

2015 - 2020 Resource Conservation and Open Space Element



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RESOURCE CONSERVATION AND OPEN SPACE ELEMENT

Introduction

Thoughtful planning and resource management will enable the City of Barstow to preserve and enhance the community while assuring that its growth occurs in balance with preservation of open space and natural resources. The Conservation and Open Space Element is intended to provide for the inclusive long-term preservation and conservation of valuable natural resources and open space located within the General Plan study area. The Element identifies the location of important natural resources including water, minerals, scenic vistas and recreational opportunities and sets forth guidelines for the protection and conservation of such resources.

Background

Conservation and open space have been integrated into one comprehensive element of the General Plan. The Conservation and Open Space Element meets the State requirements for Conservation and Open Space Elements as defined in Sections 65301(e), 65302(d), 65302(e), 65303, 65560, 65561, 65562, 65563, 65564, 65566, and 65567 of the Government Code.

- According to these requirements, the Conservation Element must contain goals and policies to protect and maintain natural resources such as water, soils, wildlife, and minerals, and prevent wasteful resource exploitation, degradation, and destruction. The Conservation Element must also address the protection of cultural resources, including archaeological resources, historic resources and Native American cultural resources.
- According to these requirements, the Open Space Element must contain goals and policies to manage open space areas, including undeveloped lands and outdoor recreation areas. Specifically, the Open Space Element must address several open space categories such as those used for the preservation of natural resources and managed production of resources.

PURPOSE

The purpose of the Conservation and Open Space Element is to provide the public, decision makers and staff members with guidelines and policies for identifying resources that should be preserved, thereby establishing a foundation for preservation of these resources using a variety of tools that will promote conservation and environmental sustainability throughout the Barstow planning area.

The Conservation and Open Space Element sets forth policies that focus on the protection and enhancement of open space and natural resources to ensure a high quality living environment in the City of Barstow. With this in mind, the Conservation and Open Space Element is developed to:

- Recognize and identify the various natural resources that the City of Barstow possesses.
- Acknowledge the value and importance of the natural environment.
- Develop policies that promote the conservation of energy, air, water, and natural resources and in doing so enhance the overall quality of life in Barstow.
- Promote actions and activities that will prevent or eliminate damage to the environment by adopting sustainable practices and effective waste management.
- Ensure long-term economic, social and environmental vitality by protecting our resources and adopting sustainable practices.
- Recognize and highlight the interconnectedness and relationship between the health of our open spaces, wildlife, native vegetation, and ecosystems, and the health of our human environment with regard to air, water, energy consumption and waste management.

This Element is divided into the following sections:

Water and Air Resources
Biological Resources
Cultural Resources
Mineral and Soil Resources
Energy and Sustainable Practices
Open Space
Goals, Policies and Implementation Strategies

WATER AND AIR RESOURCES

This section of the Conservation and Open Space Element of the General Plan addresses water sources, availability, current and future demand, conservation, and water quality as well as the future of the water resources serving the community. A discussion of regional and local water supplies, consumptive demand within the City and Sphere-of-Influence, groundwater conservation and protection is also included.

The City of Barstow is located within the Mojave River Basin. This water basin is an adjudicated system with the Mojave Water Agency acting as the court appointed Water Master. Mojave Water Agency (MWA) is also the state water contractor for this area. The City is located within the centro sub-basin of the Mojave River. Mojave Water Agency adopted its Integrated Regional Water Management Plan (IRWMP) in 2014. The IRWMP is a collaborative effort to manage the water resources in the high desert region. The management policies include quality as well as quantity of water available to the citizens of the area. The IRWMP and the applicable policies and mitigations are herein adopted as part of this General Plan Update.

Most of the Planning Area currently receives water from the Golden State Water (GSW) Company. The Golden State Water Company updated its Urban Water Master Plan for the Barstow System in July of 2011.

The local water distribution system is in significant need of improvements due to aging and deteriorating lines in the older parts of the planning area, in addition to lines throughout the area that are undersized for meeting current fire flow demands. The undeveloped portions of the City are currently unserved by the system. GSW has indicated, however, that extension of existing water mains will provide future development with access to water resources.

