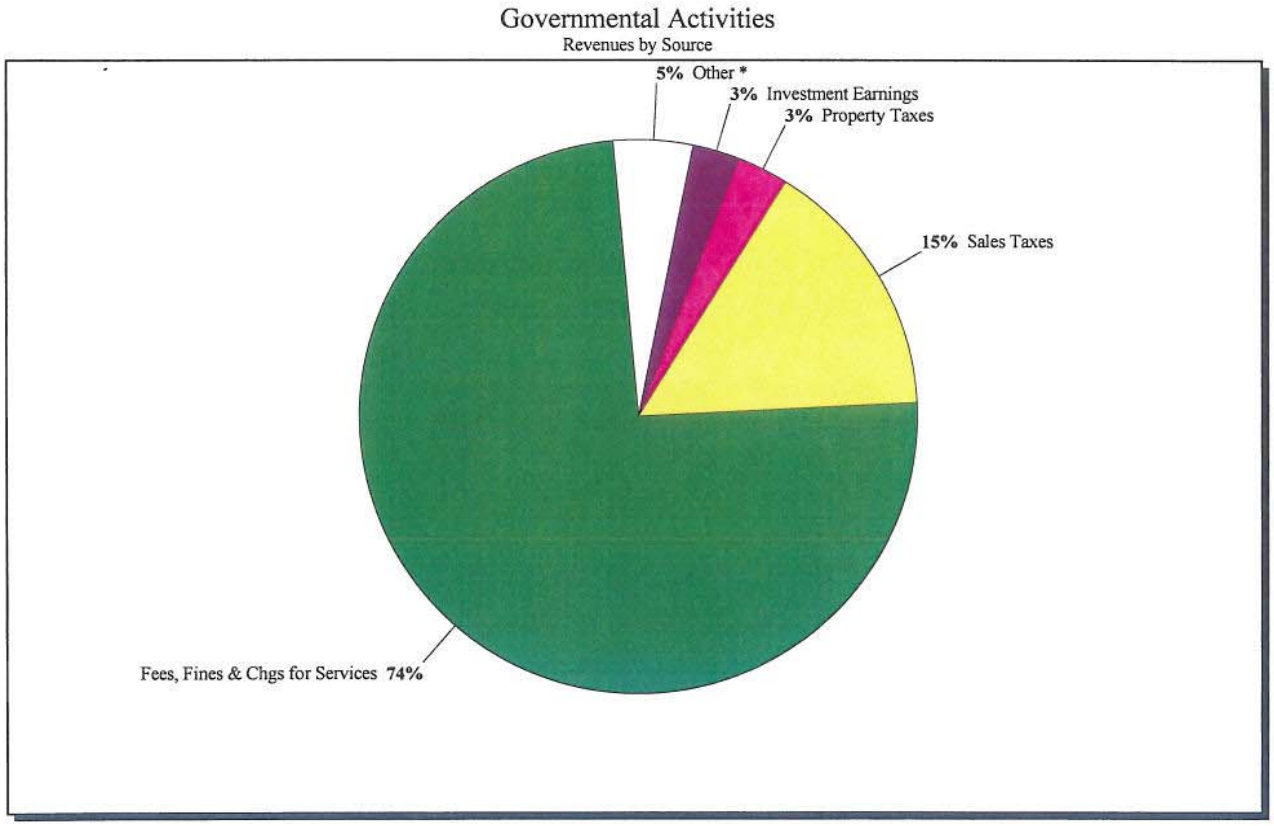
Town of Buckeye, Arizona
Changes in Net Assets
For the Fiscal Years Ended June 30, 2006 and 2005

	Governmental Activities		Business-type Activities		Total	
	2006	2005	2006	2005	2006	2005
Revenues						
Program revenues						
Fees, fines and charges for services	$ 86,441,294	$ 27,398,221	$ 15,188,148	$ 9,898,538	$ 101,629,442	$ 37,296,759
Operating grants and contributions	1,322,614	1,374,000	-	-	1,322,614	1,374,000
Capital grants and contributions	622,372	697,975	101,319	1,651,779	723,691	2,349,754
General revenues						
Sales taxes	17,786,048	8,443,984	-	-	17,786,048	8,443,984
Property taxes	3,487,934	1,981,418	-	-	3,487,934	1,981,418
Franchise taxes	508,746	316,422	-	-	508,746	316,422
State shared revenues	2,396,366	1,932,507	-	-	2,396,366	1,932,507
Grants and contributions not restricted	54,008	54,008	-	-	54,008	54,008
Investment earnings	3,175,954	533,612	107,280	14,899	3,283,234	548,511
Other	463,506	193,285	-	-	463,506	193,285
Total revenues	116,258,842	42,925,432	15,396,747	11,565,216	131,655,589	54,490,648
Expenses						
General government	9,444,119	7,470,451	-	-	9,444,119	7,470,451
Public safety	12,245,524	7,596,499	-	-	12,245,524	7,596,499
Highways and streets	3,788,433	2,783,879	-	-	3,788,433	2,783,879
Culture and recreation	1,905,488	1,125,571	-	-	1,905,488	1,125,571
Community development	2,122,344	1,295,799	-	-	2,122,344	1,295,799
Economic development	281,784	314,985	-	-	281,784	314,985
Health and welfare	633,260	501,760	-	-	633,260	501,760
Interest on long-term debt	6,757,025	3,821,751	-	-	6,757,025	3,821,751
Sewer	-	-	2,250,209	1,545,062	2,250,209	1,545,062
Water	-	-	3,902,628	1,871,838	3,902,628	1,871,838
Total expenses	37,177,977	24,910,695	6,152,837	3,416,900	43,330,814	28,327,595
Change in net assets before transfers	79,080,865	18,014,737	9,243,910	8,148,316	88,324,775	26,163,053
Transfers	(21,225,022)	(2,576,367)	21,225,022	2,576,367	-	-
Change in net assets	57,855,843	15,438,370	30,468,932	10,724,683	88,324,775	26,163,053
Net assets at beginning of year, as restated	40,059,027	25,035,061	27,569,366	18,065,397	67,628,393	43,100,458
Total net assets	$ 97,914,870	$ 40,473,431	$ 58,038,298	$ 28,790,080	$ 155,953,168	$ 69,263,511

Governmental activities. Governmental activities increased the City's net assets by $57,855,843. Key factors of this increase are as follows:

- Town's sales taxes increased by $9,342,064 or 110% during the year. This is due to the opening of new businesses within the Town.
- General Fund revenues continue to exceed budgeted revenues; this year by $17,226,814 or 42% due to significant growth within the Town.
- Property taxes revenues increased by $1,506,516 or 76%. This is a reflection of the significant growth in the housing area.
- Investment earnings increased $2,642,342, mainly due to the Town issuing bonds and carrying forward a portion of the proceeds.

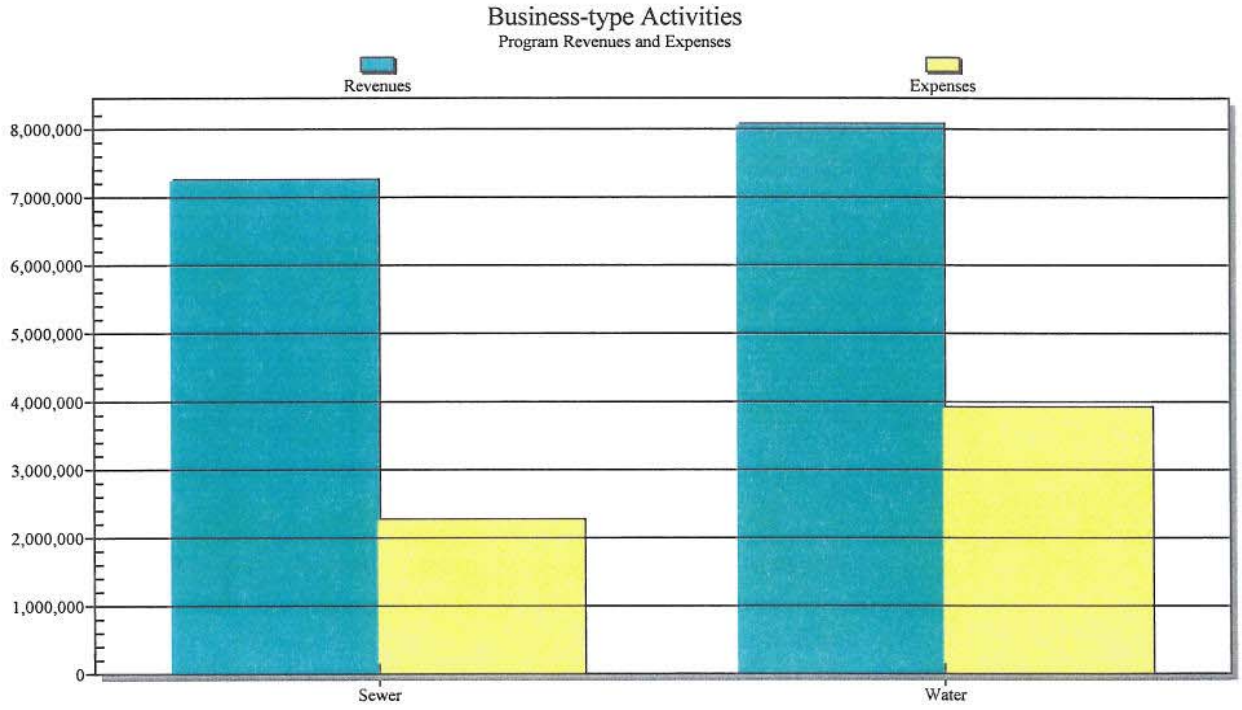


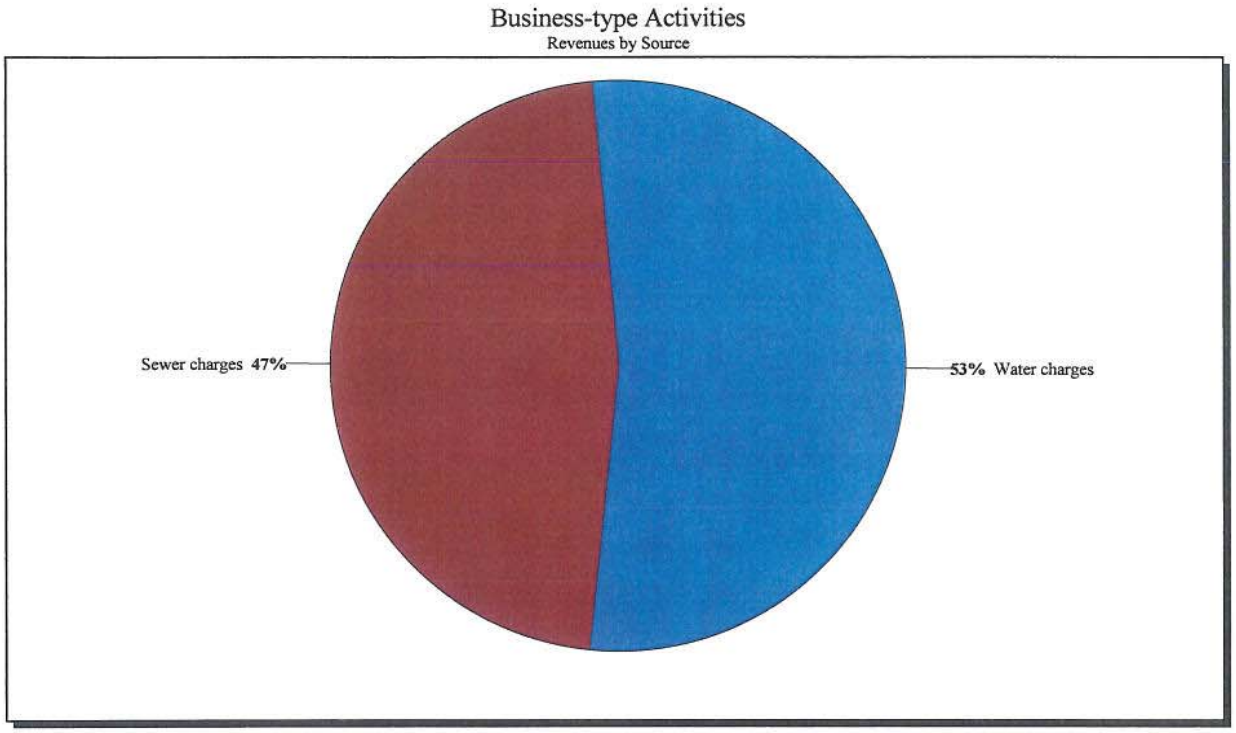


* Other (0.5%), Franchise Taxes (0.5%), State shared revenues (2.2%), Grants and contributions not restricted (0.1%), capital grants and contributions (0.5%), and operating grants and contributions (1.2%)

The charts on the previous page illustrate the Town's governmental expenses and revenues by function and its revenues by source. As shown, public safety (police, fire, and emergency medical services) is the largest function in expenses, followed by general government, interest on long-term debt, highways and streets, community development, culture and recreation, health and welfare, and economic development. General revenues such as sales taxes are not shown by program but are effectively used to support program activities. Property taxes are primarily used for general operations and for the repayment of long-term debt. For governmental activities as a whole, fees, fines and charges for services are by far the largest source of funds (74%) followed by sales tax revenues (15%).

Business-type activities. Business-type activities increased the Town's net assets by $30,468,932. The primary reason for the increase was revenue received from impact fees and developer agreements.





As shown by the charts above, the largest of the Town's business-type activities is its water operations. Water Fund expenses were just over $3.9 million with charges for services of approximately $8.1 million during the fiscal year. The Sewer Fund expenses were approximately $2.3 million with charges for services of approximately $7.1 million during the fiscal year.

Financial Analysis of the Town's Funds

As noted earlier, the Town uses fund accounting to ensure and demonstrate compliance with finance-related legal compliance. The focus of the Town's governmental funds is to provide information on near-term inflows, outflows, and balances of resources that are available for spending. Such information is useful in assessing the Town's financing requirements. In particular, unreserved fund balance may serve as a useful measure of a government's net resources available for spending at the end of the fiscal year. Types of Governmental funds reported by the Town include the General Fund, Special Revenue Funds, Debt Service Funds and Capital Projects Funds.

As of the end of the current fiscal year the Town's governmental funds reported combined ending fund balances of $99,397,966, an increase of $59,853,828 in comparison with the prior year. Approximately 20% of this total amount ($19,867,167) constitutes General Fund balance, which is available for contribution to the designated, undesignated and reserved fund balances. At fiscal year ended June 30, 2006 fund balances were as follows:

Fund	Balance	Increase From 2004-05
General Fund	$ 19,867,167	$ 7,990,188
CFD Debt Service Fund	9,258,121	5,336,287
CFD Capital Projects Fund	37,789,795	28,553,524
Impact Fees	9,015,627	7,180,879
Nonmajor Governmental Funds	23,467,256	10,792,950

The General Fund is the chief operating fund of the Town of Buckeye, Arizona. At the end of the current fiscal year, the fund balance of the General Fund was $19,867,167, while total fund balance for the Town reached $99,397,966. As a measure of the General Fund's liquidity, it may be useful to compare both General Fund balance and total fund balance to total fund expenditures. General Fund balance represents 66 percent of total General Fund expenditures, while total fund balance represents 330 percent of that same amount.

The fund balance of the Town of Buckeye, Arizona's General Fund increased by $7,990,188 during the current fiscal year. Key factors in this change are as follows:

- Revenues collected increased from last year's by $17,094,454. This is due to the Town's rapid growth. Sales taxes had the most significant increase of $10,397,202 followed by charges for services ($2,072,518) and licenses and permits ($1,989,400).
- Although total expenditures and transfers out increased by 65% ($13,265,815), the revenue increase of 70% contributed to the increase in fund balance.

The CFD Debt Service Fund's fund balance increased by $5,336,287 during the fiscal year. The change was due mainly to new bond issues with reserve requirements.

The CFD Capital Projects Fund fund balance increased by $28,553,524 during the fiscal year. The change was due mainly to the Town issuing new bonds and not expending all of the bond proceeds.

The Impact Fees Fund fund balance increased by $7,180,879. The change was mainly due to a 304% ($6,767,442) increase in impact fees collected. This is a reflection of growing infrastructure construction.

The Nonmajor Governmental Funds fund balance increased by $10,792,950 during the fiscal year. The change was due mainly to the Town bond issuance to finance the new town building. All nonmajor governmental funds of the Town are combined into one column on the governmental fund financial statements.

Proprietary Funds. The Town of Buckeye, Arizona's proprietary funds provide the same type of information found in the government-wide financial statements, but in more detail.

Unrestricted net assets at the end of the year amounted to $6,804,235 in the Sewer Fund and $6,445,977 in the Water Fund.

Budgetary Highlights

The Town's annual budget is the legally adopted expenditure control document of the Town. Budgetary comparison statements are required for the General Fund and all major special revenue funds and may be found on pages 34 - 35. These statements compare the original adopted budget, the budget if amended throughout the fiscal year, and the actual expenditures prepared on a budgetary basis.

General Fund revenues of $41,405,556, on a budgetary basis, exceeded budgeted revenues of $24,178,742 by $17,226,814. However, budgetary basis expenditures of $29,980,425 exceeded budgeted expenditures by $1,243,565 due to additional engineering and unbudgeted, but reimbursable garbage collection expenditures. The excess of revenues over budgeted revenues is primarily due to sales taxes, licenses and permits and charges for services exceeding projected expectations.

Capital Asset and Debt Administration

The Town's capital assets for its governmental activities as of June 30, 2006 amount to $70,743,775 (net of accumulated depreciation), a net increase of 33%. For government-wide financial statement presentation, all depreciable capital assets were depreciated from acquisition date to the end of the current fiscal year. Fund financial statements record capital asset purchases as expenditures. See Note 3.B.4. for further information regarding capital assets.

Governmental capital assets include land and improvements, buildings and improvements, infrastructure and furniture, machinery and equipment. During fiscal year 2005-06, the annual depreciation expense was $3,139,214. Additions to capital assets during the fiscal year totaled $20,640,162.

The major capital asset event during the current fiscal year was the construction of community facilities district assets using bond proceeds. The Town also acquired a number of furniture, machinery and equipment items during the fiscal year.

The following table provides a breakdown of the capital assets of the Town at June 30, 2006 and 2005.

Town of Buckeye, Arizona
Capital Assets at June 30, 2006 and 2005
(Net of depreciation)

	Governmental Activities		Business-type Activities		Total	
	2006	2005	2006	2005	2006	2005
Land	$ 4,547,993	$ 812,176	$ 25,148	$ 25,148	$ 4,573,141	$ 837,324
Construction in progress	8,264,832	3,979,049	24,477,949	5,974,633	32,742,781	9,953,682
Land improvements	1,605,585	1,716,550	-	-	1,605,585	1,716,550
Buildings and improvements	6,068,571	1,363,486	2,812,895	2,902,918	8,881,466	4,266,404
Infrastructure	44,297,382	42,202,970	-	-	44,297,382	42,202,970
Furniture, machinery and equipment	5,959,412	3,168,596	-	-	5,959,412	3,168,596
Wastewater system	-	-	10,753,734	8,498,661	10,753,734	8,498,661
Water system	-	-	8,525,059	8,817,234	8,525,059	8,817,234
Machinery, equipment and vehicles	-	-	579,922	404,499	579,922	404,499
	$70,743,775	$53,242,827	$47,174,707	$26,623,093	$117,918,482	$79,865,920

Long-term Debt

At the end of the current fiscal year, the Town of Buckeye, Arizona had total long-term obligations outstanding of $153,741,798, including eight new leases. Of the outstanding debt, $605,000 is general obligation bonds backed by the full faith and credit of the Town. An additional $3,570,000 are improvement bonds that are backed by the property owners within the District. An additional $119,283,000 are community facilities district bonds backed by property owners within the District areas. An additional $24,130,000 and $2,360,000 of outstanding debt is secured by pledges of specific revenue sources of the Town. The remaining $3,793,798 is in its majority for other liabilities; capital leases and compensated absences.

The following schedule shows the outstanding debt of the Town (both current and long-term) as of June 30, 2006 and 2005. Further detail on the Town's outstanding debt may be found in Note 3.E. on pages 59 - 63.

Town of Buckeye, Arizona
Long-term Obligations at June 30, 2006 and 2005

	Governmental Activities		Business-type Activities		Total	
	2006	2005	2006	2005	2006	2005
General obligation bonds	$ 605,000	$ 880,000	$ -	$ -	$ 605,000	$ 880,000
Improvement bonds	3,570,000	3,805,000	-	-	3,570,000	3,805,000
Revenue bonds	24,130,000	9,400,000	2,360,000	2,460,000	26,490,000	11,860,000
Community facilities district bonds	119,283,000	64,625,000	-	-	119,283,000	64,625,000
Deferred amount on premium	1,185,831	698,622	-	-	1,185,831	698,622
Deferred amount on discount	(937,907)	(986,639)	-	-	(937,907)	(986,639)
Capital leases	2,741,687	2,043,667	26,621	9,766	2,768,308	2,053,433
Compensated absences	703,910	608,165	73,656	51,315	777,566	659,480
	$151,281,521	$81,073,815	$ 2,460,277	$ 2,521,081	$153,741,798	$83,594,896

Economic Factors and Next Year's Budgets and Rates

- The Town of Buckeye, Arizona, expects to continue experiencing the significant revenue growth mainly due to ongoing housing construction, creation of new business, and increase in delivered services. The historical average rate of increase for the past three (3) years has been 49%, 58%, and 78% respectively.
- The Town's assessed valuation is up 60% with 49% attributed to new construction and 11% appreciation of existing property.
- The population of the Town of Buckeye, Arizona continues to grow at a 23% average for the last five years.
- During the year the Town adopted a 1% construction sales tax to assist with road construction only.
- The Town of Buckeye increased staffing by 33% (104.5 new positions) to meet the citizen's request for services.

Financial contact

This financial report is designed to provide a general overview of the Town's finances for all of those with an interest and to demonstrate accountability for the use of public funds. Questions about any of the information provided in this report, or requests for additional financial information should be addressed to:

Town of Buckeye
Accounting Department
100 N. Apache, Suite A
Buckeye, AZ 85326
623-386-4691

Or visit our website at:

www.buckeyeaz.org

TOWN OF BUCKEYE, ARIZONA
STATEMENT OF NET ASSETS
JUNE 30, 2006

	Governmental Activities	Business-type Activities	Totals
Assets			
Cash and cash equivalents	$ 59,299,823	$ 12,646,623	$ 71,946,446
Cash with paying agent	319,575	-	319,575
Receivables, net			
Accounts receivable	2,862,686	956,694	3,819,380
Taxes receivable	4,504	-	4,504
Intergovernmental receivable	3,332,261	-	3,332,261
Special assessments receivable	74,182,000	-	74,182,000
Inventories	-	14,159	14,159
Deferred charges	4,872,650	120,197	4,992,847
Restricted assets	56,284,082	336,260	56,620,342
Capital assets			
Non-depreciable	12,812,825	24,503,097	37,315,922
Depreciable (net)	57,930,950	22,671,610	80,602,560
Total assets	271,901,356	61,248,640	333,149,996
Liabilities			
Accounts payable	3,210,892	199,122	3,410,014
Contracts payable	12,683,133	-	12,683,133
Accrued wages and benefits	550,399	29,167	579,566
Interest payable	3,888,953	-	3,888,953
Developer agreements payable	-	91,120	91,120
Intergovernmental payable	23,104	94,396	117,500
Customer deposits payable	2,000	336,260	338,260
Unearned revenue	633,484	-	633,484
Matured debt principal payable	1,713,000	-	1,713,000
Noncurrent liabilities			
Due within one year	3,339,050	131,239	3,470,289
Due in more than one year	147,942,471	2,329,038	150,271,509
Total liabilities	173,986,486	3,210,342	177,196,828
Net assets			
Invested in capital assets, net of related debt	525,156	44,788,086	45,313,242
Restricted for			
Highways and streets	516,365	-	516,365
Debt service	10,146,769	-	10,146,769
Capital outlay	18,199,327	-	18,199,327
Other	561,032	-	561,032
Unrestricted	67,966,221	13,250,212	81,216,433
Total net assets	$ 97,914,870	$ 58,038,298	$ 155,953,168

The notes to the basic financial statements are an integral part of this statement.

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Maricopa County

Environmental Services

Water and Waste Management Division

1001 N. Central Ave., Suite 150
Phoenix, AZ 85004
Phone: (602) 506-6666
Fax: (602) 506-6925
TDD: 602 506 6704
www.maricopa.gov/envsvc

October 9, 2007

Maricopa Association of Governments
302 North 1st Avenue, Suite 300
Phoenix, AZ 85003

Attention: Ms. Lindy Bauer, Environmental Program Coordinator

Re: MAG 208 Water Quality Management Plan Comprehensive Amendment for the Town of Buckeye
Clean Water Act, MAG 208 Amendment

Dear Ms. Bauer:

CMX, LLC, submitted the *MAG 208 Water Quality Management Plan Comprehensive Amendment for the Town of Buckeye, August 2007,* to Maricopa County Environmental Services Department (Department). The Amendment identifies five existing, six planned, and seven future water reclamation facilities to serve a 590-square mile area that will ultimately have an estimated 638,600 residential dwelling units as well as significant areas of commercial and industrial development. The eighteen facilities will range in capacity from 2.2 to 45.8 MGD. The existing ASPC-Lewis WWTP will be eliminated. The facilities will serve the entire Municipal Planning Area "except for a few remote locations where it is not practical to plan for wastewater service at one of the municipal facilities".

The document was submitted to the Department because it is located within three miles of unincorporated areas of Maricopa County.

Based on a review of the proposed MAG 208 Amendment dated August 2007, the Department has determined that the proposed plant does not conflict with Maricopa County plans for the area.

Please note that the Department has not reviewed, nor approved, the design of the facilities as part of the 208 review. Any technical issues that remain will need to be resolved during the design phase of the project. Approval to Construct (ATC) and Approval of Construction (AOC) must be obtained from this Department prior to start of construction and startup, respectively, of all treatment, discharge, recharge, and reuse facilities, including all conveyance facilities and final end user facilities.

If you have any questions or comments, please feel free to contact Mr. Kenneth James, PE, or myself at 506-6666.

Sincerely,

Kevin Chadwick, P.E.
Division Manager

cc: Acting Town Manager, Town of Buckeye
Sheila A. Logan, P.E., CMX, LLC
File

TOWN OF GILA BEND

The Heart of Arizona

July 5, 2007

Mr. Scott Lowe
Town of Buckeye Public Works Department
423 Arizona Eastern Avenue
Buckeye, Arizona 85326

RE: Letter of No Objection, Town of Buckeye MAG 208

Dear Mr. Lowe:

After reviewing the draft MAG 208 Comprehensive Water Quality Management Plan Amendment for the Town of Buckeye with Mayor Hull, the Town of Gila Bend has no objection to the amendment as submitted by the Town of Buckeye.

If you have any questions or comments please feel free to contact me.

Sincerely,

Lynn D. Farmer
Town Manager
Town of Gila Bend

Cc: Ms. Julie Hoffman
Maricopa Association of Governments
302 North 1st Avenue, Suite 300
Phoenix, Arizona 85003

Ms. Sheila Logan
CMX, LLC
7740 North 16th Street, Suite 100
Phoenix, Arizona 85020

GLENDALE

May 16, 2007

Ms. Julie Hoffman
Maricopa Association of Governments
302 North 1st Avenue, Suite 300
Phoenix, AZ 85003

Subject: MAG 208 Comprehensive Water Quality Management Plan Buckeye
Letter of No Objection

Dear Ms. Hoffman:

The City of Glendale has reviewed the subject plan and finds no reason to object. While the study is very comprehensive and wide in scope, the area of impact to the Glendale Municipal Planning Area is relatively small along the eastern edge of the study area.

Sincerely,

Kenneth A. Reedy, P.E.
Deputy City Manager
Public Works

cc: Mr. Scott Lowe
Town of Buckeye
423 Arizona Eastern Avenue
Buckeye, AZ 85326

Ms. Sheila Logan
CMX, LLC
7740 North 16th Street, Suite 100
Phoenix, AZ 85020

Mr. Mark Ivanich
City of Glendale Engineering
5850 W. Glendale Avenue
Glendale, AZ 85301

May 25, 2007

Ms. Lindy Bauer
Environmental Director
Maricopa Association of Governments
302 N. 1st Avenue, Suite #300
Phoenix, AZ. 85003

RE: MAG 208 Amendment request from the Town of Buckeye – Comprehensive Plan Prepared by CMX, L.L.C.

Dear Ms. Bauer:

Pursuant to recent meetings with Town of Buckeye officials, we have been informed of their intention to move forward with an application to amend their current MAG 208 Plan for the existing Planning Area. Goodyear Water Resources Department staff has had the opportunity to review the technical report and related information and to dialogue with counter-parts from Buckeye.

The City of Goodyear does not have any objections to the application to amend their MAG 208 Plan being presented to the MAG Water Quality Assurance Committee.

Please feel free to contact me, should you have any questions.

Sincerely,

STEPHEN S. CLEVELAND
City Manager

CC: Scott Lowe – Public Works Director for the Town of Buckeye
Sheila Logan – Project Engineer for CMX, L.L.C.
Jim Nichols, Deputy City Manager - Goodyear
Shawn Bradford, Water Resources Director – Goodyear
David Iwanski, Water Resources Manager

Town of Wickenburg
Public Works Department
155 N. Tegner, Suite A
Wickenburg, Arizona 85390
(928) 684-2761 Fax (928) 684-9156
publicworks@ci.wickenburg.az.us

May 25, 2007

Mr. Scott Lowe
Town of Buckeye Public Works Department
423 Arizona Eastern Avenue
Buckeye AZ 85326

Dear Mr. Lowe,

On behalf of the Town of Wickenburg, I have reviewed a copy of the MAG 208 Comprehensive Water Quality Management Plan Amendment of the 2002 MAG 208 Water Quality Management Plan from the Town of Buckeye. The Town of Wickenburg has no objection to the Plan.

Please feel free to contact me if you have any further questions regarding this document.

Sincerely,

Harry Parsi, P.E.
Director of Public Works

CC: Ms Julie Hoffman
MAG
302 North 1st Avenue, Suite 300
Phoenix AZ 85003

MS Sheila Logan
CMX LLC
7740 North 16th Street, Suite 100
Phoenix AZ 85020

APPENDIX B

FIGURES

1. **Vicinity Map** – This exhibit shows the location of the Town of Buckeye Municipal Planning Area (MPA) and proximity to surrounding areas.

2. **Town of Buckeye Annexations** – This map identifies the land annexed into the Town of Buckeye.

3. **Private Wastewater Utilities** – This map identifies the existing and proposed private wastewater utility providers within the Town of Buckeye MPA.

4. **Buckeye Municipal Planning Area, Regional Analysis Zones and Regions** – This exhibit illustrates a regional view of the MPA including roads, highways, mountain ranges, rivers and washes, floodplains and floodways, and general land ownerships. The Regional Analysis Zones delineated by MAG also are displayed in this exhibit.

5. **North Buckeye Region** – This exhibit presents a portion of the United States Geologic Survey (USGS) 1:100,000 scale Phoenix North (1982) indicating the northern portion of Buckeye.

6. **Central Buckeye Region** – This exhibit presents portions of the USGS 1:100,000 scale Phoenix North (1982) and Phoenix South (1984) indicating the central portion of Buckeye.

7. **South Buckeye Region** – This exhibit presents a portion of the USGS 1:100,000 scale Phoenix South (1984) indicating the central portion of Buckeye.

8. **Conceptual Transportation Framework** – This map displays the future transportation system proposed by MAG in the *Conceptual Transportation Framework* (January 2007) for the Town of Buckeye MPA including major highways and roads.

9. **Subbasins and Geology** – This exhibit illustrates the delineated groundwater subbasins within the MPA, the boundary of the AMA, and the regional geology from the Arizona Geologic Survey.

10. **Proposed Water Reclamation Facilities and Service Areas** – This exhibit provides the locations of the existing, planned and future water reclamation facilities as proposed in this report and delineates the ultimate service area for each facility.

11. **ASPC-Lewis, Gila Rainbow and Gila Southwest Proposed Service Areas** – This exhibit displays the proposed service area for the Gila Rainbow and Gila Southwest WRFs, as well as the original ASPC-Lewis Complex WWTP service area. Proposed locations of AZPDES discharges from the Gila Rainbow and Gila Southwest WRFs are indicated. Property ownership, floodplain and floodway delineations, existing transportation networks, landfills, rivers and washes, and topography are shown in this exhibit.

12. **Central Buckeye Proposed Service Area** – This exhibit displays the original and proposed service areas for the Central Buckeye WWTP. Property ownership, floodplain and floodway delineations, existing transportation networks, rivers and washes, and topography are shown in this exhibit.

13. **Festival Ranch and Hassayampa North Proposed Service Areas** – This exhibit displays the original and proposed service areas for the Festival Ranch and Hassayampa North WRFs, as applicable. Property ownership, floodplain and floodway delineations, existing transportation networks, rivers and washes, and topography are shown in this exhibit.

14. **Sundance and Verrado Proposed Service Areas** – This exhibit displays the original and proposed service areas for the Sundance and Verrado WRFs. Property ownership, floodplain and floodway delineations, existing transportation networks, rivers and washes, and topography are shown in this exhibit.

15. **Anthem at Sun Valley South, Sun Valley, Tartesso East and West and Trillium West Proposed Service Areas** – The location of these five facilities and their respective original and proposed service areas are shown in this exhibit. Property ownership, floodplain and floodway delineations, existing transportation networks, rivers and washes, and topography are shown in this exhibit.

16. **Douglas Ranch Proposed Service Area** – This exhibit displays the original and proposed service areas for the Douglas Ranch WRF. Property ownership, floodplain and floodway delineations, existing transportation networks, rivers and washes, and topography are shown in this exhibit.

17. **Cipriani, Gila 85, Gila Hassayampa and Palo Verde Road Proposed Service Areas** – The location of these four facilities and their respective original and proposed service areas (as applicable) are shown in this exhibit. Property ownership, floodplain and floodway delineations, existing transportation networks, rivers and washes, and topography are shown in this exhibit.

18. **Waterman Wash Proposed Service Area** – This exhibit displays the proposed service area for the Waterman Wash WRF. Property ownership, floodplain and floodway delineations, existing transportation networks, rivers and washes, and topography are shown in this exhibit.

19. **Service Area Expansion and Proposed Land Use** – This exhibit graphically represents the original service areas for the WRFs and the land uses assumed for areas

that were not previously accounted for in wastewater planning. This exhibit provides the basis for the population projections used in this 208 Plan Amendment.

20. **Proposed Recharge Locations** – This map identifies the proposed recharge locations for effluent throughout the Town of Buckeye MPA. The locations are conceptual and may be subject to change.

21. **Proposed Discharge Locations** – This map identifies the proposed discharge locations for effluent throughout the Town of Buckeye MPA. The locations are conceptual and may be subject to change.

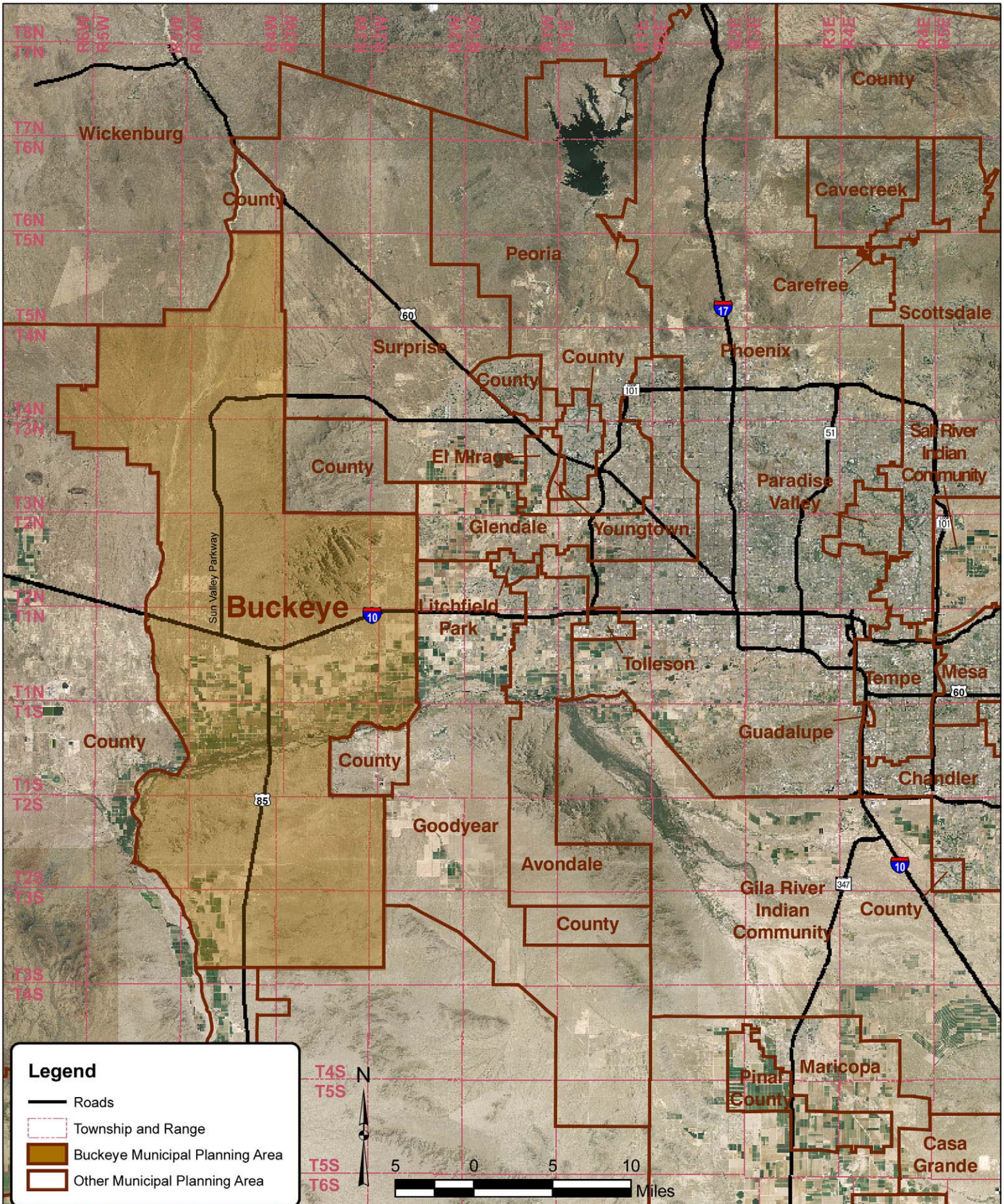

FIG NO. 1 SHT. 1 OF 1	CMX PROJ: 7449	DATE: 08/21/07	SCALE:1:500,000
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	REV.		

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Buckeye 208 Plan

Buckeye, Arizona

Vicinity Map

CMX
7740 N. 16TH ST. STE. 100
PHOENIX, AZ 85020
PHONE: (602) 567-1900
FAX: (602) 567-1901
www.cmxinc.com
ENGINEERS - PLANNERS - LANDSCAPE - ARCHITECTS - SURVEYORS - CONSTRUCTION - MANAGERS

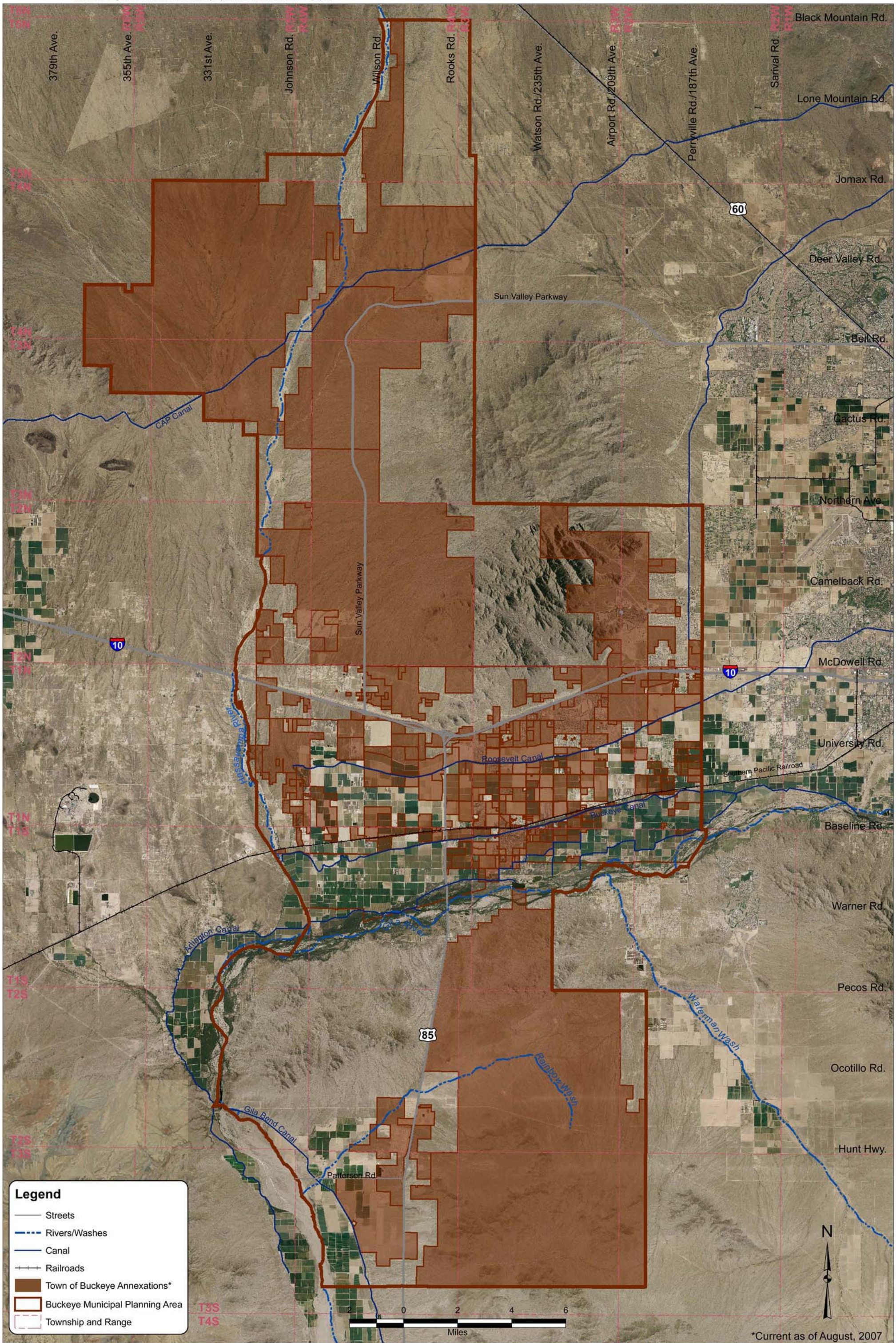

FIG NO. 2	CMX PROJ: 7449	DATE: 08/08/07	SCALE 1:100,000
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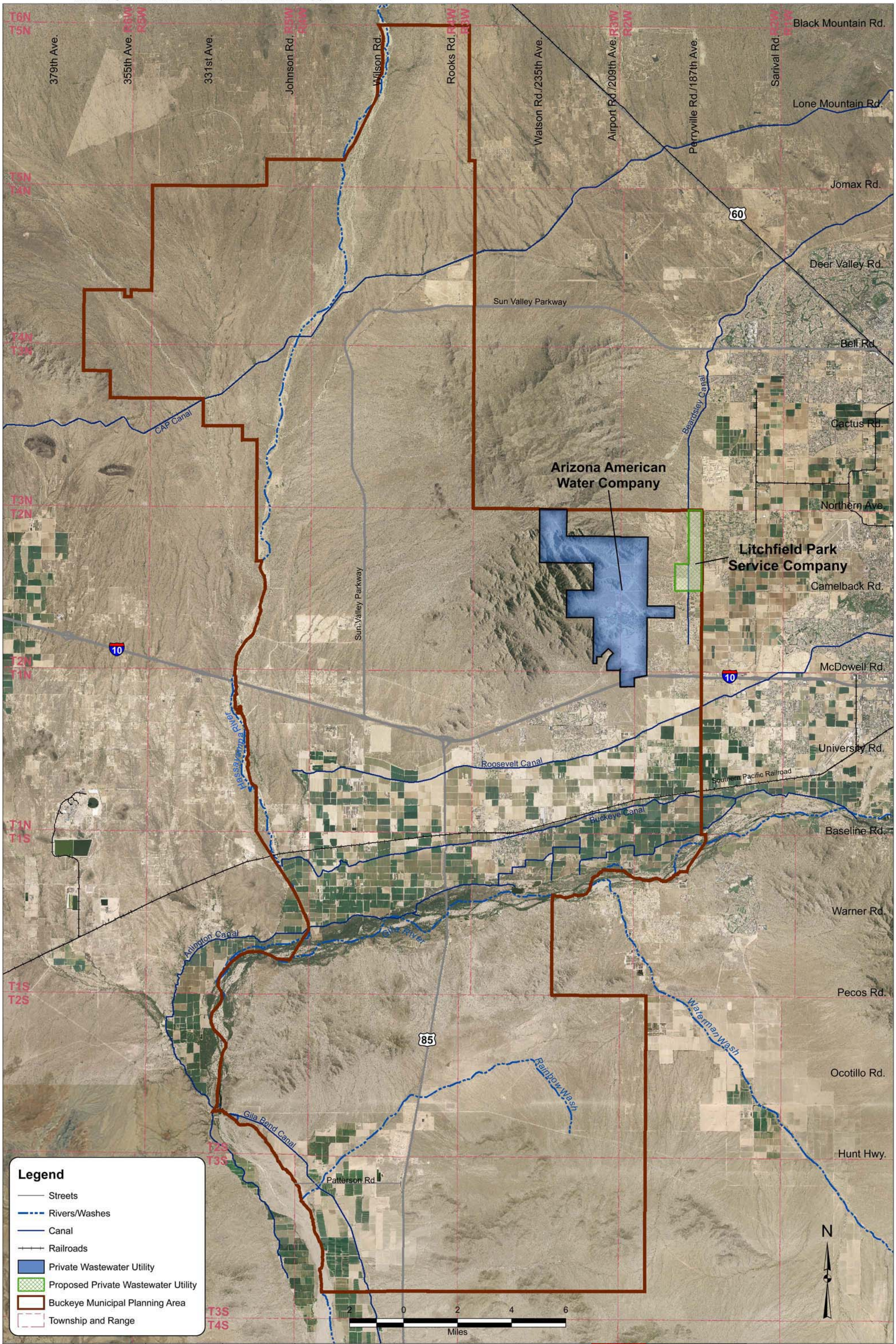
Buckeye 208 Plan

Buckeye, Arizona

Town of Buckeye Annexations

CMX
7740 N. 16TH ST. STE. 100
PHOENIX, AZ 85020
PHONE: (602) 567-1900
FAX: (602) 567-1901
www.cmxinc.com
ENGINEERS - PLANNERS - LANDSCAPE - ARCHITECTS - SURVEYORS - CONSTRUCTION MANAGERS



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Buckeye 208 Plan

Buckeye, Arizona

Private Wastewater Utilities

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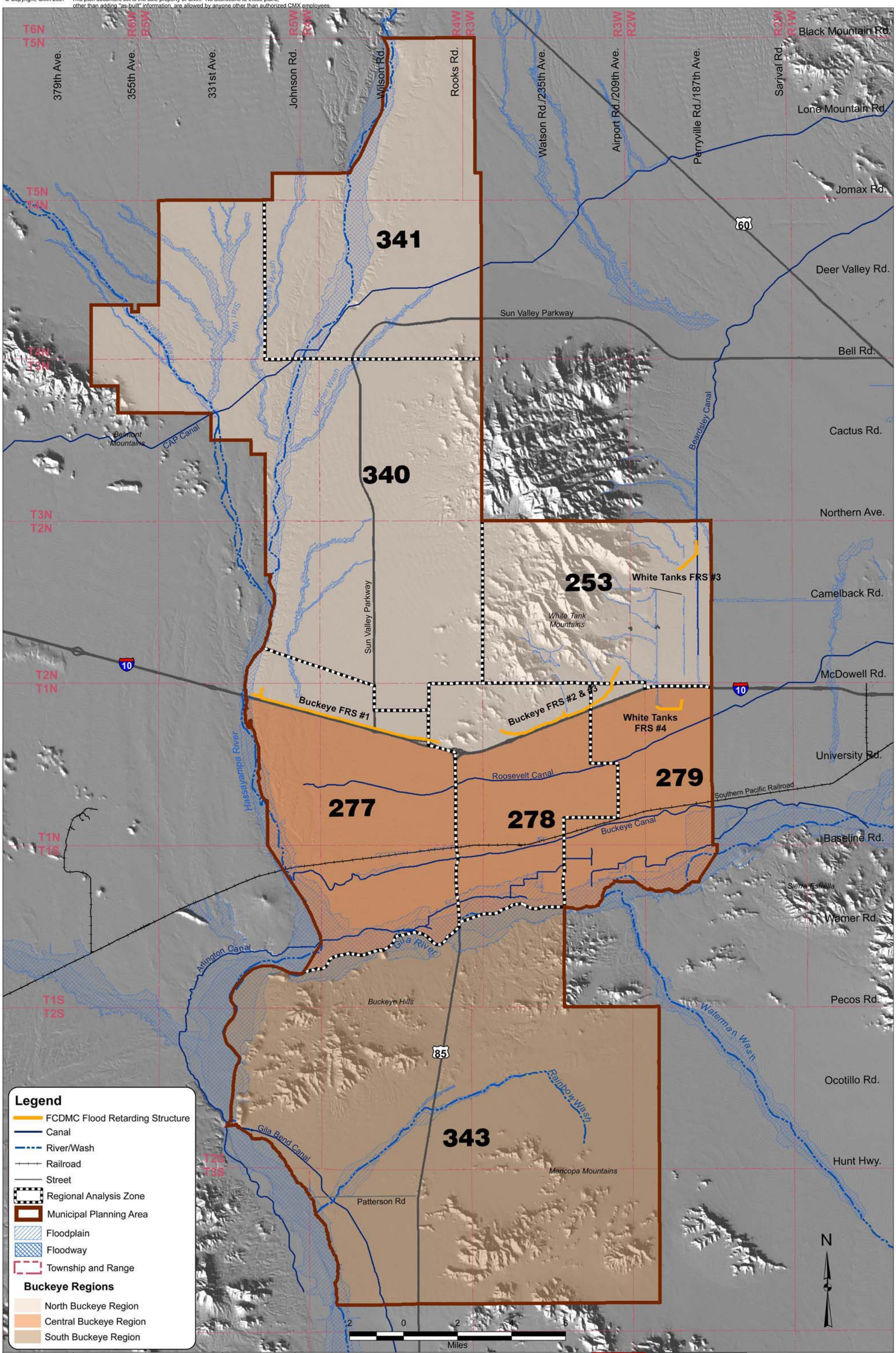

Legend

- FCDMC Flood Retarding Structure
- Canal
- River/Wash
- Railroad
- Street
- Regional Analysis Zone
- Municipal Planning Area
- Floodplain
- Floodway
- Township and Range

Buckeye Regions

- North Buckeye Region
- Central Buckeye Region
- South Buckeye Region

FIG NO.	CMX PROJ: 7449	DATE: 08/08/07	SCALE 1:100,000
4	DESIGNED: SAL	DRAWN: MEN	APPROVED: SAL
SHT. 1 OF 1	REV.		

Buckeye 208 Plan

Buckeye, Arizona

Buckeye Municipal Planning Area, Regional Analysis Zones, and Regions

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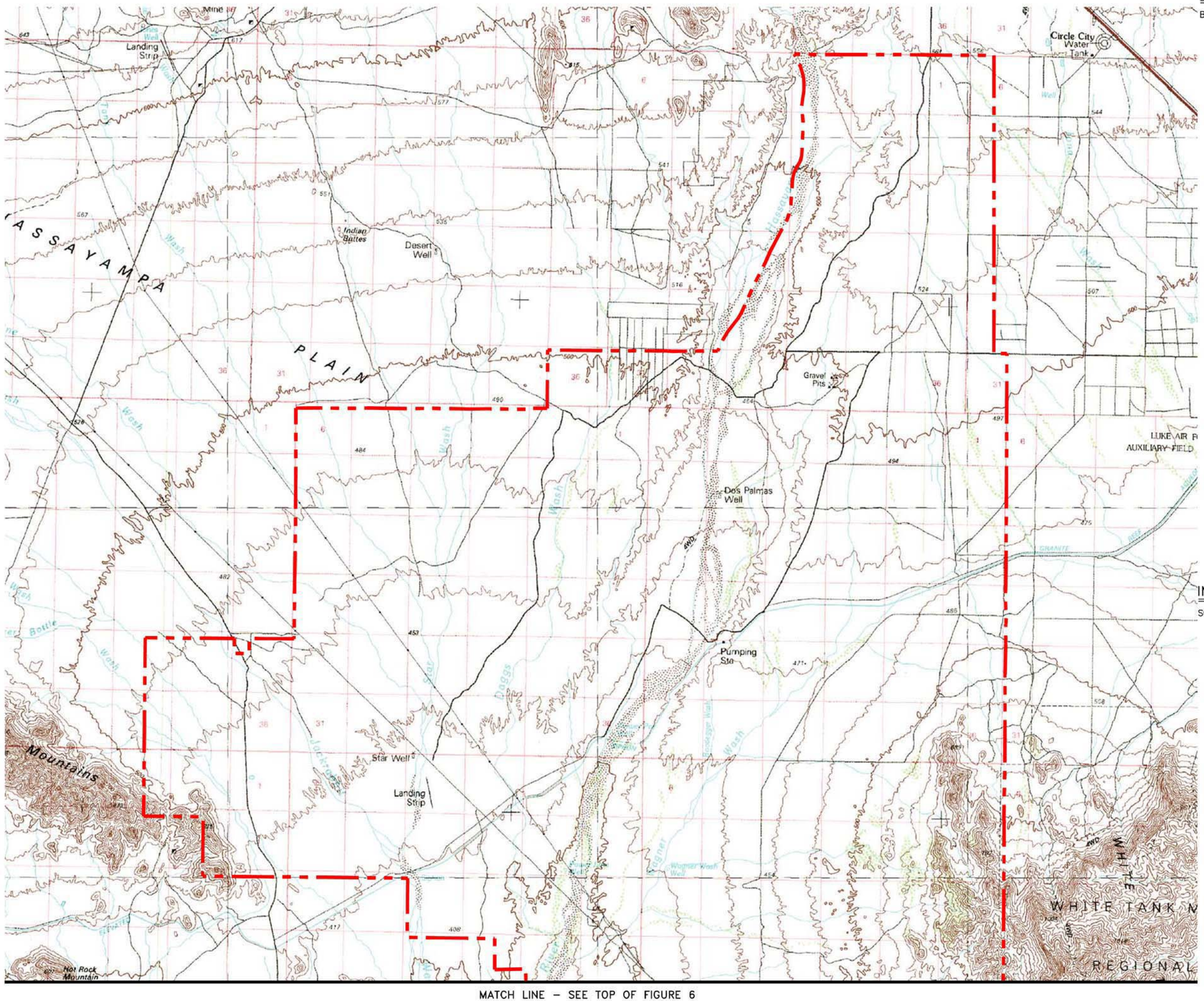
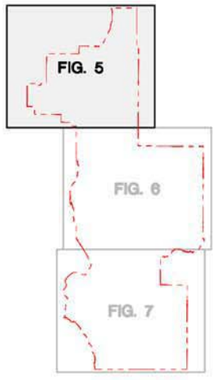
LEGEND

BUCKEYE BOUNDARY





INDEX MAP

SCALE: N.T.S.

N

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Buckeye 208 Plan

Buckeye, Arizona

North Buckeye Region

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SCALE: N.T.S.	
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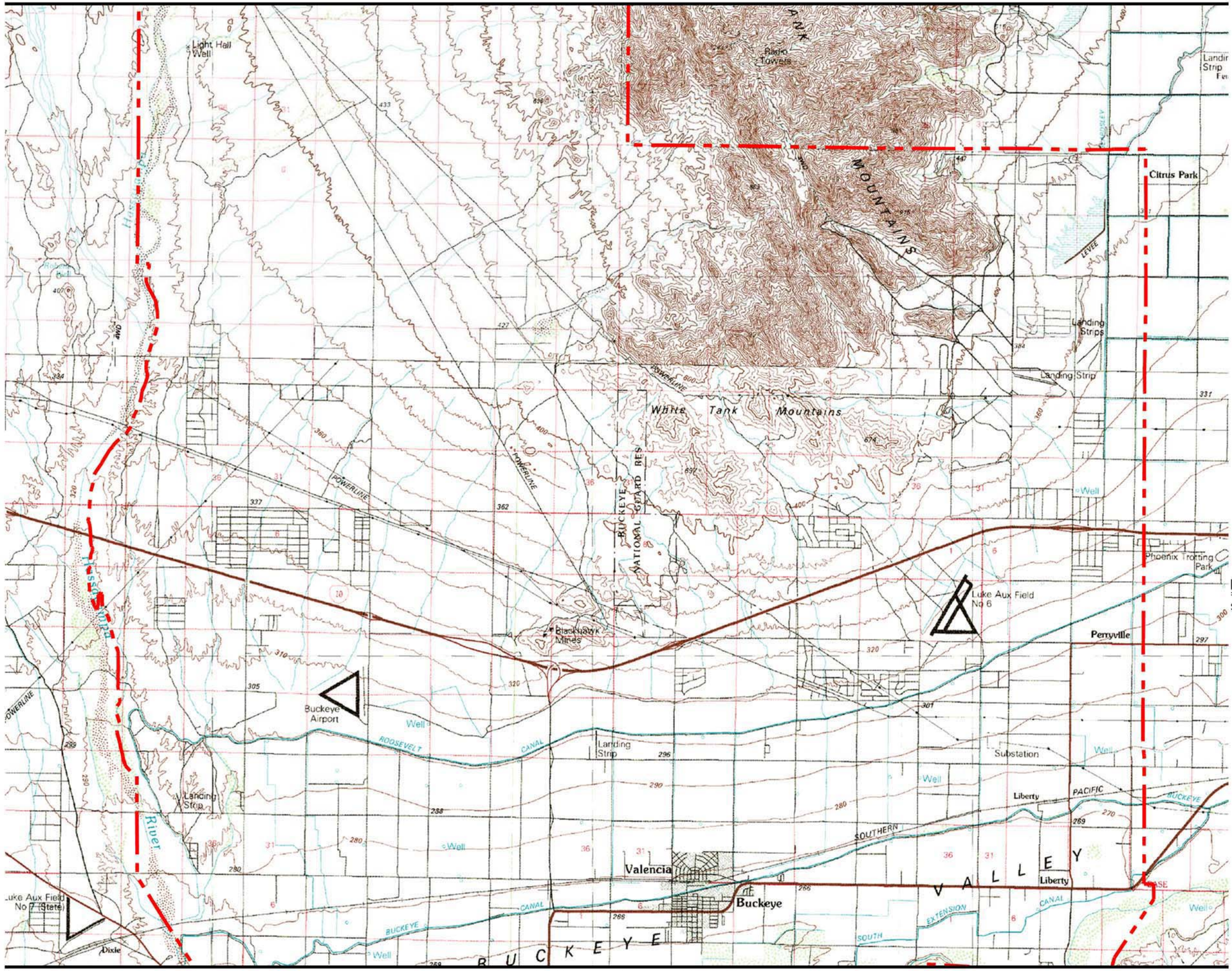
DWG. NO. 5 SHT. OF

MATCH LINE – SEE BOTTOM OF FIGURE 5



MATCH LINE – SEE TOP OF FIGURE 7

LEGEND

BUCKEYE BOUNDARY

INDEX MAP

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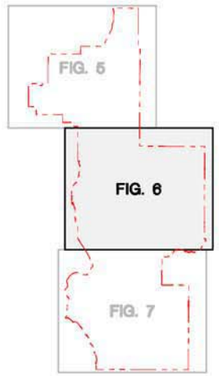

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Buckeye 208 Plan

Buckeye, Arizona

Central Buckeye Region

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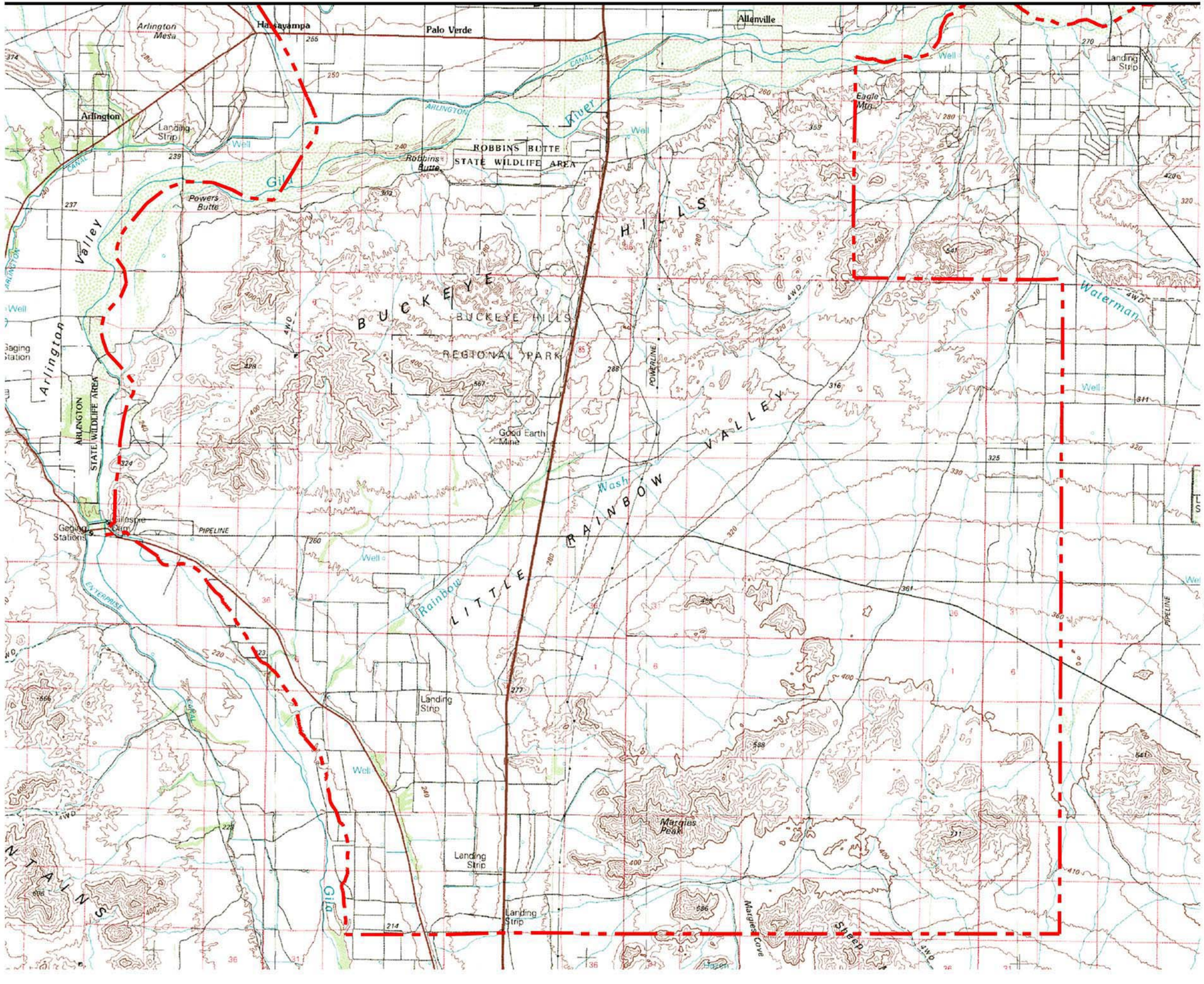
DESIGNED:	DRAWN: BC	APPROVED: SAL	
REV.			

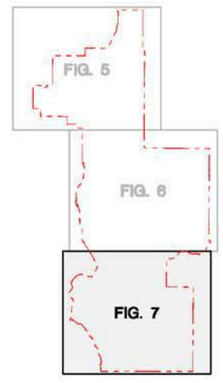
DWG. NO. 6 SHT. OF

MATCH LINE – SEE BOTTOM OF FIGURE 6

LEGEND

BUCKEYE BOUNDARY





INDEX MAP

SCALE: N.T.S.

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Buckeye 208 Plan

Buckeye, Arizona

South Buckeye Region

DWG. NO. 7	CMX PROJ: 7449	DATE: JULY 2007	SCALE: N.T.S.
SHT. OF	DESIGNED:	DRAWN: BC	APPROVED: SAL
	REV.		

T6N
T5N
T5N
T4N
T4N
T3N
T3N
T2N
T2N
T1N
T1N
T1S
T1S
T2S
T2S
T3S
T3S
T4S

R6W
R5W
R5W
R4W
R4W
R3W
R3W
R2W
R2W
R1W

Vulture Mine Rd
Hidden Waters Pkwy
243rd Ave
211th Ave
187th Ave
163rd Ave
Lone Mountain Rd.
White Tank Frwy
60
Jomax Rd.
Bell Pkwy
Hassayampa North-South Frwy
Deer Valley Rd.
Sun Valley Pkwy
Bell Rd.
303
Belmont Mountains
CAP Canal
Jackrabbit Trail
Beardsley Canal
Cactus Rd.
Northern Ave
Northern Ave.
Wintersburg Pkwy
Camelback Rd
Sun Valley Pkwy
Turner Pkwy
Camelback Rd.
White Tank Mountains
10
McDowell Pkwy
McDowell Rd.
Yuma Pkwy
Hassayampa River
University Rd.
Roosevelt Canal
Southern Pacific Railroad
Southern Ave
85
Buckeye Canal
801
Baseline Rd.
Tonopah Pkwy
SR-801 Pkwy Extension
Sierra Estrella
Warner Rd.
Arlington Canal
Gila River
Sonoran Pkwy
Buckeye Hills
Cotton Lane
Pecos Rd.
Hassayampa North-South Frwy
Rainbow Wash
Ocotillo Rd.
Gila Bend Canal
Hunt Hwy.
Maricopa Mountains
Patterson Rd

Legend

- Buckeye Municipal Planning Area
- Township and Range
- Existing Freeway Improvements
- New Freeway Proposals
- New Parkway Alternative
- New Parkway Proposal
- Frontage Road Proposal
- Future Major Arterial Network
- Railroad
- Rivers/Washes

2 0 2 4 6
Miles

N

*Data obtained from MAG "*Conceptual Transportation Framework*," January 10, 2007.

FIG NO.	CMX PROJ: 7449	DATE: 08/10/07	SCALE 1:100,000
8	DESIGNED: SAL	DRAWN: MEN	APPROVED: SAL
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Buckeye 208 Plan

Buckeye, Arizona

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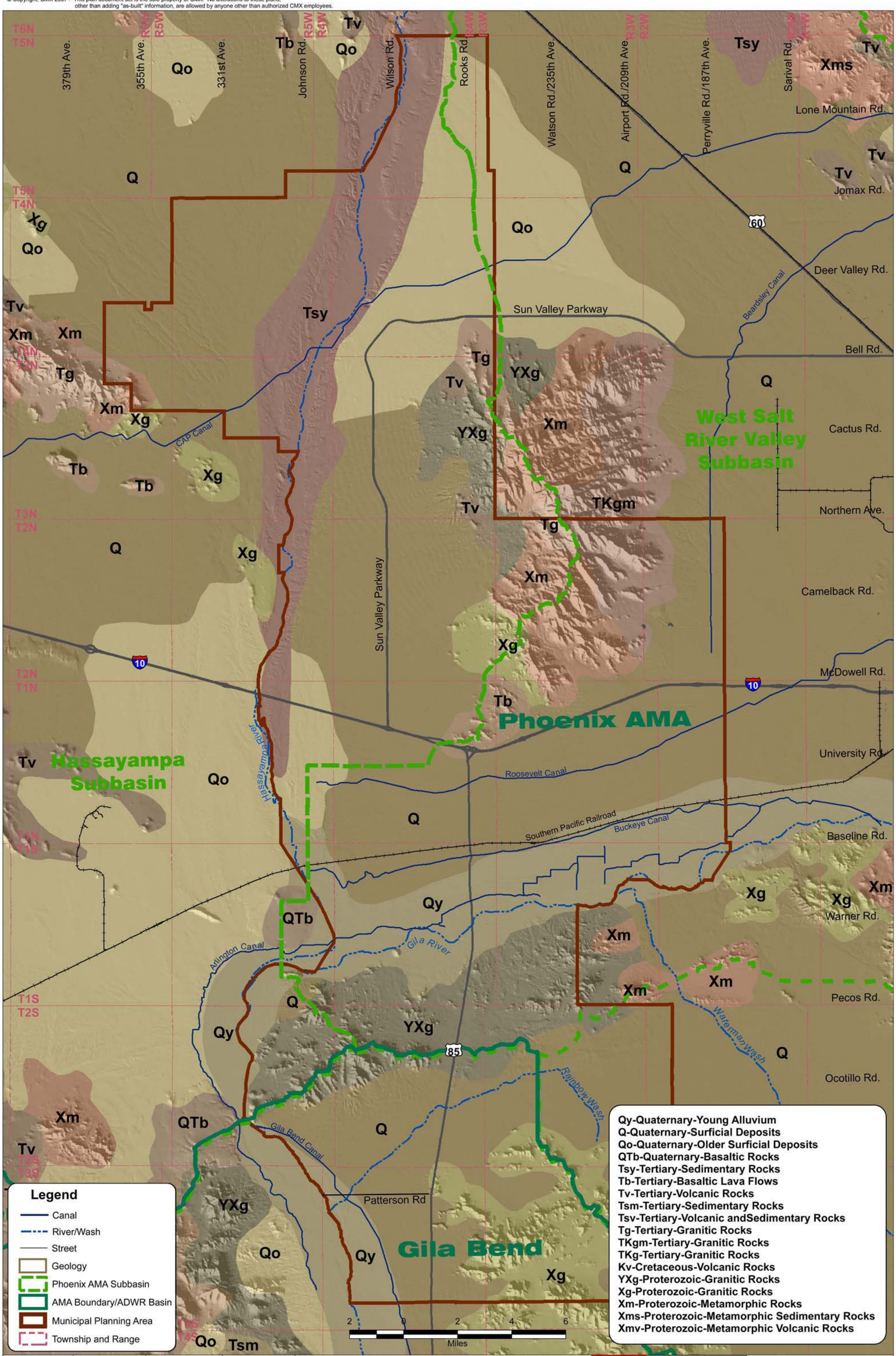

FIG NO. 9	CMX PROJ: 7449	DATE: 08/10/07	SCALE 1:100,000
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	REV.		

SHT. 1 OF 1

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Buckeye 208 Plan

Buckeye, Arizona

Subbasins and Geology

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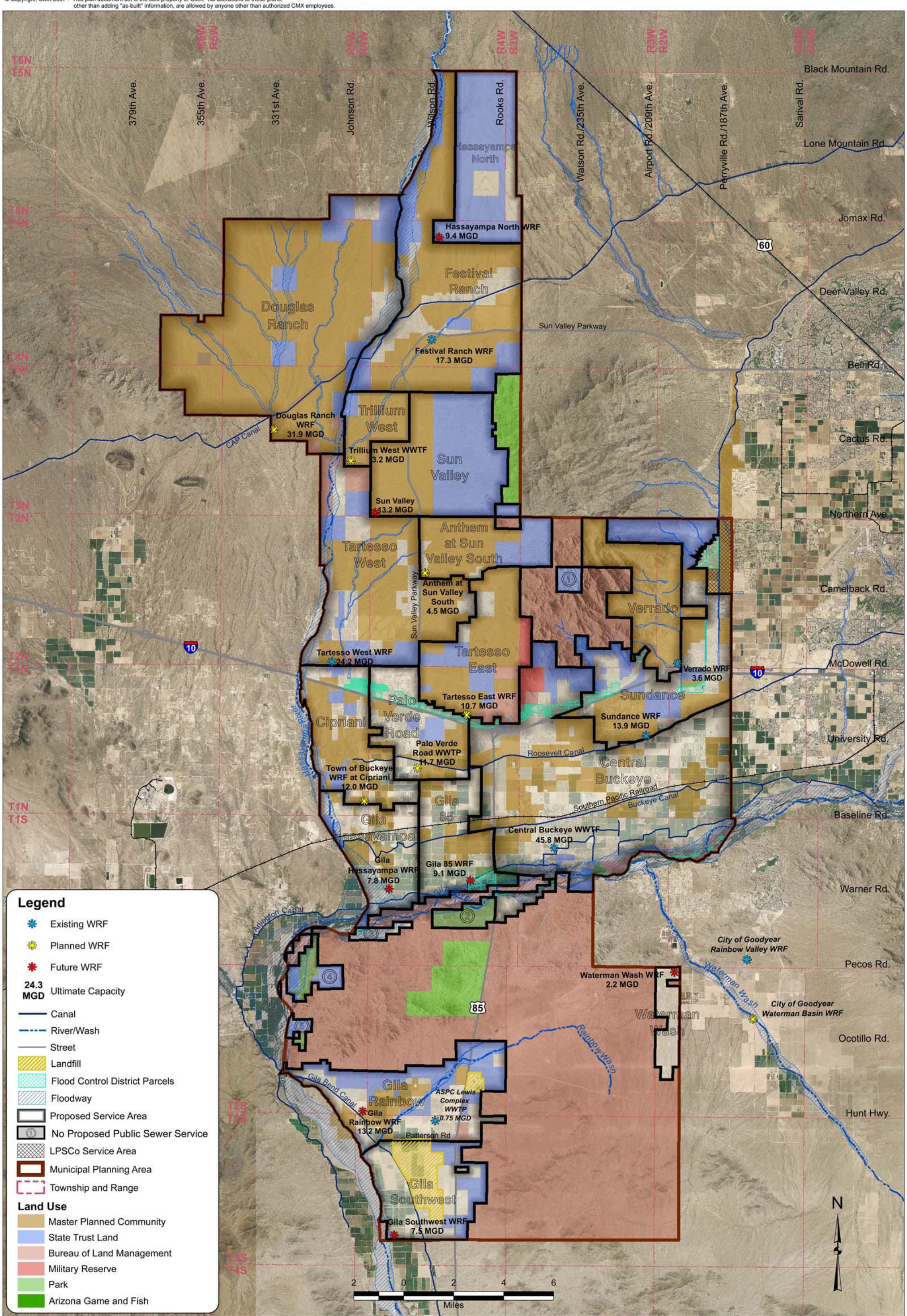

Legend

- Existing WRF
- Planned WRF
- Future WRF
- 24.3 MGD — Ultimate Capacity
- Canal
- River/Wash
- Street
- Landfill
- Flood Control District Parcels
- Floodway
- Proposed Service Area
- ① No Proposed Public Sewer Service
- LPSCo Service Area
- Municipal Planning Area
- Township and Range

Land Use

- Master Planned Community
- State Trust Land
- Bureau of Land Management
- Military Reserve
- Park
- Arizona Game and Fish

FIG NO. 10	CMX PROJ: 7449	DATE: 07/02/07	SCALE 1:100,000
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	REV.		

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Buckeye 208 Plan

Buckeye, Arizona

Proposed Water Reclamation Facilities and Service Areas

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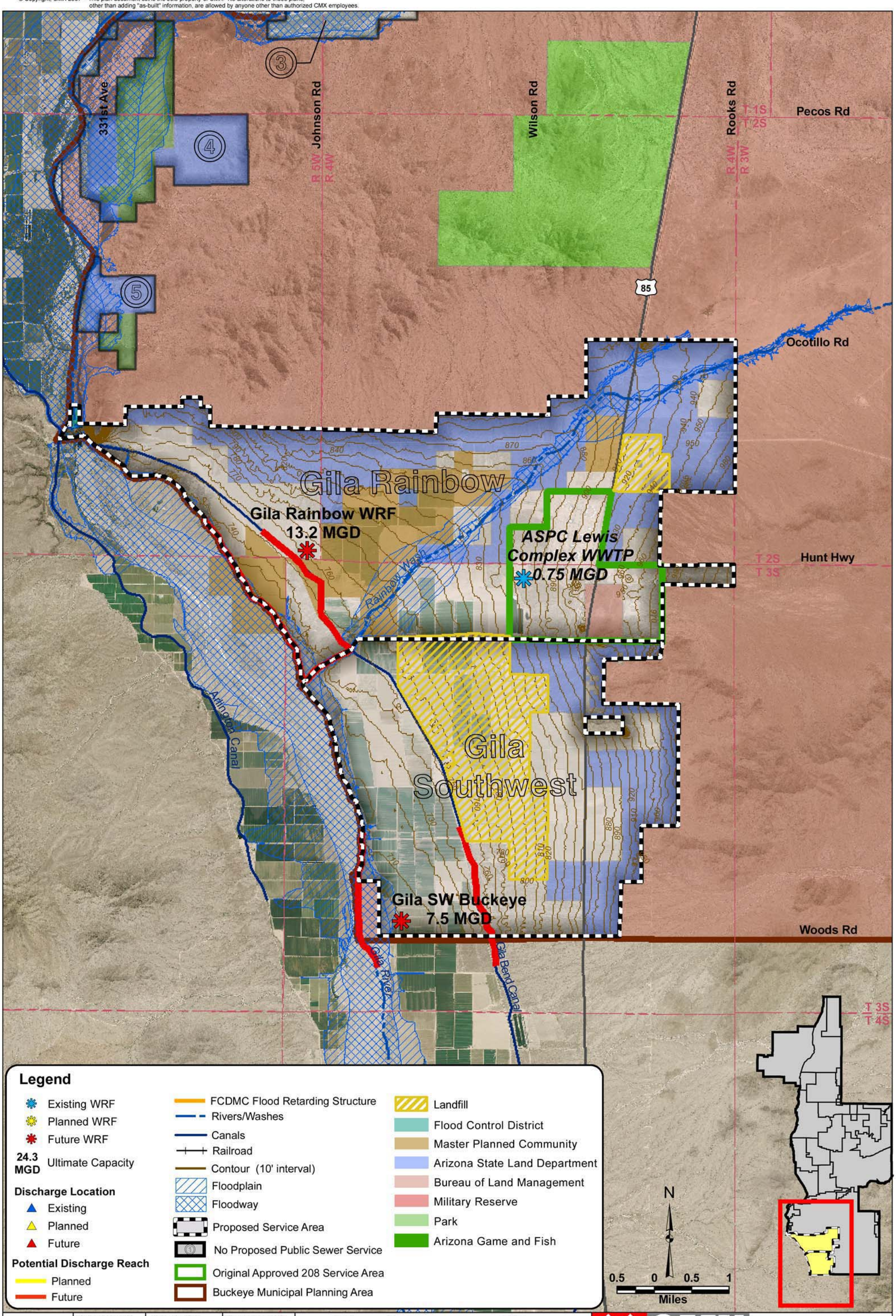

Legend

- Existing WRF
- Planned WRF
- Future WRF
- 24.3 MGD Ultimate Capacity

Discharge Location

- Existing
- Planned
- Future

Potential Discharge Reach

- Planned
- Future

- FCDMC Flood Retarding Structure
- Rivers/Washes
- Canals
- Railroad
- Contour (10' interval)
- Floodplain
- Floodway
- Proposed Service Area
- No Proposed Public Sewer Service
- Original Approved 208 Service Area
- Buckeye Municipal Planning Area

- Landfill
- Flood Control District
- Master Planned Community
- Arizona State Land Department
- Bureau of Land Management
- Military Reserve
- Park
- Arizona Game and Fish

FIG NO.	CMX PROJ: 7449	DATE: 07/30/07	SCALE: 1" = 6000'
11	DESIGNED: BNM	DRAWN: MEN	APPROVED: SAL
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Buckeye 208 Plan
Buckeye, Arizona

ASPC-Lewis, Gila Rainbow and Gila Southwest Proposed Service Areas

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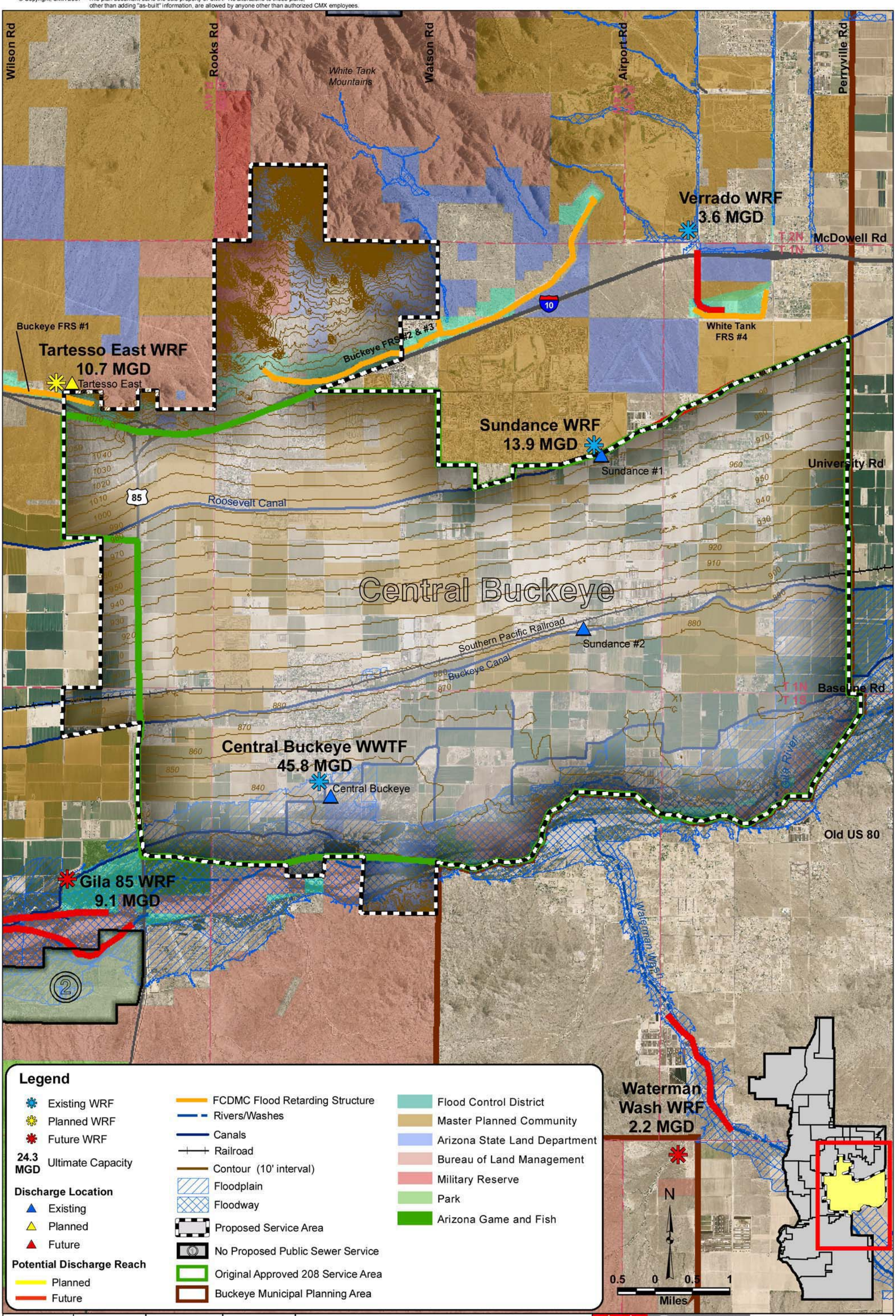

FIG NO.	CMX PROJ: 7449	DATE: 07/30/07	SCALE: 1"=6000'
12	DESIGNED: BNM	DRAWN: MEN	APPROVED: SAL
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Buckeye 208 Plan
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Central Buckeye Proposed Service Area

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331st Ave
Johnson Rd
Wilson Rd
Rooks Rd
Black Mountain Rd
T 6N
T 5N
R 5W
R 4W
R 4W
R 3W
Lone Mountain Rd
Hassayampa North
Jomax Rd
T 6N
T 4N
Hassayampa North WRF
9.4 MGD
Hassayampa River
Festival Ranch
CAP Canal
Deer Valley Rd
Daggs Wash
Sun Valley Parkway
Festival Ranch WRF
17.3 MGD
Festival Ranch
Wagner Wash
T 4N
T 3N
Bell Rd

Legend

- Existing WRF
- Planned WRF
- Future WRF
- 24.3 MGD — Ultimate Capacity

Discharge Location

- Existing
- Planned
- Future

Potential Discharge Reach

- Planned
- Future

- FCDMC Flood Retarding Structure
- Rivers/Washes
- Canals
- Railroad
- Contour (10' interval)
- Floodplain
- Floodway
- Proposed Service Area
- No Proposed Public Sewer Service
- Original Approved 208 Service Area
- Pending Service Area

- Buckeye Municipal Planning Area
- Flood Control District
- Master Planned Community
- Arizona State Land Department
- Bureau of Land Management
- Military Reserve
- Park
- Arizona Game and Fish

N

0.5 0 0.5 1
Miles

FIG NO. 13 SHT. 1 OF 1	CMX PROJ: 7449	DATE: 07/16/07	SCALE: 1"=6000'
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	REV.		

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Buckeye 208 Plan
Buckeye, Arizona

Festival Ranch and Hassayampa North Proposed Service Areas

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Rooks Rd
R 4W
R 3W
Watson Rd
Airport Rd
R 3W
R 2W
Perryville Rd
T 3N
T 2N
Northern Ave
White Tank FRS #3
Litchfield Park Service Company
Camelback Rd
1
White Tank Mountains
Verrado
Verrado WRF
3.6 MGD
T 2N
T 1N
McDowell Rd
10
White Tank FRS #4
Buckeye FRS #2 & #3
Sundance
Sundance WRF
13.9 MGD
Sundance #1
University Rd
Roosevelt Canal
Southern Pacific Railroad
Buckeye Canal
Sundance #2
T 1N
T 1S
Baseline Rd
N
0.5 0 0.5 1
Miles

Legend

- Existing WRF
- Planned WRF
- Future WRF
- 24.3 MGD — Ultimate Capacity

Discharge Location

- Existing
- Planned
- Future

Potential Discharge Reach

- Planned
- Future

- FCDMC Flood Retarding Structure
- Rivers/Washes
- Canals
- Railroad
- Contour (10' interval)
- Floodplain
- Floodway
- Proposed Service Area
- No Proposed Public Sewer Service
- Original Approved 208 Service Area
- Buckeye Municipal Planning Area

- Flood Control District
- Master Planned Community
- Arizona State Land Department
- Bureau of Land Management
- Military Reserve
- Park
- Arizona Game and Fish

FIG NO.	CMX PROJ: 7449	DATE: 07/30/07	SCALE: 1"=6000'
14	DESIGNED: BNM	DRAWN: MEN	APPROVED: SAL
SHT. 1 OF 1	REV.		
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Buckeye 208 Plan
Buckeye, Arizona

Sundance and Verrado Proposed Service Areas

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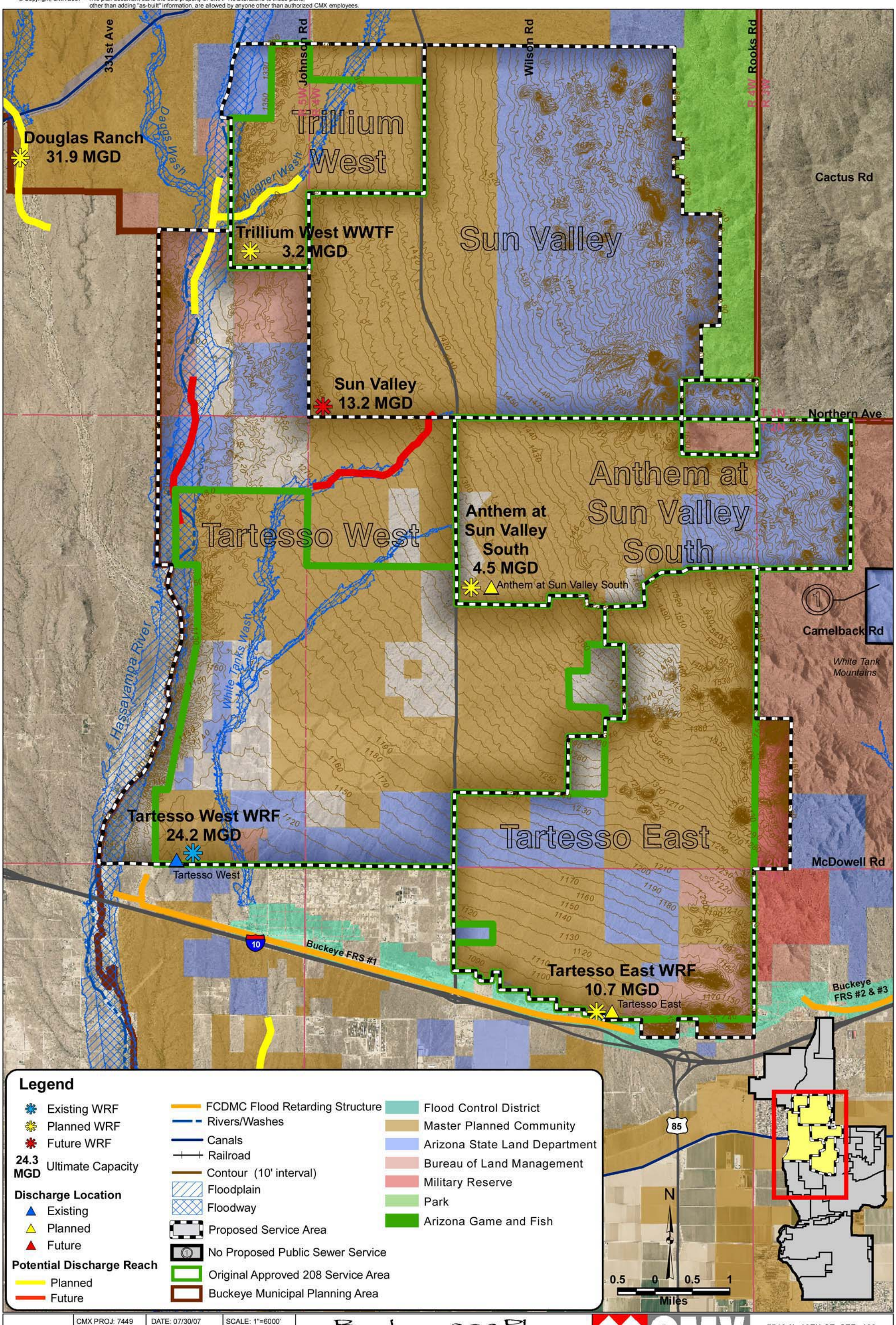

Legend

- Existing WRF
- Planned WRF
- Future WRF
- 24.3 MGD — Ultimate Capacity

Discharge Location
- Existing
- Planned
- Future

Potential Discharge Reach
- Planned
- Future

- FCDMC Flood Retarding Structure
- Rivers/Washes
- Canals
- Railroad
- Contour (10' interval)
- Floodplain
- Floodway
- Proposed Service Area
- No Proposed Public Sewer Service
- Original Approved 208 Service Area
- Buckeye Municipal Planning Area

- Flood Control District
- Master Planned Community
- Arizona State Land Department
- Bureau of Land Management
- Military Reserve
- Park
- Arizona Game and Fish

FIG NO.	CMX PROJ: 7449	DATE: 07/30/07	SCALE: 1"=6000'
15	DESIGNED: BNM	DRAWN: MEN	APPROVED: SAL
SHT. 1 OF 1	REV.		

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Buckeye 208 Plan
Buckeye, Arizona

Anthem at SVS, Sun Valley, Tartesso East and West and Trillium West Proposed Service Areas

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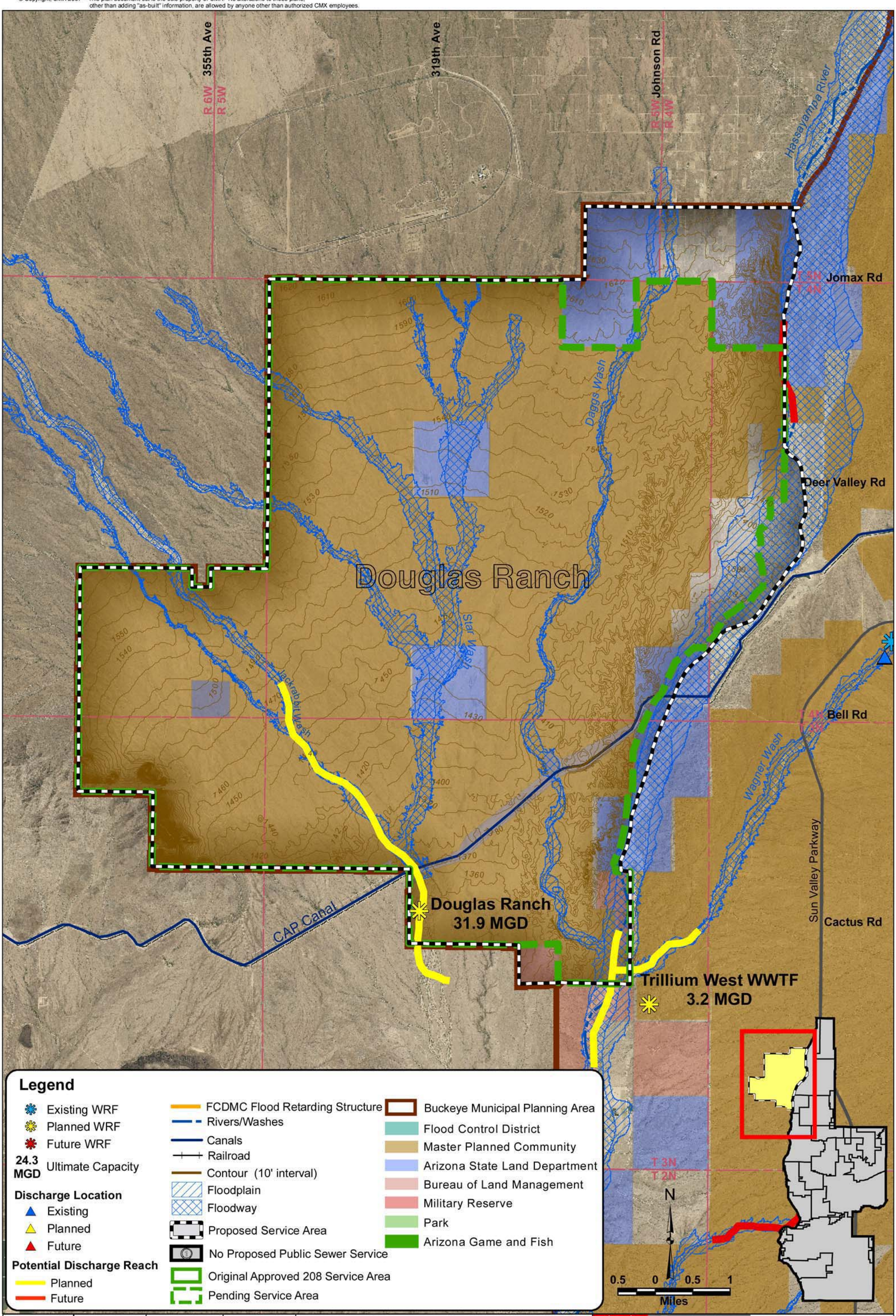

FIG NO. 16 SHT. 1 OF 1	CMX PROJ: 7449	DATE: 07/30/07	SCALE: 1"= 6000'
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	REV.		