Population and household growth between the present and the General Plan horizon year of 2020 will result in marginal increases in water demand. If such growth occurs at the two percent annual rate forecast under the plan the City's population will increase approximately 10 percent by 2020. Assuming that this growth occurs within homes and developments that are designed for reduced water use (i.e. low-flow toilets, showers and appliances, xeriscape, etc.) the actual increase in water use likely to occur in association with this new development should be on the order of seven to eight percent.

Water distribution is an intricate system that requires maintenance and upgrading as growth occurs. Currently, improvements made to the existing system and the construction of facilities added to the system is financed through water rates charged to customers, augmented by contributions paid by developers.

The City requires that:

- Water design requirements for new development are subject to the provisions of site plan review by the City of Barstow and approval by Golden State Water.
- Water distribution system improvements be constructed prior to or concurrent with future development as required.
- All City ordinances or other actions regulating the use of water approved by the City Council are implemented by all new development.
- Water conservation measures recommended by the California Department of Water Resources are incorporated in all new or substantially rehabilitated projects as appropriate, including:
 - Low flush toilets of no greater than 1.6 gallons per flush.

- Low flow shower heads.
- Insulation of hot water lines to provide hot water faster with less water waste and to keep hot pipes from heating cold water pipes.
- Water pressures greater than 65 pounds per square inch are reduced to less than 65 pounds per square inch by means of a pressure reducing valve.
- Landscaping with low water consuming or water efficient plants in all projects. Landscaped areas should also be mulched to the maximum extent to reduce evaporation and maintain soil moisture.
- Installation of efficient irrigation systems that minimize runoff and evaporation, and maximize the water that will reach the plant roots. Drip irrigation, soil moisture sensors and automatic irrigation systems are a few methods to consider in increasing irrigation efficiency, as per existing City policy.

Wastewater Treatment, Reclaimed Water and Groundwater Recharge

Wastewater typically undergoes two levels of treatment before it is released to percolation ponds and reintroduced into the groundwater table. The treatment and use of reclaimed and recycled water has the potential for reducing the impacts of development on groundwater resources. No reclaimed water or tertiary treated wastewater is currently available to Barstow or the planning area at this time and it is not anticipated that it will become available by the 2020 General Plan horizon year.

The existing wastewater collection system consists primarily of vitrified clay pipe and concrete pipe but includes truss, polyvinyl chloride (PVC), and cast iron pipe. The oldest portions of the collection system were apparently constructed around 1939. Barstow wastewater treatment facilities have a combined secondary treatment capacity of 4.5 million gallons per day (MGD). The existing treatment facilities include aeration basins and secondary clarifiers. A major renovation and expansion of the existing plant facilities was begun in 2014 and is expected to be completed in 2015. This project will improve the wastewater treatment facilities at the plant, increasing its capacity and thereby enabling the plan to accommodate future planned development.

The City is currently (2014) in the process of a comprehensive update to its Capital Improvement Program. This update will identify system-wide current and future needs and define methods to address those needs.

The City requires that:

- All new development in its jurisdiction must obtain approval from the City of Barstow prior to occupancy. Evidence of the Barstow Wastewater treatment facility's ability to serve the project site shall be submitted prior to the issuance of building permits.
- Implementation of the water conservation measures presented in this document also will reduce per unit sewage flows.

STORM WATER

The National Pollutant Discharge Elimination System (NPDES) Permit (amended from the Clean Water Act, in 1972), established that discharge of pollutants to waters of the United States from any point source is unlawful unless the discharge is in compliance. In 1990, the U.S. Environmental Protection Agency (USEPA) provided regulations for storm water discharges associated with construction and land disturbance activities. In addition, the agency incorporated a Municipal Separate Storm Sewer Systems (MS4) Permitting Program, commonly known as MS4-Phase I for larger cities. By 1999, federal and state permits decreased the construction/land disturbance requirement from five acres to one acre. In 2003, as part of the next phase for the MS4 permit, Phase II provided coverage for smaller municipalities and included non-traditional Small MS4s (military bases, public campuses, prisons and hospitals). In 2014, the City of Barstow applied for the MS4-Phase II permit and at present is integrating these requirements into the local storm water management plan.

The City of Barstow enforces new projects to adhere to the most current Construction General Permit (CGP). Concurrently, the City of Barstow is establishing Low Impact Development (LID) Standards and Municipal Codes and Enforcement Measures to meet all the water quality requirements of the Phase II MS4. Individual Permits, Industrial Stormwater Management and Non-Traditional Small MS4 Permits are project specific and are managed by project owners/management and regulated by the assigning jurisdiction(s).