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Buckeye 208 Plan
Buckeye, Arizona

Douglas Ranch
Proposed Service Area

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331st Ave
White Tanks Wash
Johnson Rd
R 4W
R 5W
Wilson Rd
Rooks Rd
R 3W
2N
McDowell Rd
Tartesso West WRF
24.2 MGD
Tartesso West
10
Buckeye FRS #1
Tartesso East WRF
10.7 MGD
Tartesso East
Buckeye FRS #2
Hassayampa River
Palo Verde Road
Town of Buckeye at Cipriani
Roosevelt Canal
Palo Verde #2
Palo Verde Road WWTP
11.7 MGD
85
Broadway Rd
Town of Buckeye WRF at Cipriani
12.0 MGD
Gila Hassayampa
T 1N
T 1S
Baseline Rd
Southern Pacific Railroad
Buckeye Canal
Gila 85
Palo Verde #1
Central Buckeye WWTF
45.8 MGD
Central Buckeye
Gila 85 WRF
9.1 MGD
Gila Hassayampa WRF
7.8 MGD
Arlington Canal
Gila River
Narramore Rd
T 1S
T 2S
N
0.5 0 0.5 1
Miles

Legend

- Existing WRF
- Planned WRF
- Future WRF
- 24.3 MGD — Ultimate Capacity

Discharge Location
- Existing
- Planned
- Future

Potential Discharge Reach
- Planned
- Future

- FCDMC Flood Retarding Structure
- Rivers/Washes
- Canals
- Railroad
- Contour (10' interval)
- Floodplain
- Floodway
- Proposed Service Area
- ① No Proposed Public Sewer Service
- Original Approved 208 Service Area
- Pending Service Area

- Buckeye Municipal Planning Area
- Flood Control District
- Master Planned Community
- Arizona State Land Department
- Bureau of Land Management
- Military Reserve
- Park
- Arizona Game and Fish

FIG NO. 17 SHT. 1 OF 1	CMX PROJ: 7449	DATE: 07/30/07	SCALE: 1"= 6000'
	DESIGNED: BNM	DRAWN: MEN	APPROVED: SAL
	REV.		

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Buckeye 208 Plan
Buckeye, Arizona

Cipriani, Gila 85, Gila Hassayampa and Palo Verde Road Proposed Service Areas

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Central Buckeye
Central Buckeye WRF
45.8 MGD
Gila River
Watson Rd
Airport Rd
Perryville Rd
Old US 80
R 3W
R 2W
Waterman Wash
Waterman Wash WRF
2.2 MGD
City of Goodyear
Rainbow Valley WRF
T 1S
T 2S
Pecos Rd
Waterman Wash
Rainbow Wash
City of Goodyear
Waterman Basin WRF
Ocotillo Rd
T 2S
T 3S
Hunt Hwy

Legend

- Existing WRF
- Planned WRF
- Future WRF
- 24.3 MGD — Ultimate Capacity

Discharge Location

- Existing
- Planned
- Future

Potential Discharge Reach

- Planned
- Future

- FCDMC Flood Retarding Structure
- Rivers/Washes
- Canals
- Railroad
- Contour (10' interval)
- Floodplain
- Floodway
- Proposed Service Area
- No Proposed Public Sewer Service
- Original Approved 208 Service Area
- Buckeye Municipal Planning Area

- Flood Control District
- Master Planned Community
- Arizona State Land Department
- Bureau of Land Management
- Military Reserve
- Park
- Arizona Game and Fish

N
0.5 0 0.5 1
Miles

FIG NO.	CMX PROJ: 7449	DATE: 07/18/07	SCALE: 1"= 6000'
18	DESIGNED: BNM	DRAWN: MEG	APPROVED: SAL
SHT. 1 OF 1	REV.		

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Buckeye 208 Plan
Buckeye, Arizona

Waterman Wash Proposed Service Area

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Proposed Land Use Service Area Expansion			
Facility	**Residential (ac)**	**Commercial (ac)**	**Open Space (ac)**
Existing Facilities			
ASPC - Lewis WWTP	N/A	N/A	N/A
Central Buckeye WWTF	4,688	1,532	0
Festival Ranch WRF	6,754	470	6,081
Sundance WWTF	5,574	0	1,237
Tartesso West WRF	3,771	2,332	2,078
Verrado WRF	421	0	0
Planned Facilities			
Anthem at Sun Valley South WRF	0	0	0
Douglas Ranch WRF	2,501	574	875
Palo Verde Road WWTP	1,701	510	181
Tartesso East WRF	439	702	0
Town of Buckeye WRF at Cipriani	181	0	0
Trillium West WWTF	472	378	0
Future Facilites			
Gila 85 WRF	7,990	1,578	0
Gila Hassayampa WRF	7,772	655	0
Gila Rainbow WRF	5,365	6,384	0
Gila Southwest WRF	4,917	2,580	0
Hassayampa North WRF	8,364	1,564	1,633
Sun Valley WRF	13,418	1,036	0
Waterman Wash WRF	2,426	0	0

Hassayampa North
Festival Ranch
Festival Ranch WRF
Douglas Ranch
Douglas Ranch WRF
Trillium West
Trillium West WWTF
Sun Valley
Sun Valley WRF
Anthem at Sun Valley South
Anthem at Sun Valley South WRF
LPSCO (Sarival/Palm Valley WRFs)
Tartesso West
Tartesso West WRF
Verrado
Verrado WRF
Tartesso East
Tartesso East WRF
Sundance
Sundance WWTP
Palo Verde Road WRF
Palo Verde Road
Cipriani
Town of Buckeye WRF at Cipriani
Central Buckeye
Central Buckeye WWTP
Gila Hassayampa
Gila Hassayampa WRF
Gila 85
Gila 85 WRF
Waterman Wash WRF
Waterman Wash
Gila Rainbow
ASPC Lewis Complex WWTP
Gila Southwest
Gila Southwest WRF

Legend

Facility status
- Existing
- Planned
- Future
- Buckeye Planning Boundary
- Original Service Area
- Proposed Service Area
- ① No Proposed Public Sewer Service
- Flood Control
- LPSCO

Land Ownership
- BLM
- Local or State Parks
- State
- State Wildlife Area

Service Area Land Use
- Commercial/Industrial
- Open Space
- Residential
- Landfill

NOTES
1. Land use assumptions based on draft Town of Buckeye General Plan Amendment.
2. Land use assumptions are used as the basis for population and flow rate projections for areas that are within proposed service areas, but are not within original service area of a facility.
3. Some remote areas of the MPA are not assigned to a specific facility's service area. These remote locations will need to evaluate their wastewater treatment options prior to development.
4. Original service area refers to the service area shown in the latest approved 208 Plan Amendment or proposed by an amendment previously in progress.

FIG NO. 19
SHT. 1 OF 1

CMX PROJ: 7449	DATE: 07/30/07	SCALE: 1"=20,000'
DESIGNED: BNM	DRAWN: MEN	APPROVED: SAL
REV.		

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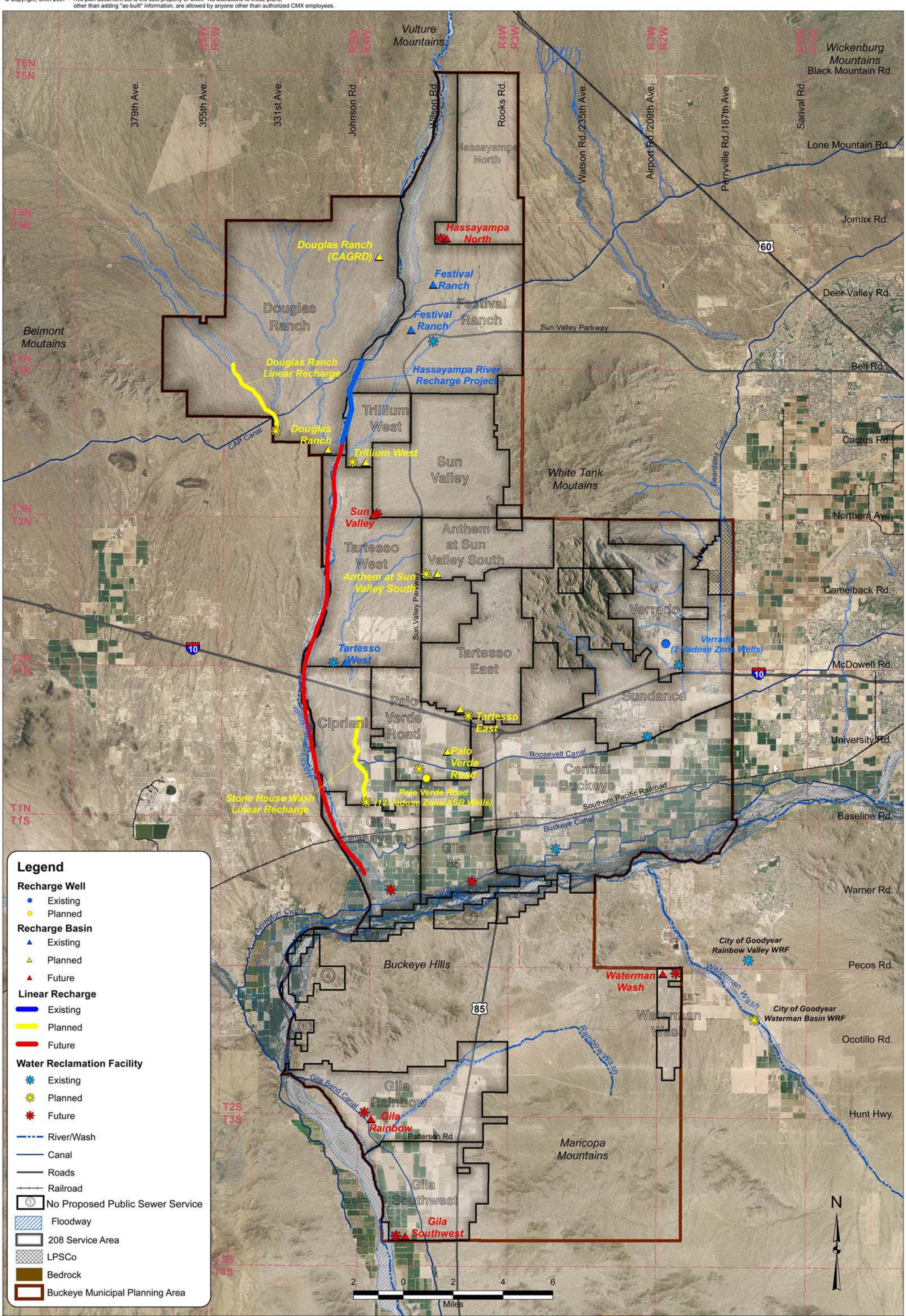
Buckeye 208 Plan
Buckeye, Arizona

Service Area Expansion and Proposed Land Use

CMX
7740 N. 16TH ST. STE. 100
PHOENIX, AZ 85020
PHONE: (602) 567-1900
FAX: (602) 567-1901
www.cmxinc.com
ENGINEERS - PLANNERS - LANDSCAPE - ARCHITECTS - SURVEYORS - CONSTRUCTION MANAGERS



Legend

Recharge Well
- Existing
- Planned

Recharge Basin
- Existing
- Planned
- Future

Linear Recharge
- Existing
- Planned
- Future

Water Reclamation Facility
- Existing
- Planned
- Future

- River/Wash
- Canal
- Roads
- Railroad
- ① No Proposed Public Sewer Service
- Floodway
- 208 Service Area
- LPSCo
- Bedrock
- Buckeye Municipal Planning Area

FIG NO. 20 SHT. 1 OF 1	CMX PROJ: 7449	DATE: 07/30/07	SCALE 1:100,000
	DESIGNED: SAL	DRAWN: MEN	APPROVED: SAL
	REV.		

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Buckeye 208 Plan

Buckeye, Arizona

Proposed Recharge Locations

CMX
7740 N. 16TH ST. STE. 100
PHOENIX, AZ 85020
PHONE: (602) 567-1900
FAX: (602) 567-1901
www.cmxinc.com
ENGINEERS - PLANNERS - LANDSCAPE - ARCHITECTS - SURVEYORS - CONSTRUCTION MANAGERS

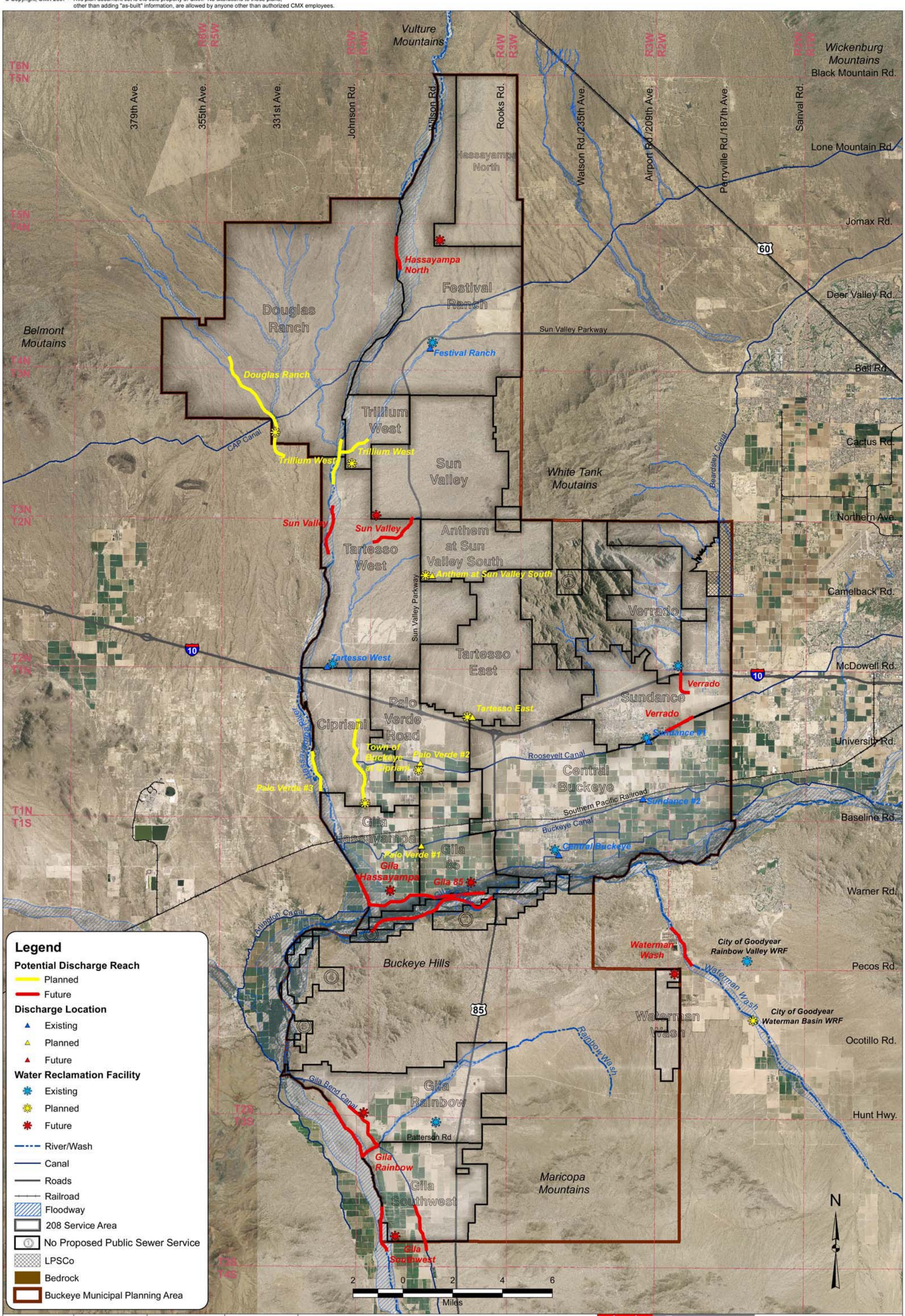

FIG NO. 21 SHT. 1 OF 1	CMX PROJ: 7449	DATE: 07/30/07	SCALE 1:100,000
	DESIGNED: SAL	DRAWN: MEN	APPROVED: SAL
	REV.		

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Buckeye 208 Plan

Buckeye, Arizona

Proposed Discharge Locations

CMX
7740 N. 16TH ST. STE. 100
PHOENIX, AZ 85020
PHONE: (602) 567-1900
FAX: (602) 567-1901
www.cmxinc.com
ENGINEERS - PLANNERS - LANDSCAPE - ARCHITECTS - SURVEYORS - CONSTRUCTION MANAGERS

APPENDIX C

TABLES

C.1. **Town of Buckeye Facility Summary** – This table provides a summary the original and proposed service area for each existing, planned and future facility. The ultimate build out populations and the corresponding ultimate capacity for each facility proposed herein are listed in this table.

C.2. **Existing 208 Plan Amendments** – This table lists the existing MAG 208 Plans that are referenced in this report with the corresponding author, date published and status.

C.3. **Population Projections per Facility by RAZ** – This table shows the estimated population for the Town of Buckeye using POPTAC and RAZ information.

C.4. **Populations and Flow Projections for Proposed Service Areas** – This table displays the original and proposed service areas with the corresponding populations, average day flows, and ultimate capacities of the facilities.

C.5. **Implementation Schedule for the Town of Buckeye Wastewater Facilities** – The table shows the anticipated construction schedule for the wastewater facilities. Dates presented are subject to change.

Table C.1. Town of Buckeye Facility Summary

Town of Buckeye 208 Plan Amendment

Buckeye, Arizona

	Original Service Area (acres)	Gross Service Area Expansion (acres)	Proposed Service Area (acres)	Ultimate Build Out Population	Constructed Capacity (MGD)	Approved Capacity (MGD)	Pending Capacity (MGD)	Original Capacity (MGD)	Ultimate Capacity (MGD)
Existing Facilities									
ASPC Lewis Complex WWTP	1,978	0	0	0	0.75	0.75		0.75	0.0
Central Buckeye WWTP	35,053	6,220	41,254	439,000	4.0	16.6		16.6	45.8
Festival Ranch WRF	13,423	13,305	26,849	160,000	1.0	4.0	11.0	11.0	17.3
Sundance WWTP	10,715	6,811	17,522	139,000	2.4	8.9		8.9	13.9
Tartesso West WRF	13,530	8,182	21,563	173,000	1.2	18.0		18.0	24.2
Verrado WRF	8,800	421	9,242	37,000	0.45	3.35		3.35	3.6
Existing Facilities Subtotal	**83,499**	**34,939**	**116,429**	**948,000**	**9.8**	**51.6**		**58.6**	**104.8**
Planned Facilities									
Anthem at Sun Valley South WRF	7,385	0	7,589	37,000	N/A	4.5		4.5	4.5
Douglas Ranch WRF	35,250	3,950	41,399	275,000	N/A	N/A	29.0	29.0	31.9
Palo Verde Road WWTP	6,853	1,703	8,473	111,000	N/A	10.2		10.2	11.7
Tartesso East WRF	10,291	1,141	11,923	86,000	N/A	9.6		9.6	10.7
Town of Buckeye WRF at Cipriani	9,903	182	10,290	85,000	N/A	N/A	12.0	12.0	12.0
Trillium West WWTF	3,042	850	3,986	30,000	N/A	11.0		11.0	3.2
Planned Facilities Subtotal	**72,724**	**7,827**	**83,660**	**624,000**	**N/A**	**35.3**		**76.3**	**74.1**
Future Facilities									
Gila 85 WRF	N/A	9,568	9,573	72,000	N/A	N/A		N/A	9.1
Gila Hassayampa WRF	N/A	8,427	8,458	70,000	N/A	N/A		N/A	7.8
Gila Rainbow WRF	ASPC Lewis Complex	11,749	14,098	56,000	N/A	N/A		N/A	13.2
Gila Southwest WRF	N/A	7,497	10,112	44,000	N/A	N/A		N/A	7.5
Hassayampa North WRF	N/A	11,561	11,594	75,000	N/A	N/A		N/A	9.4
Sun Valley WRF	N/A	14,454	14,455	120,000	N/A	N/A		N/A	13.2
Waterman Wash WRF	N/A	2,426	2,428	22,000	N/A	N/A		N/A	2.2
Future Facilities Subtotal	**0**	**65,683**	**70,717**	**459,000**	**N/A**	**N/A**		**N/A**	**62.4**
TOTAL	**156,223**	**108,448**	**270,806**	**2,031,000**	**9.8**	**86.9**		**134.9**	**241.2**

Notes:

1. The proposed service areas for each of the facilities are conceptual and subject to change.
2. Approved capacities represent the facility capacity as established by a previously approved 208 Plan Amendment. The pending capacity represents the size of a facility proposed in a draft 208 Plan Amendment that has been presented to the Town for sponsorship but has not been submitted to nor approved by MAG or other agencies. The pending facility capacities are assumed to represent the latest planning efforts by the Town and are therefore considered throughout this document as such. The pending and approved facility capacities are combined and defined as original capacities for the purposes of this report and the corresponding analyses. See Section 2.2 for more information.
3. Dwelling unit and population counts for the original service areas are taken from the respective 208 Plan Amendments with no alterations to the specific design criteria outlined therein. Where actual populations and dwelling units for the original service areas are not provided, equivalent populations and dwelling units are used, based on average daily flow and a flow generation rate of 100 gpcd and population density 3.2 persons per dwelling unit. This includes the ASPC-Lewis, Central Buckeye, Palo Verde Road and Sundance service areas. The overall Central Buckeye service area dwelling unit and population counts are based on the Central Buckeye Wastewater Treatment Plant Master Plan (CDM 2006).
4. The ASPC-Lewis Complex WWTP, Central Buckeye WWTP, Festival Ranch WRF, Sundance WWTP and Palo Verde Road original/approved acreages are estimated whereas the others are gathered from prior MAG 208 Plan applications.
5. The ASPC-Lewis WWTP is assumed to be phased in the future with flows from the facility being treated at the Gila Rainbow WRF.
6. Service area expansion population and dwelling unit counts are based net acreage of the expansion area, which takes into account a 20% reduction to account for open space and right-of-way areas. The dwelling unit density is assumed to be 3.5 dwelling units per acre and the population density is assumed to be 3.2 persons per dwelling unit. Average daily flow is based on flow generation rates of 100 gpcd for residential populations, 1,500 gpad for commercial acreages and 0 gpad for open space acreages.
7. The additional service area for the Verrado WRF is the Fireside at Sienna Hills (formerly Tesota Hills) development. As the population and average daily flows for this facility are calculated in the Wastewater Master Plan for Fireside at Sienna Hills (formerly Tesota Hills) (CMX 2007), they are not calculated using the above mentioned assumptions.
8. Due to overlapping original service areas between the Palo Verde Road WWTP and adjacent facilities, the service area expansion for the Palo Verde Road WWTP incorporates an area reduction of 690 acres.
9. The original service area and gross service area expansion will not necessarily total the proposed service area.

Table C.2. Existing 208 Plan Amendments

Town of Buckeye 208 Plan Amendment
Buckeye, Arizona

Facility	Document Title	Author	Date Published	208 Status
Existing Facilities				
ASPC-Lewis WWTF	ASPC Lewis Complex Wastewater Treatment Facility Revised Feasibility Report for Wastewater Treatment Facility	Carollo Engineers	March 1998	Approved under the MAG Small Plant Process
Central Buckeye WWTP	Clean Water Act 208 Plan Amendment for the Central Buckeye Wastewater Treatment Plant	CDM	May 2005	Approved
Festival Ranch WRF	Clean Water Act Plan 208 Amendment for the Town of Buckeye Festival Ranch Water Reclamation Facility	Coe & Van Loo Consultants, Inc	June 2003	Approved
	Festival Ranch Water Reclamation Facility 208 Water Quality Management Plan Amendment	Fluid Solutions	January 2006	Submitted to Town for sponsorship
Sundance WWTP	MAG 208 Water Quality Management Plan Amendment for the Expansion of the Sundance Wastewater Treatment Plant	RBF Consulting	August 2005	Approved
Tartesso West WRF	Clean Water Act 208 Amendment Application for Maricopa Association of Governments Prepared for the Tartesso Water Reclamation Facility and the Town of Buckeye	Pacific Advanced Civil Engineering, Inc	May 2003	Approved
Verrado WRF	Clean Water Act 208 Plan Amendment for the Town of Buckeye: Whitestone Water Reclamation Facility	Malcolm Pirnie	June 2001	Approved
Planned Facilities				
Anthem at Sun Valley South WRF	MAG 208 Water Quality Management Plan Amendment for Anthem at Sun Valley South and Tartesso East Water Reclamation Facilities	CMX, LLC	February 2006	Approved
Douglas Ranch WRF	Douglas Ranch Water Reclamation Facility Clean Water Act Plan 208 Amendment for the Town of Buckeye	Coe & Van Loo Consultants, Inc	September 2006	Submitted to Town for sponsorship
Palo Verde Road WWTP	MAG 208 Water Quality Management Plan Amendment Application for the Palo Verde Road Wastewater Treatment Plant	RBF Consulting	November 2004	Approved
Tartesso East WRF	MAG 208 Water Quality Management Plan Amendment for Anthem at Sun Valley South and Tartesso East Water Reclamation Facilities	CMX, LLC	February 2006	Approved
Town of Buckeye WRF at Cipriani	MAG 208 Water Quality Management Plan Amendment for the Town of Buckeye Water Reclamation Facility at Cipriani	CMX, LLC	September 2006	Submitted to Town for sponsorship
Trillium West WWTF	Clean Water Act 208 Amendment for the Town of Buckeye Trillium West Wastewater Treatment Facility	CSA Engineering	December 2005	Approved

Table C.3. Population Projections per Facility by RAZ

Town of Buckeye 208 Plan Amendment

Buckeye, Arizona

Facility	RAZ	Developable Area per RAZ (ac)	Total Developable RAZ Area (ac)	2005 POPTAC Population	2010 POPTAC Population	2020 POPTAC Population	2030 POPTAC Population
Existing Facilities							
ASPC-Lewis WWTP	253	N/A	20,997	N/A	N/A	N/A	N/A
	277	N/A	40,171	N/A	N/A	N/A	N/A
	278	N/A	26,283	N/A	N/A	N/A	N/A
	279	N/A	21,485	N/A	N/A	N/A	N/A
	340	N/A	84,830	N/A	N/A	N/A	N/A
	341	N/A	46,668	N/A	N/A	N/A	N/A
	343	N/A	27,220	N/A	N/A	N/A	N/A
		N/A	**267,653**	**N/A**	**N/A**	**N/A**	**N/A**
Central Buckeye WWTP	253	664	20,997	134	259	615	1,354
	277	2,013	40,171	118	217	1,052	2,872
	278	21,021	26,283	13,156	27,591	53,631	83,663
	279	15,320	21,485	3,167	9,971	28,600	54,559
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	528	27,220	96	116	152	355
Subtotal		**39,547**	**267,653**	**16,671**	**38,155**	**84,049**	**142,804**
Festival Ranch WRF	253	0	20,997	0	0	0	0
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	3,915	84,830	2	194	1,934	3,939
	341	22,934	46,668	126	1,820	10,458	16,834
	343	0	27,220	0	0	0	0
Subtotal		**26,848**	**267,653**	**129**	**2,014**	**12,393**	**20,773**
Sundance WWTP	253	9,023	20,997	1,815	3,520	8,353	18,399
	277	0	40,171	0	0	0	0
	278	2,488	26,283	1,557	3,266	6,348	9,903
	279	5,996	21,485	1,240	3,902	11,193	21,353
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	0	27,220	0	0	0	0
Subtotal		**17,507**	**267,653**	**4,612**	**10,689**	**25,894**	**49,655**
Tartesso West WRF	253	0	20,997	0	0	0	0
	277	1,987	40,171	117	214	1,038	2,835
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	19,577	84,830	11	970	9,672	19,700
	341	0	46,668	0	0	0	0
	343	0	27,220	0	0	0	0
Subtotal		**21,565**	**267,653**	**128**	**1,184**	**10,710**	**22,534**
Verrado WRF	253	9,073	20,997	1,825	3,540	8,399	18,501
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	169	21,485	35	110	315	601
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	0	27,220	0	0	0	0
Subtotal		**9,242**	**267,653**	**1,860**	**3,650**	**8,714**	**19,102**
Planned Facilities							
Anthem at Sun Valley South WRF	253	1,596	20,997	321	623	1,478	3,255
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	5,957	84,830	3	295	2,943	5,994
	341	0	46,668	0	0	0	0
	343	0	27,220	0	0	0	0
Subtotal		**7,553**	**267,653**	**325**	**918**	**4,421**	**9,250**
Douglas Ranch WRF	253	0	20,997	0	0	0	0
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	29,262	84,830	17	1,450	14,456	29,445
	341	12,140	46,668	67	964	5,536	8,911
	343	0	27,220	0	0	0	0
Subtotal		**41,402**	**267,653**	**84**	**2,414**	**19,993**	**38,356**
Palo Verde Road WRF	253	0	20,997	0	0	0	0
	277	8,467	40,171	498	913	4,422	12,076
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	6	84,830	0	0	3	6
	341	0	46,668	0	0	0	0
	343	0	27,220	0	0	0	0
Subtotal		**8,473**	**267,653**	**498**	**913**	**4,426**	**12,082**
Tartesso East WRF	253	0	20,997	0	0	0	0
	277	890	40,171	52	96	465	1,270
	278	2,767	26,283	1,732	3,632	7,059	11,012
	279	0	21,485	0	0	0	0
	340	7,675	84,830	4	380	3,792	7,723
	341	0	46,668	0	0	0	0
	343	0	27,220	0	0	0	0
Subtotal		**11,332**	**267,653**	**1,788**	**4,108**	**11,316**	**20,005**
Town of Buckeye WRF at Cipriani	253	0	20,997	0	0	0	0
	277	10,290	40,171	605	1,109	5,375	14,676
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	0	27,220	0	0	0	0
Subtotal		**10,290**	**267,653**	**605**	**1,109**	**5,375**	**14,676**
Trillium West WWTF	253	0	20,997	0	0	0	0
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	3,986	84,830	2	198	1,969	4,011
	341	0	46,668	0	0	0	0
	343	0	27,220	0	0	0	0
Subtotal		**3,986**	**267,653**	**2**	**198**	**1,969**	**4,011**

Table C.3. Population Projections per Facility by RAZ

Town of Buckeye 208 Plan Amendment

Buckeye, Arizona

Facility	RAZ	Developable Area per RAZ (ac)	Total Developable RAZ Area (ac)	2005 POPTAC Population	2010 POPTAC Population	2020 POPTAC Population	2030 POPTAC Population
Future Facilities							
Gila 85 WRF	253	0	20,997	0	0	0	0
	277	8,022	40,171	472	865	4,190	11,441
	278	7	26,283	4	9	17	27
	279	0	21,485	0	0	0	0
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	1,120	27,220	204	247	322	753
Subtotal		**9,148**	**267,653**	**680**	**1,120**	**4,529**	**12,221**
Gila Hassayampa WRF	253	0	20,997	0	0	0	0
	277	8,458	40,171	497	912	4,418	12,064
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	0	27,220	0	0	0	0
Subtotal		**8,458**	**267,653**	**497**	**912**	**4,418**	**12,064**
Gila Rainbow WRF	253	0	20,997	0	0	0	0
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	13,464	27,220	2,450	2,965	3,866	9,053
Subtotal		**13,464**	**267,653**	**2,450**	**2,965**	**3,866**	**9,053**
Gila Southwest WRF	253	0	20,997	0	0	0	0
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	7,490	27,220	1,363	1,649	2,151	5,036
Subtotal		**7,490**	**267,653**	**1,363**	**1,649**	**2,151**	**5,036**
Hassayampa North WRF	253	0	20,997	0	0	0	0
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	0	84,830	0	0	0	0
	341	11,594	46,668	64	920	5,287	8,510
	343	0	27,220	0	0	0	0
Subtotal		**11,594**	**267,653**	**64**	**920**	**5,287**	**8,510**
Sun Valley WRF	253	0	20,997	0	0	0	0
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	14,451	84,830	8	716	7,139	14,542
	341	0	46,668	0	0	0	0
	343	0	27,220	0	0	0	0
Subtotal		**14,451**	**267,653**	**8**	**716**	**7,139**	**14,542**
Waterman Wash WRF	253	0	20,997	0	0	0	0
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	2,423	27,220	441	533	696	1,629
Subtotal		**2,423**	**267,653**	**441**	**533**	**696**	**1,629**
Non-service Areas							
Non-service Area 1	253	640	20,997	129	250	593	1,306
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	0	27,220	0	0	0	0
Subtotal		**640**	**267,653**	**129**	**250**	**593**	**1,306**
Non-service Area 2	253	0	20,997	0	0	0	0
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	0	27,220	0	0	0	0
Subtotal		**0**	**267,653**	**0**	**0**	**0**	**0**
Non-service Area 3	253	0	20,997	0	0	0	0
	277	44	40,171	3	5	23	63
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	599	27,220	109	132	172	403
Subtotal		**643**	**267,653**	**112**	**137**	**195**	**466**
Non-service Area 4	253	0	20,997	0	0	0	0
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	1,213	27,220	221	267	348	815
Subtotal		**1,213**	**267,653**	**221**	**267**	**348**	**815**
Non-service Area 5	253	0	20,997	0	0	0	0
	277	0	40,171	0	0	0	0
	278	0	26,283	0	0	0	0
	279	0	21,485	0	0	0	0
	340	0	84,830	0	0	0	0
	341	0	46,668	0	0	0	0
	343	384	27,220	70	85	110	258
Subtotal		**384**	**267,653**	**70**	**85**	**110**	**258**
TOTAL		**267,653**		**32,735**	**74,906**	**218,591**	**419,146**

Notes:

1. Population projections based on Socioeconomic Projections of Population, Housing and Emplyment by Municipal Planning Area and Regional Analysis Zone by MAG dated May 2007.
2. Developable Area per RAZ and Total Developable RAZ Area do not include BLM, military, Game & Fish or landfill lands.
3. Rounding may cause slight discrepancies in the total values.

Table C.4. Population and Flow Projections for Proposed Service Areas

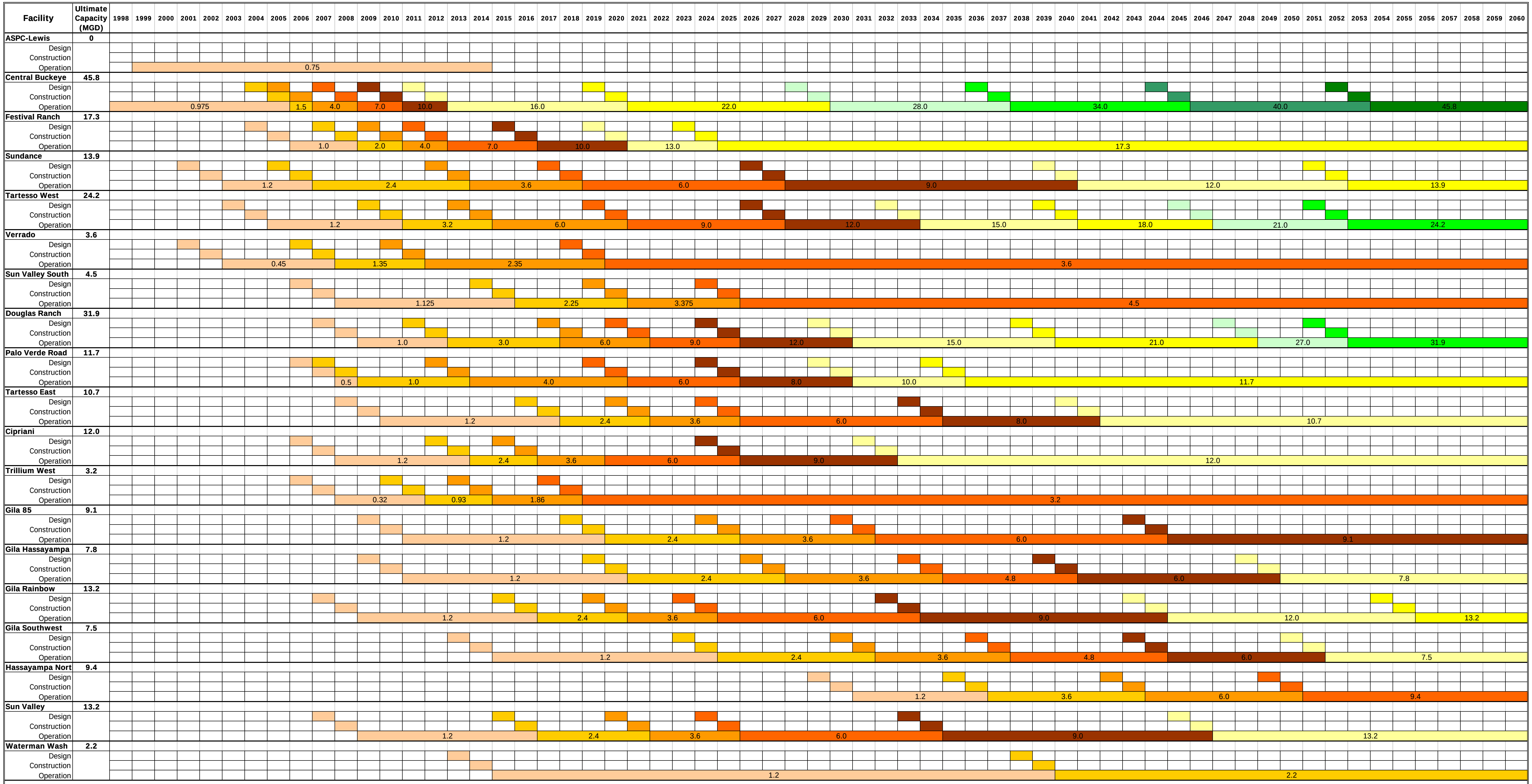
Town of Buckeye 208 Plan Amendment
Buckeye, Arizona

Facility	Original Service Area		Service Area Expansion from Original Service Area								Proposed Service Area		
			Gross Area				Net Area						
	Residential Population	Average Daily Flow (gpd)	Residential (ac)	Commercial (ac)	Open Space (ac)	Total	Residential (ac)	Commercial (ac)	Residential Population	Average Daily Flow (gpd)	Ultimate Build Out Population	Average Daily Flow (gpd)	Ultimate Capacity (MGD)
Existing Facilities													
ASPC-Lewis WWTP	7,500	750,000	0	0	0	0	0	0	0	0	N/A	N/A	N/A
Central Buckeye WWTP	397,372	39,737,198	4,688	1,532	0	6,220	3,750	1,226	42,000	6,038,724	439,000	45,775,922	45.8
Festival Ranch WRF	99,397	10,596,000	6,754	470	6,081	13,305	5,404	376	61,000	6,663,958	160,000	17,259,958	17.3
Sundance WWTP	89,294	8,929,443	5,574	0	1,237	6,811	4,459	0	50,000	5,000,000	139,000	13,929,443	13.9
Tartesso West WRF	138,846	18,000,000	3,771	2,332	2,078	8,182	3,017	1,866	34,000	6,198,549	173,000	24,198,549	24.2
Verrado WRF	33,460	3,350,000	0	0	0	444	326	4	3,040	249,370	37,000	3,599,370	3.6
Existing Facilities Subtotal	**765,869**	**81,362,641**	**20,788**	**4,334**	**9,396**	**34,962**	**16,956**	**3,472**	**190,040**	**24,150,601**	**948,000**	**104,763,242**	**104.8**
Planned Facilities													
Anthem at Sun Valley South WRF	36,675	4,519,475	0	0	0	0	0	0	0	0	37,000	4,519,475	4.5
Douglas Ranch WRF	252,585	29,000,250	2,501	574	875	3,950	2,001	459	22,000	2,889,161	275,000	31,889,411	31.9
Palo Verde Road WRF	101,928	10,192,800	1,011	510	181	1,703	809	408	9,000	1,512,577	111,000	11,705,377	11.7
Tartesso East WRF	81,577	9,472,000	439	702	0	1,141	352	562	4,000	1,242,335	86,000	10,714,335	10.7
Town of Buckeye WRF at Cipriani	83,085	11,800,000	181	0	0	182	145	0	2,000	200,467	85,000	12,000,467	12.0
Trillium West WWTF	25,566	2,821,120	472	0	378	850	378	0	4,000	400,000	30,000	3,221,120	3.2
Planned Facilities Subtotal	**581,416**	**67,805,645**	**4,605**	**1,787**	**1,435**	**7,827**	**3,684**	**1,430**	**41,000**	**6,244,541**	**624,000**	**74,050,186**	**74.1**
Future Facilities													
Gila 85 WRF	0	0	7,990	1,578	0	9,568	6,392	1,262	72,000	9,093,201	72,000	9,093,201	9.1
Gila Hassayampa WRF	0	0	7,772	655	0	8,427	6,217	524	70,000	7,786,287	70,000	7,786,287	7.8
Gila Rainbow WRF	ASPC-Lewis WWTP		5,365	6,384	0	11,749	4,292	5,107	48,000	12,460,321	56,000	13,210,321	13.2
Gila Southwest WRF	0	0	4,917	2,580	0	7,497	3,934	2,064	44,000	7,496,138	44,000	7,496,138	7.5
Hassayamapa North WRF	0	0	8,364	1,564	1,633	11,561	6,692	1,251	75,000	9,376,660	75,000	9,376,660	9.4
Sun Valley WRF	0	0	13,418	1,036	0	14,454	10,734	829	120,000	13,243,107	120,000	13,243,107	13.2
Waterman Wash WRF	0	0	2,426	0	0	2,426	1,941	0	22,000	2,200,000	22,000	2,200,000	2.2
Future Facilities Subtotal	**0**	**0**	**50,253**	**13,796**	**1,633**	**65,683**	**40,203**	**11,037**	**451,000**	**61,655,713**	**459,000**	**62,405,713**	**62.4**
Total	**1,347,285**	**149,168,286**	**75,646**	**19,918**	**12,464**	**108,471**	**60,843**	**15,939**	**682,040**	**92,050,856**	**2,031,000**	**241,219,142**	**241.2**

Notes:

1. In addition to the approved 208 Plan Amendments, three facilities have pending 208 Plan Amendments that have been presented to the Town for sponsorship but has not been submitted to nor approved by MAG or other agencies. The pending facility capacities are assumed to represent the latest planning efforts by the Town and are therefore considered throughout this document as such. The pending and approved facility capacities are combined and defined as original capacities for the purposes of this report and the corresponding analyses. See Section 2.2 for more information.
2. Gross area is reduced by 20% to account for open space and right-of-way areas.
3. Residential populations are based on a dwelling unit density of 3.5 dwelling units per acre and a population density of 3.2 persons per dwelling unit.
4. Average daily flow is based on flow generation rates of 100 gpcd for residential population, 1,500 gpad for commercial acreages and 0 gpad for open space acreages.
5. Original residential populations and average daily flows are from the respective 208 Plan Amendments for existing and planned facilities.
6. The original service area for the Gila Rainbow WRF is the ASPC-Lewis WWTP, which is assumed to eventually be decommissioned and incorporated into the Gila Rainbow facility.
7. The additional service area for the Verrado WRF is the Fireside at Sienna Hills (formerly Tesota Hills) development. As the population and average daily flows for this facility are calculated in the Wastewater Master Plan for Fireside at Sienna Hills (formerly Tes (CMX 2007), they are not calculated using the above mentioned assumptions.
8. Where residential populations are not provided by in the respecitive 208 Plan Amendments, equivalent populations are provided. This includes Central Buckeye, Palo Verde Road WRF, Sundance WWTP and ASPC-Lewis WWTP.
9. Ultimate build out populations are rounded to the nearest thousand.

Table C.5. Estimated Implementation Schedule for Town of Buckeye Wastewater Facilities



Facility	Ultimate Capacity (MGD)	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050	2051	2052	2053	2054	2055	2056	2057	2058	2059	2060
ASPC-Lewis	**0**																																																															
Design																																																																
Construction																																																																
Operation										0.75																																																				
Central Buckeye	**45.8**																																																															
Design																																																																
Construction																																																																
Operation					0.975					1.5	4.0		7.0		10.0					16.0									22.0								28.0								34.0								40.0								45.8			
Festival Ranch	**17.3**																																																															
Design																																																																
Construction																																																															
Operation											1.0		2.0		4.0			7.0				10.0				13.0																				17.3																		
Sundance	**13.9**																																																															
Design																																																																
Construction																																																																
Operation								1.2						2.4						3.6							6.0											9.0												12.0									13.9				
Tartesso West	**24.2**																																																															
Design																																																																
Construction																																																															
Operation											1.2					3.2					6.0							9.0						12.0							15.0						18.0						21.0							24.2				
Verrado	**3.6**																																																															
Design																																																																
Construction																																																																
Operation									0.45				1.35						2.35																									3.6																				
Sun Valley South	**4.5**																																																															
Design																																																																
Construction																																																																
Operation															1.125							2.25					3.375																				4.5																	
Douglas Ranch	**31.9**																																																															
Design																																																																
Construction																																																																
Operation														1.0					3.0				6.0				9.0					12.0							15.0									21.0						27.0						31.9				
Palo Verde Road	**11.7**																																																															
Design																																																																
Construction																																																																
Operation												0.5			1.0						4.0						6.0					8.0					10.0															11.7												
Tartesso East	**10.7**																																																															
Design																																																																
Construction																																																															
Operation																	1.2						2.4				3.6							6.0								8.0													10.7									
Cipriani	**12.0**																																																															
Design																																																																
Construction																																																																
Operation														1.2					2.4			3.6				6.0							9.0																	12.0														
Trillium West	**3.2**																																																															
Design																																																																
Construction																																																																
Operation													0.32				0.93			1.86																								3.2																					
Gila 85	**9.1**																																																															
Design																																																																
Construction																																																																
Operation																			1.2							2.4						3.6										6.0														9.1								
Gila Hassayampa	**7.8**																																																															
Design																																																																
Construction																																																																
Operation																			1.2										2.4							3.6						4.8								6.0										7.8					
Gila Rainbow	**13.2**																																																															
Design																																																																
Construction																																																																
Operation																1.2						2.4				3.6							6.0										9.0											12.0								13.2		
Gila Southwest	**7.5**																																																															
Design																																																																
Construction																																																																
Operation																							1.2									2.4						3.6							4.8							6.0								7.5				
Hassayampa Nort	**9.4**																																																															
Design																																																																
Construction																																																																
Operation																																						1.2							3.6							6.0								9.4					
Sun Valley	**13.2**																																																															
Design																																																																
Construction																																																																
Operation																1.2							2.4				3.6							6.0										9.0												13.2							
Waterman Wash	**2.2**																																																															
Design																																																																
Construction																																																																
Operation																															1.2																							2.2										

Legend

Activity	Color and Text Key										
Design	Design period for Phase 1	Design period for Phase 2	Design Period for Phase 3	Design period for Phase 4	Design Period for Phase 5	Design period for Phase 6	Design period for Phase 7	Design period for Phase 8	Design period for Phase 9	Design period for Phase 10	Design period for Phase 11
Construction	Phase 1 Construction	Phase 2 Construction	Phase 3 Construction	Phase 4 Construction	Phase 5 Construction	Phase 6 Construction	Phase 7 Construction	Phase 8 Construction	Phase 9 Construction	Phase 10 Construction	Phase 11 Construction
Operation	Capacity during Phase 1 (MGD)	Capacity during Phase 2 (MGD)	Capacity during Phase 3 (MGD)	Capacity during Phase 4 (MGD)	Capacity during Phase 5 (MGD)	Capacity during Phase 6 (MGD)	Capacity during Phase 7 (MGD)	Capacity during Phase 8 (MGD)	Capacity during Phase 9 (MGD)	Capacity during Phase 10 (MGD)	Capacity during Phase 11 (MGD)

Note: The implementation timeline presented is estimated and subject to change. Actual timelines will be dependent on the success of the developments within the service areas and the wastewater flows received at the respective facility.