Under the CGP:

The developer will be required to comply with the latest edition of the California Construction General Permit (CGP). This permit includes the preparation of an Erosion Control Plan and Storm Water Pollution Prevention Plan (SWPPP), submittal of a Notice of Intent (NOI) application, and payment of required fees submitted on the Storm Water Multiple Application and Report Tracking System (SMARTS) online tool. Upon receipt of a Waste Discharge Identification (WDID) Number by the State Water Board, and approval of plans by the requisite City departments, developers may obtain grading or other permits to begin land disturbance activities.

Under the MS4 Permit:

The City of Barstow will require the developer to comply with City of Barstow Development Standards that incorporate site design with approved Low Impact Development (LID) Standards. The developer shall prepare as part of plan submittal a Water Quality Management Plan (WQMP) for the proposed project. Upon approval of the WQMP, the project's Legally Responsible Owner (Land Owner/Development Owner) must sign and record the necessary documents attached to the WQMP.

The City of Barstow will require the developer to provide an Erosion Control Plan for all new projects of any size. Plans must include construction waste disposal and recycling measures.

New projects that are subject to the Construction General Permit must provide an Erosion Control Plan, prepared in accordance to the CGP as part of plan submittal and review. Erosion

Control Plans shall include construction waste disposal and recycling measures. The city reviewer may request a copy of the SWPPP for clarification. Review intensions are for best management practices (BMP) suitability only, and it will remain the responsibility of the signing Qualified SWPPP Developer (QSD) and Legally Responsible Person (LRP)/Owner for adequacy and compliance. The developer will be required to provide a WDID number issued by the State Water Board to obtain final city approval and issuance of grading and building permits, or other forms of notices to proceed.

The developer must agree to provide access to the city appointed Qualified SWPPP Developer (QSD) or Qualified SWPPP Practitioner (QSP) to the project site and its surrounding areas during normal construction hours and activities. The city appointed QSD or QSP will conduct a city designed Best Management Practices (BMPs) Inspection, without notice or scheduled arrival. Non-compliance issues will be handled according to severity, and per the CGP/MS4 requirements, Lahontan Regional Water Control Board, state and federal regulations.

Flooding

Barstow is situated on alluvial deposits dissected by numerous small intermittent streams. The primary hydrologic feature within the planning area is the Mojave River which originates in the San Bernardino Mountains. The River flows in a northeasterly direction finally emptying into Soda Lake. The flow of the Mojave River is seasonal though it carries discharges from Lake Arrowhead, Silverwood Lake, and Mojave Forks Reservoir.

Local hydrology consists of small intermittent streams draining the hills located to the north and south of the City and emptying into the Mojave River. Water reaching the Mojave River is carried eastward out of the City limits. The highest elevation within the corporate limits is 2,720 feet, located near Barstow College. The lowest point of the City is 2,069 feet in the flowline of the Mojave River to the northeast. Elevations for most of the developed area of the City range from 2,100 to 2,400 feet.

The Mojave River is typical of major Southern California drainage courses. The drainage area is 1,290 square miles and has the potential of carrying large discharges, generated from major storms, although it is a dry sand wash most of the time. This apparent lack of water has resulted in a dangerous condition with development occurring in the flood plain without the realization of the flood potential. Recent major floods occurred in 1969, 1982 and 1993, all of which caused flooding of the residential area along Crooks Avenue adjacent to the Mojave River.

The Flood Insurance Study performed by the Federal Emergency Management Agency (FEMA) in August of 2008 and updated in September of 2014, identified the principal flooding problems affecting the City. The Study indicated that flood water from the Mojave River had the greatest potential for causing flood-related damage to the City. The Study also stated a similar situation exists for several channels that direct flows from the adjacent hillsides into the Mojave River.

The City of Barstow contains flood plain areas, identified by the Federal Emergency Management Agency (FEMA), indicating that several areas of the City subject to 100-year floods

including: the Mojave River Channel, the Lenwood area, and the southeastern section of South Barstow. The National Flood Insurance Program has identified and mapped those areas of the City that are at risk due to periodic flooding. The Flood Insurance Rating Map (FIRM), Exhibit RC-1, shows areas designated for flood insurance and flood plain management applications.

Flood zone designations indicated on the map refer to specific areas which may be subject to flooding, based on engineering and hydrologic studies. The map identifies 100-year (1% annual chance or base flood) and 500-year (0.2% annual chance) flood plains, floodways, location of selected cross-sections used in the hydrologic studies, and the anticipated flood-water depths. The following flood zone designations are found on the Flood Insurance Rate Map produced for the City of Barstow:

- Zone A:** Areas subject to flooding in the event of a 100-year flood though Base Flood Elevations and flood hazard factors have not been determined.
- Zone AE:** Areas subject to flooding in the event of a 100-year flood, Base Flood Elevations determined
- Zone AO:** Areas subject to shallow flooding (one to three feet) in the event of a 100-year storm.
- Zone X (shaded):** Areas subject to flooding in the event of a 500-year (0.2% annual chance) flood; areas subject to a 100-year flood (1% annual chance) with average flood-water depths anticipated to be less than one foot or with drainage areas less than 1 square mile; or areas protected from the base flood by levees.
- Zone X (unshaded):** Areas determined to be outside the 500-year (0.2% annual chance) floodplain.

Storm Drains

The City's storm drainage system is shown on Exhibit RC-2. The Barstow Master Plan of Drainage, addresses drainage problems in the City, and recommends a master drainage system to resolve these problems. The plan shows new drainage facilities in areas that are subject to damage due to the flood waters of a 100-year flood. These facilities will not entirely resolve flooding issues, because other problems exist in areas that carry much less than the amount of flood water that necessitate localized facilities. A development program that includes small, localized facilities along with curbed streets will help solve these localized flooding problems that are not addressed by the City's Master Plan. Flood control measures have recently been completed and are currently being addressed in the City's comprehensive Capital Improvement Program update.

Additional development within the planning area will increase runoff which in turn may impact the carrying capacity of existing storm drain facilities. These facilities could be significantly affected, due to the construction of additional impervious surface improvements. Future projects will be required to address the increase in runoff flows due to their development.

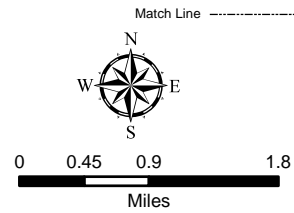
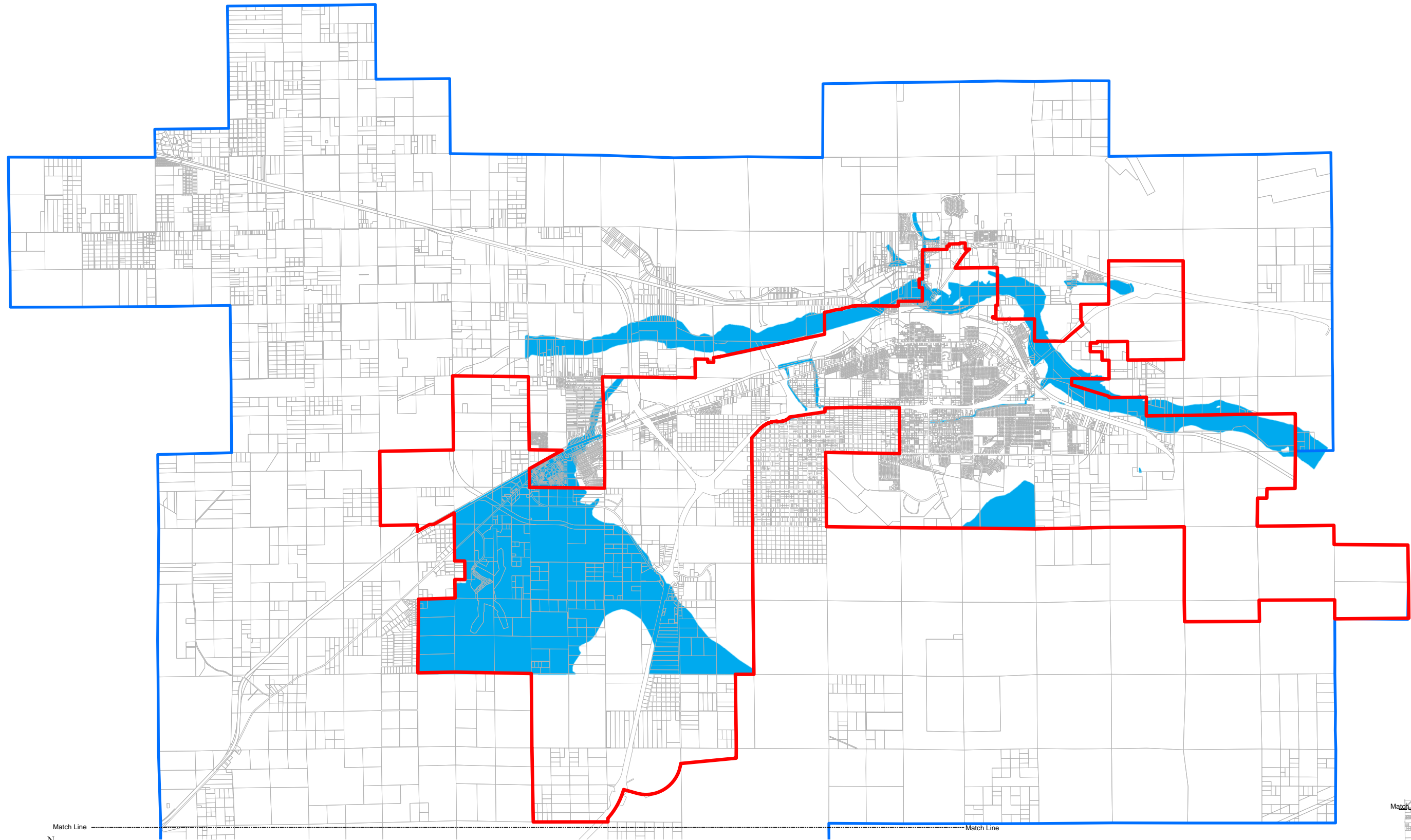