APPENDIX D

ASPC LEWIS COMPLEX
WASTEWATER TREATMENT PLANT DATA

Information provided in this appendix includes:

1. Data Collection Form

2. Background Information from the approved *ASPC Lewis Complex Wastewater Treatment Facility Revised Feasibility for Wastewater Treatment Facility* (Carollo 1998)

Water Quality Management Plan
Comprehensive Amendment
for the Town of Buckeye
Data Collection

Contact Information	
Name	**Rick Hodgin**
Title	Physical Plant Administrator
Company	ASPC-Lewis Complex
Telephone Number	623-386-6160
Email Address	rhodgin@azcorrections.gov
Date	8/14/07

Facility Information	
Facility Name	**ASPC-LEWIS**
Current Design Capacity (MGD)	0.75
Process Description	Extended aeration activated sludge with nitrification/de-nitrification, effluent filtration.
Planned Upgrades (capacity and timing)	N/A
Current Population Served (persons and/or dwelling units)	6100
Additional Information	

Current Data		
Actual Average Daily Flow (MGD)		
Parameter	Average Concentration Influent	Average Concentration Effluent
BOD (mg/L)	310	<5.0
TSS (mg/L)	210	<10.0
TDS (mg/L)		
TKN (mg/L)		<1.3
TN (mg/L)		5.33
Fecal Coliform (CFU/100 mL)	N/A	<1
Total Coliform (CFU/100 mL)	N/A	<1
Based on Data From		

ASPC LEWIS COMPLEX
WASTEWATER TREATMENT FACILITY

MARICOPA COUNTY DEPARTMENT OF ENVIRONMENTAL SERVICES

REVISED FEASIBILITY REPORT FOR WASTEWATER TREATMENT FACILITY
DRAFT

MARCH 1998

CAROLLO PROJECT NUMBER 4374B20 006

carollo engineers

INTRODUCTION

The ASPC Lewis/Juvenile Complex is a new facility planned for an undeveloped site. The site is located along Highway 85, approximately ten miles south of the Town of Buckeye, as shown on the Vicinity Map in Attachment I. Vehicular access to the prison is provided from Highway 85 just north of Patterson Road.

The project will be built in one phase and is expected to be at full capacity within three years. The wastewater treatment plant for the prison facility will have the capability to treat up to 0.75 million gallons per day. Treated wastewater will be reused on-site with a zero net water balance.

According to the 208 Water Quality Management Plan prepared for the Maricopa Association of Governments in 1993, the ASPC Lewis Complex Wastewater Treatment Plant is located within the "County Small Plant Planning Area" and the County has the responsibility of reviewing and approving the proposed wastewater facility. However, the Town of Buckeye has annexed a piece of land 0.25 miles from the perimeter of the prison facility and will also need to approve the project. The following addresses the feasibility criteria for Small Plants Outside of Municipal Small Plant Planning Area as required by Table 4-43 of the 208 Plan.

TECHNICAL CRITERIA

- Why is small plant desired?

  With an expected wastewater influent flow 0.75 million gallons per day (mgd), a small on-site treatment plant is desired to treat sewage generated by the prison complex and to produce an acceptable effluent water quality for reuse and water conservation. The surrounding area has a very low population density and is not slated in any Master Plan for regional service in the future. Therefore, on-site treatment and effluent reuse is the most desirable option.

  Alternatives to building an on-site treatment facility such as using an existing wastewater treatment plant would require building an expensive transport system. In addition, using other on-site treatment options like septic tanks becomes difficult at large flows of 0.75 mgd. Ultimately, both alternatives are poor choices when considering the associated limited reuse options and large costs.

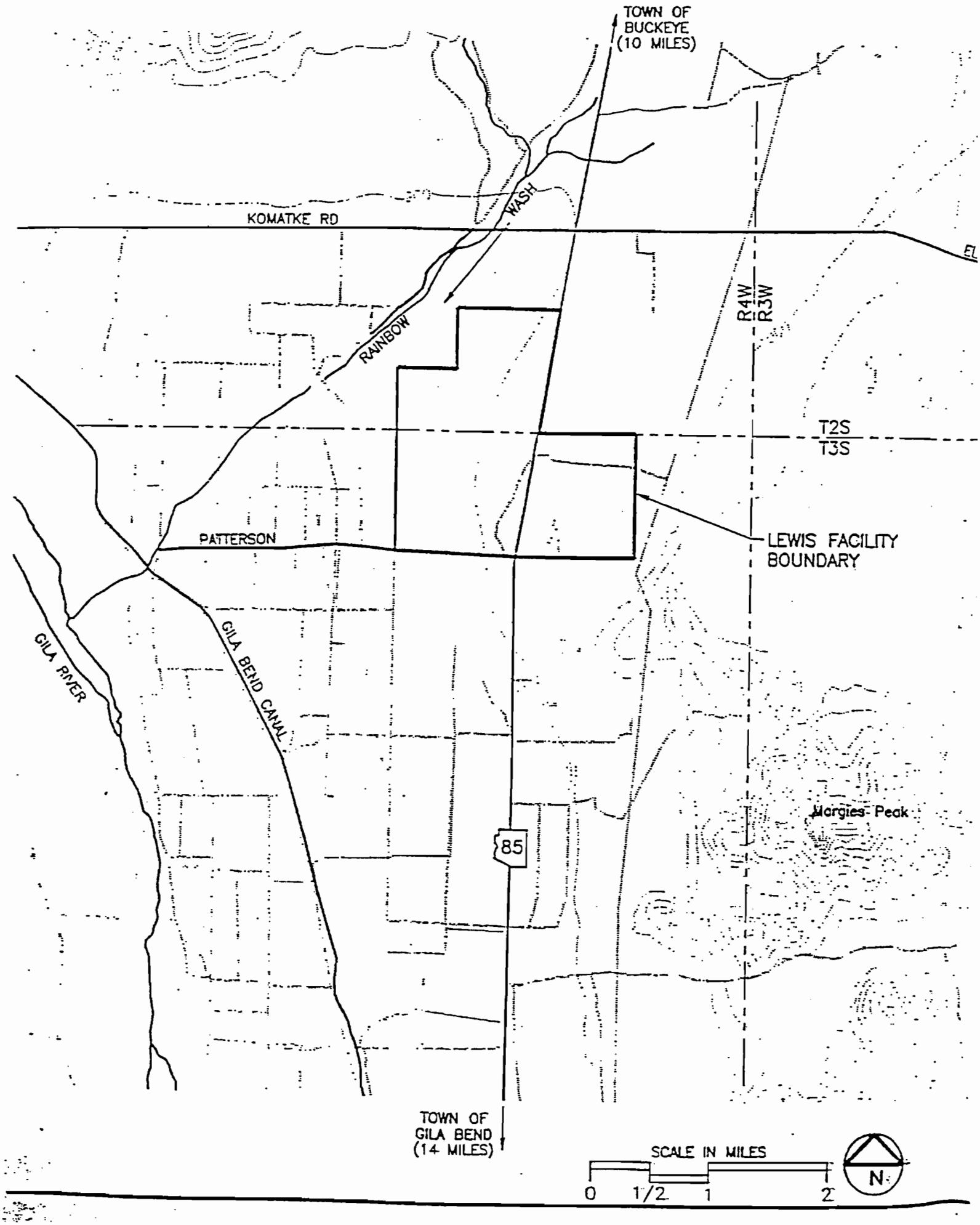
- Why can't wastewater be treated at an existing facility?

  The nearest wastewater treatment plant to the prison complex is more than ten miles away and is owned and operated by the Town of Buckeye. The cost of installing a transport system is too great, and the potential for local reuse is lost.

- What is the anticipated quality of the wastewater?

  The majority of the wastewater produced at the prison will be composed of domestic waste, but will produce some commercial waste from cafeterias on-site. Grease interceptors will limit oils and greases from entering the treatment plant. The anticipated quality of the raw wastewater is based on data from existing prison facilities similar in size with comparable conditions.

BOD	370 mg/L
TSS	258 mg/L
Total N	37 mg/L


TOWN OF
BUCKEYE
(10 MILES)
KOMATKE RD
WASH
RAINBOW
R4W
R3W
T2S
T3S
PATTERSON
LEWIS FACILITY
BOUNDARY
GILA RIVER
GILA BEND CANAL
Margies Peak
85
TOWN OF
GILA BEND
(14 MILES)
SCALE IN MILES
0
1/2
1
2
N

APPENDIX E

CENTRAL BUCKEYE WASTEWATER TREATMENT PLANT DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Data Collection Form

3. Alternatives Analysis

4. Background Information from the approved *Clean Water Act 208 Plan Amendment for the Central Buckeye Wastewater Treatment Plant* (CDM 2005)

5. Background Information from the *East Buckeye Sewer Group Central Buckeye Wastewater Treatment Plant Master Plan* (CDM 2006)

Central Buckeye WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 142,804 persons in 2030 based on the 2007 POPTAC population estimates and 439,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Central Buckeye WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 0.912 MGD currently to 45.8 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 12** in **Appendix B**.	Figure 12, Appendix B
Describe the type and capacity of the recommended WWT plant.	The Central Buckeye WWTP has been recently expanded to a 4.0 MGD facility. The addition includes screening and grit removal, Bardenpho secondary treatment process (for biological BOD reduction and nitrification/dentrification), secondary clarifiers, tertiary filtration, and chlorination/dechlorination. Sludge handling will use an additional belt filter press. Future expansions are planned to expand the capacity of the Bardenpho treatment process. The ultimate capacity of the facility is expected to be 45.8 MGD.	Section 5.2.2, Pages 45-46
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the expansion. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WWTP.	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	Effluent from the WWTP is currently discharged to the Arlington Canal under an AZPDES permit. The effluent will continue to be discharged to the Arlington Canal, under modifications to the existing AZPDES and APPs. Beneficial reuse of the effluent will occur downstream for irrigation purposes. Recharge will likely need to occur off-site due to high groundwater in the vicinity of the existing WWTP.	Section 6.7.2, Pages 64-65
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A

Central Buckeye WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Describe ownership of land proposed for plant sites and reuse areas.	The Town of Buckeye owns the land where WWTP expansions will be constructed. Additional easements for future expansions will be obtained as needed. Other public or private entities may own the reuse areas.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The expansion of the WWTP to 4.0 MGD has been completed. Additional expansions will occur in 3.0 MGD increments as population increases dictate or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The plant site is contained within a 10-foot high perimeter berm, which prevents the plant site from receiving storm water runoff. Storm water discharges from the plant site will be subject to AZPDES storm water permitting requirements. The flows will be addressed through implementation of a storm water pollution prevention plan. Storm water currently drains to the southeast corner of the facility, where it is discharged by gravity or pumping to a channel adjacent to the property. This line can be closed with a valve to contain any spills that may occur on-site. Spills can then be cleaned up and disposed of properly, or portable pumps can return process spills to the headworks facility.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	Not applicable.	N/A
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A

Central Buckeye WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility currently operates under an AZPDES Permit and an APP. These permits have been updated to reflect the recent expansion of the treatment facility capacity, and will need to be updated with additional expansions in the future. The facility also may require an Air Quality Permit, Storm Water Discharge Permit, Annual Operating Permit, and a Reuse of Reclaimed Wastewater permit in the future. Future construction will require coordination with the Town of Buckeye and MCESD to obtain an approval to construct, approval of construction, and architectural and building permits. The Town is operating the existing WWTP under a Consent Agreement from ADEQ and a Cooperation Agreement through MCESD.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions exist for the current AZPDES permit. The effluent for the expansion will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	APP and AZPDES permits have been obtained from ADEQ for the recent facility expansion. In the future, the Town of Buckeye will be responsible for obtaining the necessary permits from the ADEQ as required for further expansion of the facility. ADEQ will be notified and a preapplication meeting will be scheduled once the design of the facility commences.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Future industrial development along the Southern Pacific Railroad is possible. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53

Central Buckeye WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Currently, sludge is dewatered using belt filter presses and disposed of at an offsite, permitted landfill. Anaerobic sludge digesters may be installed in the future, at which point the sludge could be use for land applications or continue to be disposed at a landfill.	Section 5.1.5, Pages 43-44
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	The facility expansion to 4.0 MGD is complete. The engineering design of the next 3 MGD expansion is nearly complete. Construction would not begin until the need for additional capacity is anticipated (when flows reach approximately 3.2 MGD). Subsequent expansions will be designed when the facility reaches 70% capacity and construction will begin at 80% capacity or as designated by the Town.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	The Town of Buckeye is responsible for the construction, operation and maintenance of the facility.	Section 8.0, Page 79

Central Buckeye WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	The Town of Buckeye is responsible for the construction, operation and maintenance of the facility. The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is the DMA. The Town of Buckeye is a municipality and owns and operates the existing Buckeye WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	The expansion to 4.0 MGD is complete. The engineering design of the next 3 MGD expansion is nearly complete. Construction would not begin until the need for additional capacity is anticipated (when flows reach approximately 3.2 MGD). Subsequent expansions will be designed when the facility reaches 70% capacity and construction will begin at 80% capacity or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	The project may be financed through some combination of user fees, municipal bonds, impact fees, and developer funding.	Section 9.0, Page 80

Central Buckeye WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The existing facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The existing facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. The Central Buckeye WWTP is currently operational, and the plan consists of expanding the existing facility to meet future demands. The existing facility will remain on-line during construction of the expansion. The construction will be completed in phases to increase the capacity of the facility to meet growing demands.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Water Quality Management Plan ***Comprehensive Amendment*** ***for the Town of Buckeye*** Data Collection	
General Information	
Facility Name	**Central Buckeye Wastewater Treatment Plant**
Planned Upgrades	**3.0 + the old ditch =4.0 MGD**
Report Completed by (name, position, company)	**C. Lucky Roberts, Public Works, Environmental Regulatory Coordinator**

Wastewater Generation			
	Persons	Residential Dwelling Units	Equivalent Dwelling Units
Current Population Served	5056	1580	3.2
	Please provide persons and/or residential dwelling units, commercial acreage or equivalent dwelling units.		

Current Data*		
Average Daily Flow (MGD)	0.912 MGD	
Parameter	Average Concentration Influent mg/L	Average Concentration Effluent mg/L
BOD (mg/L)	265	<5.0
TSS (mg/L)	157	<10
TDS (mg/L)	2	<10
TKN (mg/L)	n/a	<1.3
TN (mg/L)	n/a	4.6
Fecal Coliform (CFU/100 mL)	n/a	1
Total Coliform (CFU/100 mL)	n/a	n/a

* Note if you have spreadsheets with daily/weekly/monthly values please forward this information

Memorandum

DATE: August 27, 2007

SUBJECT: MAG 208 Comprehensive Amendment for the Town of Buckeye
Central Buckeye Service Area Analysis

Introduction

The Central Buckeye WWTF is located on 7th Street south of Beloat Road. The original service area for the facility per the approved *Clean Water Act 208 Amendment for the Central Buckeye Wastewater Treatment Plant* (CDM 2005) is generally defined as the area between I-10 and the Gila River between Turner and Perryville Roads. The proposed service area per the *MAG 208 Comprehensive Amendment for the Town of Buckeye* (Comprehensive Amendment) encompasses the previous service area as well as additional area in the northwest and west portions of the original service area.

As part of the Comprehensive Amendment, several alternatives for the number and configuration of wastewater facilities within the proposed service area were evaluated. This memo summarizes the considerations and conclusions of those alternatives.

General Description

The topography mainly slopes gently to the southeast throughout the majority of the service area. Towards the Gila River, the slope turns mildly towards the southwest. The terrain is mountainous in the northwestern reaches of the service area, with steeper slopes in several different directions.

Approaching the Gila River, the groundwater level becomes significantly shallow. Per the *Lower Hassayampa Sub-basin Hydrologic Study and Computer Model* (Brown and Caldwell 2006), the depth to groundwater south of MC-85 is in the range of 15 to 27 feet below ground surface. Instances of shallower groundwater have also been reported.

The area under consideration covers approximately 41,250 acres with a build out population of approximately 439,000 people. The anticipated wastewater flow generation from the area is 45.8 million gallons per day.

7740 North 16th Street | Suite 100 | Phoenix, AZ 85020
877.567.1900 | 602.567.1900 | 602.567.1901 fax
www.cmxinc.com

Options

Several different options were evaluated for this area. These options are summarized below.

1. One facility – Existing Central Buckeye WWTF

   These options evaluate the potential to expand the existing facility and the collection system to serve the entire service area independently with only one facility.

   a. Deep sewers

      An expansion of the existing wastewater collection system is currently planned to bring wastewater to the facility from planned developments to the north and east of the existing site. The southeast interceptor sewer line is designed; however it runs within the documented waterlogged area. Significant stretches of the sewer line are deep because it requires several long reaches to be installed cross-slope. Significant costs are associated with the dewatering of trenches to install the proposed sewer line.

   b. Shallow sewers

      This option is similar to the above option however it would employ the use of true lift stations throughout the main trunkline to keep the sewer depth shallower through the waterlogged area.

2. Two facilities

   These options evaluate the service area being divided up into two areas, each served by a wastewater treatment facility, as proposed in the *East Buckeye Wastewater Master Plan* (RBF 2004). The Central Buckeye WWTF would be utilized to serve the western portion of the service area and an additional facility, located approximately in the vicinity of Baseline and Dean Roads, could be implemented to serve the eastern portion of the service area.

   a. Two full-scale facilities

      This option represents two facilities that are both operating as full-scale wastewater treatment facilities, maximizing the amount of service area associated with each facility.

   b. One full-scale facility and one small-scale facility

      This option expands the Central Buckeye WWTF to be the wastewater solution for the majority of the service area, while the secondary facility only treats a small portion and may eventually be converted into a scalping facility sending its sludge to the Central Buckeye WWTF for treatment.

Considerations

Several factors were considered during the analysis of these alternatives. These include, but are not limited to, the following:

- Waterlogged area
- Facility operation and maintenance
- Lift station operation and maintenance
- Recharge and reuse opportunities
- Financing mechanism
- Developments within the service area
- Land ownership
- Current design plans

Recommendation

Based on the factors listed above, it is recommended that one water reclamation facility, the existing Central Buckeye WWTP, be utilized to provide service to the area in question. It is up to the Town's discretion whether they would prefer to have the deep or shallow option. The topography in the area generally slopes towards the existing facility and the Town currently owns a large portion of land in the vicinity that will allow the facility to expand to the anticipated treatment capacity required for the service area. In addition, the facility has recently been expanded to a capacity of 4.0 MGD and the next 3.0 MGD expansion is under engineering design.

While the facility is within the waterlogged area making construction difficult and recharge onsite nearly impossible, there are solutions to both issues for the facility. Construction can utilize lift stations in an effort to make the sewers shallow, although they will add additional operation and maintenance costs. Effluent from the facility can be pumped farther north to be recharged outside of the waterlogged area or potentially wheeled through the Buckeye Canal to be recharged in planned recharge facilities.

Finally, given the Town's standard practice of having developers finance improvement projects, splitting the service area will reduce the number of developments over which the costs would be shared, and thereby raise the price for each development. In addition, the developments within the service area are generally small and can not easily support the extra financial burden or loss of land associated with the construction of a wastewater treatment facility.

CDM

Clean Water Act
208 Plan Amendment

for the

Central Buckeye Wastewater Treatment Plant

Prepared for the

Town of Buckeye, Arizona

May 2005

The 20-year projected wastewater flow, according to the 208 Plan amendment prepared for the Whitestone Water Reclamation Facility (name later changed to Verrado WRF) in 2001 is 3.35 mgd. The Verrado WRF facility service area falls within RAZ 253, which is not within the Buckeye Core Planning Area. The service area for the Verrado WRF does not, and will not, overlap with the service area for the Central Buckeye WWTP

Current Septic System Area:

Within RAZ 278 and 279 there is an area that currently has on-site disposal using septic tanks. This area is bounded to the north by Durango St., to the south by Lower Buckeye Rd., to the west by Watson Rd., and to the east by Dean Rd. Other dwellings in RAZ 278 and 279 may also be on septic tanks. In the future, flows from these septic systems will be added to the Central Buckeye WWTP service area.

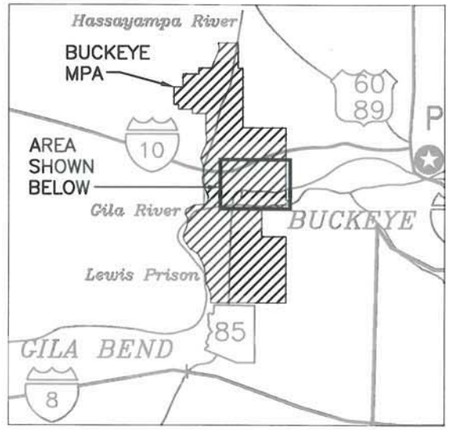
1.3 Estimated Wastewater Generation

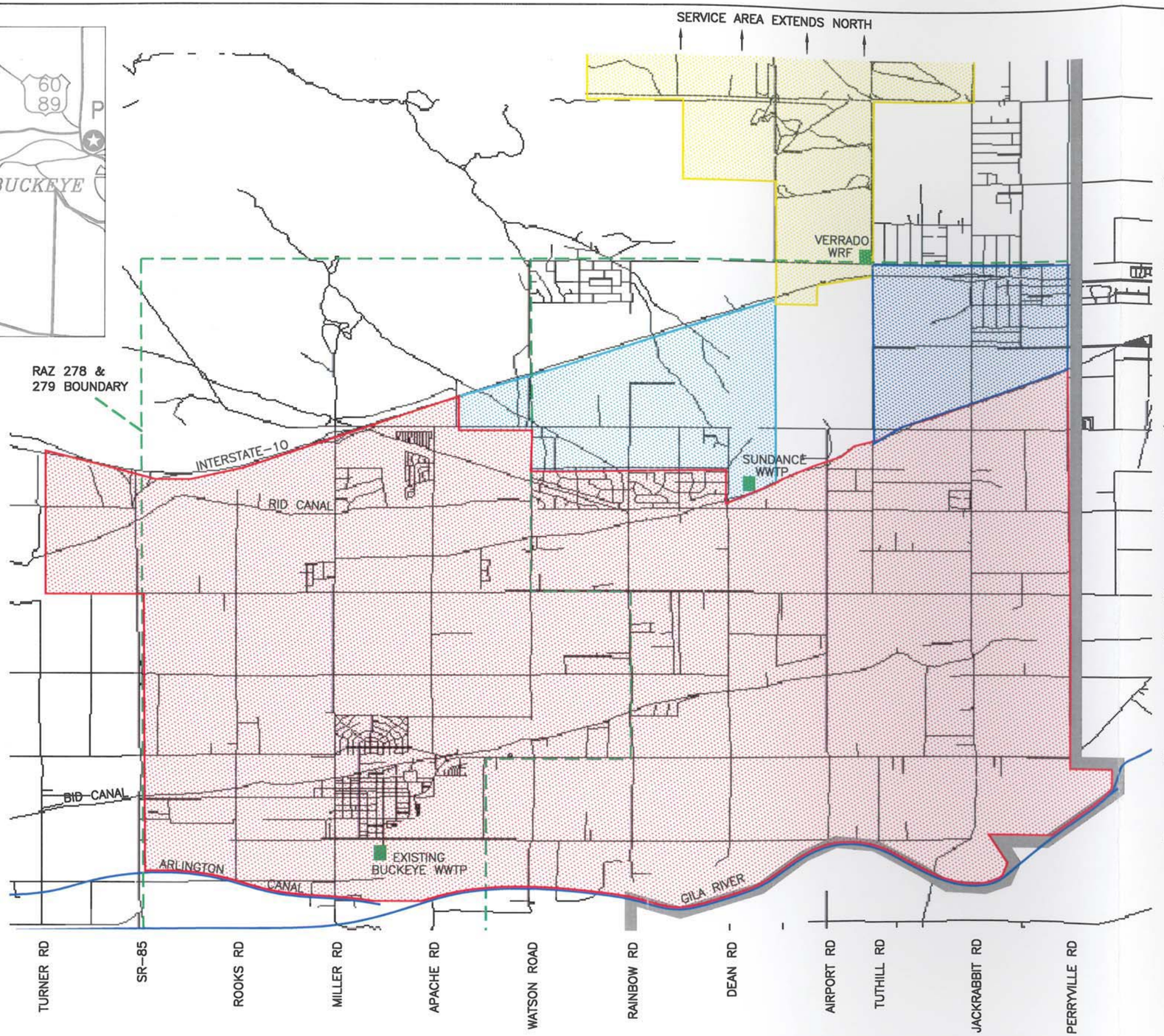
Table 1.1 presents population projections based on 2003 MAG Interim Projections for the Town of Buckeye core planning area. According to the MAG 208 Water Quality Management Plan, the Central Buckeye Wastewater Treatment Plant will serve a core area consisting of Regional Analysis Zones (RAZ) 278 and 279. RAZ 278 and 279 boundaries are shown in Figure 3. Population projections prepared by the Town of Buckeye Engineer (W.C. Scoutten, Inc.) are also included in Table 1.1. The population projections that the Town developed for the 20-year planning period are based on currently approved subdivisions, as well as predicted future subdivisions. The Town projections are higher than the MAG projections, and will be used for estimating wastewater flows for the Town of Buckeye core planning area for the 20-year planning period. The wastewater flow projections for the WWTP are also presented in Table 1.1, based on the Town of Buckeye population projections and a 100 gpcd annual average flow.

Table 1.1 Population and Wastewater Flow Projections
Central Buckeye Wastewater Treatment Plant

Year	2003 MAG Population Projections (RAZ 278 & 279)[1]	2005 Town of Buckeye Population Projections	WW Flow (based on Town Projections) (mgd)
2000	10,644	-	-
2005	-	14,000	1.4
2010	32,544	41,780	4.2
2015	-	107,420	10.7
2020	69,103	140,720	14.1
2025[2]	107,000	165,830	16.6
2030	158,219	-	-

1. Data from *Draft Revised Interim Projections of Population, Housing and Employment by Municipal Planning Area and Regional Analysis Zone – June 2003.*
2. Value is interpolated from 2003 interim projections to give population for capacity at the conclusion of the 20 year planning period.





N

1" = 1 MILE (APPROX)

.5 0 1

LEGEND

- CENTRAL SERVICE AREA
- SUNDANCE SERVICE AREA
- BLUE HORIZON SERVICE AREA – TREATED AT SUNDANCE WWTP
- VERRADO SERVICE AREA
- RAZ BOUNDARY
- WWTP SITES

REFERENCES

2000 CENTRAL WASTEWATER MASTER PLAN – DEA, INC.

OCTOBER 2002
208 WATER QUALITY MANAGEMENT PLAN

JUNE 2003
RAZ AND MPA BOUNDARIES MAP
MARICOPA ASSOCIATION OF GOVERNMENTS

P:\Buckeye WWTP\7 Project Documents\7.6 Permit Applications and Approvals\7.6.5 208 Plan Amendment\Figures\ Figure 3 03/22/05 15:20 ialsajd

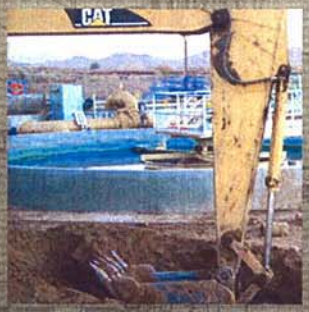
CENTRAL BUCKEYE WASTEWATER TREATMENT FACILITY
208 WATER QUALITY MANAGEMENT PLAN AMENDMENT

CDM

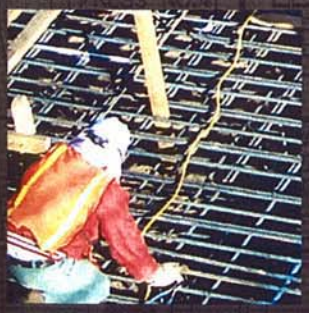
FIGURE 3
CENTRAL BUCKEYE WWTP PLANNING AREA

East Buckeye Sewer Group
Central Buckeye Wastewater Treatment Plant
Master Plan

April 2006



Registered Professional Engineer (Civil)
CERTIFICATE NO.
41191
PAUL
GUSTAFSON
Date Signed
ARIZONA U.S.A.



CDM

SUNDANCE WASTEWATER TREATMENT PLANT

IT IS ASSUMED THAT WW FROM THIS AREA WILL DISCHARGE TO SUNDANCE WWTP IN FUTURE

CENTRAL BUCKEYE WASTEWATER TREATMENT PLANT

ARLINGTON CANAL

GILA RIVER

LEGEND

- EXISTING DEVELOPMENTS TRIBUTARY TO THE CENTRAL BUCKEYE WWTP
- EXISTING DEVELOPMENTS WITH ONSITE SEPTIC SYSTEMS
- EAST BUCKEYE SEWER GROUP (EBSG) PLANNED DEVELOPMENTS
- OTHER DEVELOPMENTS CURRENTLY UNDER CONSTRUCTION
- OTHER DEVELOPMENTS CURRENTLY IN THE PLANNING PHASE
- 01 DESIGNATED ID NUMBERS FOR DEVELOPMENT
- BOUNDARY OF THE CENTRAL BUCKEYE SERVICE AREA

N

SCALE: 1"=1,500FT (APPROX)
0 1,500 3,000

P:\34253 Buckeye WWTP\11 Master Plan\11.3 WWTP Site Development\DCad\01Fig\ 45003PD6702-1_11x17 04/11/06 14:00 lakasjd XREFS: 45003BMPSitePlan-1

CDM

EAST BUCKEYE SEWER GROUP
MASTER PLAN FOR CENTRAL BUCKEYE WWTP
EXISTING AND PLANNED DEVELOPMENTS
CENTRAL BUCKEYE SERVICE AREA

FIGURE 2-1

Table B-1
Flow Projection Data for the Central Buckeye Service Area
Master Plan for Central Buckeye Wastewater Treatment Plant

Parcel ID	Development Name	Status	Total Estimated Flow (gpd)	Estimated Capacity Requirements (gpd) - based on 320 gpd/du																														
				Year 0 2005	Year 1 2006	Year 2 2007	Year 3 2008	Year 4 2009	Year 5 2010	Year 6 2011	Year 7 2012	Year 8 2013	Year 9 2014	Year 10 2015	Year 11 2016	Year 12 2017	Year 13 2018	Year 14 2019	Year 15 2020	Year 16 2021	Year 17 2022	Year 18 2023	Year 19 2024	Year 20 2025	Year 21 2026	Year 22 2027	Year 23 2028	Year 24 2029	Year 25 2030	Year 26 2031	Year 27 2032	Year 28 2033	Year 29 2034	Year 30 2035
Existing Developments Tributary to Central WWTP																																		
---	Existing Developments Tributary to WWTP*	Existing	**435,000**	435,000																														
East Buckeye Sewer Group																																		
33	CHI Construction Company	Planning Phase	**368,000**			61,333	61,333	61,333	61,333	61,333	61,333																							
34	BP Prop., Inv.; Broadway/Perryville Inv.; Brown Fam. Inv.	Planning Phase	**88,000**			14,667	14,667	14,667	14,667	14,667	14,667																							
49	Kalish (Vista Investors, Vista Del Sol Inv.)	Planning Phase	**298,240**			49,707	49,707	49,707	49,707	49,707	49,707																							
36	DML Farms, LLLP (Liberty)	Planning Phase	**802,240**			133,707	133,707	133,707	133,707	133,707	133,707																							
28	Roston Company Southwest, Inc.	Planning Phase	**412,160**			68,693	68,693	68,693	68,693	68,693	68,693																							
31	Ryland Group, Inc.	Planning Phase	**346,240**			57,707	57,707	57,707	57,707	57,707	57,707																							
48	D. R. Horton/Dietz-Crane	Planning Phase	**274,880**			45,813	45,813	45,813	45,813	45,813	45,813																							
22	D. R. Horton/Dietz-Crane	Planning Phase	**289,280**			48,213	48,213	48,213	48,213	48,213	48,213																							
47	Humboldt Investments, LLC	Planning Phase	**224,000**			37,333	37,333	37,333	37,333	37,333	37,333																							
27A, 27B	Evergreen Properties	Planning Phase	**352,000**			58,667	58,667	58,667	58,667	58,667	58,667																							
26	Triyar Capital, LLC; KB Home	Planning Phase	**205,760**			34,293	34,293	34,293	34,293	34,293	34,293																							
51A	Triyar Capital, LLC; KB Home	Planning Phase	**338,880**			56,480	56,480	56,480	56,480	56,480	56,480																							
51B	Hallcraft Homes; Triyar Capital, LLC	Planning Phase	**187,200**			31,200	31,200	31,200	31,200	31,200	31,200																							
15A, 15B	WS Land Partners-Buckeye; Buckeye Dev.-WS	Planning Phase	**508,480**			84,747	84,747	84,747	84,747	84,747	84,747																							
25	Trimark Development, Inc.	Planning Phase	**1,536,000**			192,000	192,000	192,000	192,000	192,000	192,000	192,000	192,000																					
52	Shea Homes, LP	Planning Phase	**992,000**			165,333	165,333	165,333	165,333	165,333	165,333																							
54	Park View Plaza Real Estate Holdings, LLC	Planning Phase	**317,440**			52,907	52,907	52,907	52,907	52,907	52,907																							
32	Montalbano Homes, Inc.; Broadway & Jackrabbit	Planning Phase	**370,880**			61,813	61,813	61,813	61,813	61,813	61,813																							
21	Rainbow Road 122, LLC (Magee Holdings)	Planning Phase	**186,560**			31,093	31,093	31,093	31,093	31,093	31,093																							
23	Stardust Development	Planning Phase	**474,240**			79,040	79,040	79,040	79,040	79,040	79,040																							
53A, 53B	Concordia Homes	Planning Phase	**444,160**			74,027	74,027	74,027	74,027	74,027	74,027																							
30	Tuthill (Cason - Tyler)	Planning Phase	**76,800**			12,800	12,800	12,800	12,800	12,800	12,800																							
37	Jackrabbit Trail, LP (Lewis)	Planning Phase	**128,000**			21,333	21,333	21,333	21,333	21,333	21,333																							
35	Southwest Ranch Holdings Retail, Multi-Family, Church	Planning Phase	**110,400**			18,400	18,400	18,400	18,400	18,400	18,400																							
		Totals	**9,331,840**	**0**	**0**	**1,491,307**	**1,491,307**	**1,491,307**	**1,491,307**	**1,491,307**	**1,491,307**	**192,000**	**192,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Other Developments Currently Under Construction																																		
01	West Park	Under Construction	**394,132**	65,689	65,689	65,689	65,689	65,689	65,689																									
14	Parkside at Buckeye, Terra Vista, Estrella Vista	Under Construction	**413,010**	68,835	68,835	68,835	68,835	68,835	68,835																									
18	KB Homes, Sunset Vista	Under Construction	**196,315**	32,719	32,719	32,719	32,719	32,719	32,719																									
38	Rancho Vista	Under Construction	**335,635**	55,939	55,939	55,939	55,939	55,939	55,939																									
39	Ironwood Vista	Under Construction	**37,848**	6,308	6,308	6,308	6,308	6,308	6,308																									
40	Miller Manor	Under Construction	**108,800**	18,133	18,133	18,133	18,133	18,133	18,133																									
41	Dove Cove Estates	Under Construction	**108,800**	18,133	18,133	18,133	18,133	18,133	18,133																									
42	Sunset Point	Under Construction	**146,243**	24,374	24,374	24,374	24,374	24,374	24,374																									
43	Blue Hills	Under Construction	**183,114**	30,519	30,519	30,519	30,519	30,519	30,519																									
44	Encantada Estates	Under Construction	**411,135**	68,523	68,523	68,523	68,523	68,523	68,523																									
	Other Known Developments Under Construction	Under Construction	**240,640**	40,107	40,107	40,107	40,107	40,107	40,107																									
		Totals	**2,575,673**	429,279	429,279	429,279	429,279	429,279	429,279	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Developments Currently in Planning Phase																																		
04A, 04B	NE Sewer Community	Planning Phase	**3,159,851**			526,642	526,642	526,642	526,642	526,642	526,642																							
5	NE Sewer Community (McCrea)	Planning Phase	**510,000**			85,000	85,000	85,000	85,000	85,000	85,000																							
6	NE Sewer Community (Recorp)	Planning Phase	**525,000**			87,500	87,500	87,500	87,500	87,500	87,500																							
7	Santana	Planning Phase	**206,205**			34,368	34,368	34,368	34,368	34,368	34,368																							
8	Coy	Planning Phase	**203,608**			33,935	33,935	33,935	33,935	33,935	33,935																							
10	Walmart Distribution Center	Planning Phase	**35,204**			5,867	5,867	5,867	5,867	5,867	5,867																							
17	Gray	Planning Phase	**342,854**			57,142	57,142	57,142	57,142	57,142	57,142																							
13A,13B, 50	Lamb Trimark	Planning Phase	**704,695**			117,449	117,449	117,449	117,449	117,449	117,449																							
28	West Park	Planning Phase	**562,283**			93,714	93,714	93,714	93,714	93,714	93,714																							
29	Richard Mayfield	Planning Phase	**558,692**			93,115	93,115	93,115	93,115	93,115	93,115																							
45	Rostoczy 80	Planning Phase	**101,252**			16,875	16,875	16,875	16,875	16,875	16,875																							
46	Rostoczy 220	Planning Phase	**195,662**			32,610	32,610	32,610	32,610	32,610	32,610																							
		Totals	**7,708,679**	0	0	1,184,217	1,184,217	1,184,217	1,184,217	1,184,217	1,184,217	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Existing Developments with On-Site Septic Systems																																		
03	Leaf Verde M.H. Park	Existing - Septic Systems	**22,400**								3,733	3,733	3,733	3,733	3,733	3,733																		
09	No name	Existing - Septic Systems	**11,200**								1,867	1,867	1,867	1,867	1,867	1,867																		
11	Walmart Distribution Center	Existing - Septic Systems	**12,800**								2,133	2,133	2,133	2,133	2,133	2,133																		
12	No name	Existing - Septic Systems	**16,000**								2,667	2,667	2,667	2,667	2,667	2,667																		
19	Frag	Existing - Septic Systems	**201,600**								33,600	33,600	33,600	33,600	33,600	33,600																		
20	No name	Existing - Septic Systems	**134,400**								22,400	22,400	22,400	22,400	22,400	22,400																		
		Totals	**398,400**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**66,400**	**66,400**	**66,400**	**66,400**	**66,400**	**66,400**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Additional Developments for Full Buildout																																		
	Remaining Residential Area at Full Build-out	Area for Future Development	**10,297,600**			355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090	355,090
	Remaining Mixed Areas at Full Buildout	Area for Future Development	**1,948,160**			67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178	67,178
	Remaining Commercial/Industrial Area at Full Build-out	Area for Future Development	**6,406,500**			220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914	220,914
	Development within 100-yr Flood Plain at Full Build-out	Area for Future Development	**1,238,720**			42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714	42,714
		Totals	**19,890,980**	**0**	**0**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**	**685,896**
	Annual Increase in Wastewater Generation				864,279	429,279	3,790,699	3,790,699	3,790,699	3,790,699	3,361,420	3,427,820	944,296	944,296	752,296	752,296	752,296	685,896	685,896	685,896	685,896	685,896	685,896	685,896	685,896	685,896	685,896	685,896	685,896	685,896	685,896	685,896	685,896	685,896	685,896
	Estimated Total Wastewater Generation				864,279	1,293,558	5,084,257	8,874,956	12,665,655	16,456,354	19,817,774	23,245,594	24,189,889	25,134,185	25,886,481	26,638,777	27,391,073	28,076,969	28,762,865	29,448,761	30,134,656	30,820,552	31,506,448	32,192,344	32,878,240	33,564,136	34,250,032	34,935,927	35,621,823	36,307,719	36,993,615	37,679,511	38,365,407	39,051,303	39,737,198

APPENDIX F

FESTIVAL RANCH WATER RECLAMATION FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Data Collection Form

3. Background Information from the draft *Festival Ranch Water Reclamation Facility 208 Water Quality Management Plan Amendment* (Fluid Solutions 2006) currently before the Town for sponsorship that has not been presented to nor approved by MAG

Festival Ranch WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 20,773 persons in 2030 based on the 2007 POPTAC population estimates and 160,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Festival Ranch WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 0.026 MGD currently to 17.3 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 13** in **Appendix B**.	Figure 13, Appendix B
Describe the type and capacity of the recommended WWT plant.	The first phase of the WRF has a 1.0 MGD capacity. The second phase of the WRF is anticipated to add 1.0 to 2.0 MGD in 2008. Phase 1 of the WRF has fine screens at the headworks followed by SBR for secondary treatment, tertiary filtration, and ultraviolet disinfection. The effluent quality meets Class A+ requirements and future phases of the plant will also provide this quality effluent. Once flows approach approximately 5 MGD, the facility will be planned to upgrade to one of four Bardenpho alternative technologies. The WRF is anticipated to have an ultimate capacity of 17.3 MGD.	Section 5.2.3, Page 46
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the expansion. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WRF.	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	Festival Ranch will reuse the treated effluent for landscape and golf course irrigation or recharge the treated effluent for future recovery. Discharge to the Wagner Wash will be available for emergencies and for seasonal use.	Section 6.7.3, Page 65
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A

Festival Ranch WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Describe ownership of land proposed for plant sites and reuse areas.	Ownership of the land for the plant belongs to 10,000 West LLC. Land for the sewage collection system and reclaimed water system is owned by Pulte Homes and 10,000 West LLC. Reuse areas may include public areas, community association land, and land owned by private golf courses. After acceptance by the Town of Buckeye, ownership of the plant site, WRF, sewage collection system, and reclaimed water system will be conveyed to the Town of Buckeye.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	Phase 1 of the WRF has been constructed and is operational. Subsequent phases will be completed as development dictates or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the WRF will treat wastewater only. The WRF site will not receive storm water runoff from adjacent properties. Storm water discharges from the WRF site will be subject to AZPDES storm water permitting requirements. The flows will be addressed through the implementation of a SWPPP.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	The developments will provide park areas that will be irrigated using the treated effluent in accordance with ADEQ reuse requirements, the Arizona Groundwater Code, and rules for water augmentation.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The WRF will require an AZPDES permit, APP, permit for the Reuse of Reclaimed Water and an Air Quality permit for future expansions. ADWR Underground Storage Facility and Water Storage permits also will be pursued.	Section 7.0 (Table 7.1), Page 77

Festival Ranch WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions exist for the current AZPDES permit. The effluent for the expansion will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	Pulte Homes has obtained the APP and AZPDES permits for Phase 1. Concurrent with the engineering design for facility expansions, the permits will be amended and coordinated with ADEQ, as appropriate.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Significant industrial users are not anticipated in the service area outlined. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Biosolids will be stabilized by aerobic digestion. Wasted biosolids will be dewatered for odor and vector control prior to landfilling or land application.	Section 5.1.5, Pages 43-44
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A

Festival Ranch WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Construction		
Define construction priorities and time schedules for initiation and completion.	Phase 1 of the WRF has been constructed and is operational. Subsequent expansions will be designed when the facility reaches 70% capacity, and construction will begin at 80% capacity or as designated by the Town.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	The construction and operation of the existing facility has been financed by local developer(s). Future expansions are likely to be funded in a similar manner. Ultimately, the Town of Buckeye will be responsible for the operation and maintenance of the facility.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	A CFD has been created to fund the initial construction and operation of the facility. The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80

Festival Ranch WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	Phase 1 of the WRF has been constructed and is operational. Subsequent expansions will be designed when the facility reaches 70% capacity or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	A CFD has been created to fund the initial construction and operation of the facility. The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The existing facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The existing facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. The Festival Ranch WRF is currently operational, and the plan consists of expanding the existing facility to meet future demands. The existing facility will remain on-line during construction of the expansion. The construction will be completed in phases to increase the capacity of the facility to meet growing demands.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Festival Ranch WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Water Quality Management Plan
Comprehensive Amendment
for the Town of Buckeye
Data Collection

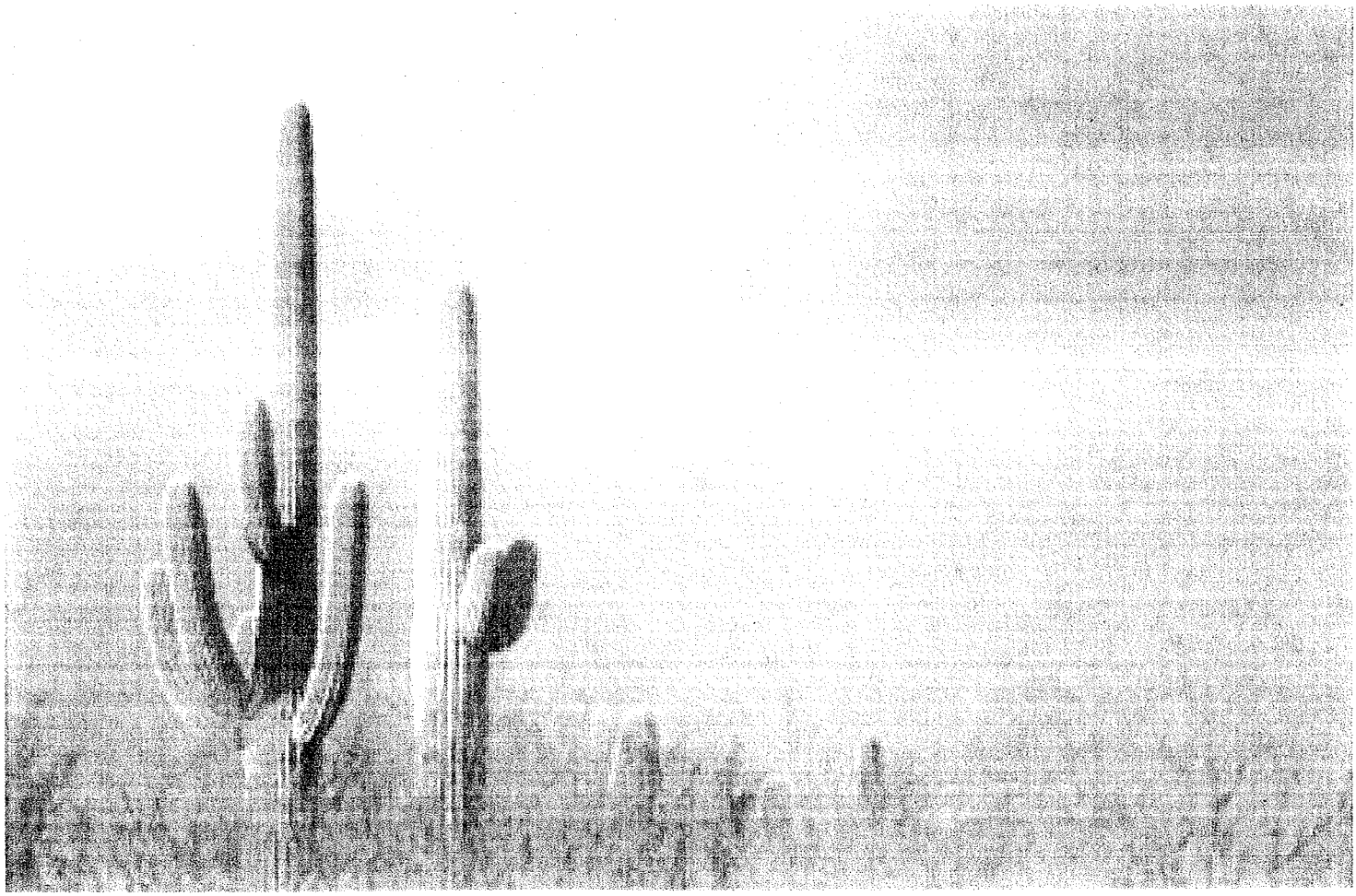
Contact Information	
Name	**Carl Christensen**
Title	Operator
Company	Severn Trent Environmental Services
Telephone Number	(928) 252-6421 Office (602) 540-8638 Cellular
Email Address	cchristensen@stes.com
Date	August 10, 2007

Facility Information	
Facility Name	**Festival Ranch Water Reclamation Facility**
Current Design Capacity (MGD)	1.0 MGD
Process Description	Sequential Batch Reactor
Planned Upgrades (capacity and timing)	Phase 2 will increase the plant to 2.0 MGD. Ultimate capacity: 10 MGD at build out – unable to find estimated date.
Current Population Served (persons and/or dwelling units)	434 dwelling units
Additional Information	* Samples not required to be collected yet according to permits.