Exhibit RC-1
Flood Insurance Rating Map (FIRM)

Legend

City Limits

Sphere of Influence

100 Year Flood Zones

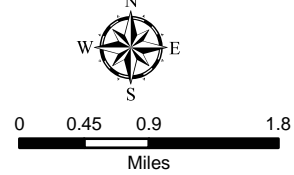
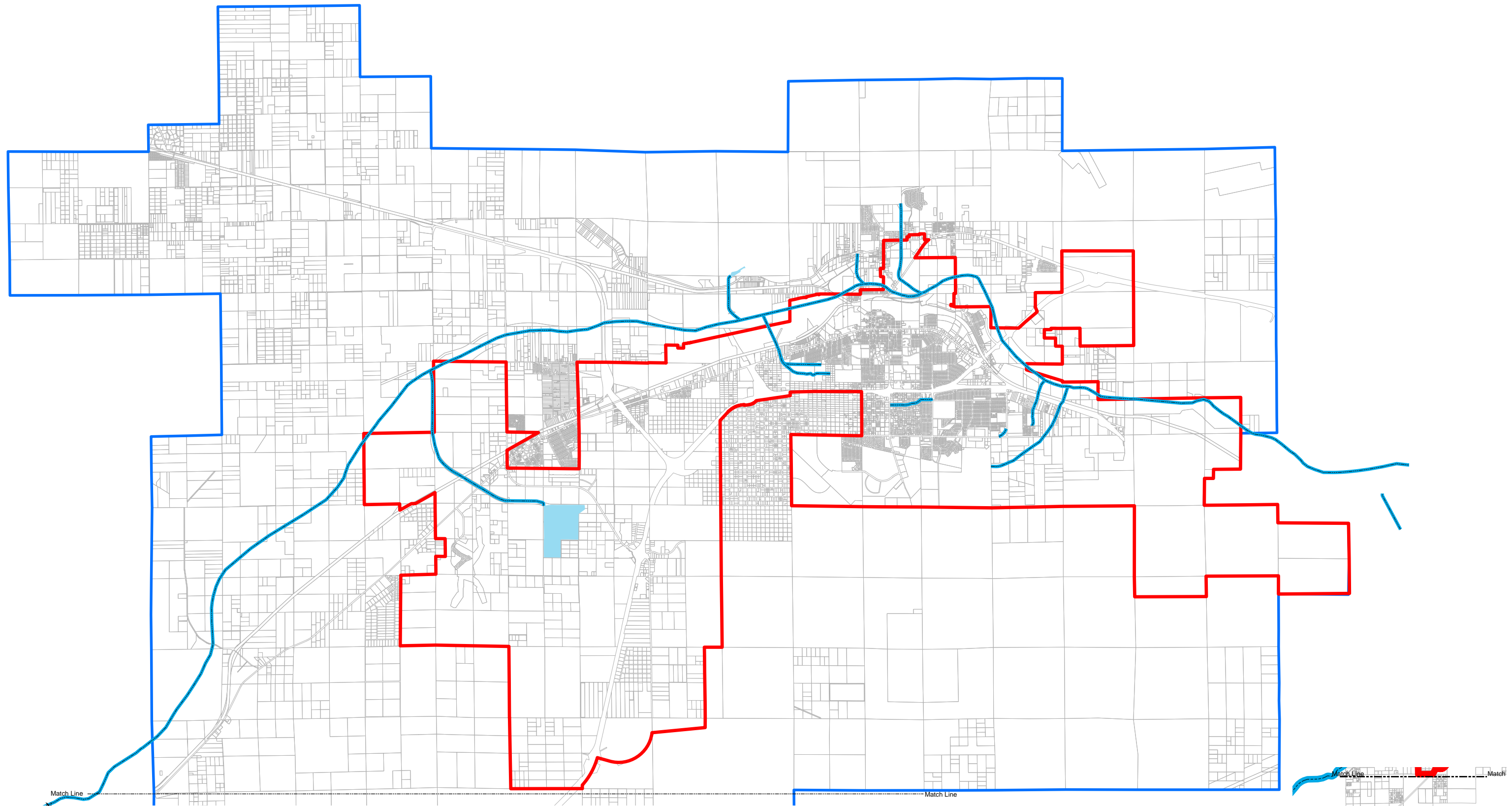


Exhibit RC-2
Storm Drainage Facilities

Source: San Bernardino County GIMS - Public Works 2014

Legend

- ▭ City Limits
- ▭ Sphere of Influence
- ▭ Spreading Basin
- ↘↗ Channels

The City requires that:

- Development design shall include measures to ensure adequate drainage, including construction of open or closed conveyance structures. Development projects of more than 1 acre must obtain an NPDES General Construction Stormwater Permit by submitting a Notice of Intent (NOI) to the State Water Resources Control Board before beginning construction.
- New development or significant rehabilitation is required to pay impact fees in accordance with the City's drainage impact fee program.
- New development is required to submit a preliminary hydrology/drainage study encompassing both off-site and on-site drainage at the time of initial submittal of plans to the city for review. The study shall be performed in accordance with the latest version of the San Bernardino County Hydrology Manual and any addenda. Rainfall data shall be obtained from the latest version of the National Oceanic and Atmospheric Administration (NOAA) National Weather Service Atlas. Hydrological soil properties shall be mapped and obtained from the United States Department of Agriculture, Natural Resources Conservation Service's Web Soil Survey. The study shall be provided to the Engineering Department of the City of Barstow for review and comments that may affect site development.
- Site development shall incorporate Low Impact Development practices and shall comply with all hydrological conditions required by the Engineering and Planning Departments of the City.

AIR QUALITY

The City's location within the Mojave Desert has allowed its residents to enjoy clear skies and favorable weather conditions due to the elevation, prevailing winds and distance to more densely developed cities.

Smog, contaminants and other Impacts to healthy air quality are not as prevalent in the City as they are in cities below the Cajon Pass. Strategies including incorporation of design features into new development, businesses and minimizing fugitive dust generation will help reduce air quality impacts and enhance the desired livability of the City.

The City is located within the Mojave Desert Air Basin, an assemblage of mountain ranges and valleys with a geographic area that incorporates most of San Bernardino County, and parts of Los Angeles County, Kern County and Riverside County. The San Gabriel Mountains and the San Bernardino Mountains separate the Mojave Desert Air Basin from the San Bernardino Valley and the South Coast Air Quality Management District.