Current Data		
Actual Average Daily Flow (MGD)	0.0264 MGD	
Parameter	Average Concentration Influent	Average Concentration Effluent
BOD (mg/L)	30	<5.0
TSS (mg/L)	67	<10
TDS (mg/L)	*N/A	*N/A
TKN (mg/L)	*N/A	*N/A
TN (mg/L)	*N/A	*N/A
Fecal Coliform (CFU/100 mL)	N/A	<2
Total Coliform (CFU/100 mL)	N/A	<2
Based on Data From	DMR's and laboratory reports.	

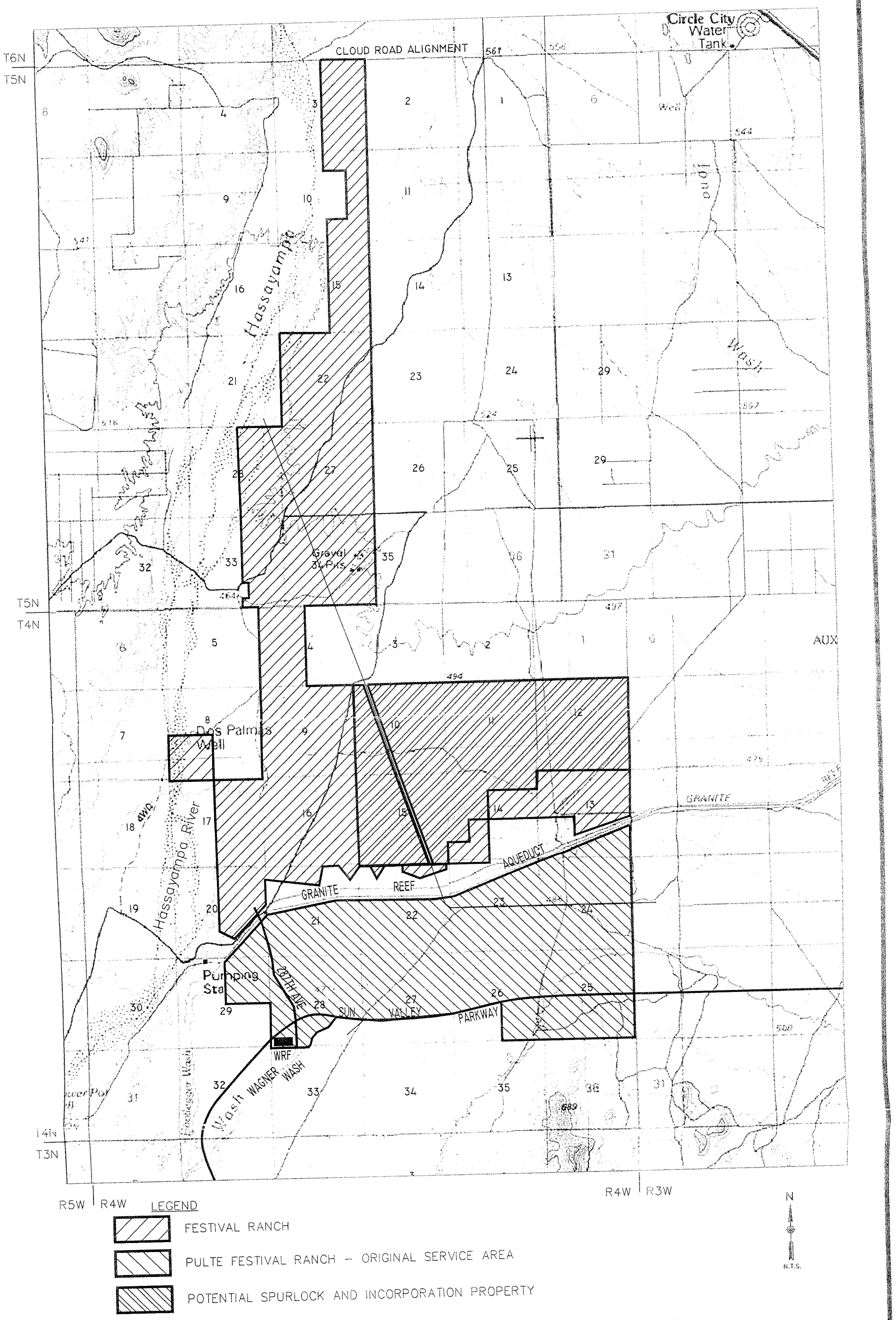
6/15/02
Spurlock Ranch

Festival Ranch Water Reclamation Facility 208 Water Quality Management Plan Amendment



January 2006

Fluid Solutions
Water • Wastewater • Engineering • Environmental Services
1121 East Missouri Avenue Suite 100, Phoenix, Arizona



FESTIVAL RANCH
WATER RECLAMATION FACILITY
FIGURE 1 - PROJECT LOCATION

Fluid Solutions
Water, Wastewater, Engineering & Environmental Services
1121 EAST MISSOURI AVENUE ▪ SUITE 100 ▪ PHOENIX ARIZONA 85014

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Type of Development and Population Estimates

At build out the Festival Ranch development's planning units A, B, and C are projected to have a residential population of 34,454 made up of residential single and multi family housing plus additional acreage to be developed for commercial businesses, business parks, offices, a resort and schools. The Spurlock development is projected to add an additional 38,321 people. The projected population for the original service area was 26,622 people for the Pulte development. The total population for the service area is projected to be approximately 99,397 people at build out. Appendix C provides the breakdown of the Festival Ranch area in more detail.

Flow Estimates

Based on the planned development and equivalent dwelling units, the projected flow for the Festival Ranch development, Spurlock development, and other off-site areas is projected to be approximately 6.58 million gallons per day (mgd). The original service area build out flow was projected to be 3.016 mgd. The two areas bring the total wastewater flow projection to 10.596 mgd. The original WRF flow capacity was permitted at 4.0 mgd. The build out capacity of the plant will be permitted at 11 mgd to provide a factor of safety. The actual flow capacity required at each phase of development will be determined by flow measurements. Wastewater flow projections are included in Appendix C.

Project Phasing

Phase 1 for the Lyle Anderson Festival Ranch development is planned for 1,600 equivalent dwelling units which equates to a wastewater flow of about 500,000 gpd. The first phase of the WRF that is being constructed by Pulte will have 1.0-mgd capacity. The second phase of the WRF is anticipated to add 1.0 to 2.0 mgd in 2008. Additional phases may be in increments of 2.0 to 2.5 mgd. The phasing of the WRF will be determined by the rate of construction and sales. The build out capacity of the WRF is projected to be completed in 2019.

WRF Description

The 1.0-mgd Phase 1 WRF will have fine screens at the headworks followed by sequencing batch reactors (SBR) for secondary treatment, tertiary filtration, and ultraviolet light disinfection. The effluent quality will meet Class A+ requirements and future phases of the plant will also provide this quality of effluent.

The expansion treatment processes include the following:

1- Headworks - Influent pumping, screening and grit removal will be used to support the downstream processes.
2- Primary Treatment - With the higher ultimate capacity, this treatment process will be considered as an option and the site layout and hydraulic

APPENDIX G

SUNDANCE WASTEWATER TREATMENT PLANT DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Data Collection Form

3. Background Information from the approved *MAG 208 Water Quality Management Plan Amendment for the Expansion of the Sundance Wastewater Treatment Plant* (RBF 2005)

Sundance WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 49,655 persons in 2030 based on the 2007 POPTAC population estimates and 139,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Sundance WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 0.692 MGD currently to 13.9 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 14** in **Appendix B**.	Figure 14, Appendix B
Describe the type and capacity of the recommended WWT plant.	The first phase of the Sundance WWTP consisted of a 1.2 MGD SBR system and the second phase has been recently completed increasing the capacity to 2.4 MGD. Planned upgrades to the facility include increasing the capacity to 3.6 MGD. The WWTP currently operates with a biological treatment process which provides BOD removal, nitrification and dentrification, aerobic sludge digestion and dewatering, and sludge disposal strategy. The plant is equipped with odor control, which includes basin covers and odor scrubbing equipment. Once flows approach approximately 5 MGD, the facility will be planned to upgrade to one of four Bardenpho alternative technologies. The WWTP is anticipated to have an ultimate capacity of 13.9 MGD.	Section 5.2.4, Page 46
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the expansion. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WWTP.	Figure 3, Appendix B

Sundance WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Describe method of effluent disposal and reuse sites (if appropriate).	Currently, effluent generated by the WRF is used for golf course irrigation or discharged to the Buckeye and Roosevelt canals under an AZPDES permit. Additional direct reuse or groundwater recharge may occur in the future as agreed by the Town of Buckeye and in accordance with the Reuse of Reclaimed Wastewater permit.	Section 6.7.4, Page 65
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A
Describe ownership of land proposed for plant sites and reuse areas.	The land for the plant was owned by Buckeye Land and managed by Buckeye Land Management Inc. After acceptance by the Town of Buckeye, ownership of the plant site, WWTP and sewage collection system were conveyed to the Town of Buckeye.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The first phase of the Sundance WWTP consisted of a 1.2 MGD SBR system and the second phase has been recently completed increasing the capacity to 2.4 MGD. Planned upgrades to the facility include increasing the capacity to 3.6 MGD. Subsequent phases will be completed as development dictates or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	Financing of the Phase 1 expansions to the Sundance WWTP are discussed in the approved Sundance MAG 208 Plan Amendment, and was provided through BLMI. Phase 2 has recently been completed. The Phase 3 expansion will be the responsibility of the Town of Buckeye. Phase 1 and 2 expansions are complete, therefore the plant is self supported and the Town has assumed financial responsibility for construction of future phases. The Town of Buckeye is responsible for the operation and maintenance of the Sundance WWTP whether the Town publicly bids the operation and maintenance services or directly hires qualified and licensed operators. User fees will be collected by the Town of Buckeye to fund operation and maintenance over the life of the facility.	Section 9.0, Page 80

Sundance WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the WWTP will treat wastewater only. The WWTP site will not receive storm water runoff from adjacent properties. Storm water discharges from the WRF site will be subject to AZPDES storm water permitting requirements. The flows will be addressed through the implementation of a SWPPP.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	The developments will provide park areas that will be irrigated using the treated effluent in accordance with ADEQ reuse requirements, the Arizona Groundwater Code and rules for water augmentation.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility currently operates under an AZPDES Permit and an APP. These permits would need to be updated with additional expansions. The facility will also require an Air Quality Permit, Storm Water Discharge Permit, Annual Operating Permit, and a Reuse of Reclaimed Wastewater permit in the future. Future construction will require coordination with the Town of Buckeye and MCESD to obtain an approval to construct, approval of construction, and architectural and building permits.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions exist for the current AZPDES permit. The effluent for the expansion will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	The Town of Buckeye or its designated agent will be responsible for obtaining the necessary permits from the ADEQ as required for further expansion of the facility. ADEQ will be notified and a preapplication meeting will be scheduled once the design of the facility expansion commences.	Section 7.0 (Table 7.2), Pages 77-78

Sundance WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Significant industrial users are not anticipated in the service area outlined. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Sludge will be dewatered and either disposed of at an approved landfill or applied to approved agricultural land. Sludge hauler and sludge disposal agreements will be obtained. Sludge will be of such a quality that it may be used for agricultural purposes.	Section 5.1.5, Pages 43-44
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	The project will be divided into phases. Construction of Phase 3 expansion is not estimated to begin until 2013. Subsequent expansions will be designed when the facility reaches 70% capacity and construction will begin at 80% capacity or as designated by the Town.	Section 8.0 and Section 10.0, Pages 79 and 81

Sundance WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	The construction and operation of the existing facility has been financed by local developer(s). Future expansions are likely to be funded in a similar manner. Ultimately, the Town of Buckeye will be responsible for the operation and maintenance of the facility.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	A CFD has been created to fund the initial construction and operation of the facility. The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	The Phase 2 expansion is constructed and operational. Subsequent expansions will be designed when the facility reaches 70% capacity or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82

Sundance WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	A CFD has been created to fund the initial construction and operation of the facility. The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The existing facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The existing facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. The Sundance WWTP is currently operational, and the plan consists of expanding the existing facility to meet future demands. The existing facility will remain on-line during construction of the expansion. The construction will be completed in phases to increase the capacity of the facility to meet growing demands.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Sundance WWTP (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Water Quality Management Plan
Comprehensive Amendment
for the Town of Buckeye

Data Collection

Contact Information	
Name	**Mike Bollinger**
Title	Senior Operator
Company	Pacific Environmental Resources Corporation
Telephone Number	(623) 393-9630
Email Address	mbollinger@percwater.com
Date	August 7, 2007

Facility Information	
Facility Name	**Sundance Water Reclamation Facility**
Current Design Capacity (MGD)	2.4 MGD
Process Description	Sequential Batch Reactor
Planned Upgrades (capacity and timing)	Phase C will increase the plant capacity to 3.6 mgd. Ultimate capacity: 8.9 mgd (est.) by the year 2026 (est.)
Current Population Served (persons and/or dwelling units)	5,000 dwelling units
Additional Information	

Current Data		
Actual Average Daily Flow (MGD)	0.692 mgd	
Parameter	Average Concentration Influent	Average Concentration Effluent
BOD (mg/L)	295	<5
TSS (mg/L)	268	1.90
TDS (mg/L)		
TKN (mg/L)	47	1.75
TN (mg/L)		4.1
Fecal Coliform (CFU/100 mL)	N/A	<1
Total Coliform (CFU/100 mL)	N/A	<1
Based on Data From	Monthly operational report and quarterly Self Monitoring Report Form (SMRF)	

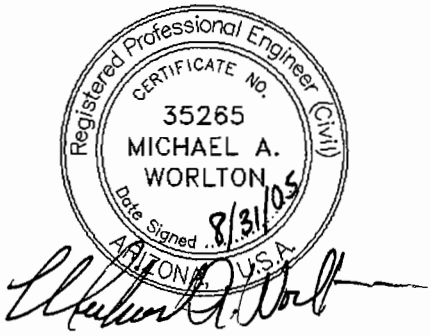
MAG 208

Water Quality Management Plan Amendment

For the Expansion of the
Sundance Wastewater Treatment Plant
Buckeye, Arizona

Prepared for:
Town of Buckeye
100 North Apache
Buckeye, Arizona 85326
Phone: (623) 386-4691
Fax: (623) 386-7832

Revised: August 2005



Engineering Firm:
RBF Consulting
Engineer: Michael Worlton, P.E.
16605 North 28th Avenue, Suite 100
Phoenix, Arizona 85053-7550
Phone: (602) 467-2200
Fax: (602) 467-2201

RBF JN: 45-102159

Road, Indian School Road, Thomas Road, McDowell Road, Van Buren Street, Yuma Road, Dean Road, Airport Road, Tuthill road, Jack Rabbit Trail & Perryville Road. According to the FEMA map number 04013C2045 G, the SWWTP is not in a floodplain. It is located in the Zone X flood area which is the area of 500-year flood; area of 100-year flood with average depths of less than 1 foot or with drainage area less than 1 square mile; and area protected by levees from 100-year flood. A flood area map showing the SWWTP site is included in Appendix A.

3.2.3 Population Estimates and Flow Projections

The Department of Economic Security (DES) Population Statistics Unit prepares official population estimates and projections for the State of Arizona. The DES projects the population of Buckeye for the 20-year planning period to reach 102,223. It is anticipated that the SWWTP will accommodate a portion of this population.

The proposed SWWTP will have a service area as shown in the Buckeye Planning Area Map in Appendix A. The existing SWWTP was proposed to serve a total of 3.6 MGD or 10,286 dwelling units. The proposed expansion of the SWWTP service area would serve an additional 15,161 equivalent dwelling units. The total number of equivalent dwelling units projected to be served by the SWWTP is 25,446 equivalent dwelling units.

The flow projections were based on land use maps, planned and proposed development information and existing development and parcels maps. The land use categories within the SWWTP service area consist of commercial center, general commerce, planned community, planned residential, rural residential and special use. The allowable land use densities were established by the Town staff and are described in Table 3.1 Land Use Densities. A distribution of the population projections for the SWWTP service area is shown in Exhibit B in Appendix A.

Table 3.1 Land Use Densities

Land Use	Density
Planned community	4 du/ac
Planned Residential	4 du/ac
Rural Residential	1 du/ac

A more detailed description of the population projections is provided in the East Buckeye Wastewater Master Plan prepared by RBF Consulting, which is attached in Appendix C.

3.2.4 Estimated Wastewater Flow

The projected wastewater flows from the expanded SWWTP service area are summarized in Table 3.2. In addition to these flows, The SWWTP will also receive a minimal amount of flow from the arsenic treatment facility at the Sundance-Sonora water storage tank. Exhibit B shows the flow summary and the land use and developments for the proposed service area.

Table 3.2 Flow Summary for the area serviced by the proposed SWWTP

Description	Equivalent Dwelling Units	Flow (gal/unit/day)	Average Daily Flow (gpd)
Future DU	12,607	325	4,097,275
Existing DU	720	325	234,000
Rancho Sonora	476	325	154,700
Subtotal	**13,803**		**4,485,975**
Outside Parcels Future DU	2,919	325	948,675
Outside Parcels Existing DU	908	325	295,100
Subtotal	**3,827**		**1,243,775**
Sundance Build out Design Capacity			3,600,000
Sundance build out capacity	9,054	325	
Excess Sundance Capacity*			-400,307
Total	***17,630***		***8,929,443***

* This is because the number of lots approved was less than the projected number of lots.

3.2.5 WWTP Description

The first phase of the Sundance WWTP consists of a Sequential Batch Reactor (SBR) system, with average flow capacity of 1.2 MGD. Further phasing will be determined by growth within the service area for the SWWTP. Phases 1B and 1C will also consist of a SBR system. The existing facilities will be upgraded in phase 2. In phase 3 an additional 1.7 MGD Modified Ludzack Ettinger (MLE) expansion will be added. The capacity, at full build-out, of the WWTP will be 8.9 MGD, based on sizing requirements per Maricopa County where total residential EDUs are multiplied by 325 gallons per unit per day. The proposed treatment process will provide BOD removal, nitrification and denitrification, aerobic or anaerobic sludge digestion, sludge dewatering, and sludge disposal strategy. Since bidding for the design and construction of the SWWTP has not yet begun, specific design parameters have not yet been determined. Details of the treatment process are therefore not included in this report. The construction plan will be reviewed and approved by Maricopa County Environmental Services Department (MCESD) and the Town of Buckeye prior to construction. This will include a start-up plan for the facility.

3.2.5.1 Effluent Disposal and Quality Requirements

Effluent from the SWWTP is currently being reused at the Sundance golf course. This effluent is stored in a lake and is pumped to the golf course for irrigation purposes. A 20-inch low-pressure effluent line with a capacity of 7.6 MGD is currently being constructed to carry effluent from the SWWTP to the Buckeye Irrigation District (BID) Canal. The effluent line will be pressurized to meet the current demand of 8.9 MGD. Other alternatives for effluent disposal may include: 1) direct reuse for irrigation of green areas, 2) Discharge into the BID Canal, and 3) Groundwater Recharge. Such a strategy helps to conserve water resources available to the Town of Buckeye.

Exhibit A - Sundance WWTP Amendment

Re-use Line
Reuse Area
Buckeye Streams
Railroad
3 Mile Buffer arround the Service Area
Existing Trunk Sewer
Proposed Service Area
Effluent Line to BID Canal
Existing Service Area
Wastewater Treatment Plant (WWTP)

Verrado Service Area
City of Goodyear (Municipal Planning Area)
City of Glendale (Municipal Planning Area)

Feet
0 6,400 12,800 19,200

RBF CONSULTING
PLANNING ■ DESIGN ■ CONSTRUCTION
GIS
16605 N 28th AVENUE
PHOENIX, ARIZONA 85053-7550
602.467.2200 ▪ FAX 602.467.2201 ▪ www.RBF.com

08/29/05

CITY OF GLENDALE

CITY OF GOODYEAR

Bethany Home Rd
Camelback Rd
Indian School Rd
Thomas Rd
McDowell Rd
Van Buren St
Yuma Rd
Sundance WWTP
Lower Buckeye
RID Canal
Broadway Rd
Watson Rd
Rainbow Rd
Dean Rd
Tuthill Rd
Citrus Rd
Southern Ave
BID Canal
Baseline Rd
Airport Rd
Jack Rabbit Trl
Perryville Rd

APPENDIX H

TARTESSO WEST WATER RECLAMATION FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Data Collection Form

3. Background Information from the approved *Clean Water Act 208 Amendment Application for Maricopa Association of Governments Prepared for the Tartesso Water Reclamation Facility and the Town of Buckeye* (PACE 2003)

Tartesso West WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 22,534 persons in 2030 based on the 2007 POPTAC population estimates and 173,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Tartesso West WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 0.112 MGD currently to 24.2 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 15** in **Appendix B**.	Figure 15, Appendix B
Describe the type and capacity of the recommended WWT plant.	The first phase of the Tartesso West WRF has a capacity of 1.2 MGD and uses an activated sludge process within hybrid SBRs. As typical with conventional SBRs, the treatment process for the Tartesso West WRF utilize anoxic mixing, aerobic mixing, and static reaction capabilities to provide biological oxidation, nitrification, denitrification, phosphorous removal, and clarification within each reactor tank. The hybrid SBR design includes an additional anoxic pre-reactor which functions for flow equalization, denitrification, and biological selection which provides for optimal treatment efficiency and ease of operation. The hybrid mechanism also allows for efficient foam and scum removal from the SBR during RAS periods. Preceding primary treatment within the facility includes screening and grit removal within covered and odor-controlled headworks areas. Following the secondary processes, the facility is equipped with tertiary treatment capabilities including a surge basin, filtration, and UV disinfection equipment (with back-up chlorination). Once flows approach approximately 5 MGD, the facility will plan to upgrade to one of four Bardenpho alternative technologies. The WRF is anticipated to have an ultimate capacity of 24.2 MGD.	Section 5.2.5, Pages 46-47
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52

Tartesso West WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WRF.	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	Effluent from the Tartesso West WRF is anticipated to be used for groundwater recharge within basins adjacent to the facility. An APP and potentially an ADWR constructed underground storage facility permit are planned to provide for groundwater recharge. Alternative discharge sites to Waters of the U.S. (e.g. Hassayampa River & tributaries) require an ADEQ AZPDES permit. In addition, following significant development, effluent reuse may be developed to provide lake source water or irrigation of golf courses and/or parks within the Town of Buckeye. An ADEQ reuse permit will be provided for such direct reuse.	Section 6.7.5, Page 66
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A
Describe ownership of land proposed for plant sites and reuse areas.	The Tartesso West WRF is located on property currently owned by Stardust Development. Following the construction and acceptance of each phase of the facility, the ownership will be transferred to the Town of Buckeye. Recharge facilities accepting reuse water will be on land transferred to the Town of Buckeye from Stardust Development. Other public or private entities may own the reuse areas.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	Phase I of the Tartesso West WRF was completed in November 2004. Additional facility phases for the Tartesso West WRF will be completed as development dictates or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	All storm water generated within the project sites will be detained on-site following completion of construction (zero storm water discharge will occur from the property of the Tartesso West WRF). During construction, flows will be discharged from the site under an AZPDES temporary construction discharge permit.	Section 7.0, Pages 77-78

Tartesso West WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	The developments will provide park areas that will be irrigated using the treated effluent in accordance with ADEQ reuse requirements, the Arizona Groundwater Code and rules for water augmentation.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility currently operates under an AZPDES Permit and an APP. These permits would need to be updated with additional expansions. The facility will also require an Air Quality Permit, Storm Water Discharge Permit, Annual Operating Permit, and a Reuse of Reclaimed Wastewater permit in the future. Future construction will require coordination with the Town of Buckeye and MCESD to obtain an approval to construct, approval of construction, and architectural and building permits.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions exist for the current AZPDES permit. The effluent for the expansion will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	PERC, Inc., in conjunction with the Town of Buckeye, obtained the necessary permits from ADEQ for the first phase of the Tartesso West WRF. The Town of Buckeye or its designated agent will be responsible for obtaining the necessary permits from the ADEQ as required for further expansion of the facility. ADEQ will be notified and a preapplication meeting will be scheduled once the design of the facility commences.	Section 7.0 (Table 7.2), Pages 77-78

Tartesso West WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Significant industrial users are not anticipated in the service area outlined. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Sludge will be stored, treated, and dewatered on-site for the Tartesso West WRF. Biological reactors will provide processes to significantly reduce pathogens and volatile solids composition. The facility will provide aerated storage, digestion, and dewater capabilities. In Phase I sludge will be processed to meet a minimum of EPA Class B reuse requirements for sludge of exceptional quality up to plant influent flow rates of 600,000 gallons per day. Following the completion of Phase II, the facility will produce Class B biosolids for the remainder of the facility build-out. Treated and dewatered sludge from Phase I beyond 600,000 gallons/day is anticipated to be landfilled. Class B biosolids from Phase I or subsequent phases can be reused for land application or fertilization of non-contact crops.	Section 5.1.5, Pages 43-44
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A

Tartesso West WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Construction		
Define construction priorities and time schedules for initiation and completion.	Construction of Phase I of Tartesso West WRF is complete and operational. Subsequent expansions will be designed when the facility reaches 70% capacity and construction will begin at 80% capacity or as designated by the Town.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	PERC, Inc. currently operates and maintains the Tartesso West WRF for the Town of BUckeye. The Town of Buckeye will ultimately own and operate the WRF.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	The Town of Buckeye is responsible for the construction, operation and maintenance of the facility. The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80

Tartesso West WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Provide a timeline outlining period of time necessary for carrying out plan implementation.	Construction of Phase I of Tartesso West WRF is complete and operational. Subsequent expansions will be designed when the facility reaches 70% capacity or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	A CFD has been created to fund the initial construction and operation of the facility. The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The existing facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The existing facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. The Tartesso West WRF is currently operational, and the plan consists of expanding the existing facility to meet future demands. The existing facility will remain on-line during construction of the expansion. The construction will be completed in phases to increase the capacity of the facility to meet growing demands.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

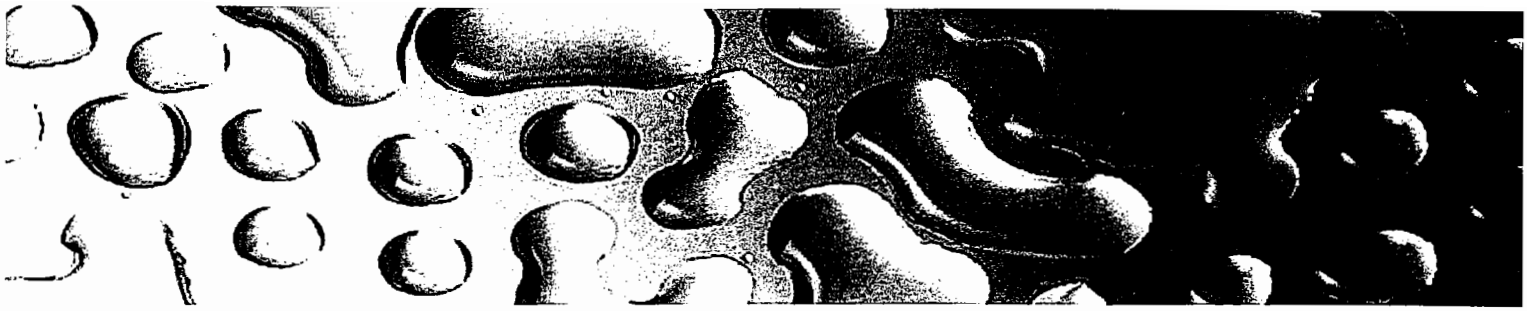
Tartesso West WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Water Quality Management Plan
Comprehensive Amendment
for the Town of Buckeye
Data Collection

Contact Information	
Name	**Marc Ocampo**
Title	Operations Specialist
Company	Pacific Environmental Resources Corporation
Telephone Number	(714) 338-9621
Email Address	mocampo@percwater.com
Date	August 7, 2007

Facility Information	
Facility Name	**Tartesso Water Reclamation Facility**
Current Design Capacity (MGD)	1.2 MGD
Process Description	Sequential Batch Reactor
Planned Upgrades (capacity and timing)	Phase 2 will increase the plant capacity to 3.2 mgd. Ultimate capacity: 9 to 11 mgd (est.) by the year 2022 (est.)
Current Population Served (persons and/or dwelling units)	1,600 dwelling units
Additional Information	

Current Data		
Actual Average Daily Flow (MGD)	0.112 mgd	
Parameter	Average Concentration Influent	Average Concentration Effluent
BOD (mg/L)	81	2.5
TSS (mg/L)	97.53	1.41
TDS (mg/L)		
TKN (mg/L)	22.75	1.213
TN (mg/L)		8.1
Fecal Coliform (CFU/100 mL)	N/A	<1
Total Coliform (CFU/100 mL)	N/A	<1
Based on Data From	Monthly operational report and quarterly Self Monitoring Report Form (SMRF)	



CLEAN WATER ACT
- 208 AMENDMENT -

APPLICATION FOR
MARICOPA ASSOCIATION OF GOVERNMENTS

PREPARED ON BEHALF OF
THE TOWN OF BUCKEYE BY PERC & PACE, INC :

TARTESSO WATER RECLAMATION FACILITY &
TOWN OF BUCKEYE

PREPARED BY:

PACE
PACIFIC ADVANCED
CIVIL ENGINEERING, INC.

APRIL 2003
(REVISED MAY 2003)

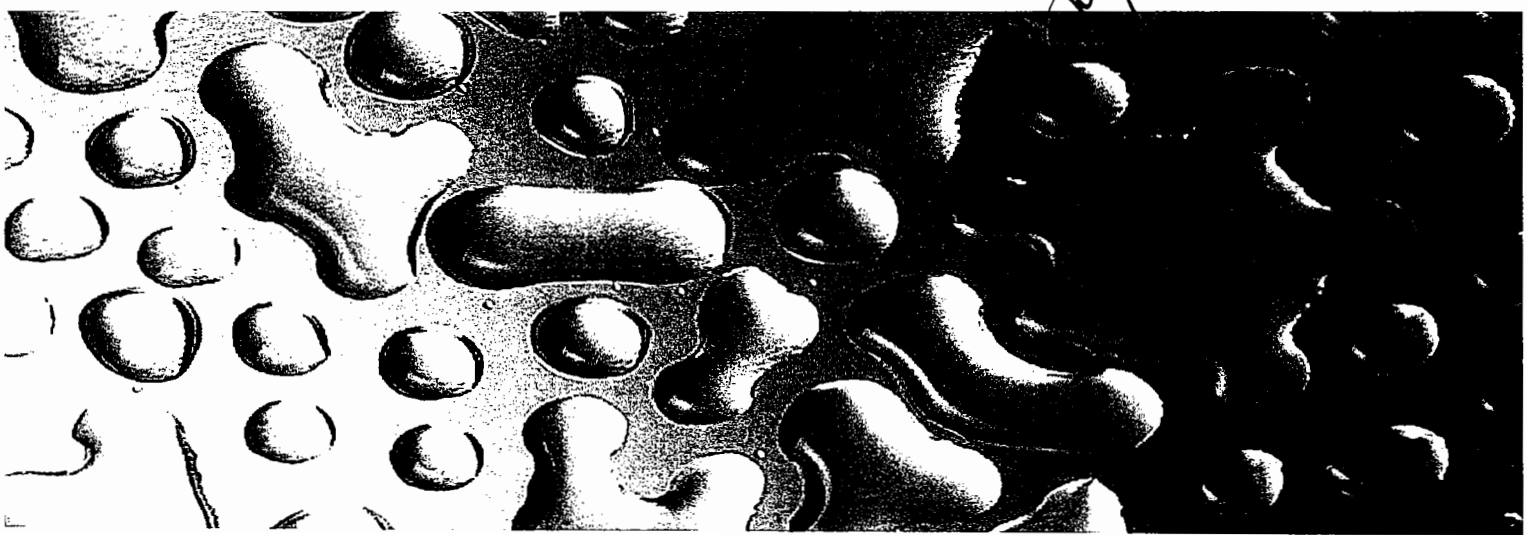
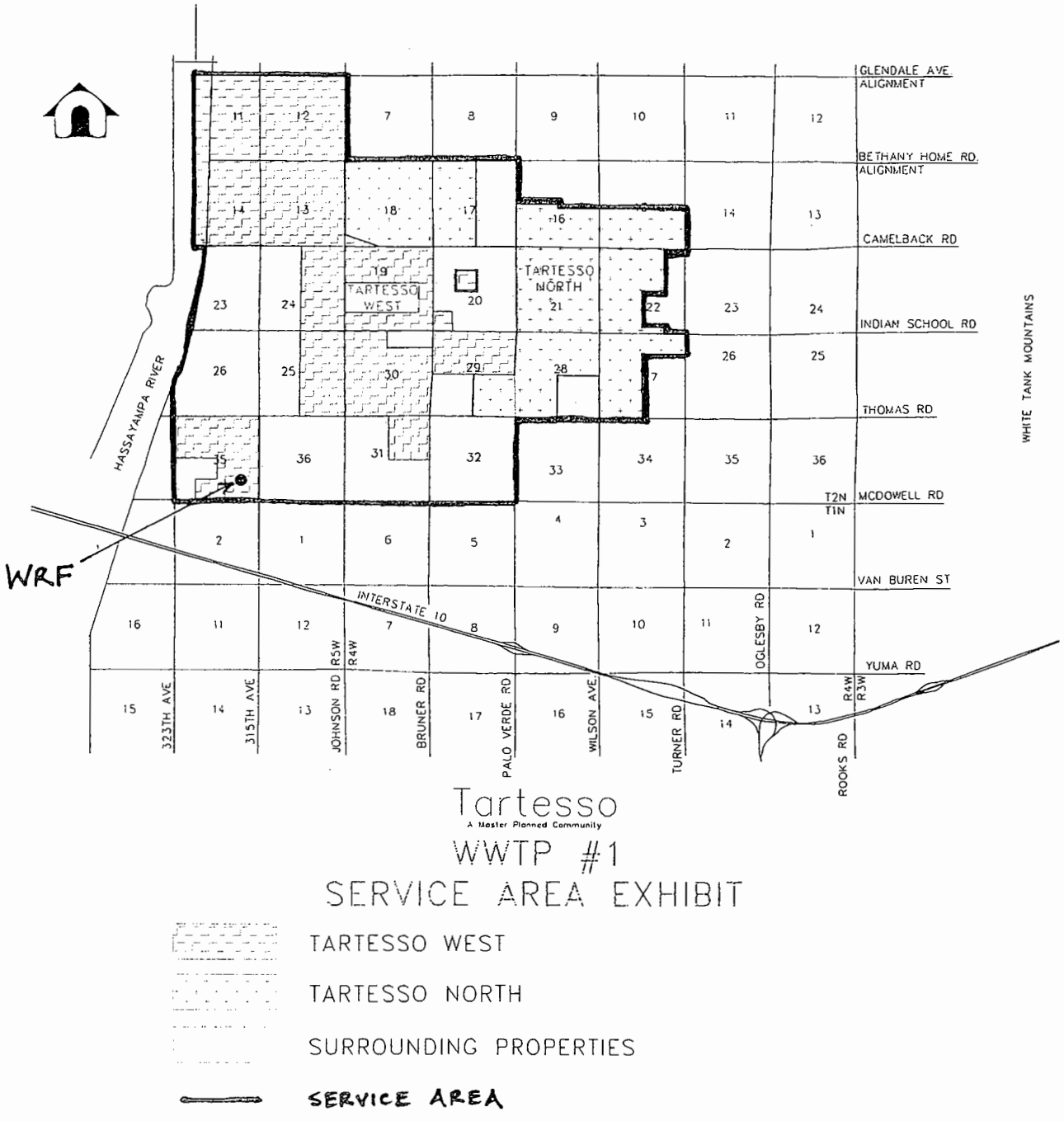


Figure 2. Service Area for the Proposed Tartesso West WRF (see Appendix A for detailed aerial map and facility location)



2. Population, Water Supply, and Wastewater Generation Estimates

As stated previously, portions of four regional analysis zones (RAZs) summing approximately 13,500 acres were used to define the Tartesso WRF service area. These four areas include RAZs 253, 277, 278, and 340 within the Town of Buckeye. Comprising the service area are developments including Tartesso West (5,040 acres) and Tartesso North (3,750 acres) and surrounding areas in the Town of Buckeye (4,740 acres) not owned by Stardust Development. Table 1 below displays the maximum anticipated population in the service area for 100% build-out. Figure 2 (previous page) illustrates the regions that make up the service area.

Table 1. Projected Population in the Tartesso WRF Service Area*

		TARTESSO WEST (5,040 acres)		TARTESSO NORTH (3,750 acres)		SURROUNDING (4,740 acres)		TOTAL UNITS	TOTAL POPULATION
Land Use	*Persons/Unit*	*Units*	*Population*	*Units*	*Population*	*Units*	*Population*		
High Density Residential	2	3,393	6,786	1,851	3,702	3,191	6,382	8,435	16,870
Medium High Density Residential	2	2,168	4,336	4,050	8,100	2,039	4,078	8,257	16,514
Medium/Medium High Density Residential	3.2	170	544	0	0	160	512	330	1,056
Medium Density Residential	3.2	12,006	38,419	5,590	17,888	11,291	36,132	28,887	92,439
Medium Density Residential/WWTP	3.2	312	998	0	0	293	939	605	1,937
Low Density Residential	3.2	869	2,781	0	0	817	2,615	1,686	5,396
Mixed Use	3.2	438	1,402	1,011	3,235	0	0	1,449	4,637
TOTAL		19,356	55,266	12,502	32,925	17,792	50,657	49,650	138,848

* Information in Table 1 was obtained from estimates provided by Stardust Development (April, 2003). Population and wastewater flow projections were also included in the October, 2002 MAG 208 report for the Town of Buckeye (Table 2); however, the total wastewater flow projected in the year 2020 for the Town of Buckeye was 8.24 MGD. The population projections provided by Stardust Development for the Tartesso WRF service area alone may be as high as 18 MGD in the year 2022 (not including significant flows expected for the Sundance WRF, Town of Buckeye WWTP, Verrado WRF, etc.).

Table 2. Projected Population and Wastewater Generation within the Town of Buckeye (Source: October, 2002 MAG 208 Water Quality Management Report)

Table 4.13 Buckeye Population and Flow Projections
MAG 208 Water Quality Management Plan Update

	Core Planning Area (RAZ 278 & 279)		Future Planning Areas			Total Wastewater
Year	Population	Flow (mgd)	Population	Flow (mgd)	Total Population	Flow (mgd)
2000	10,279	1.03	7,773	0.78	18,084	1.81
2005	12,252	1.23	10,101	1.01	22,385	2.24
2010	14,630	1.46	13,514	1.35	28,176	2.82
2015	24,914	2.49	26,500	2.65	51,446	5.14
2020	36,356	3.64	46,028	4.60	82,416	8.24

Based on 100 gpcd.

disinfection equipment (with back-up chlorination). To provide process redundancy and obtain a Phase I average-day capacity of 1.2 MGD, four reactor tanks (two SBR reactors and two pre-reactors) will be constructed in Phase I.

Wastewater will be treated to exceed the current ADEQ Title 18 requirements for unrestricted irrigation recharge or re-use. The phase I plan for effluent includes discharging from the Tartesso WRF to adjacent recharge basins directly east of the facility for groundwater recharge. Ultimately, future golf courses and public parks may be irrigated with reclaimed water from the facility. Stardust Development may provide reclaimed water at less cost than potable groundwater or surface water supplies. Effluent proposed for future reuse from the treatment facility may be stored in lined golf course lakes and water feature amenities prior to distribution for irrigation.

The Tartesso WRF will generate waste sludge which will be directed to an aerated digester reactor for biological conversion including volumetric sludge reduction, pathogen removal, and bio-solids conditioning. The sludge digestion process will ultimately provide pathogen and vector attraction reduction equivalent to the EPA Title 40 CFR 503 regulations for Class B biosolids. Biosolids will be dewatered, stored, and hauled to either a landfill for disposal or biosolids reuse areas.

a.) Facility Capacity

The Tartesso facility will have an average day capacity for Phase I of 1.2 MGD with phased expansions which will treat potentially 18 MGD (average day capacity) at full build-out. The phasing of the facility will be dependent on population and development growth rates from the service area (see Table 3). The modular design of the facility typical of SBRs will allow efficient implementation of subsequent phases to the Tartesso WRF. Both the Phase I and subsequent phases will be capable of processing peak day and peak hour flows into the facility.

Table 3. Potential Phasing Options for the Tartesso WRF Based on Projected Wastewater Generation from the Service Area

Potential Phasing Options Based on Wastewater Generation						
	Phase I (year)	Phase II (year)	Phase III (year)	Phase IV (year)	Phase V (year)	**TOTAL**
100% Build Out 350 gal/unit/day	1.2 MGD (2004)	5.4 MGD (2006)	9.6 MGD (2010)	13.8 MGD (2012)	18.0 MGD (2015)	**18.0 MGD**
80% Build Out & Growth Rate w/25% Flow Reduction	1.2 MGD (2004)	5.2 MGD (2007)	9.2 MGD (2012)	11.2 MGD (2015)	-	**11.2 MGD**

APPENDIX I

VERRADO WATER RECLAMATION FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Data Collection Form

3. Background Information from the approved *Clean Water Act 208 Plan Amendment for the Town of Buckeye: Whitestone Water Reclamation Facility* (Malcom Pirnie 2001)

4. Background Information from the *Wastewater Master Plan for Fireside at Sienna Hills (formerly Tesota Hills)* (CMX 2007)

Verrado WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	The Verrado WRF is the only private sewer utility operating within the Buckeye MPA. The WRF serves the Verrado development area located in Buckeye, approximately one-half mile north of Interstate 10, west of Tuthill Road, east of 227th Avenue, and south of Northern Avenue. The facility will also serve the Fireside at Sienna Hills development. A small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B

Verrado WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 19,102 persons in 2030 based on the 2007 POPTAC population estimates and 37,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 0.141 MGD currently to 3.6 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 14** in **Appendix B**.	Figure 14, Appendix B
Describe the type and capacity of the recommended WWT plant.	Phase 1 has an initial capacity of 0.45 MGD and utilizes the following treatment types; screening, secondary treatment with biological nitrogen removal and chlorination. The ultimate capacity is projected to have a capacity of 3.6 MGD.	Section 5.2.6, Page 47
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the expansion. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Arizona American, on behalf of the Verrado development, has filed and received a CC&N to serve the Verrado Development. An expansion to the CC&N has been recently approved to serve the Fireside at Sienna Hills development.	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	The effluent is being used to irrigate landscaping at golf courses. The treated effluent is being pumped to the golf course lakes for storage. The ultimate facility's effluent (and, in case a second golf course is not constructed and effluent from the Phase 1 facility exceeds reuse demands) also may be used for groundwater recharge. Ultimately, the effluent also may be used to irrigate open access landscaping, such as in right-of-ways, common areas and parks. In the future, the facility may use White Tanks FRS #4 or the Roosevelt Canal for discharges under an AZPDES permit.	Section 6.7.6, Page 66
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A

Verrado WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Describe ownership of land proposed for plant sites and reuse areas.	The land used by the plant site is either owned or under contract to be purchased by DMB White Tank LLC. The sewage collection system and reclaimed water pipeline will be located on land owned by DMB and Associates. Reuse will occur on land owned by private golf courses.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The plant is designed for an initial flow of 0.45 MGD with an ultimate capacity of 3.6 MGD. Additional facility phases for the Verrado WRF will be completed as development dictates.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	Currently, there is no effluent from the plant being discharged to surface waters and therefore no individual AZPDES permit is required. In the future, the facility may use White Tanks FRS #4 or the Roosevelt Canal for discharges which will require an AZPDES permit. The collection system will be designed to prevent storm water infiltration and the plant will treat wastewater only. The plant site will not receive storm water runoff from adjacent properties. Storm water discharges from the plant site will be subject to AZPDES storm water permitting requirements when design flows exceed 1 MGD. The flows will be addressed through implementation of a SWPPP.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	The reuse of treated effluent will safely enhance golf course landscaping and lakes while reducing the need for unnecessary use of groundwater/surface water resources.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A

Verrado WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility currently operates under an APP, which would need to be updated with additional expansions. The facility also requires an Air Quality Permit and a Reuse of Reclaimed Wastewater permit. The facility may use White Tanks FRS #4 or the Roosevelt Canal for emergency discharge in the future which will require an AZPDES permit.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	Not applicable. There is currently not an AZPDES permit for the facility. However, Arizona American may pursue an AZPDES permit in the future; no restrictions would be anticipated for a discharge to White Tanks FRS #4 or the Roosevelt Canal. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	DMB obtained the necessary permits for the first phase of the Verrado WRF. Arizona American or its designated agent will be responsible for obtaining the necessary permits from the ADEQ as required for further expansion of the facility. ADEQ will be notified and a preapplication meeting will be scheduled once the design of the facility expansion commences.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Significant industrial users are not anticipated in the service area outlined. In the event that an industrial user requests to discharge to this system, Arizona American would review the industrial processes involved and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A

Verrado WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Currently, sludge is dewatered using belt filter presses and disposed of at an offsite, permitted landfill. Anaerobic sludge digesters may be installed in the future, at which point the sludge could be use for land applications or continue to be disposed of at a landfill.	Section 5.1.5, Pages 43-44
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	Construction of Phase I of Verrado WRF is complete and operational. Subsequent expansions will be designed when the facility reaches 70% capacity and construction will begin at 80% capacity or as designated by Arizona American.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	DMB has constructed the initial phase of the project. Arizona American operates and maintains the initial phase WRF and will be responsible for expansion of the collection system, discharge line, and WRF beyond the initial phase.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A

Verrado WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly. Financing will be provided through private funding sources.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	Long-term cost recovery to DMB and Arizona American will be provided on a per-connection basis. Connection and operating fees will be regulated by the ACC.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is the DMA, however the facility is not going to be constructed, owned or operated by the Town of Buckeye. It will be constructed by DMB and owned and operated by Arizona American. The financial capability of Arizona American was provided in the original approved 208 Plan Amendment for the Verrado WRF (formerly Whitestone WRF).	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	The initial phase of this project was completed in 2003. Subsequent expansions to ultimate capacity will be completed as needed, and the facility is projected to have an ultimate capacity of 3.6 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	Financing will be provided through private funding sources.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The existing facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A

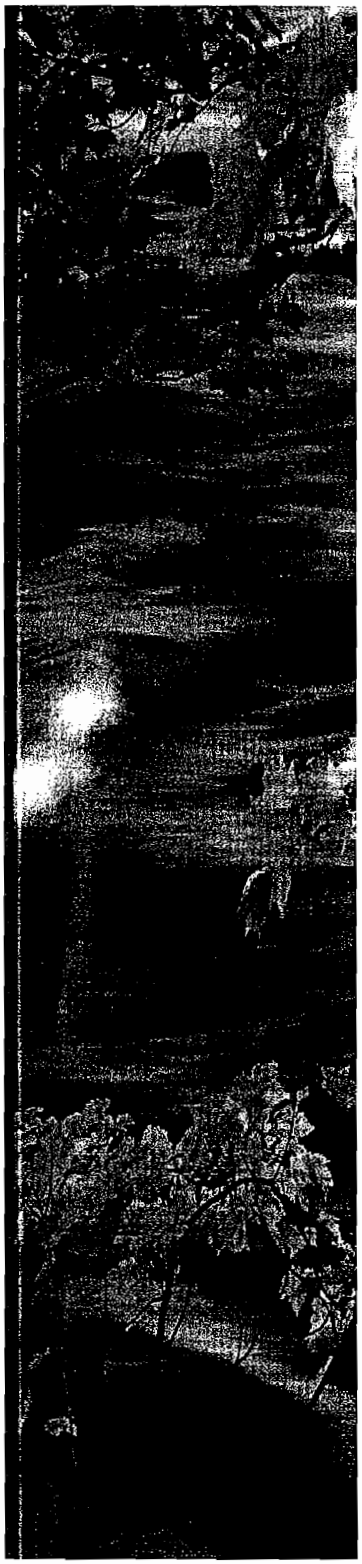
Verrado WRF (Existing)		
Requirement	**Summary of Compliance**	**See Page**
Describe the impact on communities and businesses affected by the plan.	The existing facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. The Verrado WRF is currently operational, and the plan consists of expanding the existing facility to meet future demands. The existing facility will remain on-line during construction of the expansion. The construction will be completed in phases to increase the capacity of the facility to meet growing demands.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Comprehensive 208 Plan Amendment for the Town of Buckeye Data Collection Sheet July 2007	
General Information	
Facility Name	**Verrado Water Reclamation Facility**
Planned Upgrades	**Completion of the Phase II Expansion from the current SBR rated @ 0.45 MGD to conventional activated sludge BNR rated @ 0.83 to 1.35 MGD depending upon Influent BOD loading (0.83 MGD @ 350 mg/L Influent BOD, 1.35 MGD @ 250 mg/L Influent BOD) expected by August 2007.**
Report Completed by (name, position, company)	**Arthur W. Faiello** **Operations Supervisor** **Arizona American Water** **Verrado Water Reclamation Facility**

Wastewater Generation			
	Persons	Residential Dwelling Units	Equivalent Dwelling Units
Current Population Served	Estimated at: 1,800	Estimated at: 800	
	Please provide persons and/or residential dwelling units, commercial acreage or equivalent dwelling units.		

Current Data*		
Average Daily Flow (MGD)	**0.141 MGD or 141,000 gpd**	
Parameter	Average Concentration Influent	Average Concentration Effluent
BOD (mg/L)	236 mg/L	2.4 mg/L
TSS (mg/L)	163 mg/L	1.2 mg/L
TDS (mg/L)	N/A	N/A
TKN (mg/L)	47 mg/L	<1.3 mg/L
TN (mg/L)	47 mg/L	<1.7 mg/L
Fecal Coliform (CFU/100 mL)	N/A	< 1 CFU
Total Coliform (CFU/100 mL)	N/A	N/A

* Note if you have spreadsheets with daily/weekly/monthly values please forward this information



Clean Water Act Plan 208 Amendment

for the Town of Buckeye: Whitestone Water Reclamation Facility

Application

Prepared for

DMB White Tank, LLC

JUNE 2001

MALCOLM PIRNIE

Foundation has agreed to waivers as required. Areas with setback waivers will most likely be used for maintenance facilities and commercial properties.

1.2.2 Population Estimates

Population estimates for the Whitestone development were based upon a land-use model. (*Master Wastewater Plan Update and Planning Unit Plan for Portions of Planning Units IV and V (Phase 1) of Whitestone*, Wood/Patel, March 2001). The model assumed 3.5 capita per residential dwelling unit. Table 1 summarizes the proposed overall land use budgets for the project.

TABLE 1

PROPOSED OVERALL LAND USE BUDGET

	RESIDENTIAL HOUSING (UNITS)	COMMERCIAL (ACRES)	RESORT (ROOMS)	SCHOOL (ACRES)	COMMUNITY FACILITY (ACRES)	PARK (ACRES)	ROADWAY LANDSCAPING (ACRES)	GOLF (ACRES)
Total	9,560	235	1,000	98	69	258	214	798

Table 2 summarizes the design criteria for the Phase 1 and ultimate WRF through buildout of the development.

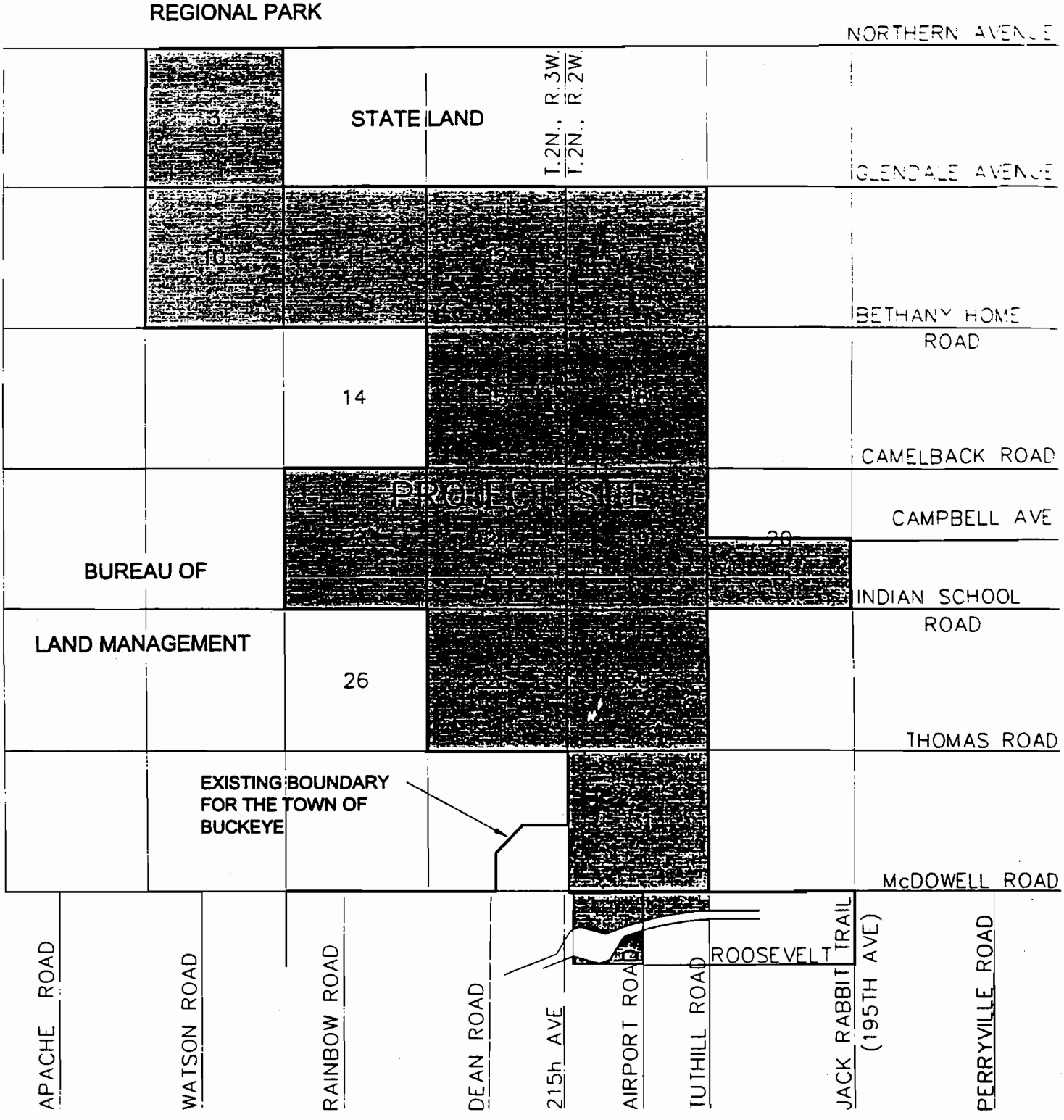
TABLE 2

WASTEWATER GENERATION

Ultimate Number of Residential Housing Units	9,560
Wastewater Flow Generation	100 gal/capita/day
Average Number of People per Residential Unit	3.5
Phase 1 Capacity	0.45 mgd
Ultimate Capacity	3.35 mgd

1.2.3 Collection System Description

Based on the natural topography, the majority of property can be served by gravity sewer lines to the WRF. However, four areas on the property cannot flow by gravity due to topographical constraints. These areas are expected to be served by utilizing wastewater lift



DMB

LOCATION MAP

FIGURE # 1

WHITESTONE

BUCKEYE, ARIZONA

WOOD, PATEL & ASSOCIATES INC.
Civil Engineers, Hydrologist and
Land Surveyors
(602) 335-8500

WASTEWATER MASTER PLAN

FOR

FIRESIDE AT SIENNA HILLS

(FORMERLY TESOTA HILLS)

BUCKEYE, ARIZONA

Owned and Developed By:
PULTE HOMES, INC.
Mr. Stewart Hayes
15111 North Pima Road, Suite 100
Phoenix, AZ 85060

Prepared By:
CMX, L.L.C.
7740 North 16th Street, Suite 100
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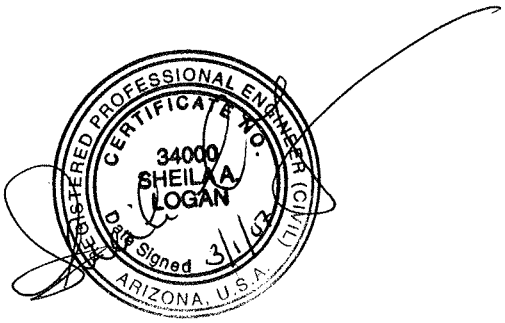


APPROVED

TOWN OF BUCKEYE ENGINEER DATE

THE TOWN APPROVES THIS REPORT FOR CONCEPT ONLY AND ACCEPTS NO LIABILITY FOR ERRORS OR OMISSIONS

Revised March 2007
Revised December 2005
Revised November 2003
March 2003
CMX Project No. 6785

TABLE 3

WASTEWATER FLOW SUMMARY

Parcel	Land Use Designation	Acreage	Population	Average Day Flow (gpd)	Peaking Factor	Peak Flow (gpd)
1 North	L/MDR	10.1	113	9,000	3.0	27,000
2 North	MDR	12.7	228	18,200	3.0	54,600
3A North	LDR	26.9	267	21,360	3.0	64,080
3B North	LDR	20.0	186	14,880	3.0	44,640
4 North	ER	23.9	108	8,640	3.0	25,920
5 North	LDR	19.3	120	9,600	3.0	28,800
6 North	LDR	13.1	114	9,120	3.0	27,360
7A North	ER	33.4	114	9,120	3.0	27,360
7B North	LDR	23.5	129	10,320	3.0	30,960
8 North	OS	71.7	-	0	2.5	0
9 North	PARK	6.3	-	0	2.5	0
10 North	COMM	4.1	-	6,210	2.5	15,525
11 North	OS	20.4	-	0	2.5	0
12 North	OS	14.8	-	0	2.5	0
1 South	L/MDR	35.9	398	31,800	3.0	95,400
3 South	LDR	35.3	363	29,040	3.0	87,120
4 South	LDR	25.8	291	23,280	3.0	69,840
5 South	MDR	16.0	283	22,600	3.0	67,800
6 South	L/MDR	30.6	328	26,200	3.0	78,600
Total	**-**	**443.7**	**3,040**	**249,370**	**-**	**745,005**

Note:
1. Rounding may affect total values.
2. Land use designations are defined as follows:
   COMM - Commercial
   ER - Estate Residential
   L/MDR - Low Medium Density Residential
   LDR - Low Density Residential
   MDR - Medium Density Residential
   OS - Open Space
   PARK - Community Park
3. Residential generation based on 80 gpcd. Commercial generation based on 1,500 gpad.
4. Residential peaking factor is 3.0 times average day. Non-residential peaking factor is 2.5 times average day.

4.2 Offsite Wastewater Facilities

Based on current agreements, wastewater from Sienna Hills will ultimately be treated to tertiary quality at the AAWC Regional Facility located within Verrado. The required infrastructure to convey the Sienna Hills flows from the connection to the Verrado WRF has been constructed. This offsite sewer main included in the Verrado Master Wastewater Plan varies in size from 15-inches to 18-inches and is designed to accommodate the wastewater flows from Sienna Hills as well as the flows generated by the tributary parcels within the Verrado development. The overall sewer plan for the Verrado development is shown in Figure 4.

APPENDIX J

ANTHEM AT SUN VALLEY SOUTH
WATER RECLAMATION FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Background Information from the approved *MAG 208 Water Quality Management Plan Amendment for Anthem at Sun Valley South and Tartesso East Water Reclamation Facilities* (CMX 2006)

Anthem at Sun Valley South WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 9,250 persons in 2030 based on the 2007 POPTAC population estimates and 37,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Anthem at Sun Valley South WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	The wastewater generation rate for the proposed service area ranges from an average day of the maximum month of 1.125 MGD in Phase 1 to a build-out capacity of approximately 4.5 MGD.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 15** in **Appendix B**.	Figure 15, Appendix B
Describe the type and capacity of the recommended WWT plant.	The wastewater treatment facility will have an ultimate capacity to treat up to 4.5 MGD of flow. The WRF for Anthem at Sun Valley South will be a multi-phase SBR consisting of the following unit processes and other elements: influent wet well and lift station including flow metering, fine screening, grit removal, secondary treatment with biological nitrogen removal, secondary equalization/clarification, tertiary filtration, ultraviolet disinfection, nitrification and denitrification, effluent pump station including flow metering, standby generator, laboratory and control building, effluent reuse, and sludge treatment.	Section 5.3.1, Pages 47-48
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the facility or any expansions. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WRF.	Figure 3, Appendix B

Anthem at Sun Valley South WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Describe method of effluent disposal and reuse sites (if appropriate).	The effluent will be used to fill and maintain storage lakes and irrigate golf courses and other turf managed facilities and landscaped areas within the community. Additionally, open space tracts along power line corridors and community parks may use effluent for irrigation. Effluent generated above landscape irrigation demands may be used for recharge. In addition, an AZPDES permit will be obtained for emergency discharges. The receiving stream of the AzDPES discharge will be an unnamed wash tributary to White Tanks wash, approximately 3 miles downstream. Flow from the White Tanks Wash is retained in FRS No. 1 on the north side of Interstate 10. The FRS is operated and maintained by the FCDMC. This FRS is designed to retain flows from approximately the 100-year storm event; beyond this storm event, flow would discharge from the FRS into the Hassayampa River.	Section 6.8.1, Pages 67-68
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A
Describe ownership of land proposed for plant sites and reuse areas.	The land for these facilities is owned by Sun Valley Partners, LLC. Further, Pulte Home Corporation is under contract to purchase the land proposed for the WRF and reuse sites.	Section 7.0 (Table 7.2), Pages 77-78

Anthem at Sun Valley South WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Address time frames in the development of the treatment works.	Phase 1 of the ASVS WRF is expected to commence construction in 2007 and be substantially complete in 2008. The Phase 1 facility will be designed to treat wastewater generated from the start-up of the facility, coincidental with the occupancy of the first dwelling units. Low flow treatment operations may include modification of the wet well for extended aeration and/or provisions for temporary equipment. In the event that the plant design and construction cannot accommodate low flow treatment, wastewater may be collected and transported to another facility for treatment (vault and haul scenario). If this alternative is employed, then the necessary capacity agreement will be obtained from the intended destination. At 320 gallons per day per dwelling unit (gpd/du), an initial 20,000 gallon per day (gpd) vault and haul scenario would serve approximately 50 homes in the maximum flow month. Therefore, the Phase 1 facilities must be operational in the same time frame. The Phase 1 SBR will have an average day maximum month capacity of approximately 1.125 MGD. Additional facility phases for the Anthem at Sun Valley South WRF will be completed as development dictates or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the facility will treat wastewater only. The plant will not receive runoff from adjacent properties. During construction, storm water flows will be managed under an AZPDES temporary discharge permit. Storm water discharges, if any, will be subject to AZPDES storm water permitting requirements and will be addressed through the development and implementation of a site SWPPP. However, no storm water discharge is expected from the site.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	The effluent from this WRF will safely enhance golf course landscaping, lakes, and other turf managed facilities while reducing the demand of available groundwater and surface water supplies.	Section 6.6, Pages 61-62

Anthem at Sun Valley South WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility will require an AZPDES permit, APP, permit for the Reuse of Reclaimed Wastewater, and an Air Quality permit. Additionally, coordination with the Town of Buckeye and MCESD will be required to obtain an approval to construct, approval of construction, and architectural and building permits. A Clean Water Act Section 404 individual permit is being pursued for the project.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions are anticipated for the required AZPDES permit. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	Pulte Homes, Inc. will be responsible for obtaining the necessary permits from the ADEQ for the Town of Buckeye for the initial phases of the facility. The ADEQ will be notified and a pre application meeting will be scheduled once the design of future phases commence.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Significant industrial users are not anticipated in the service area outlined. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A

Anthem at Sun Valley South WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Sludge will be pumped via belt filter press or other acceptable technology for dewatering. Aerobic digestion will be provided to meet Class B sludge quality requirements. Biosolids produced by the ASVS WRF will be of a sufficient quality to meet the applicable requirements for the selected final disposition. A licensed sludge hauler and sludge disposal permit will be obtained, as necessary.	Section 5.1.5, Pages 43-44
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	Construction of Phase 1 (1.125 MGD) of the ASVS WRF is proposed to commence in 2007 and be completed in 2008.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	Pulte will manage (with oversight from the Town of Buckeye) the construction of the initial phases of the WRF. The Town of Buckeye will operate and maintain the ASVS WRF at the completion of Phase 1.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A

Anthem at Sun Valley South WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility and its expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	Pulte Homes, Inc. will finance the construction of the initial phase of the WRF. The Town of Buckeye is responsible for the construction, operation and maintenance of the facility. The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	Construction of Phase 1 of the ASVS WRF is anticipated to commence in 2007 and be completed by 2008. Subsequent expansions will be designed when the facility reaches 70% capacity or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	The initial project phase will be financed by Pulte Home Corporation. A CFD may be employed as an alternative financing mechanism. In the event a CFD is utilized, it will be an acquisition type CFD, with Pulte fronting the costs until the WRF has been turned over to the Town of Buckeye. The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A

Anthem at Sun Valley South WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Describe the impact on communities and businesses affected by the plan.	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. Homes will not be occupied prior to the operational completion and approval of the Anthem at Sun Valley South WRF. Wastewater flow will not be generated until the WRF is operational in either its initial phase, or under a low flow treatment alternative.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

MAG 208

Water Quality Management Plan Amendment

for

Anthem at Sun Valley South
and
Tartesso East
Water Reclamation Facilities

Prepared for:
Town of Buckeye
100 North Apache
Buckeye, Arizona 85326
Phone: (623) 386-4691
Fax: (623) 386-7832

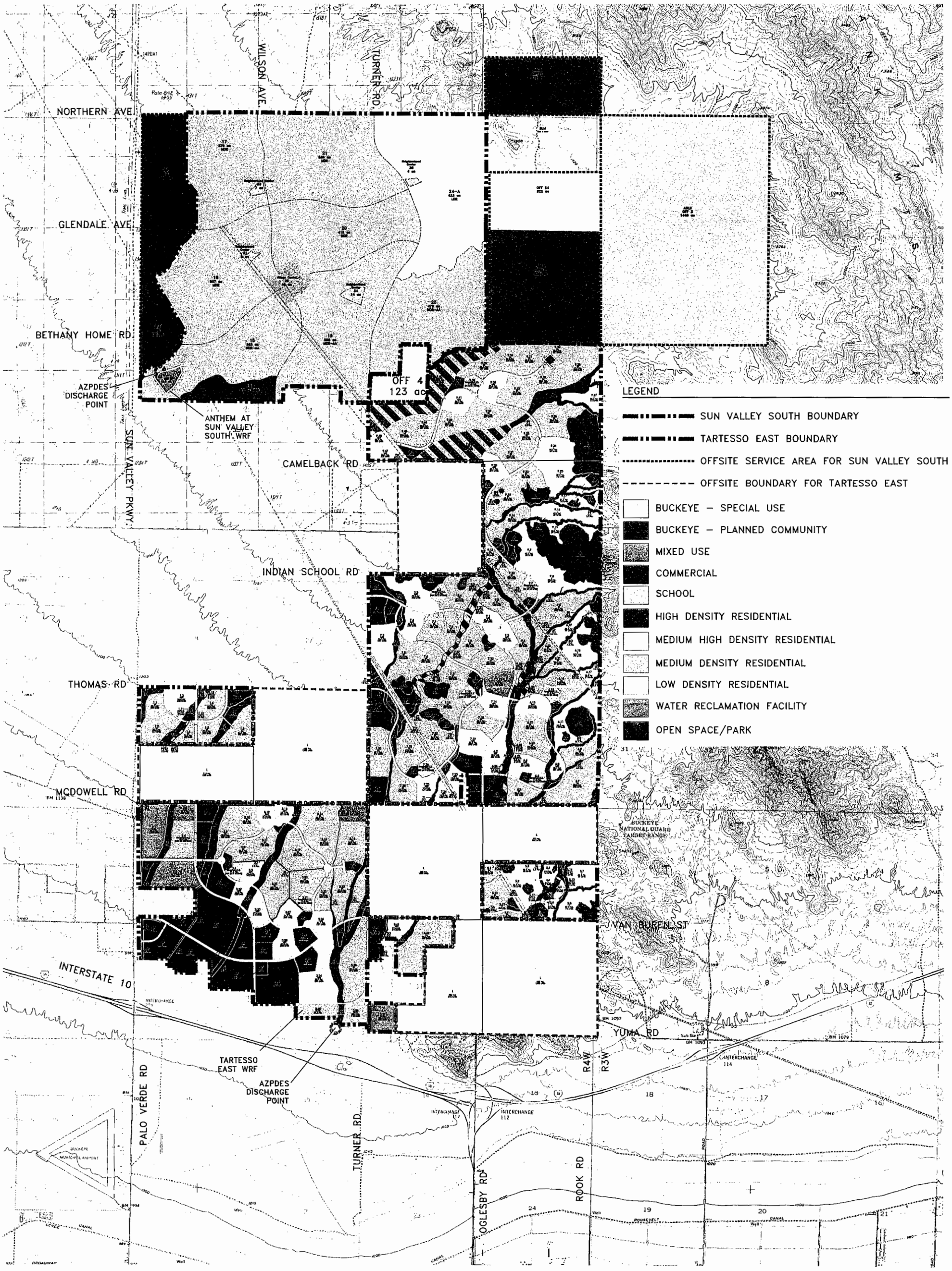
Prepared by:
CMX, LLC
7740 North 16th Street, Suite 100
Phoenix, Arizona 85020
Phone: (602) 567-1900
Fax: (602) 567-1901

February 2006
CMX Project No. 6359.62

TABLE 2
ANTHEM AT SUN VALLEY SOUTH POPULATION PROJECTIONS [*]

Parcel	Land Use	Gross Area (acres)	Net Area (acres)	Proposed Density (du/ac)	Dwelling Units	Persons per du	Total Population	Average Day Flow Generation (gpd)
14	HDR	97	83	9.0	747	2.0	1,494	149,400
15	MDR - AA	383	109	3.5	382	1.9	725	72,485
16	MDR	507	463	3.0	1,389	3.2	4,445	444,480
17	MDR	379	129	3.0	387	3.2	1,238	123,840
19	MDR - AA	555	507	3.5	1,775	1.9	3,372	337,155
20	MDR	412	330	3.0	990	3.2	3,168	316,800
21	MDR	535	398	3.0	1,194	3.2	3,821	382,080
23	MDR - AA	470	427	3.5	1,495	1.9	2,840	283,955
24	LDR-Resort Comm.	623	415	2.3	955	3.2	3,054	305,440
26	C-Village Center	49	49					73,500
31	C-Neighborhood Center	5	3					4,500
32	C-Neighborhood Center (WRF)	24	24					36,000
33	C-Neighborhood Center	7	7					10,500
34	C-Neighborhood Center	14	14					21,000
36	C-Neighborhood Center	4	4					6,000
Subtotal On-Site [†]		**4,064**	**2,962**		**9,312**		**24,156**	**2,567,135**
OFF 1	LDR[‡]	319	123	2.0	638	3.2	2,042	204,160
OFF 2	LDR[‡]	628	509	2.0	1,256	3.2	4,019	401,920
OFF 3	LDR[‡]	1,440	1,035	1.0	1,440	3.2	4,608	460,800
OFF 4	LDR	123	105	2.0	210	3.2	672	67,200
OFF 24	LDR	322	184	2.0	368	3.2	1,178	117,760
OFF 38	COM-BC	220	211					316,500
OFF 40	COM-BC	269	256					384,000
Subtotal Off-Site[†]		**3,321**	**2,423**		**3,912**		**12,518**	**1,952,340**
TOTAL		**7,385**	**5,385**		**13,224**		**36,675**	**4,519,475**

Note:
[†]On-site refers to the property under contract for purchase by Pulte Home Corporation. Off-site refers to the property owned by others, but proposed to be served by this WRF.
[‡] The off-site parcels indicated estimate population based on gross area.
[*] Due to rounding, calculations may not exactly match the data shown.



DWG. NO.	CMX PROJ: 6359–62	DATE: FEB. 2006	SCALE: 1"=2000'
	DESIGNED: SMG	DRAWN: DD	APPROVED: SAL
	REV.		
SHT. 1 OF 1			

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ANTHEM AT SUN VALLEY SOUTH & TARTESSO EAST 208 PLAN

BUCKEYE, ARIZONA

FIGURE 2: PROPOSED WRF SERVICE AREAS

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ENGINEERS • PLANNERS • LANDSCAPE ARCHITECTS • SURVEYORS • CONSTRUCTION MANAGERS

APPENDIX K

DOUGLAS RANCH WATER RECLAMATION FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Background Information from the draft *Douglas Ranch Water Reclamation Facility Clean Water Act Plan 208 Amendment for the Town of Buckeye* (CVL 2006) currently before the Town for sponsorship that has not been presented to nor approved by MAG

Douglas Ranch WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 38,356 persons in 2030 based on the 2007 POPTAC population estimates and 275,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Douglas Ranch WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from a Phase 1 at 1.0 MGD to 31.9 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 16** in **Appendix B**.	Figure 16, Appendix B
Describe the type and capacity of the recommended WWT plant.	Phase 1 of the facility will implement fine screens, extended aeration secondary treatment, clarification, tertiary filtration, and ultraviolet disinfection with an initial capacity of 1.0 MGD ADF. Once flows approach approximately 5 MGD, the facility will be planned to upgrade to one of four Bardenpho alternative technologies. The WRF is anticipated to have an ultimate capacity of 31.9 MGD.	Section 5.3.2, Page 48
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the facility or any expansions. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WRF.	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	The effluent will be used to irrigate golf courses, lakes, and open access areas such as green belt areas, schools, and parks. Effluent that exceeds reuse demands will be used for groundwater recharge and recovery. An AZPDES permit and a USF permit will be obtained to recharge initial low flows and wet weather flows in Jackrabbit Wash.	Section 6.8.2, Page 68
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A

Douglas Ranch WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Describe ownership of land proposed for plant sites and reuse areas.	The sewage collection system and reclaimed water pipelines will be located on land currently owned by El Dorado Holdings, Inc. Reuse will occur on public areas, community association land, and land owned by private golf courses. After acceptance by the Town of Buckeye, the WRF and utility easements will be dedicated to the Town of Buckeye.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The WRF will have a capacity of 1.0 MGD on start-up projected for 2009 and is expected to expand as determined by the Town, and as required by development until the facility reaches the ultimate capacity of 31.9 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the WRF will treat wastewater only. The WRF site will not receive storm water runoff from adjacent properties. Storm water discharges from the WRF site will be subject to AZPDES storm water permitting requirements. The flows will be addressed through the implementation of a Storm Water Pollution Prevention Plan.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	The reuse of treated effluent will safely enhance golf course landscaping, lakes, and other large common area landscape tracts, while reducing the need for unnecessary use of groundwater/surface water resources.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The WRF will require an AZPDES permit, APP, Permit for the Reuse of Reclaimed Water and an Air Quality Permit.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions are anticipated for the required AZPDES permit. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A

Douglas Ranch WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	El Dorado Holdings, Inc. is in the process of obtaining the necessary ADEQ permits on behalf of the Town of Buckeye. The ADEQ will be notified and a pre application meeting will be scheduled once the design of future phases commence.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Significant industrial users are not anticipated in the service area outlined. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Digested sludge will be dewatered by centrifuges and sent to a landfill for disposal. Anaerobic digestion and dewatering will produce a minimum of Class B sludge. A valid sludge hauler and sludge disposal permit will be obtained.	Section 5.1.5, Pages 43-44
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	Phase 1 of the WRF will have an initial capacity of 1.0 MGD and is expected to be operational early in 2009.	Section 8.0 and Section 10.0, Pages 79 and 81

Douglas Ranch WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	The initial facility construction will be completed by local developer(s) with oversight by the Town of Buckeye. The Town of Buckeye ultimately will operate and maintain the WRF, collection system, and effluent distribution system.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility and its expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms. Once constructed, the plant will be operated and maintained with user collected fees collected from those who benefit from the service.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	The Phase 1 WRF is planned to be in operation early in 2009. Subsequent expansions will be designed when the facility reaches 70% capacity or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82

Douglas Ranch WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	A CFD will likely be employed as a financing mechanism for the initial phases of plant construction and operation. The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. Homes will not be occupied prior to the operational completion and approval of the Douglas Ranch WRF. Wastewater flow will not be generated until the WRF is operational in either its initial phase, or under a low flow treatment alternative.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Douglas Ranch WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

DOUGLAS RANCH
WATER RECLAMATION FACILITY

Clean Water Act Plan 208 Amendment for the Town of Buckeye

DRAFT: September 7, 2006

Prepared for:

100 North Apache
Buckeye, AZ 85326
(623) 386-4691

Submitted to:

302 North 1st Avenue, Suite 300
Phoenix, Arizona 85003
(602) 254-6300

Prepared by:

Coe & Van Loo Consultants, Inc.
4550 N. 12th Street
Phoenix, AZ 85014
(602) 264-6831
Contact: Lani Good

CVL Project No.: 79-0001-02

Table 3 – Ultimate Wastewater Generation Rates

	Single Family	Multi Family	School	Commercial	Total
Ultimate Land Use (acres)	20,968	600	830	2,115	24,513
Residential Dwelling Units	74,835	14,040	44	-	88,919
Population (cpdu)	3.0	2.0	1200	-	-
Unit Flow (gpcd)	88	88	28	-	-
Unit Flow (gpd/ac)	-	-	-	1500	-
Wastewater Flow (gpd)	**19,756,440**	**2,471,040**	**1,478,400**	**3,172,500**	**26,878,380**

Table 4 – MCESD Wastewater Treatment Plant Planning Flow Rates

	Single Family	Multi Family	School	Commercial	Total
Residential Dwelling Units	74,835	14,040	44	-	88,919
MCESD Unit Flow (gpd/du)	350	200	-	-	-
MCESD WRF Capacity (gpd)	**26,192,250**	**2,808,000**	-	-	**29,000,250**

1.2.3 Collection System Description

Based on the natural topography, the property can be served by gravity sewer lines to the WRF with the aid of two wastewater pump stations. Figure 3 in Appendix A graphically depicts the proposed collection system.

The sewer was designed to convey the peak hour flow at no more than 82 percent of the calculated pipe capacity, with mean velocities between 2 fps and 9 fps. Ultimately, an extensive network of gravity trunk sewers along with one forcemain will convey wastewater to the WRF, and will discharge into the WRF influent pump station.

1.2.4 WRF Description

The WRF will consist of a multi-phased activated sludge treatment process. The phased processes consist of:

Phase 1 WRF (1.0 – 3.0 mgd)

- Influent Pumping
- Fine Screening
- Extended Aeration Activated Sludge
- Flow Equalization
- Secondary Clarification
- Filtration
- Ultraviolet (UV) Disinfection

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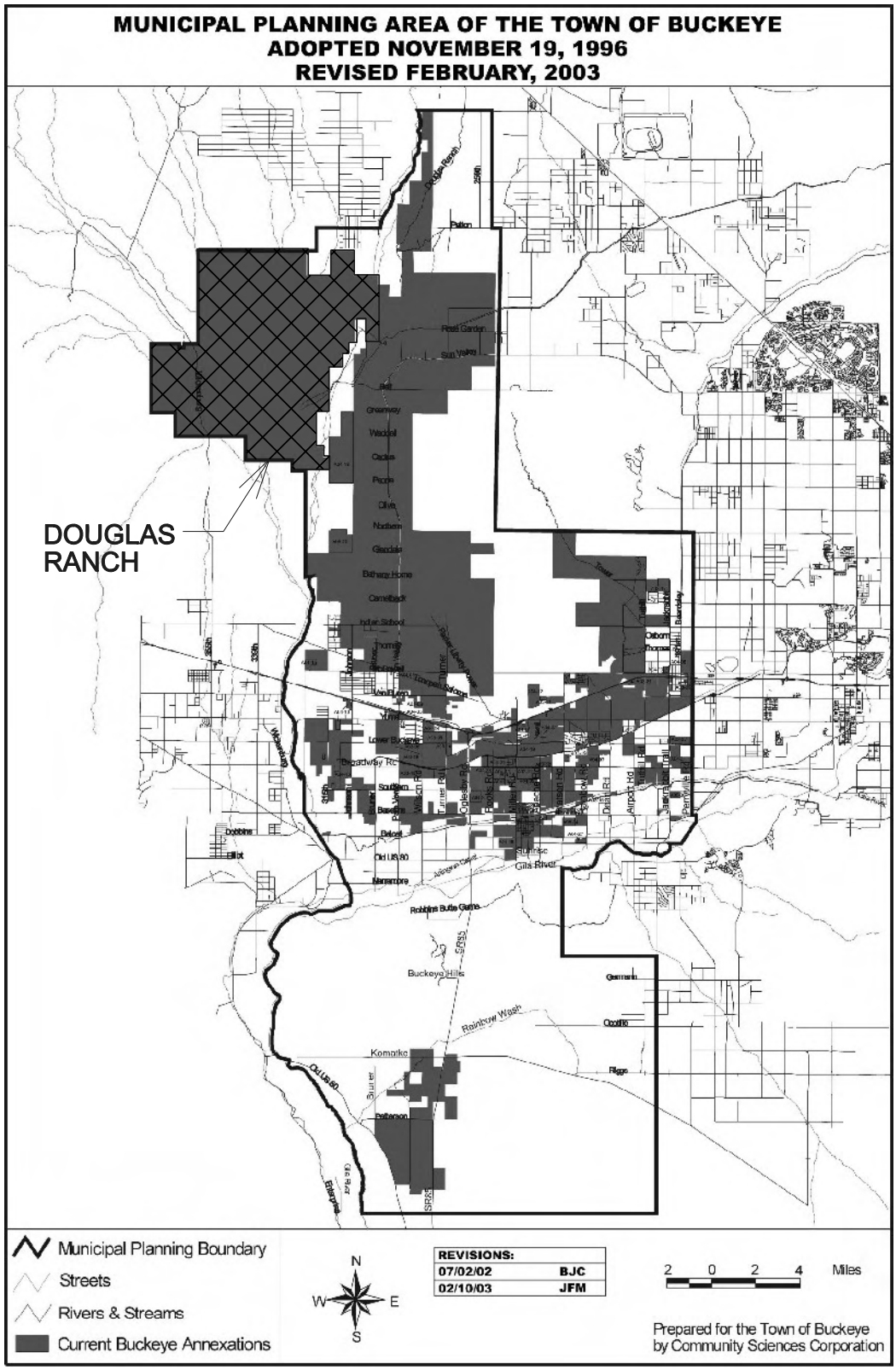

VICINITY MAP

DOUGLAS RANCH
WATER RECLAMATION FACILITY

JOB NO
790001-02

4550 North 12th Street
Phoenix, Arizona 85014
Telephone 602-264-6831
http://www.cvlci.com

Coe & Van Loo Consultants, Inc.

FIGURE
1

APPENDIX L

PALO VERDE ROAD WASTEWATER TREATMENT PLANT DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Background Information from the approved *MAG 208 Water Quality Management Plan Amendment Application for the Palo Verde Road Wastewater Treatment Plant* (RBF 2004)

Palo Verde Road WWTP (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 12,082 persons in 2030 based on the 2007 POPTAC population estimates and 111,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Palo Verde Road WWTP (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from a Phase 1 at 0.5 MGD to 11.7 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 17** in **Appendix B**.	Figure 17, Appendix B
Describe the type and capacity of the recommended WWT plant.	Phase 1 of the facility is anticipated to have a capacity of 0.5 MGD. The treatment facility with a SBR process will provide screening, BOD removal, secondary clarification, nitrification and denitrification, tertiary filtration, UV disinfection, either aerobic or anaerobic sludge digestion, sludge dewatering, sludge disposal strategy, and flow equalization. The plant will be equipped with odor control, which includes basin covers and odor scrubbing equipment. Once flows approach approximately 5 MGD, the facility will be planned to upgrade to one of four Bardenpho alternative technologies. The WWTP is anticipated to have an ultimate capacity of 11.7 MGD.	Section 5.3.3, Page 48
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the facility or any expansions. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WWTP.	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	Effluent generated by the facility may be recharged and reused. Reclaimed water may be used for landscape irrigation and other potential uses as agreed by the Town of Buckeye and in accordance with the Reuse of Reclaimed Wastewater permit. An AZPDES permit may be obtained for planned and emergency discharges, which will be coordinated through ADEQ. It is anticipated that effluent may be discharged to the Buckeye Canal, Roosevelt Canal and/or the Hassayampa River under the AZPDES permit.	Section 6.8.3, Page 68

Palo Verde Road WWTP (Planned)		
Requirement	**Summary of Compliance**	**See Page**
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A
Describe ownership of land proposed for plant sites and reuse areas.	The land for the plant is owned by Youngker Farms Limited Partners. Westwind Properties and Newport Development will oversee and fund construction of the WWTP. Once construction of the facilities is complete, the Town of Buckeye will own the facility. The Town of Buckeye will own the recharge areas. Other public or private entities may own the reuse areas.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The WWTP will have an initial capacity of 0.5 MGD and is expected to expand as determined by the Town, and as required by development until the facility reaches the ultimate capacity of 11.7 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	All storm water will be contained onsite and there will be no offsite storm water discharge.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	Palo Verde Road WWTP effluent will be a primary irrigation source for open areas. The reuse of effluent will safely enhance the parks and open space while minimizing the use of groundwater for irrigation. Effluent will be A+ quality.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility will require an AZPDES permit, APP, permit for the Reuse of Reclaimed Wastewater, and an Air Quality permit. Additionally, coordination with the Town of Buckeye and MCESD will be required to obtain an approval to construct, approval of construction, and architectural and building permits.	Section 7.0 (Table 7.1), Page 77

Palo Verde Road WWTP (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions are anticipated for the required AZPDES permit. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	The Town of Buckeye or its designated agent will be responsible for obtaining the necessary permits from the ADEQ as required for further expansion of the facility. ADEQ will be notified and a preapplication meeting will be scheduled once the design of the facility commences.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Future industrial development within the vicinity of the airport may be anticipated. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Sludge will be dewatered and either disposed of at an approved landfill or applied to approved agricultural land. Sludge hauler and sludge disposal agreements will be obtained. Sludge will be of such a quality that it may be used for agricultural purposes.	Section 5.1.5, Pages 43-44
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A

Palo Verde Road WWTP (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Construction		
Define construction priorities and time schedules for initiation and completion.	Phase 1 of the WWTP will have an initial capacity of 0.5 MGD and is expected to be operational early in 2008.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	Local developers may bid for a construction firm to design and build the Palo Verde Road WWTP under the supervision of the Town of Buckeye. Prior to operation, the Town of Buckeye will obtain complete ownership of the facility and will oversee operation and maintenance services for this facility.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility and its expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	The Town of Buckeye is responsible for the construction, operation and maintenance of the facility. The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80

Palo Verde Road WWTP (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Provide a timeline outlining period of time necessary for carrying out plan implementation.	The Phase 1 WWTP is planned to be in operation in 2008. Subsequent expansions will be designed when the facility reaches 70% capacity or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	Financing for at least the first phase of the facility will be provided through private funding sources.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. Homes will not be occupied prior to the operational completion and approval of the Palo Verde Road WWTP. Wastewater flow will not be generated until the WWTP is operational in either its initial phase, or under a low flow treatment alternative.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Palo Verde Road WWTP (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

MAG 208

Water Quality Management Plan Amendment Application

November 2004

Prepared for:
Palo Verde Road Wastewater Treatment Plant
Town of Buckeye
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RBF JN: 45-101318

3.2.4 Estimated Wastewater Flow

The proposed service area for the Palo Verde Road WWTP is located within the Buckeye planning area. The projected wastewater flows from the Westwind and SilverRock developments are outlined in their respective wastewater master plans. Table 3.1 summarizes the anticipated flows.

Table 3.1 Flow Summary for the area serviced by the proposed Palo Verde Road WWTP

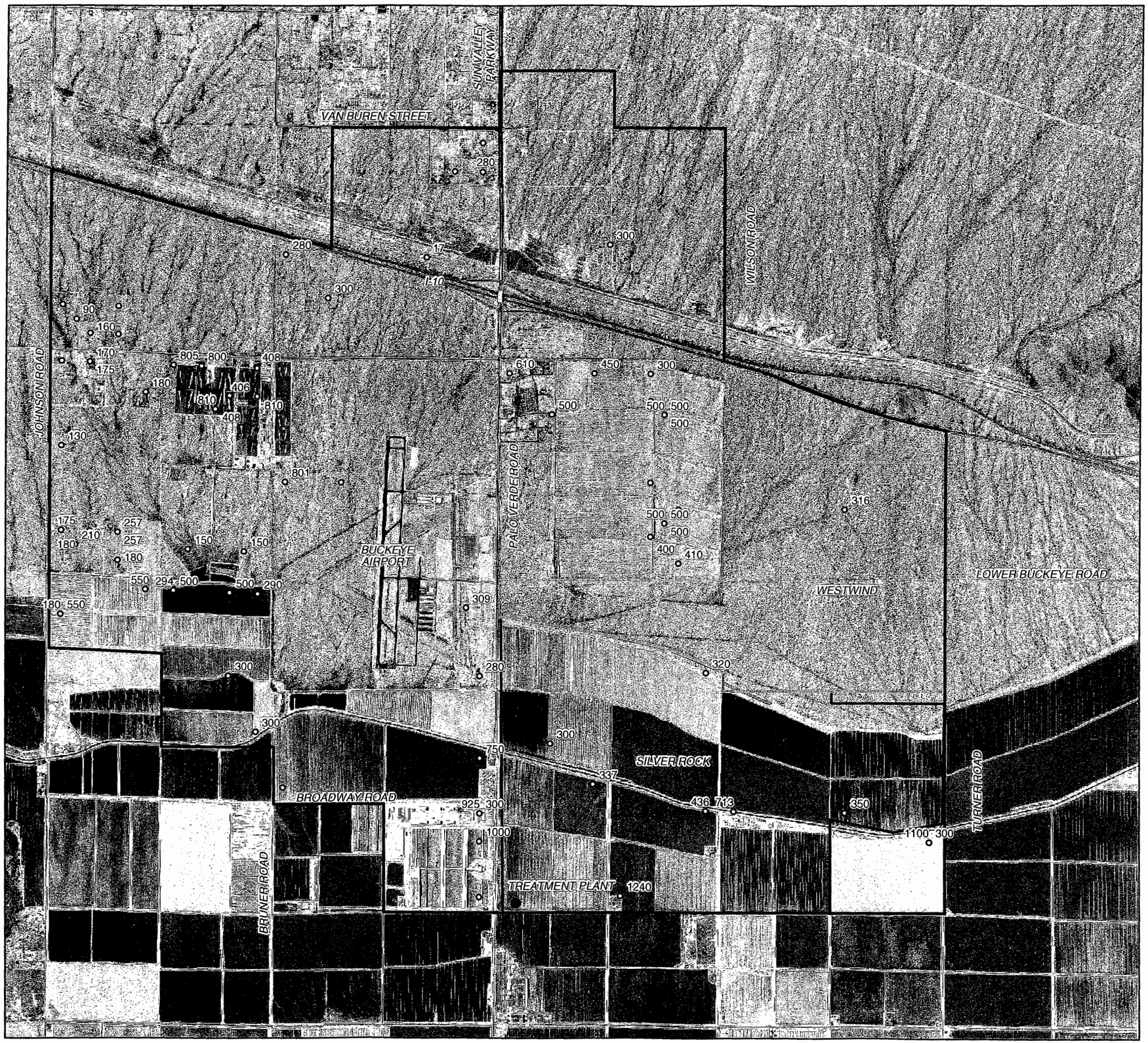
Description	Equivalent Dwelling Units	Flow (gal/unit/day)	Average Daily Flow (gpd)
Westwind Residential	3,200	300	960,000
Westwind Commercial	170	300	51,000
Westwind School	333	300	99,900
Westwind Subtotal	**3,703**	**NA**	**1,110,900**
SilverRock Residential	5,500	300	1,650,000
SilverRock Commercial	1,313	300	393,900
SilverRock School	250	300	75,000
Silver Rock Subtotal	**7,063**	**NA**	**2,118,900**
Outside Parcels Residential	5,210	300	1,563,000
Outside Parcels Commercial	16,460	300	4,938,000
Outside Parcels Airport	1,540	300	462,000
Total	***33,976***	***NA***	***10,192,800***

3.2.5 WWTP Description

The Palo Verde Road WWTP will consist of a multi-phased Sequential Batch Reactor (SBR) system with average flow capacity of 0.5 MGD for the initial phase (Phase 1A) of plant construction. Further phasing is anticipated to proceed such that Phase 1 at completion will provide 1.0 MGD of treatment capacity, Phase 2 will provide 2.0 MGD, Phase 3 will provide 4.0 MGD, Phase 4 will provide 8.0 MGD, and ultimate plant capacity at full build-out will provide 10.2 MGD of treatment capacity, based on average day generation. The treatment process will consist of screening, secondary biological treatment using the activated sludge process, secondary clarification, tertiary filtration, UV disinfection, nitrification and denitrification, either aerobic or anaerobic sludge digestion, sludge dewatering, a sludge disposal strategy, and flow equalization. Treatment units will be enclosed with chemical scrubbing of ventilation air for odor control. The aesthetic appearance of the proposed treatment facility will be a primary objective in plant design. Details of the SBR treatment process are included in Appendix D where a preliminary design of the proposed Palo Verde Road WWTP is presented in concept.

PALO VERDE ROAD WWTP SERVICE AREA

EXISTING WELL LOCATIONS



Legend

- EXISTING WELLS
- SERVICE AREA BOUNDARY
- WESTWIND BOUNDARY
- SILVER ROCK BOUNDARY

NUMBER VALUES REPRESENT WELL DEPTHS IN FEET

N

0 0.25 0.5 1 Miles

RBF CONSULTING GIS

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APPENDIX M

TARTESSO EAST WATER RECLAMATION FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Background Information from the approved *MAG 208 Water Quality Management Plan Amendment for Anthem at Sun Valley South and Tartesso East Water Reclamation Facilities* (CMX 2006)

Tartesso East WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 20,005 persons in 2030 based on the 2007 POPTAC population estimates and 86,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Tartesso East WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 1.2 MGD for Phase 1 to 10.7 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 15** in **Appendix B**.	Figure 15, Appendix B
Describe the type and capacity of the recommended WWT plant.	Phase 1 (1.2 MGD) of the Tartesso East WRF will use an SBR activated sludge treatment system with advanced tertiary treatment compatible with ADEQ Title 18 Class A+ effluent standards. The treatment train will ultimately include screening, grit removal, biological nutrient removal through anoxic and aerobic zones, clarification, nitrification/ denitrification, filtration and UV disinfection. The facility will also incorporate sludge storage, treatment and processing capabilities. The plant will be equipped with odor and noise control and other aesthetic measures in accordance with AAC Title 18. Once flows approach approximately 5 MGD, the facility will be planned to upgrade to one of four Bardenpho alternative technologies. The WRF is anticipated to have an ultimate capacity of 10.7 MGD.	Section 5.3.4, Pages 48-49
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the facility or future expansions. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WRF.	Figure 3, Appendix B

Tartesso East WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Describe method of effluent disposal and reuse sites (if appropriate).	The effluent from this WRF will be unrestricted, and will be used for recharge, possible golf course irrigation and/or lakes. The effluent will increase groundwater recharge and reduce the groundwater demand for the possible golf courses and lakes. In addition, an AZPDES permit will be obtained for emergency discharges. The receiving stream of the AzDPES discharge will be an unnamed wash. The flow from this wash is retained in FRS No. 1 on the north side of Interstate 10. The FRS is operated and maintained by the FCDMC. This FRS is designed to retain flows from approximately the 100-year storm event; beyond this storm event, flow would discharge from the FRS into the Hassayampa River.	Section 6.8.4, Pages 68-69
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A
Describe ownership of land proposed for plant sites and reuse areas.	Stardust Foundation, Inc., a non-profit foundation that is not affiliated with Stardust Companies, owns a portion of the property. Stardust Companies owns the remainder of the property. Once construction of the facilities is complete, the Town of Buckeye will own the facility.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The 1.2 MGD Phase 1 of the Tartesso East WRF is expected to commence construction in 2009 and be substantially complete in 2010. The facility is expected to expand as determined by the Town, and as required by development until the facility reaches the ultimate capacity of 10.7 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the facility will treat wastewater only. The plant will not receive runoff from adjacent properties. During construction, storm water flows will be managed under an AZPDES temporary discharge permit. Storm water discharges, if any, will be subject to AZPDES storm water permitting requirements and will be addressed through the development and implementation of a site SWPPP. However, no storm water discharge is expected from the site.	Section 7.0, Pages 77-78

Tartesso East WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	The effluent from this WRF will be unrestricted, and will be used for recharge, possible golf course irrigation, and/or lakes. The effluent will increase groundwater recharge and reduce the groundwater demand for the possible golf courses and lakes.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility will require an AZPDES permit, APP, permit for the Reuse of Reclaimed Wastewater, and an Air Quality permit. Additionally, coordination with the Town of Buckeye and MCESD will be required to obtain an approval to construct, approval of construction, and architectural and building permits. A Clean Water Act Section 404 individual Permit is being pursued for the project.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions are anticipated for the required AZPDES permit. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	Stardust Companies will be responsible for obtaining the necessary permits from the ADEQ for the Town of Buckeye. Plans for the Tartesso East WRF were discussed with ADEQ on February 23, 2006.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Significant industrial users are not anticipated in the service area outlined. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53

Tartesso East WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	It is anticipated that sludge will be treated to meet requirements for the Class B designation and that biosolids produced by the facility will be of a sufficient quality to meet the applicable requirements for the selected final disposition. A licensed sludge hauler and sludge disposal permit will be obtained, as necessary.	Section 5.1.5, Pages 43-44
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	Phase 1 of the Tartesso East WRF is estimated to begin construction in 2009. Assuming a 12-14 month construction period, substantial completion will be achieved in 2010.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	Stardust will manage (with oversight from the Town of Buckeye) the construction of the initial phases of the WRF. The Town of Buckeye will own and maintain the WRF at the completion of Phase 1 construction.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79

Tartesso East WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility and its expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	Presently, it is anticipated that Stardust Companies would finance the construction of the initial phases of the WRF. A community facilities district may be evaluated as a possible financing mechanism. The Town will coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	Phase 1 of the Tartesso East WRF is estimated to begin construction in 2009. Assuming a 12-14 month construction period, substantial completion will be achieved in 2010. Subsequent expansions will be designed when the facility reaches 70% capacity or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	Stardust may initially finance the initial phases of the Tartesso East WRF. As discussed previously, a CFD will be evaluated as a possible financing mechanism. In the event that a CFD is utilized, it will be an acquisition type CFD, with Stardust fronting the costs until the WRF has been turned over to the Town of Buckeye.	Section 9.0, Page 80

Tartesso East WRF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. Homes will not be occupied prior to the operational completion and approval of the Tartesso East WRF. Wastewater flow will not be generated until the WRF is operational in either its initial phase, or under a low flow treatment alternative.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

MAG 208

Water Quality Management Plan Amendment

for

Anthem at Sun Valley South
and
Tartesso East
Water Reclamation Facilities

Prepared for:
Town of Buckeye
100 North Apache
Buckeye, Arizona 85326
Phone: (623) 386-4691
Fax: (623) 386-7832

Prepared by:
CMX, LLC
7740 North 16th Street, Suite 100
Phoenix, Arizona 85020
Phone: (602) 567-1900
Fax: (602) 567-1901

February 2006
CMX Project No. 6359.62

TABLE 6
TARTESSO EAST POPULATION PROJECTIONS

Property	Land Use	Area (acres)	Proposed Density (du/ac)	Dwelling Units	Persons per du	Total Population	Average Day Flow (MGD)
Tartesso	High Density Residential	116.5	25.0	2,912	2	5,894	0.589
Tartesso	Medium High Density Residential	460.4	10.0	4,604	2	9,208	0.921
Tartesso	Medium Density Residential	2201.1	4.6	10,276	3.2	32,883	3.288
Tartesso	Low Density Residential	548.3	2.0	1,097	3.2	3,510	0.351
Tartesso	Mixed Use—Residential (10% High Density)	24.2	25.0	606	2	1,212	0.121
Tartesso	Mixed Use--Commercial (3000 gpad)	218.1					0.654
Tartesso	Commercial (3000 gpad)	110.4					0.331
Tartesso	High School (x2)	87.3					0.150
Tartesso	Elementary School (x9)	99.7					0.180
Tartesso	Open Space/Parks/Other	1502.9					
Tartesso	Rights-of-Way	411.2					
Tartesso Subtotal		**5780.1**		**19,495**		**52,707**	**6.585**
1121	Low Density Residential	1121.2	2.0	2,242	3.2	7,174	0.717
1121 Subtotal		**1121.2**		**2,242**		**7,174**	**0.717**
Offsite Properties	Low Density Residential	3390.0	2.0	6,780	3.2	21,696	2.170
Offsite Properties Subtotal		**3390.0**		**6,780**		**21,696**	**2.170**
TOTAL		**10,291.3**		**28,517**		**81,577**	**9.472**

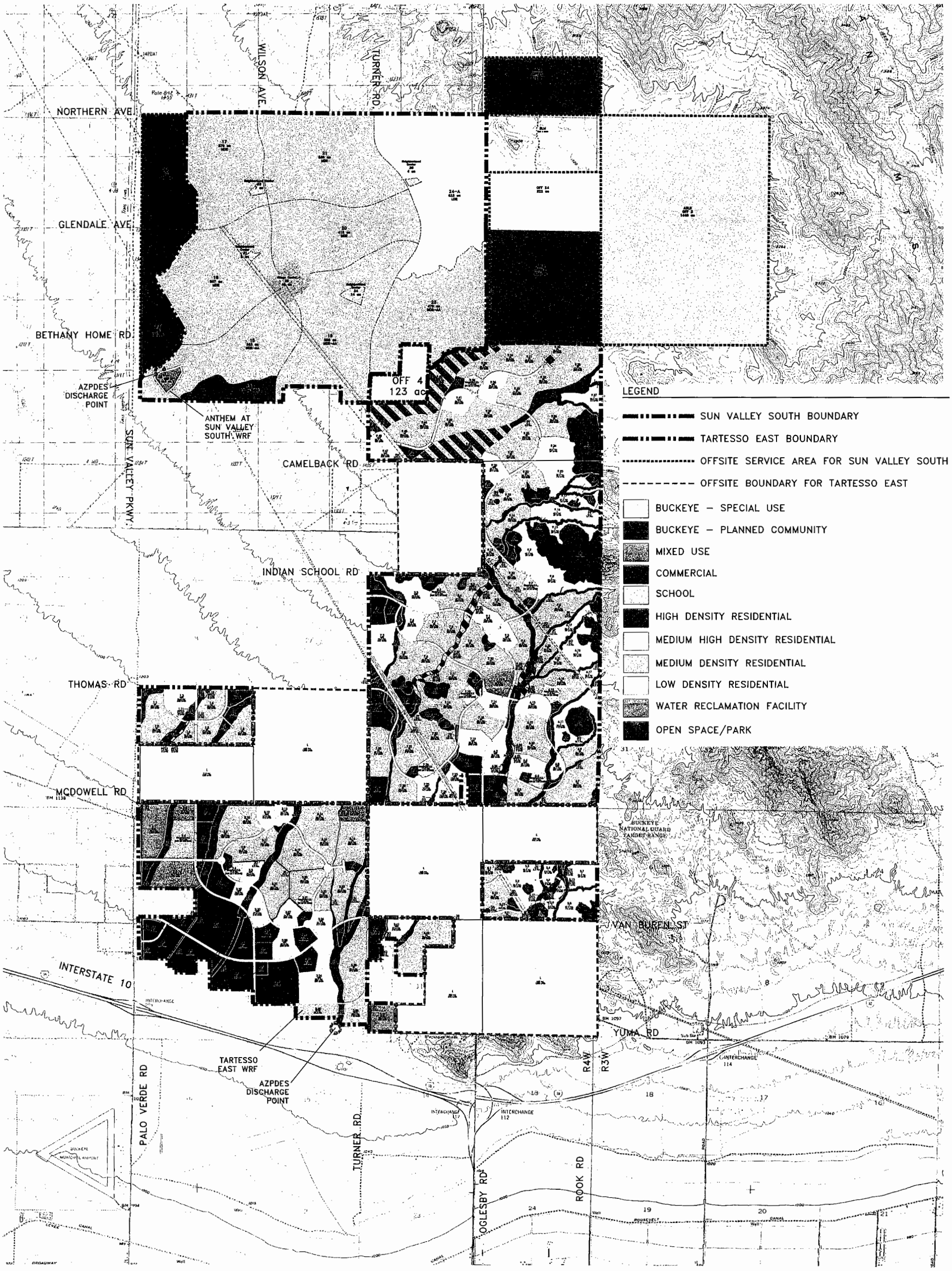
†On-site refers to the property owned by: (i) Stardust Foundation, Inc., a non-profit foundation that is not affiliated with Stardust Companies; and (ii) Stardust Companies. Off-site refers to the property owned by others, but proposed to be served by this WRF.
‡Tartesso subtotal excludes school populations.

9.2.3 Flow Generation

The service area for the Tartesso East WRF provides a sewer solution for approximately 10,300 acres. Figure 2 illustrates the service area. The projected populations for these areas and the corresponding wastewater flow generation rates are listed in Table 6. At build-out in 2025–2030, these developments are anticipated to generate an average day flow of 9.6 MGD.

The projected population was calculated using 3.2 persons per dwelling unit for densities of less than or equal to 5 du/ac, and 2.0 person per dwelling unit for densities greater than 5 du/ac. The unit flow rate of 100 gpcd was used for residential parcels to calculate the average daily flow.

The average daily flow for commercial parcels assumes a wastewater generation rate of 3,000 gpad. It was assumed that the high schools and elementary schools will have 3,000 and 800 students per school, respectively. A unit flow rate of 25 gallons per student per day was used to calculate the average daily flow for the school sites.



DWG. NO.	CMX PROJ: 6359–62	DATE: FEB. 2006	SCALE: 1"=2000'
	DESIGNED: SMG	DRAWN: DD	APPROVED: SAL
	REV.		
SHT. 1 OF 1			

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ANTHEM AT SUN VALLEY SOUTH & TARTESSO EAST 208 PLAN

BUCKEYE, ARIZONA

FIGURE 2: PROPOSED WRF SERVICE AREAS

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APPENDIX N

TOWN OF BUCKEYE WATER RECLAMATION FACILITY AT CIPRIANI DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Background Information from the draft *MAG 208 Water Quality Management Plan Amendment for the Town of Buckeye Water Reclamation Facility at Cipriani* (CMX 2006) currently before the Town for sponsorship that has not been presented to nor approved by MAG

Town of Buckeye WRF at Cipriani (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WTTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 14,676 persons in 2030 based on the 2007 POPTAC population estimates and 85,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Town of Buckeye WRF at Cipriani (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 1.2 MGD for Phase 1 to 12.0 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 17** in **Appendix B**.	Figure 17, Appendix B
Describe the type and capacity of the recommended WWT plant.	The WRF will be a multi-phase sequencing batch reactor. The treatment train will include preliminary screening, biological treatment using the activated sludge process, clarification, nitrification/denitrification, filtration and UV disinfection. The facility may also incorporate sludge storage, treatment, and processing capabilities. The plant will be equipped with odor and noise control and other aesthetic measures in accordance with AAC Title 18. Once flows approach approximately 5 MGD, the facility will be planned to upgrade to one of four Bardenpho alternative technologies. The WRF is anticipated to have an ultimate capacity of 12.0 MGD.	Section 5.3.5, Page 49
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the facility or any expansions. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WRF.	Figure 3, Appendix B

Town of Buckeye WRF at Cipriani (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Describe method of effluent disposal and reuse sites (if appropriate).	Effluent generated by the Cipriani development will be recharged and reused within the development. Recharge will occur within a tributary to the Hassayampa River which traverses the development (hereafter the "Stone House Wash") via constructed groundwater recharge facilities. Additional infrastructure will pump the reclaimed water to multiple discharge points within the wash. An AZPDES permit will be obtained for planned and emergency discharges. In addition to the recharge function, the effluent will be used to establish riparian habitat and enhance the native vegetation in the wash. The wash will also support recreational opportunities for the local and broader areas through interpretive nodes and a trail system. Reuse will occur on landscape/turf areas within the Cipriani development. Effluent generated by other planned developments served by the WRF may be returned to those relevant projects. The Desert Creek development also may plan to construct a recharge facility.	Section 6.8.5, Page 69
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A
Describe ownership of land proposed for plant sites and reuse areas.	Buckeye Johnson Southern 80, LLC owns the land proposed for the WRF. Other entities affiliated with the Cipriani development own the reuse areas specifically proposed. Once construction of the facility is complete, the Town of Buckeye will own the facility.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The 1.2 MGD Phase 1 of the Town of Buckeye WRF at Cipriani is expected to commence construction in 2008 and be completed in 2009. The facility is expected to expand as determined by the Town, and as required by development until the facility reaches the ultimate capacity of 12.0 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no financial constraints in the development of the treatment works.	N/A

Town of Buckeye WRF at Cipriani (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the facility will treat wastewater only. The plant will not receive runoff from adjacent properties. During construction, storm water flows will be managed under an AZPDES temporary discharge permit. Storm water discharges, if any, will be subject to AZPDES storm water permitting requirements and will be addressed through the development and implementation of a site SWPPP. However, no storm water discharge is expected from the site.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	Effluent generated by the Cipriani development will be used to enhance Stone House Wash and create a unique open space. Additional reuse and recharge opportunities may be developed. As the WRF expands its capacity, it is anticipated that the opportunity for recreational use will also expand through interpretive nodes and a trail system along Stone House Wash. Additional opportunities to enhance open areas and recreation may also exist.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility will require an AZPDES permit, APP, permit for the Reuse of Reclaimed Wastewater, and an Air Quality permit. Additionally, coordination with the Town of Buckeye and MCESD will be required to obtain an approval to construct, approval of construction, and architectural and building permits. Clean Water Act Section 404 permits related to the wash restoration components have been secured.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions are anticipated for the required AZPDES permit. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	ADEQ has been informally notified of the intent to design and construct the Buckeye WRF at Cipriani. A preapplication meeting will be scheduled with ADEQ once the design commences.	Section 7.0 (Table 7.2), Pages 77-78

Town of Buckeye WRF at Cipriani (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Significant industrial users are not anticipated in the service area outlined. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Sludge will be dewatered via belt filter press or other acceptable technology. Aerobic digestion will be provided to meet Class B quality requirements. Biosolids produced by the Buckeye WRF at Cipriani will be of a sufficient quality to meet the applicable requirements for the selected final disposition. A licensed sludge hauler and sludge disposal permit will be obtained, as necessary.	Section 5.1.5, Pages 43-44
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	Construction of Phase 1 (1.2 MGD) of the Town of Buckeye WRF at Cipriani is proposed to commence in 2008 and be completed in 2009.	Section 8.0 and Section 10.0, Pages 79 and 81

Town of Buckeye WRF at Cipriani (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	The initial facility construction will be completed by local developer(s) with oversight by the Town of Buckeye. The Town of Buckeye ultimately will operate and maintain the WRF, collection system, and effluent distribution system.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility and its expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms. Once constructed, the plant will be operated and maintained with user collected fees collected from those who benefit from the service.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	Construction of Phase 1 of the Buckeye WRF at Cipriani is anticipated to commence in 2008 and be completed in 2009. Subsequent expansions will be designed when the facility reaches 70% capacity or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82

Town of Buckeye WRF at Cipriani (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	A CFD will likely be employed as a financing mechanism for the initial phases of plant construction and operation.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. Homes will not be occupied prior to the operational completion and approval of the Town of Buckeye WRF at Cipriani. Wastewater flow will not be generated until the WRF is operational in either its initial phase, or under a low flow treatment alternative.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Draft

MAG 208

Water Quality Management Plan Amendment

for the

Town of Buckeye Water Reclamation Facility at Cipriani

Prepared For:
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Second Revision: November 2006
First Revision: September 2006
Original Submittal: July 2006
CMX Project No. 6984

TABLE 2 WASTEWATER GENERATION RATES					
Land Use	**Area (acres)**	**Dwelling Units (DU)**	**Persons/ DU**	**Population**	**Average Day Flow (MGD)**
CIPRIANI (reflects net acreage):					
COMM	178.2	-	-	-	0.27
HD	75.6	1,413	2.0	2,826	0.28
LD	287.1	667	3.0	2,000	0.20
LH	146.6	1,451	3.0	4,353	0.44
MD	592.0	1,881	3.0	5,644	0.56
MH	684.1	2,685	3.0	8,055	0.81
OS	195.4	-	-	-	0.00
P	75.7	-	-	-	0.06
ROW	0.5	-	-	-	0.00
WRF	28.2	-	-	-	0.04
Subtotal	**2,263.3**	**8,097**	**-**	**22,879**	**2.65**
DESERT CREEK (reflects gross acreage)					
VARIES	2,143.0	8,484	2.0/3.0	23,030	2.90
Subtotal	**2,143.0**	**8,484**	**-**	**23,030**	**2.90**
ADDITIONAL LANDS (reflects gross acreage)					
COMM	1,742.2	0	-	0	2.61
LD	700.9	1,402	3.0	4,206	0.42
MD	3,048.5	10,670	3.0/3.2	32,093	3.21
OS/P	4.7	0	-	0	0.00
Subtotal	**5,496.3**	**12,072**	**-**	**36,299**	**6.24**
TOTAL	**9,902.6**	**28,653**	**-**	**82,208**	**11.80**

Given the proposed development and other developments in the project vicinity, population projections listed in Table 1 may be accelerated significantly. Table 2 shows the projected population for the proposed WRF service area based on the proposed developments.

2.2.3 Flow Generation

The service area for the Buckeye WRF at Cipriani provides a sewerage solution for approximately 10,000 gross acres of planned and unplanned development. Figure 2 (Appendix A) illustrates the location of the service area and the proposed developments. The wastewater flow generation rate was calculated using conservative design factors.

The projected populations for high density residential (HDR), medium density (MDR), and low density residential (LDR) units were calculated using 2.0, 3.0 and 3.0 persons per dwelling unit, respectively. The

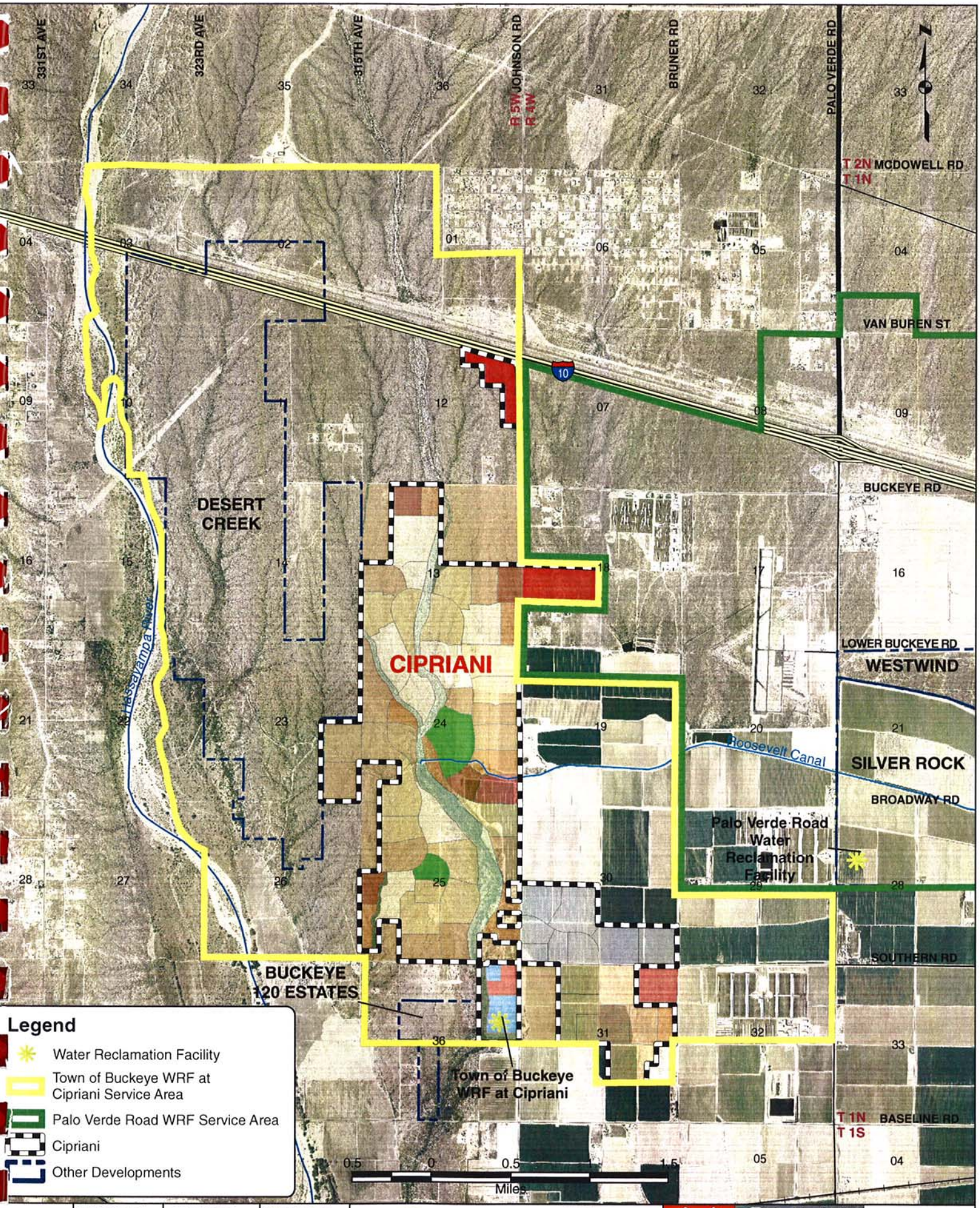

FIG NO. 2	CMX PROJ: 6984	DATE: 11/28/06	SCALE:1"=4000'
	DESIGNED: SAL	DRAWN: BNM	APPROVED: SAL
	REV.		

SHT. 1 OF 1

6900\6984\Water\W-GIS\MXDs\09-11-06\FIG_2_Cipriani_Service_Area.mxd

Cipriani 208 Plan

Buckeye, Arizona

FIG 2: Proposed Town of Buckeye WRF at Cipriani Service Area

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APPENDIX O

TRILLIUM WEST WASTEWATER TREATMENT FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Background Information from the approved *Clean Water Act 208 Amendment for the Town of Buckeye Trillium West Wastewater Treatment Facility* (CSA 2005)

Trillium West WWTF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 4,011 persons in 2030 based on the 2007 POPTAC population estimates and 30,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Trillium West WWTF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 0.32 MGD for Phase 1 to 3.2 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 15** in **Appendix B**.	Figure 15, Appendix B
Describe the type and capacity of the recommended WWT plant.	Trillium West is proposed to be an activated sludge process using a modified sequencing batch reaction methodology with an approved initial capacity of 0.32 MGD. The WWTF is anticipated to have an ultimate capacity of 3.2 MGD.	Section 5.3.6, Pages 49-50
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the facility or any expansions. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WWTF	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	Effluent disposal will occur by means of three alternatives: various public open space reuse sites throughout the service area, groundwater basin recharge at the WWTF sites, and treated effluent discharge into the Hassayampa River or Wagner Wash.	Section 6.8.6, Page 69
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A
Describe ownership of land proposed for plant sites and reuse areas.	Currently, the Trillium West WWTF site is owned by El Dorado Holdings or affiliate. Once construction is complete and plant commissioning has been approved, the facility and land ownership will be transferred to the Town of Buckeye.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The initial phase (0.32 MGD) at Trillium West WWTF is scheduled for construction in 2008 with plant commissioning to be completed in 2009. The facility is expected to expand as determined by the Town, and as required by development until the facility reaches the ultimate capacity of 3.2 MGD.	Section 10.0 and Table 10.1, Pages 81-82

Trillium West WWTF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Address financial constraints in the development of the treatment works.	There are no financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the WRF will treat wastewater only. The WWTF site will not receive storm water runoff from adjacent properties. Storm water discharges from the WRF site will be subject to AZPDES storm water permitting requirements. The flows will be addressed through the implementation of a SWPPP.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	The developments will provide park areas that will be irrigated using the treated effluent in accordance with ADEQ reuse requirements and the Arizona Groundwater Code and Rules for water augmentation.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The WWTF will require an AZPDES permit, APP, permit for the Reuse of Reclaimed Water and an Air Quality permit. ADWR Underground Storage Facility and Water Storage permits are also planned.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions are anticipated for the required AZPDES permit. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	An APP preapplication meeting was held on June 7, 2005.	Section 7.0 (Table 7.2), Pages 77-78

Trillium West WWTF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Significant industrial users are not anticipated in the service area outlined. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Sludge will be Class B and will be deposited in the Southwest Regional Landfill. On-site sludge will be dewatered and stored in hand off bins.	Section 5.1.5, Pages 43-44
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	Construction of the initial phase of the Trillium West WWTF is scheduled to begin in 2008 and be commissioned for operation in 2009.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	The initial facility construction will be completed by local developer(s) with oversight by the Town of Buckeye. The Town of Buckeye ultimately will operate and maintain the WRF, collection system, and effluent distribution system.	Section 8.0, Page 79

Trillium West WWTF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility and its expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	The Town may coordinate with developers to finance facility construction or fund improvements through impact fees, municipal bonds or other funding mechanisms. Once constructed, the plant will be operated and maintained with user collected fees collected from those who benefit from the service.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	The initial phase (0.32 MGD) at Trillium West WWTF is scheduled for construction beginning in 2008 with plant commissioning to be completed by 2009. Subsequent expansions will be designed when the facility reaches 70% capacity or as designated by the Town.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	The Town may coordinate with developers to finance facility expansions or fund improvements through impact fees, municipal bonds or other funding mechanisms.	Section 9.0, Page 80

Trillium West WWTF (Planned)		
Requirement	**Summary of Compliance**	**See Page**
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. Homes will not be occupied prior to the operational completion and approval of the Trillium West WWTF. Wastewater flow will not be generated until the WWTF is operational in either its initial phase, or under a low flow treatment alternative.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Clean Water Act 208 Amendment

Town of Buckeye
Trillium West
Wastewater Treatment Facility

DRAFT

Prepared by:

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Phoenix, AZ 85040

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December 2005

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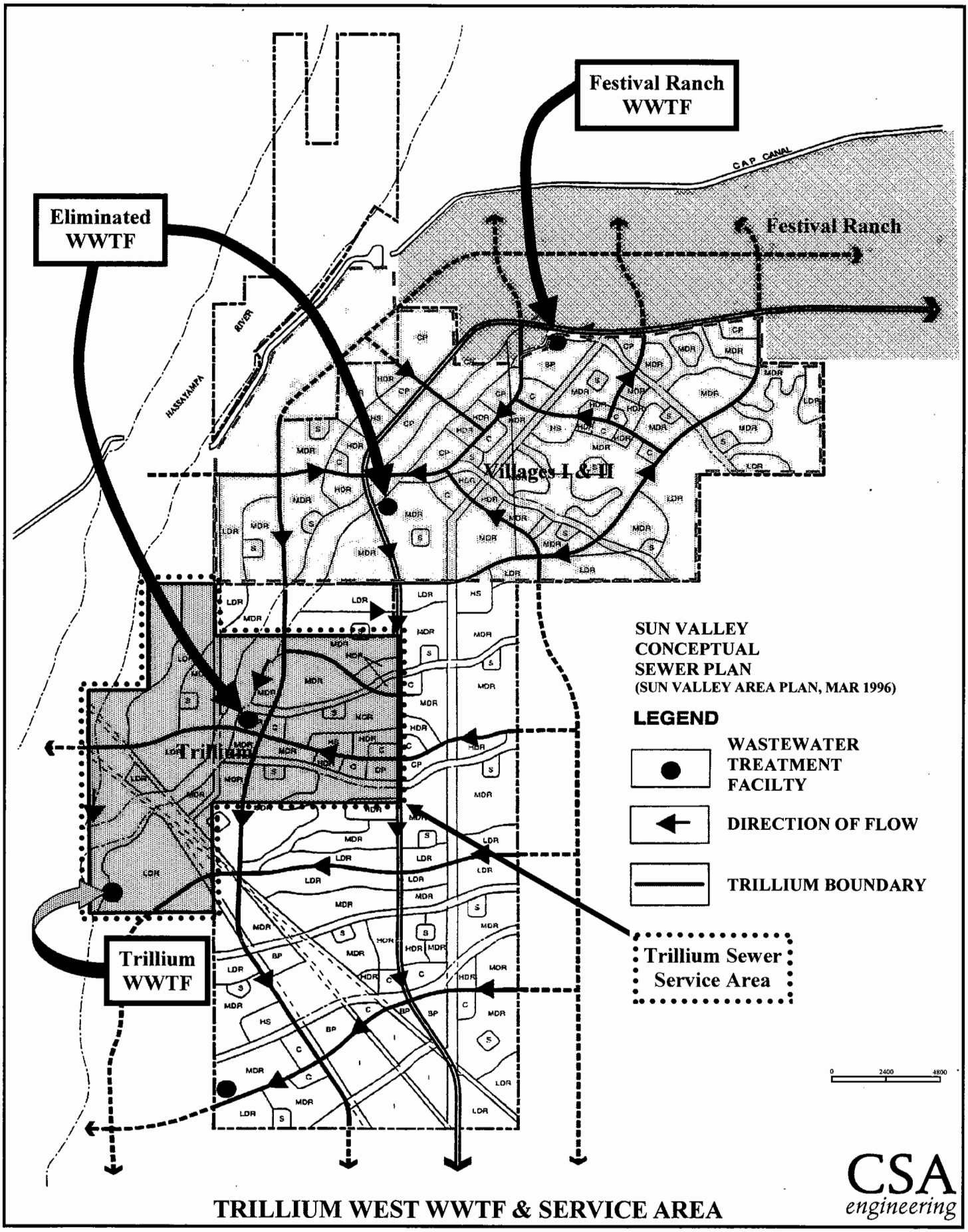
engineering



TRILLIUM WEST WWTF & SERVICE AREA

CSA engineering

FIGURE 2

has been approved, the facility and land ownership will be transferred to the Town of Buckeye. The Town of Buckeye will own and operate all recharge areas where reclaimed water would be recharged. Private entities, including various homeowners associations, would own reuse sites such as greenbelt areas, gateway entrances, schools, and community parks.

3.2.2 Topographic Conditions

The existing grade within the proposed Trillium West WWTF service area slopes generally to the west at an approximate slope of 0.013 ft/ft. The proposed site consists of primarily undeveloped desert landscape. Major hydrologic features include the Hassayampa River, which borders the proposed Trillium West site to the west, and Wagner Wash, which traverses the proposed site from northeast to southwest.

3.2.3 Service Area and Population Estimates

Maricopa Association of Governments has developed Interim Population projections for various county-wide cities. The Town of Buckeye's projected population for the 20-year growth period ending 2026 is 295,000. Trillium West WWTF is planned to accommodate a portion of this population.

Considering the population densities estimated per household, total residential population for Trillium West is estimated to be 25,566 at build-out. The Land Use Budget shown below identifies land use plans for the Trillium West development.

Land Use Budget for Trillium West
Sewer Service Area

Trillium West

Trillium Land Use Table	Acreage (acres)	Density Range (du/acre)	Average Density (du/acre)	Dwelling Units
Low Density Res	646	1 to 3	1.58	1,844
Medium Density Res	1,084	3 to 6	3.89	5,318
High Density Res	80	6 to 20	17	1,600
School	97			
Commercial/Office	107			
Open Space	1,028			
Total	3,042		2.9*	8,816

* Net density per Town of Buckeye ordinance.

Single family residential units in Trillium West are projected to be built at an annual rate of 480, beginning in 2006, while multi family units will come on line at a build out rate of 200 units per year beginning in the year 2016 and for six years thereafter. At this projected build out, Trillium West is expected to reach 100 percent absorption in the year 2022.

As shown in Figure 3, the initial 0.32 MGD treatment capacity would be exhausted in 2008. At that point a subsequent expansion phase would be required in order to ensure the continued issuance of building permits. Exact phasing will be contingent upon the home building market forces and rate of in-fill within the Trillium West sewer service area. The 20-year growth period shown in Figure 3 projects the total 8,816

residential units and a required sewer treatment capacity of approximately 2.8 MGD for the Trillium West service area. If the TWWWTF becomes a regional solution, it would have a capacity of up to 11 MGD. This will be dependent upon the growth and development of the areas outside the Trillium West service area.

3.2.4 Estimated Wastewater Flow

Projected wastewater flows from the Trillium West service area is summarized in Table 3.1.

Table 3.1 Flow summary for the area serviced by the proposed Trillium West WWTF

Description	*Population*	*Residential Dwelling Units*	*Acres*	*Flow (gal/unit/day)*	*Average Daily Flow (gpd)**
Trillium West	25,566**	8,816	3042	320	2,821,120

* Peak daily and peak hourly flows will be assumed at 2X and 3X ADF, respectively.

** Population is based upon Town of Buckeye average population density of 2.9 capita per dwelling unit and not Maricopa County's mandated 3.2 capita per dwelling unit which identifies a higher hydraulic loading.

3.2.5 WWTF Description

The Trillium WWTF will be a multiphase facility consisting of an initial 0.32 MGD phase, up to a total of 2.8 MGD, based upon average daily flow. Subsequent phases (up to 11 MGD) could be constructed at this site. Treatment elements/units will be sized to accommodate peak day and hour demands. The initial phase will consist of the following process units:

- Influent pump station consisting of one duty and one standby submersible pump, and a wet well. The lift station will be equipped with an odor control system.
- Headworks will consist of flow metering, and fine screens. The headworks will be enclosed to prevent odor and vector attraction.
- Biological treatment will consist of a Sequencing Batch Reactor (SBR) system. The SBR will be enclosed and outfitted with air exhaust carbon scrubbers to control odors. The system will be programmed to include anoxic sequences within the treatment cycles to reduce the nitrogen levels in the mixed liquor.
- An aerobic digester will be used to further reduce the volatile solids. The digester will also be enclosed and outfitted with granular activated carbon (GAC) adsorbers.
- Thickened sludge will be processed in the sludge handling facility to produce sludge cake that can be safely disposed of in a landfill. Waste activated sludge (WAS) pumping is integral process to the aerobic digester system.
- Filtration will be included in the system to produce an effluent quality of less than 5 NTUs.
- Ultraviolet radiation will be used to disinfect the tertiary effluent in order to meet the requirements of A+ classification. A backup disinfection system using 12% bulk sodium hypochlorite solution will be provided.
- Tertiary Class A+ effluent will be percolated on site.
- Backup power generator will be provided.

Figure 4 shows the transition from the initial 0.32 mgd SBR system to a full nitrifying-denitrifying (ndn) Modified Ludzack Ettinger (MLE) process. The expansion phase will include a new process train that is capable of treating 0.93 mgd (average flow). A 2x

APPENDIX P

GILA 85 WATER RECLAMATION FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Alternatives Analysis

Gila 85 WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 12,221 persons in 2030 based on the 2007 POPTAC population estimates and 72,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Gila 85 WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 1.2 MGD for Phase 1 to 9.1 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 17** in **Appendix B**.	Figure 17, Appendix B
Describe the type and capacity of the recommended WWT plant.	The WRF will be a multi-phase sequencing batch reactor. The treatment train will include preliminary screening, biological treatment using the activated sludge process, clarification, nitrification/denitrification, filtration and UV disinfection. The facility may also incorporate sludge storage, treatment, and processing capabilities. The plant will be equipped with odor and noise control and other aesthetic measures in accordance with AAC Title 18. Once flows approach approximately 5 MGD, the facility will be planned to upgrade to one of four Bardenpho alternative technologies. The WRF is anticipated to have an ultimate capacity of 9.1 MGD.	Section 5.4, Page 50
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the facility or any expansions. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WRF.	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	Effluent generated by the facility may be recharged and reused. Reclaimed water may be used for landscape irrigation and other potential uses as agreed by the Town of Buckeye and in accordance with the Reuse of Reclaimed Wastewater permit. An AZPDES permit may be obtained for planned and emergency discharges, which will be coordinated through ADEQ. It is anticipated that effluent will be discharged to the Arlington Canal, Hassayampa River or Gila River under the AZPDES permit.	Section 6.9.1, Page 71

Gila 85 WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A
Describe ownership of land proposed for plant sites and reuse areas.	The Town of Buckeye will ultimately own the land for the facility. Other public or private entities may own the reuse areas.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The initial phase (1.2 MGD) of the Gila 85 WRF is anticipated to begin construction in 2010 and be operational in 2011. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town and as required by development until the facility reaches the ultimate capacity of 9.1 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no known financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the facility will treat wastewater only. The plant will not receive runoff from adjacent properties. During construction, storm water flows will be managed under an AZPDES temporary discharge permit. Storm water discharges, if any, will be subject to AZPDES storm water permitting requirements and will be addressed through the development and implementation of a site SWPPP. However, no storm water discharge is expected from the site.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	Open space and/or park areas may be irrigated using the treated effluent in accordance with ADEQ reuse requirements, the Arizona Groundwater Code, and rules for water augmentation.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A

Gila 85 WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility will require an AZPDES permit, APP, permit for the Reuse of Reclaimed Wastewater, and an Air Quality permit. Additionally, coordination with the Town of Buckeye and MCESD will be required to obtain an approval to construct, approval of construction, and architectural and building permits.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions are anticipated for the required AZPDES permit. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	The Town of Buckeye or its designated agent will be responsible for obtaining the necessary permits from the ADEQ as required for the initial phase of the facility. ADEQ will be notified and a preapplication meeting will be scheduled once the design of the facility commences.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Future industrial development along the Southern Pacific Railroad is likely. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Sludge will be dewatered via belt filter press or other acceptable technology. Aerobic digestion will be provided to meet Class B quality requirements. Biosolids produced by the facility will be of a sufficient quality to meet the applicable requirements for the selected final disposition. A licensed sludge hauler and sludge disposal permit will be obtained, as necessary.	Section 5.1.5, Pages 43-44

Gila 85 WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	The initial phase (1.2 MGD) of the Gila 85 WRF is anticipated to begin construction in 2010 and be operational in 2011. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	The Town of Buckeye will ultimately own and operate the Gila 85 WRF.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility and its expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80

Gila 85 WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Describe proposed method(s) of community financing.	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	The initial phase (1.2 MGD) of the Gila 85 WRF is anticipated to begin construction in 2010 and be operational in 2011. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town, and as required by development until the facility reaches the ultimate capacity of 9.1 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81

Gila 85 WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. Homes will not be occupied prior to the operational completion and approval of the Gila 85 WRF. Wastewater flow will not be generated until the WRF is operational in either its initial phase, or under a low flow treatment alternative.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Memorandum

DATE: August 27, 2007

SUBJECT: MAG 208 Comprehensive Amendment for the Town of Buckeye
Gila 85/Gila Hassayampa Service Area Analysis

Introduction

Northeast of the confluence of the Gila and Hassayampa Rivers, there is a portion of land that is not currently associated with an existing or planned wastewater treatment facility. This region, per the *MAG 208 Comprehensive Amendment for the Town of Buckeye* (Comprehensive Amendment) encompasses the area generally bound by Broadway Road to the north, State Route 85 to the east, the Gila River to the south and the Hassayampa River to the west.

As part of the Comprehensive Amendment, alternatives for the number and configuration of wastewater facilities within the proposed service area were evaluated. This memo summarizes the considerations and conclusions of those alternatives.

General Description

The topography mainly slopes gently to the south-southeast towards the Gila River throughout the majority of the service area. There is a small ridge near the center of the area at Palo Verde Road. The slopes on the western edge of the area near the Hassayampa River turn more southerly. The high point of the area is located in the northeast corner of the service area and the low point is along the Gila River across the southern boundary of the service area.

Pending developments in the area are focused mainly to the east and west, with an expanse of approximately 3 miles of currently unplanned area between them.

Approaching the Gila River, the groundwater level becomes significantly shallow. Per the *Lower Hassayampa Sub-basin Hydrologic Study and Computer Model* (Brown and Caldwell 2006), the depth to groundwater south of MC-85 is in the range of 15 to 27 feet below ground surface. Instances of shallower groundwater also have been reported.

The area under consideration covers approximately 18,000 acres with a build out population of approximately 142,000 people. The anticipated wastewater flow generation from the area is 16.9 million gallons per day (MGD).

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Options

Five different options were evaluated for this area. These options are summarized below.

1. One facility – Gila Hassayampa WRF (west location)

   As one of the natural low points in the area is in the southwest corner of the service area near the confluence of the Gila and Hassayampa Rivers, the Gila Hassayampa facility is considered at that location. This option assumes the proposed facility and collection system will serve the entire service area with only one facility. The facility would have a capacity of approximately 16.9 MGD.

2. One facility – Gila Hassayampa WRF (central location)

   As the low point of the service area extends along the Gila River at the bottom of the service area, the treatment facility was moved east from the confluence towards the center of the area. This option assumes the proposed facility and collection system will serve the entire service area with only one facility. The facility would have a capacity of approximately 16.9 MGD.

3. One facility – Gila Hassayampa WRF (east location)

   As the low point of the service area extends along the Gila River at the bottom of the service area, the treatment facility was moved east from the confluence towards the eastern portion of the area on land currently planning to be developed. This option assumes the proposed facility and collection system will serve the entire service area with only one facility. The facility would have a capacity of approximately 16.9 MGD.

4. One facility – Gila 85 WRF

   As the low point of the service area extends along the Gila River at the bottom of the service area, a treatment facility was evaluated on the east side of the area on federal land. This option assumes the proposed facility and collection system will serve the entire service area with only one facility. The facility would have a capacity of approximately 16.9 MGD.

5. Two facilities – Gila 85 and Gila Hassayampa (west location) WRFs

   This option evaluates both facilities, the Gila 85 and Gila Hassayampa WRFs, operating in conjunction to serve the area. The Gila 85 WRF would be utilized to serve the area generally east of Palo Verde Road and the Gila Hassayampa WRF would serve the area generally west of Palo Verde Road. The Gila 85 and Gila Hassayampa facilities would have capacities of approximately 9.1 and 7.8 MGD, respectively.

Considerations

Several factors were considered during the analysis of these alternatives. These include, but are not limited to, the following:

- Waterlogged area
- Facility operation and maintenance
- Recharge and reuse opportunities
- Financing mechanism
- Developments within the service area
- Land ownership
- Offsite sewer

Recommendation

Based on the factors listed above, it is recommended that two water reclamation facilities be utilized to provide service to the area in question. As mentioned, the topography of the area is fairly uniform, falling towards the Gila River, with only a small portion breaking towards the Hassayampa River to the west. Based on this, a facility could be located anywhere along the Gila River and be able to sewer the majority of the area by gravity. However, in light of the natural ridge along Palo Verde Road and the waterlogged area making the installation of lateral sewers difficult and costly, the two facilities are recommended.

In addition, with two facilities, there are greater opportunities to provide effluent to the surrounding master planned communities for reuse and recharge opportunities without needing the installation of a large reclaimed water system.

The two facilities also benefit the proposed developments in the area. With development being focused mainly on the east and west sides of the area, the two facilities will enable the communities to develop without needing to install as much as 6 miles of offsite sewer to deliver flows to a facility on the other end of the area. The installation of such a sewer would be a significant cost increase to the developers, given the Town's traditional financing mechanism that requires the developers to fund infrastructure improvements.

APPENDIX Q

GILA HASSAYAMPA WATER RECLAMATION FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Alternatives Analysis

Gila Hassayampa WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 12,064 persons in 2030 based on the 2007 POPTAC population estimates and 70,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Gila Hassayampa WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 1.2 MGD for Phase 1 to 7.8 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 17** in **Appendix B**.	Figure 17, Appendix B
Describe the type and capacity of the recommended WWT plant.	The WRF will be a multi-phase sequencing batch reactor. The treatment train will include preliminary screening, biological treatment using the activated sludge process, clarification, nitrification/denitrification, filtration and UV disinfection. The facility may also incorporate sludge storage, treatment, and processing capabilities. The plant will be equipped with odor and noise control and other aesthetic measures in accordance with AAC Title 18. Once flows approach approximately 5 MGD, the facility will be planned to upgrade to one of four Bardenpho alternative technologies. The WRF is anticipated to have an ultimate capacity of 7.8 MGD.	Section 5.4, Page 50
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the facility or any expansions. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WRF.	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	Effluent generated by the facility may be recharged and reused. Reclaimed water may be used for landscape irrigation and other potential uses as agreed by the Town of Buckeye and in accordance with the Reuse of Reclaimed Wastewater permit. An AZPDES permit may be obtained for planned and emergency discharges, which will be coordinated through ADEQ. It is anticipated that effluent will be discharged to the Arlington Canal, Hassayampa River or Gila River under the AZPDES permit.	Section 6.9.2, Page 71

Gila Hassayampa WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A
Describe ownership of land proposed for plant sites and reuse areas.	The Town of Buckeye will ultimately own the land for the facility. Other public or private entities may own the reuse areas.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The initial phase (1.2 MGD) of the Gila Hassayampa WRF is anticipated to begin construction in 2010 and be operational in 2011. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town and as required by development until the facility reaches the ultimate capacity of 7.8 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no known financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the facility will treat wastewater only. The plant will not receive runoff from adjacent properties. During construction, storm water flows will be managed under an AZPDES temporary discharge permit. Storm water discharges, if any, will be subject to AZPDES storm water permitting requirements and will be addressed through the development and implementation of a site SWPPP. However, no storm water discharge is expected from the site.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	Open space and/or park areas may be irrigated using the treated effluent in accordance with ADEQ reuse requirements, the Arizona Groundwater Code, and rules for water augmentation.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A

Gila Hassayampa WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility will require an AZPDES permit, APP, permit for the Reuse of Reclaimed Wastewater, and an Air Quality permit. Additionally, coordination with the Town of Buckeye and MCESD will be required to obtain an approval to construct, approval of construction, and architectural and building permits.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions are anticipated for the required AZPDES permit. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	The Town of Buckeye or its designated agent will be responsible for obtaining the necessary permits from the ADEQ as required for the initial phase of the facility. ADEQ will be notified and a preapplication meeting will be scheduled once the design of the facility commences.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Future industrial development along the Southern Pacific Railroad is likely. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Sludge will be dewatered via belt filter press or other acceptable technology. Aerobic digestion will be provided to meet Class B quality requirements. Biosolids produced by the facility will be of a sufficient quality to meet the applicable requirements for the selected final disposition. A licensed sludge hauler and sludge disposal permit will be obtained, as necessary.	Section 5.1.5, Pages 43-44

Gila Hassayampa WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	The initial phase (1.2 MGD) of the Gila Hassayampa WRF is anticipated to begin construction in 2010 and be operational in 2011. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	The Town of Buckeye will ultimately own and operate the Gila Hassayampa WRF.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility and its expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80

Gila Hassayampa WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Describe proposed method(s) of community financing.	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	The initial phase (1.2 MGD) of the Gila Hassayampa WRF is anticipated to begin construction in 2010 and be operational in 2011. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town, and as required by development until the facility reaches the ultimate capacity of 7.8 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81

Gila Hassayampa WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. Homes will not be occupied prior to the operational completion and approval of the Gila Hassayampa WRF. Wastewater flow will not be generated until the WRF is operational in either its initial phase, or under a low flow treatment alternative.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Memorandum

DATE: August 27, 2007

SUBJECT: MAG 208 Comprehensive Amendment for the Town of Buckeye
Gila 85/Gila Hassayampa Service Area Analysis

Introduction

Northeast of the confluence of the Gila and Hassayampa Rivers, there is a portion of land that is not currently associated with an existing or planned wastewater treatment facility. This region, per the *MAG 208 Comprehensive Amendment for the Town of Buckeye* (Comprehensive Amendment) encompasses the area generally bound by Broadway Road to the north, State Route 85 to the east, the Gila River to the south and the Hassayampa River to the west.

As part of the Comprehensive Amendment, alternatives for the number and configuration of wastewater facilities within the proposed service area were evaluated. This memo summarizes the considerations and conclusions of those alternatives.

General Description

The topography mainly slopes gently to the south-southeast towards the Gila River throughout the majority of the service area. There is a small ridge near the center of the area at Palo Verde Road. The slopes on the western edge of the area near the Hassayampa River turn more southerly. The high point of the area is located in the northeast corner of the service area and the low point is along the Gila River across the southern boundary of the service area.

Pending developments in the area are focused mainly to the east and west, with an expanse of approximately 3 miles of currently unplanned area between them.

Approaching the Gila River, the groundwater level becomes significantly shallow. Per the *Lower Hassayampa Sub-basin Hydrologic Study and Computer Model* (Brown and Caldwell 2006), the depth to groundwater south of MC-85 is in the range of 15 to 27 feet below ground surface. Instances of shallower groundwater also have been reported.

The area under consideration covers approximately 18,000 acres with a build out population of approximately 142,000 people. The anticipated wastewater flow generation from the area is 16.9 million gallons per day (MGD).

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Options

Five different options were evaluated for this area. These options are summarized below.

1. One facility – Gila Hassayampa WRF (west location)

   As one of the natural low points in the area is in the southwest corner of the service area near the confluence of the Gila and Hassayampa Rivers, the Gila Hassayampa facility is considered at that location. This option assumes the proposed facility and collection system will serve the entire service area with only one facility. The facility would have a capacity of approximately 16.9 MGD.

2. One facility – Gila Hassayampa WRF (central location)

   As the low point of the service area extends along the Gila River at the bottom of the service area, the treatment facility was moved east from the confluence towards the center of the area. This option assumes the proposed facility and collection system will serve the entire service area with only one facility. The facility would have a capacity of approximately 16.9 MGD.

3. One facility – Gila Hassayampa WRF (east location)

   As the low point of the service area extends along the Gila River at the bottom of the service area, the treatment facility was moved east from the confluence towards the eastern portion of the area on land currently planning to be developed. This option assumes the proposed facility and collection system will serve the entire service area with only one facility. The facility would have a capacity of approximately 16.9 MGD.

4. One facility – Gila 85 WRF

   As the low point of the service area extends along the Gila River at the bottom of the service area, a treatment facility was evaluated on the east side of the area on federal land. This option assumes the proposed facility and collection system will serve the entire service area with only one facility. The facility would have a capacity of approximately 16.9 MGD.

5. Two facilities – Gila 85 and Gila Hassayampa (west location) WRFs

   This option evaluates both facilities, the Gila 85 and Gila Hassayampa WRFs, operating in conjunction to serve the area. The Gila 85 WRF would be utilized to serve the area generally east of Palo Verde Road and the Gila Hassayampa WRF would serve the area generally west of Palo Verde Road. The Gila 85 and Gila Hassayampa facilities would have capacities of approximately 9.1 and 7.8 MGD, respectively.

Considerations

Several factors were considered during the analysis of these alternatives. These include, but are not limited to, the following:

- Waterlogged area
- Facility operation and maintenance
- Recharge and reuse opportunities
- Financing mechanism
- Developments within the service area
- Land ownership
- Offsite sewer

Recommendation

Based on the factors listed above, it is recommended that two water reclamation facilities be utilized to provide service to the area in question. As mentioned, the topography of the area is fairly uniform, falling towards the Gila River, with only a small portion breaking towards the Hassayampa River to the west. Based on this, a facility could be located anywhere along the Gila River and be able to sewer the majority of the area by gravity. However, in light of the natural ridge along Palo Verde Road and the waterlogged area making the installation of lateral sewers difficult and costly, the two facilities are recommended.

In addition, with two facilities, there are greater opportunities to provide effluent to the surrounding master planned communities for reuse and recharge opportunities without needing the installation of a large reclaimed water system.

The two facilities also benefit the proposed developments in the area. With development being focused mainly on the east and west sides of the area, the two facilities will enable the communities to develop without needing to install as much as 6 miles of offsite sewer to deliver flows to a facility on the other end of the area. The installation of such a sewer would be a significant cost increase to the developers, given the Town's traditional financing mechanism that requires the developers to fund infrastructure improvements.

APPENDIX R

GILA RAINBOW WATER RECLAMATION FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Alternatives Analysis

Gila Rainbow WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 9,053 persons in 2030 based on the 2007 POPTAC population estimates and 56,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Gila Rainbow WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 1.2 MGD for Phase 1 to 13.2 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 11** in **Appendix B**.	Figure 11, Appendix B
Describe the type and capacity of the recommended WWT plant.	The WRF will be a multi-phase sequencing batch reactor. The treatment train will include preliminary screening, biological treatment using the activated sludge process, clarification, nitrification/denitrification, filtration and UV disinfection. The facility may also incorporate sludge storage, treatment, and processing capabilities. The plant will be equipped with odor and noise control and other aesthetic measures in accordance with AAC Title 18. Once flows approach approximately 5 MGD, the facility will be planned to upgrade to one of four Bardenpho alternative technologies. The WRF is anticipated to have an ultimate capacity of 13.2 MGD.	Section 5.4, Page 50
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the facility or any expansions. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WRF.	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	Effluent generated by the facility may be recharged and reused. Reclaimed water may be used for landscape irrigation and other potential uses as agreed by the Town of Buckeye and in accordance with the Reuse of Reclaimed Wastewater permit. An AZPDES permit may be obtained for planned and emergency discharges, which will be coordinated through ADEQ. It is anticipated that effluent will be discharged to the Gila River, Gila Bend Canal or Rainbow Wash under the AZPDES permit.	Section 6.9.3, Pages 71-72

Gila Rainbow WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A
Describe ownership of land proposed for plant sites and reuse areas.	The Town of Buckeye will ultimately own the land for the facility. Other public or private entities may own the reuse areas.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The initial phase (1.2 MGD) of the Gila Rainbow WRF is anticipated to begin construction in 2008 and be operational in 2009. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town and as required by development until the facility reaches the ultimate capacity of 13.2 MGD. It is anticipated that the Gila Rainbow WRF will ultimately treat the wastewater flows from the ASPC-Lewis facility and that the ASPC-Lewis facility will be decommissioned. The ultimate capacity of the Gila Rainbow WRF takes the flows from the ASPC-Lewis facility into account. The time frame for this is unknown as it is dependent on the development of the wastewater infrastructure between the proposed WRF and the ASPC-Lewis facility.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no known financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the facility will treat wastewater only. The plant will not receive runoff from adjacent properties. During construction, storm water flows will be managed under an AZPDES temporary discharge permit. Storm water discharges, if any, will be subject to AZPDES storm water permitting requirements and will be addressed through the development and implementation of a site SWPPP. However, no storm water discharge is expected from the site.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	Open space and/or park areas may be irrigated using the treated effluent in accordance with ADEQ reuse requirements, the Arizona Groundwater Code, and rules for water augmentation.	Section 6.6, Pages 61-62

Gila Rainbow WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility will require an AZPDES permit, APP, permit for the Reuse of Reclaimed Wastewater, and an Air Quality permit. Additionally, coordination with the Town of Buckeye and MCESD will be required to obtain an approval to construct, approval of construction, and architectural and building permits.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions are anticipated for the required AZPDES permit. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	The Town of Buckeye or its designated agent will be responsible for obtaining the necessary permits from the ADEQ as required for the initial phase of the facility. ADEQ will be notified and a preapplication meeting will be scheduled once the design of the facility commences.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Future industrial development near the landfill and ASPC-Lewis is possible. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A

Gila Rainbow WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Sludge will be dewatered via belt filter press or other acceptable technology. Aerobic digestion will be provided to meet Class B quality requirements. Biosolids produced by the facility will be of a sufficient quality to meet the applicable requirements for the selected final disposition. A licensed sludge hauler and sludge disposal permit will be obtained, as necessary.	Section 5.1.5, Pages 43-44
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	The initial phase (1.2 MGD) of the Gila Rainbow WRF is anticipated to begin construction in 2008 and be operational in 2009. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. It is anticipated that the Gila Rainbow WRF will ultimately treat the wastewater flows from the ASPC-Lewis facility and that the ASPC-Lewis facility will be decommissioned. The ultimate capacity of the Gila Rainbow WRF takes the flows from the ASPC-Lewis facility into account. The time frame for this is unknown as it is dependent on the development of the wastewater infrastructure between the proposed WRF and the ASPC-Lewis facility.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	The Town of Buckeye will ultimately own and operate the Gila Rainbow WRF.	Section 8.0, Page 79

Gila Rainbow WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility and its expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80

Gila Rainbow WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Provide a timeline outlining period of time necessary for carrying out plan implementation.	The initial phase (1.2 MGD) of the Gila Rainbow WRF is anticipated to begin construction in 2008 and be operational in 2009. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town, and as required by development until the facility reaches the ultimate capacity of 13.2 MGD. It is anticipated that the Gila Rainbow WRF will ultimately treat the wastewater flows from the ASPC-Lewis facility and that the ASPC-Lewis facility will be decommissioned. The ultimate capacity of the Gila Rainbow WRF takes the flows from the ASPC-Lewis facility into account. The time frame for this is unknown as it is dependent on the development of the wastewater infrastructure between the proposed WRF and the ASPC-Lewis facility.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	It is anticipated that the Gila Rainbow WRF will ultimately treat the wastewater flows from the ASPC-Lewis facility and that the ASPC-Lewis facility will be decommissioned. The ultimate capacity of the Gila Rainbow WRF takes the flows from the ASPC-Lewis facility into account. The time frame for this is unknown as it is dependent on the development of the wastewater infrastructure between the proposed WRF and the ASPC-Lewis facility.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A

Gila Rainbow WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Describe the impact on communities and businesses affected by the plan.	It is anticipated that the Gila Rainbow WRF will ultimately treat the wastewater flows from the ASPC-Lewis facility and that the ASPC-Lewis facility will be decommissioned. The ultimate capacity of the Gila Rainbow WRF takes the flows from the ASPC-Lewis facility into account. The time frame for this is unknown as it is dependent on the development of the wastewater infrastructure between the proposed WRF and the ASPC-Lewis facility.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. Homes will not be occupied prior to the operational completion and approval of the Gila Rainbow WRF. Wastewater flow will not be generated until the WRF is operational in either its initial phase, or under a low flow treatment alternative.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Memorandum

DATE: August 27, 2007

SUBJECT: MAG 208 Comprehensive Amendment for the Town of Buckeye
Gila Rainbow/Gila Southwest Service Area Analysis

Introduction

The southwestern portion of the Town of Buckeye Municipal Planning Area is separated from the remainder of the planning area by a large expanse of Bureau of Land Management Land that has been recently annexed into the Town of Buckeye. The proposed service area for the region per the *MAG 208 Comprehensive Amendment for the Town of Buckeye* (Comprehensive Amendment) encompasses the area generally bound by Ocotillo Road to the north, Rooks Road to the east, Woods Road to the south and the Gila River to the west. The Arizona State Prison Complex (ASPC) – Lewis and its 0.75 million gallon per day (MGD) wastewater treatment plant are within this region.

As part of the Comprehensive Amendment, alternatives for the number and configuration of wastewater facilities within the proposed service area were evaluated. This memo summarizes the considerations and conclusions of those alternatives.

General Description

The topography mainly slopes gently to the southwest and the Gila River throughout the majority of the service area. The slopes near the Rainbow Wash turn slightly towards the southwesterly direction of flow. The high point of the area is located along the eastern edge of the service area and the low point is in the southwest corner of the service area.

Pending developments in the area are focused mainly to the north, with several already either annexing or establishing pre-annexation agreements with the Town of Buckeye. Preliminary discussions with the Arizona Department of Corrections indicate that when public sewer is available in the vicinity of the ASPC-Lewis facility, they would have a desire to decommission their small plant and send their wastewater flows to a wastewater treatment facility in the area. In addition to the ASPC-Lewis facility, this area also includes two existing landfills.

The area under consideration covers approximately 24,210 acres with a build out population of approximately 100,000 people. The anticipated wastewater flow generation from the area is 20.7 million gallons per day.

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Options

Two different options were evaluated for this area. These options are summarized below.

1. One facility – Gila Southwest WRF

   As the natural low point in the area is in the southwest corner of the service area, the Gila Southwest facility is considered in the southwest portion of the service area near the Gila River. This option assumes the proposed facility and collection system will serve the entire service area with only one facility. The facility would have a capacity of approximately 20.7 MGD.

2. Two facilities – Gila Rainbow and Gila Southwest WRFs

   This option evaluates a second facility, the Gila Rainbow WRF, farther to the north to service the developments generally north of Patterson Road in conjunction with the previously discussed Gila Southwest WRF. The Gila Southwest WRF would be utilized to serve the area generally south of Patterson Road. In the future, the Gila Rainbow WRF may be converted to a scalping facility. The Gila Rainbow and Gila Southwest facilities would have capacities of approximately 13.2 and 7.5 MGD, respectively.

Considerations

Several factors were considered during the analysis of these alternatives. These include, but are not limited to, the following:

- Facility operation and maintenance
- Recharge and reuse opportunities
- Financing mechanism
- Developments within the service area
- Land ownership
- Land annexation/Pre-annexation agreements
- Offsite sewer

Recommendation

Based on the factors listed above, it is recommended that two water reclamation facilities be utilized to provide service to the area in question. With the exception of the landfill and land near State Route 85, the majority of land south of Patterson Road is not annexed and does not currently have any pre-annexation agreements in place. Land ownership in the northern portion is established as part of the Town of Buckeye or in the process of becoming part of the Town.

In addition, development is currently focused to the north and therefore relying solely on the Gila Southwest WRF would require the installation of as much as 9 miles of offsite sewer to deliver flows to the facility, a significant cost increase to the developers, given the Town's traditional financing mechanism that requires the developers to fund infrastructure improvements.

APPENDIX S

GILA SOUTHWEST WATER RECLAMATION FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

2. Alternatives Analysis

Gila Southwest WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 5,036 persons in 2030 based on the 2007 POPTAC population estimates and 44,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Gila Southwest WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 1.2 MGD for Phase 1 to 7.5 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 11** in **Appendix B**.	Figure 11, Appendix B
Describe the type and capacity of the recommended WWT plant.	The WRF will be a multi-phase sequencing batch reactor. The treatment train will include preliminary screening, biological treatment using the activated sludge process, clarification, nitrification/denitrification, filtration and UV disinfection. The facility may also incorporate sludge storage, treatment, and processing capabilities. The plant will be equipped with odor and noise control and other aesthetic measures in accordance with AAC Title 18. Once flows approach approximately 5 MGD, the facility will be planned to upgrade to one of four Bardenpho alternative technologies. The WRF is anticipated to have an ultimate capacity of 7.5 MGD.	Section 5.4, Page 50
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the facility or any expansions. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WRF.	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	Effluent generated by the facility may be recharged and reused. Reclaimed water may be used for landscape irrigation and other potential uses as agreed by the Town of Buckeye and in accordance with the Reuse of Reclaimed Wastewater permit. An AZPDES permit may be obtained for planned and emergency discharges, which will be coordinated through ADEQ. It is anticipated that effluent will be discharged to the Gila River or Gila Bend under the AZPDES permit.	Section 6.9.4, Page 72

Gila Southwest WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A
Describe ownership of land proposed for plant sites and reuse areas.	The Town of Buckeye will ultimately own the land for the facility. Other public or private entities may own the reuse areas.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The initial phase (1.2 MGD) of the Gila Southwest WRF is anticipated to begin construction in 2014 and be operational in 2015. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town and as required by development until the facility reaches the ultimate capacity of 7.5 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no known financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the facility will treat wastewater only. The plant will not receive runoff from adjacent properties. During construction, storm water flows will be managed under an AZPDES temporary discharge permit. Storm water discharges, if any, will be subject to AZPDES storm water permitting requirements and will be addressed through the development and implementation of a site SWPPP. However, no storm water discharge is expected from the site.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	Open space and/or park areas may be irrigated using the treated effluent in accordance with ADEQ reuse requirements, the Arizona Groundwater Code, and rules for water augmentation.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A

Gila Southwest WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility will require an AZPDES permit, APP, permit for the Reuse of Reclaimed Wastewater, and an Air Quality permit. Additionally, coordination with the Town of Buckeye and MCESD will be required to obtain an approval to construct, approval of construction, and architectural and building permits.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions are anticipated for the required AZPDES permit. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	The Town of Buckeye or its designated agent will be responsible for obtaining the necessary permits from the ADEQ as required for the initial phase of the facility. ADEQ will be notified and a preapplication meeting will be scheduled once the design of the facility commences.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Future industrial development near the landfill and ASPC-Lewis is possible. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Sludge will be dewatered via belt filter press or other acceptable technology. Aerobic digestion will be provided to meet Class B quality requirements. Biosolids produced by the facility will be of a sufficient quality to meet the applicable requirements for the selected final disposition. A licensed sludge hauler and sludge disposal permit will be obtained, as necessary.	Section 5.1.5, Pages 43-44

Gila Southwest WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	The initial phase (1.2 MGD) of the Gila Southwest WRF is anticipated to begin construction in 2014 and be operational in 2015. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	The Town of Buckeye will ultimately own and operate the Gila Southwest WRF.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A

Gila Southwest WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility and its expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly. A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user collected fees collected from those who benefit from the service.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	The initial phase (1.2 MGD) of the Gila Southwest WRF is anticipated to begin construction in 2014 and be operational in 2015. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town, and as required by development until the facility reaches the ultimate capacity of 7.5 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80

Gila Southwest WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. Homes will not be occupied prior to the operational completion and approval of the Gila Southwest WRF. Wastewater flow will not be generated until the WRF is operational in either its initial phase, or under a low flow treatment alternative.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

Memorandum

DATE: August 27, 2007

SUBJECT: MAG 208 Comprehensive Amendment for the Town of Buckeye
Gila Rainbow/Gila Southwest Service Area Analysis

Introduction

The southwestern portion of the Town of Buckeye Municipal Planning Area is separated from the remainder of the planning area by a large expanse of Bureau of Land Management Land that has been recently annexed into the Town of Buckeye. The proposed service area for the region per the *MAG 208 Comprehensive Amendment for the Town of Buckeye* (Comprehensive Amendment) encompasses the area generally bound by Ocotillo Road to the north, Rooks Road to the east, Woods Road to the south and the Gila River to the west. The Arizona State Prison Complex (ASPC) – Lewis and its 0.75 million gallon per day (MGD) wastewater treatment plant are within this region.

As part of the Comprehensive Amendment, alternatives for the number and configuration of wastewater facilities within the proposed service area were evaluated. This memo summarizes the considerations and conclusions of those alternatives.

General Description

The topography mainly slopes gently to the southwest and the Gila River throughout the majority of the service area. The slopes near the Rainbow Wash turn slightly towards the southwesterly direction of flow. The high point of the area is located along the eastern edge of the service area and the low point is in the southwest corner of the service area.

Pending developments in the area are focused mainly to the north, with several already either annexing or establishing pre-annexation agreements with the Town of Buckeye. Preliminary discussions with the Arizona Department of Corrections indicate that when public sewer is available in the vicinity of the ASPC-Lewis facility, they would have a desire to decommission their small plant and send their wastewater flows to a wastewater treatment facility in the area. In addition to the ASPC-Lewis facility, this area also includes two existing landfills.

The area under consideration covers approximately 24,210 acres with a build out population of approximately 100,000 people. The anticipated wastewater flow generation from the area is 20.7 million gallons per day.

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Options

Two different options were evaluated for this area. These options are summarized below.

1. One facility – Gila Southwest WRF

   As the natural low point in the area is in the southwest corner of the service area, the Gila Southwest facility is considered in the southwest portion of the service area near the Gila River. This option assumes the proposed facility and collection system will serve the entire service area with only one facility. The facility would have a capacity of approximately 20.7 MGD.

2. Two facilities – Gila Rainbow and Gila Southwest WRFs

   This option evaluates a second facility, the Gila Rainbow WRF, farther to the north to service the developments generally north of Patterson Road in conjunction with the previously discussed Gila Southwest WRF. The Gila Southwest WRF would be utilized to serve the area generally south of Patterson Road. In the future, the Gila Rainbow WRF may be converted to a scalping facility. The Gila Rainbow and Gila Southwest facilities would have capacities of approximately 13.2 and 7.5 MGD, respectively.

Considerations

Several factors were considered during the analysis of these alternatives. These include, but are not limited to, the following:

- Facility operation and maintenance
- Recharge and reuse opportunities
- Financing mechanism
- Developments within the service area
- Land ownership
- Land annexation/Pre-annexation agreements
- Offsite sewer

Recommendation

Based on the factors listed above, it is recommended that two water reclamation facilities be utilized to provide service to the area in question. With the exception of the landfill and land near State Route 85, the majority of land south of Patterson Road is not annexed and does not currently have any pre-annexation agreements in place. Land ownership in the northern portion is established as part of the Town of Buckeye or in the process of becoming part of the Town.

In addition, development is currently focused to the north and therefore relying solely on the Gila Southwest WRF would require the installation of as much as 9 miles of offsite sewer to deliver flows to the facility, a significant cost increase to the developers, given the Town's traditional financing mechanism that requires the developers to fund infrastructure improvements.

APPENDIX T

HASSAYAMPA NORTH WATER RECLAMATION FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

Hassayampa North WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 8,510 persons in 2030 based on the 2007 POPTAC population estimates and 75,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Hassayampa North WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 1.2 MGD for Phase 1 to 9.4 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 13** in **Appendix B**.	Figure 13, Appendix B
Describe the type and capacity of the recommended WWT plant.	The WRF will be a multi-phase sequencing batch reactor. The treatment train will include preliminary screening, biological treatment using the activated sludge process, clarification, nitrification/denitrification, filtration and UV disinfection. The facility may also incorporate sludge storage, treatment, and processing capabilities. The plant will be equipped with odor and noise control and other aesthetic measures in accordance with AAC Title 18. Once flows approach approximately 5 MGD, the facility will be planned to upgrade to one of four Bardenpho alternative technologies. The WRF is anticipated to have an ultimate capacity of 9.4 MGD.	Section 5.4, Page 50
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the facility or any expansions. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WRF.	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	Effluent generated by the facility may be recharged and reused. Reclaimed water may be used for landscape irrigation and other potential uses as agreed by the Town of Buckeye and in accordance with the Reuse of Reclaimed Wastewater permit. An AZPDES permit may be obtained for planned and emergency discharges, which will be coordinated through ADEQ. It is anticipated that effluent will be discharged to the Hassayampa River under the AZPDES permit.	Section 6.9.5, Page 72

Hassayampa North WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A
Describe ownership of land proposed for plant sites and reuse areas.	The Town of Buckeye will ultimately own the land for the facility. Other public or private entities may own the reuse areas.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The initial phase (1.2 MGD) of the Hassayampa North WRF is anticipated to begin construction in 2029 and be operational in 2030. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town and as required by development until the facility reaches the ultimate capacity of 9.4 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no known financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the facility will treat wastewater only. The plant will not receive runoff from adjacent properties. During construction, storm water flows will be managed under an AZPDES temporary discharge permit. Storm water discharges, if any, will be subject to AZPDES storm water permitting requirements and will be addressed through the development and implementation of a site SWPPP. However, no storm water discharge is expected from the site.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	Open space and/or park areas may be irrigated using the treated effluent in accordance with ADEQ reuse requirements, the Arizona Groundwater Code and rules for water augmentation.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A

Hassayampa North WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility will require an AZPDES permit, APP, permit for the Reuse of Reclaimed Wastewater, and an Air Quality permit. Additionally, coordination with the Town of Buckeye and MCESD will be required to obtain an approval to construct, approval of construction, and architectural and building permits.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions are anticipated for the required AZPDES permit. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	The Town of Buckeye or its designated agent will be responsible for obtaining the necessary permits from the ADEQ as required for the initial phase of the facility. ADEQ will be notified and a preapplication meeting will be scheduled once the design of the facility commences.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Significant industrial users are not anticipated in the service area outlined. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Sludge will be dewatered via belt filter press or other acceptable technology. Aerobic digestion will be provided to meet Class B quality requirements. Biosolids produced by the facility will be of a sufficient quality to meet the applicable requirements for the selected final disposition. A licensed sludge hauler and sludge disposal permit will be obtained, as necessary.	Section 5.1.5, Pages 43-44

Hassayampa North WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	The initial phase (1.2 MGD) of the Hassayampa North WRF is anticipated to begin construction in 2029 and be operational in 2030. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	The Town of Buckeye will ultimately own and operate the Hassayampa North WRF.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility and its expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80

Hassayampa North WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Describe proposed method(s) of community financing.	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	The initial phase (1.2 MGD) of the Hassayampa North WRF is anticipated to begin construction in 2029 and be operational in 2030. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town, and as required by development until the facility reaches the ultimate capacity of 9.4 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81

Hassayampa North WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. Homes will not be occupied prior to the operational completion and approval of the Hassayampa North WRF. Wastewater flow will not be generated until the WRF is operational in either its initial phase, or under a low flow treatment alternative.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

APPENDIX U

SUN VALLEY WATER RECLAMATION FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

Sun Valley WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 14,542 persons in 2030 based on the 2007 POPTAC population estimates and 120,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Sun Valley WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 1.2 MGD for Phase 1 to 13.2 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 15** in **Appendix B**.	Figure 15, Appendix B
Describe the type and capacity of the recommended WWT plant.	The WRF will be a multi-phase sequencing batch reactor. The treatment train will include preliminary screening, biological treatment using the activated sludge process, clarification, nitrification/denitrification, filtration and UV disinfection. The facility may also incorporate sludge storage, treatment, and processing capabilities. The plant will be equipped with odor and noise control and other aesthetic measures in accordance with AAC Title 18. Once flows approach approximately 5 MGD, the facility will be planned to upgrade to one of four Bardenpho alternative technologies. The WRF is anticipated to have an ultimate capacity of 13.2 MGD.	Section 5.4, Page 50
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the facility or any expansions. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WRF.	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	Effluent generated by the facility may be recharged and reused. Reclaimed water may be used for landscape irrigation and other potential uses as agreed by the Town of Buckeye and in accordance with the Reuse of Reclaimed Wastewater permit. An AZPDES permit may be obtained for planned and emergency discharges, which will be coordinated through ADEQ. It is anticipated that effluent will be discharged to the Hassayampa River or White Tanks Wash under the AZPDES permit.	Section 6.9.6, Pages 72-73

Sun Valley WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A
Describe ownership of land proposed for plant sites and reuse areas.	The Town of Buckeye will ultimately own the land for the facility. Other public or private entities may own the reuse areas.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The initial phase (1.2 MGD) of the Sun Valley WRF is anticipated to begin construction in 2008 and be operational in 2009. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town and as required by development until the facility reaches the ultimate capacity of 13.2 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no known financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the facility will treat wastewater only. The plant will not receive runoff from adjacent properties. During construction, storm water flows will be managed under an AZPDES temporary discharge permit. Storm water discharges, if any, will be subject to AZPDES storm water permitting requirements and will be addressed through the development and implementation of a site SWPPP. However, no storm water discharge is expected from the site.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	Open space and/or park areas may be irrigated using the treated effluent in accordance with ADEQ reuse requirements, the Arizona Groundwater Code and rules for water augmentation.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A

Sun Valley WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility will require an AZPDES permit, APP, permit for the Reuse of Reclaimed Wastewater, and an Air Quality permit. Additionally, coordination with the Town of Buckeye and MCESD will be required to obtain an approval to construct, approval of construction, and architectural and building permits.	Section 7.0 (Table 7.1), Page 77
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions are anticipated for the required AZPDES permit. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	The Town of Buckeye or its designated agent will be responsible for obtaining the necessary permits from the ADEQ as required for the initial phase of the facility. ADEQ will be notified and a preapplication meeting will be scheduled once the design of the facility commences.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Significant industrial users are not anticipated in the service area outlined. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Sludge will be dewatered via belt filter press or other acceptable technology. Aerobic digestion will be provided to meet Class B quality requirements. Biosolids produced by the facility will be of a sufficient quality to meet the applicable requirements for the selected final disposition. A licensed sludge hauler and sludge disposal permit will be obtained, as necessary.	Section 5.1.5, Pages 43-44

Sun Valley WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	The initial phase (1.2 MGD) of the Sun Valley WRF is anticipated to begin construction in 2008 and be operational in 2009. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area.	Section 8.0 and Section 10.0, Page 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	The Town of Buckeye will ultimately own and operate the Sun Valley WRF.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility and its expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80

Sun Valley WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Describe proposed method(s) of community financing.	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	The initial phase (1.2 MGD) of the Sun Valley WRF is anticipated to begin construction in 2008 and be operational in 2009. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town, and as required by development until the facility reaches the ultimate capacity of 13.2 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81

Sun Valley WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. Homes will not be occupied prior to the operational completion and approval of the Sun Valley WRF. Wastewater flow will not be generated until the WRF is operational in either its initial phase, or under a low flow treatment alternative.	N/A
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83

APPENDIX V

WATERMAN WASH WATER RECLAMATION FACILITY DATA

Information provided in this appendix includes:

1. CWA Section 208 Checklist

Waterman Wash WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Authority		
Proposed Designated Management Agency (DMA) shall self-certify that it has the authorities required by Section 208(c)(2) of the Clean Water Act to implement the plan for its proposed planning and service areas. Self-certification shall be in the form of a legal opinion by the DMA or entity attorney.	The Town of Buckeye is the Designated Management Agency for the Buckeye Municipal Planning Area.	Section 1.0, Page 1
20-Year Needs		
Clearly describe the existing wastewater treatment (WWT) facilities:		
Describe existing WWT facilities.	There are six wastewater facilities operating within the Town of Buckeye (listed with their current constructed capacity): • ASPC-Lewis WWTP (0.75 MGD); • Central Buckeye WWTP (4.0 MGD); • Festival Ranch WRF (1.0 MGD); • Sundance WWTP (2.4 MGD); • Tartesso West WRF (1.2 MGD); and • Verrado WRF (0.45 MGD). MAG has approved 208 Plan Amendments for the Anthem at Sun Valley South, Palo Verde Road, Tartesso East and Trillium West facilities within the Town of Buckeye. The Palo Verde Road WWTP has an approval to construct from MCESD.	Section 4.1.1 and Section 4.1.2, Pages 21-27
Show WWT certified and service areas for private utilities and sanitary district boundaries if appropriate.	There are no private sewer utilities or sanitary districts within the proposed service area of this facility. The Verrado WRF is the only private sewer utility operating within the Town of Buckeye MPA and a small, localized portion of the Town of Buckeye MPA is anticipated to sewer to a wastewater facility outside of the Town of Buckeye MPA.	Section 3.1 and Figure 3, Pages 4-5 and Appendix B
Clearly describe alternatives and the recommended WRF:		
Provide POPTAC population estimates (or COG-approved estimates only where POPTAC are not available) over a 20-year period.	The estimated population of the service area for this facility is 1,629 persons in 2030 based on the 2007 POPTAC population estimates and 22,000 persons at build out based on the population projections performed as part of this study.	Section 4.2 (Table 4.5 and Table 4.6), Pages 29-33

Waterman Wash WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Provide wastewater flow estimates over the 20-year planning period.	Estimated flows range from 1.2 MGD for Phase 1 to 2.2 MGD at build out.	Section 4.3 (Table 4.7), Pages 33-34
Illustrate the WWT planning and service areas.	The planning and service area is shown in **Figure 18** in **Appendix B**.	Figure 18, Appendix B
Describe the type and capacity of the recommended WWT plant.	The WRF will be a multi-phase sequencing batch reactor. The treatment train will include preliminary screening, biological treatment using the activated sludge process, clarification, nitrification/denitrification, filtration and UV disinfection. The facility may also incorporate sludge storage, treatment, and processing capabilities. The plant will be equipped with odor and noise control and other aesthetic measures in accordance with AAC Title 18. The WRF is anticipated to have an ultimate capacity of 2.2 MGD.	Section 5.4, Page 50
Identify water quality problems, consider alternative control measures, and recommend a solution for implementation.	Through compliance with AAC Title 18, no water quality issues are anticipated for the facility or any expansions. The effluent quality will meet the A+ reclaimed water standards and will satisfy the requirements for open space irrigation. In addition, effluent water quality will comply with standards established in an AZPDES permit and AWQS.	Section 5.6, Pages 51-52
If private WWT utilities with certificated areas are within the proposed regional service area, define who (municipal or private utility) serves what area and when. Identify whose sewer lines can be approved in what areas and when.	Not applicable. There are no private wastewater utilities within the proposed service area of this facility. The Town of Buckeye will own and maintain the collection system and WRF.	Figure 3, Appendix B
Describe method of effluent disposal and reuse sites (if appropriate).	Effluent generated by the facility may be recharged and reused. Reclaimed water may be used for landscape irrigation and other potential uses as agreed by the Town of Buckeye and in accordance with the Reuse of Reclaimed Wastewater permit. An AZPDES permit may be obtained for planned and emergency discharges, which will be coordinated through ADEQ. It is anticipated that effluent will be discharged to Waterman Wash under the AZPDES permit.	Section 6.9.6, Page 73
If Sanitary Districts are within a proposed planning or service area, describe who serves the Sanitary Districts and when.	There are no Sanitary Districts within the proposed planning or service area.	N/A

Waterman Wash WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Describe ownership of land proposed for plant sites and reuse areas.	The Town of Buckeye will ultimately own the land for the facility. Other public or private entities may own the reuse areas.	Section 7.0 (Table 7.2), Pages 77-78
Address time frames in the development of the treatment works.	The initial phase (1.2 MGD) of the Waterman Wash WRF is anticipated to begin construction in 2014 and be operational in 2015. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town and as required by development until the facility reaches the ultimate capacity of 2.2 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Address financial constraints in the development of the treatment works.	There are no known financial constraints in the development of the treatment works.	N/A
Describe how discharges will comply with EPA municipal and industrial storm water discharge regulations (Section 405, CWA).	The collection system will be designed to prevent storm water infiltration and the facility will treat wastewater only. The plant will not receive runoff from adjacent properties. During construction, storm water flows will be managed under an AZPDES temporary discharge permit. Storm water discharges, if any, will be subject to AZPDES storm water permitting requirements and will be addressed through the development and implementation of a site SWPPP. However, no storm water discharge is expected from the site.	Section 7.0, Pages 77-78
Describe how open areas and recreational opportunities will result from improved water quality and how those will be used.	Open space and/or park areas may be irrigated using the treated effluent in accordance with ADEQ reuse requirements ,the Arizona Groundwater Code and rules for water augmentation.	Section 6.6, Pages 61-62
Describe potential use of lands associated with treatment works and increased access to water based recreation, if applicable.	Not applicable.	N/A
Regulations		
Describe types of permits needed, including NPDES, APP and reuse.	The facility will require an AZPDES permit, APP, permit for the Reuse of Reclaimed Wastewater, and an Air Quality permit. Additionally, coordination with the Town of Buckeye and MCESD will be required to obtain an approval to construct, approval of construction, and architectural and building permits.	Section 7.0 (Table 7.1), Page 77

Waterman Wash WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Describe restrictions on NPDES permits, if needed, for discharge and sludge disposal.	No restrictions are anticipated for the required AZPDES permit. The effluent will be sufficient to meet the Class A+ water quality standards and sludge will meet the Class B pathogen reduction requirements as outlined in AAC Title 18.	N/A
Provide documentation of communication with the Arizona Department of Environmental Quality (ADEQ) Permitting Section 30 to 60 days prior to public hearing regarding the need for specific permits.	The Town of Buckeye or its designated agent will be responsible for obtaining the necessary permits from the ADEQ as required for the initial phase of the facility. ADEQ will be notified and a preapplication meeting will be scheduled once the design of the facility commences.	Section 7.0 (Table 7.2), Pages 77-78
Describe pretreatment requirements and method of adherence to requirements (Section 208(b)(2)(D), CWA).	Significant industrial users are not anticipated in the service area outlined. In the event that an industrial user requests to discharge to this system, the Town of Buckeye would review the industrial processes involved, evaluate the request in accordance with the Town of Buckeye IPP, and implement any local limits that may be required. Under no circumstances will an industrial user be permitted to cause a violation of a water quality standard as outlined in AAC Title 18 or the Town of Buckeye IPP.	Section 5.7, Pages 52-53
Identify, if appropriate, specific pollutants that will be produced from excavations and procedures that will protect ground and surface water quality (Section 208(b)(2)(K) and Section 304, CWA).	Not applicable.	N/A
Describe alternatives and recommendations in the disposition of sludge generated (Section 405 CWA).	Sludge will be dewatered via belt filter press or other acceptable technology. Aerobic digestion will be provided to meet Class B quality requirements. Biosolids produced by the facility will be of a sufficient quality to meet the applicable requirements for the selected final disposition. A licensed sludge hauler and sludge disposal permit will be obtained, as necessary.	Section 5.1.5, Pages 43-44
Define any nonpoint issues related to the proposed facility and outline procedures to control them.	Not applicable. Nonpoint discharges from the site are not anticipated.	N/A
Describe processes to handle all mining runoff, orphan sites and underground pollutants, if applicable.	Not applicable.	N/A
If mining related, define where collection of pollutants has occurred, and what procedures are going to be initiated to contain contaminated areas.	Not applicable.	N/A

Waterman Wash WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
If mining related, define what specialized procedures will be initiated for orphan sites, if applicable.	Not applicable.	N/A
Construction		
Define construction priorities and time schedules for initiation and completion.	The initial phase (1.2 MGD) of the Waterman Wash WRF is anticipated to begin construction in 2014 and be operational in 2015. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area.	Section 8.0 and Section 10.0, Pages 79 and 81
Identify agencies that will construct, operate and maintain the facilities and otherwise carry out the plan.	The Town of Buckeye will ultimately own and operate the Waterman Wash WRF.	Section 8.0, Page 79
Identify construction activity-related sources of pollution and set forth procedures and methods to control, to the extent feasible, such sources.	Pollutants associated with construction activities are anticipated to be limited to sediment, inert materials and residual construction materials such as paint and adhesives. Construction activities will abide by all federal and state rules and regulations. Additionally, potential discharges during future expansion construction will be managed under an AZPDES SWPPP. The SWPPP will outline procedures to protect ground and surface water.	Section 8.0, Page 79
Financing and Other Measures Necessary to Carry Out the Plan		
If plan proposes to take over certificated private utility, describe how, and when financing will be managed.	Not applicable.	N/A
Describe any significant measure necessary to carry out the plan, e.g., institutional, financial, economic, etc.	The phasing of the facility and its expansion(s) will be dependent upon population increases, growing commercial development in the service area, and the resultant wastewater flows. The design and construction of the facility is therefore tied to the success of the developments within the service area, and the timing of future phases will be adjusted accordingly.	Section 9.0, Page 80
Describe proposed method(s) of community financing.	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80

Waterman Wash WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Provide financial information to assure DMA has financial capability to operate and maintain wastewater system over its useful life.	The Town of Buckeye is a municipality and has successfully owned and operated its existing WWTP.	Section 9.0, Page 80
Provide a timeline outlining period of time necessary for carrying out plan implementation.	The initial phase (1.2 MGD) of the Waterman Wash WRF is anticipated to begin construction in 2014 and be operational in 2015. The actual design and construction schedules will be dependent on the development timelines of the projects within the service area. The facility is expected to expand as determined by the Town, and as required by development until the facility reaches the ultimate capacity of 2.2 MGD.	Section 10.0 and Table 10.1, Pages 81-82
Provide financial information indicating the method and measures necessary to achieve project financing (Section 201 CWA or Section 604 may apply).	A community facilities construction district may be used as the financing mechanism for the construction of the WRF and expansions in the future. Once constructed, the facility will be operated and maintained with user fees collected from those who benefit from the service.	Section 9.0, Page 80
Implementation		
Describe impacts and implementation requirements of the plan:		
Describe impacts on existing wastewater facilities (e.g. Sanitary Districts, infrastructure/facilities, and certificated areas).	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
Describe how and when existing package plants will be connected to a regional system.	Not applicable.	N/A
Describe the impact on communities and businesses affected by the plan.	The proposed facility and any future expansions are not anticipated to impact the operation of any adjacent municipalities, businesses, communities, sanitary districts or private wastewater providers with certificated areas.	Section 10.0, Page 81
If a municipal WWT system is proposed, describe how WWT service will be provided until the municipal system is completed: i.e., will package plants and septic systems be allowed and under what circumstances (interim services).	Not applicable. Homes will not be occupied prior to the operational completion and approval of the Waterman Wash WRF. Wastewater flow will not be generated until the WRF is operational in either its initial phase, or under a low flow treatment alternative.	N/A

Waterman Wash WRF (Future)		
Requirement	**Summary of Compliance**	**See Page**
Public Participation		
Submit copy of mailing list used to notify the public of the public hearing on the 208 amendment (40 CFR, Chapter 1, Part 25.5).	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
List location where documents are available for review at least 30 days before public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit copy of the public notice of the public hearing as well as an official affidavit of publication from the area newspaper. Clearly show the announcement appeared in the newspaper at least 45 days before the hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit affidavit of publication for official newspaper publication.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83
Submit responsiveness summary for public hearing.	Public participation requirements will be satisfied through MAG.	Section 11.0, Page 83