The Mojave Desert Air Basin is a "non-attainment" area for federal and state air quality standards for ozone and state standards for particulate matter less than 10 microns and 2.5 microns in diameter (PM10 & PM2.5) excluding some areas in the western portions of the Mojave Desert Air Quality Management District. Additionally, because Barstow exceeded state and/or federal standards for ozone and nitrogen dioxide for several days in 2012 the City is defined by law as a nonattainment area for these pollutants as well.

The Mojave Desert Air Quality Management District (MDAQMD), regulates air quality improvement programs within the basin, and works to improve regional air quality to achieve federal and state standards. The District comments on all air quality and related matters within its jurisdiction, and provide comments regarding air quality impacts from projects. The City has continued to work with the MDAQMD and in accordance with the applicable Air Quality Management Plan to improve regional air quality. The City's air quality is largely impacted by significant concentrations of ozone and particulate matter. Local air quality is determined by the type and amount of contaminants emitted into the atmosphere, the size and topography of the air basin and weather conditions particularly, wind speed and direction. Ozone and particulate matter monitors located in the City reveal both contaminants exceeding federal and state ambient air quality standards, although ozone concentrations have decreased over the years. However, it has been recognized by the California Air Resources Board that these ozone concentrations are largely influenced by prevailing winds transporting ozone from other downwind regional sources and affecting local readings.

Photochemical ozone modeling conducted by the South Coast Air Quality Management District and California Air Resources Board indicates that the basin would be in compliance of standards without the influence of the transported air pollution from other upwind regions.

Particulate matter concentrations have fluctuated historically but the annual average concentrations are generally over the state standards. The City is impacted significantly by fugitive dust primarily from unpaved roads, construction activities, and local disturbed areas. These particulates can have an adverse impact on sensitive receptors in the population including children, the elderly, persons with respiratory or cardiovascular illness, and people exercising outdoors. Primary sources of air pollution within the City include, but are not limited to:

- Vehicles idling in heavy traffic congestion, such as those crawling along the freeways during peak hours of the day, which contribute to excessive exhaust
- Common sources of fine particulate matter, PM10 & PM 2.5, including road dust, construction activity, grading, and fireplaces
- Other sources of air pollution such as auto repair businesses, dry cleaners, and businesses that regularly use chemical solvents.

The City contains several logistics and warehousing uses that have heavy trucking operations. However, the local air quality conditions result largely from sources outside the immediate area, as prevailing winds carry air pollution from the valleys south of the Cajon Pass and west of the Tehachapi Mountains.

The City has recently adopted a local alternative energy ordinance that will encourage and facilitate production of clean energy for local homes and businesses. The implementation of these renewable energy sources in residential, commercial, and industrial developments will lessen the City's energy consumption, thereby decreasing the amount of air pollutants generated. In addition, the utilization of recycling programs in the City will further reduce air pollutant emissions because new products will not have to be produced.

A Climate Action Plan is proposed for adoption by the City sometime after the adoption of the General Plan Update which will further address reductions of greenhouse gas emissions. Additional information concerning local air quality and greenhouse gases can be found in the technical reports that are included as attachments to the General Plan Master Environmental Impact Report.

BIOLOGICAL RESOURCES

A map of biologically sensitive areas is presented as Exhibit RC-3 and a table describing the process for assessing biological resources in relation to development is presented as Table RC-1. Conservation of unique and valuable habitat is increasingly important due to the number of federally listed species in the region.

West Mojave Habitat Conservation Plan

The West Mojave Conservation Plan was developed by the Bureau of Land Management and is the largest habitat conservation plan ever developed in the United States, encompassing 9.3 million acres of land within San Bernardino (including Apple Valley), Kern, Los Angeles, and Inyo counties. This plan provides a comprehensive strategy to conserve and protect state and federally listed species, as well as other special status species and their habitats.

Conservation of lands for specifically covered species, like the Desert Tortoise, Mohave Ground Squirrel, Le Conte's Thrasher, Burrowing Owl, etc., is mandated in the framework of this plan. The approved West Mojave HCP is currently only applicable to federal lands. The private lands HCP will have a significantly reduced scope when compared to the federally adopted West Mojave HCP.

Habitat Protection

Habitat protection, along with land conservation and ecosystem management, provides for maximum biological diversity, ensuring the long-term protection of all species. Over the last few years, advances in the field of conservation biology have given rise to a new discipline of restoration ecology, which seeks to repair or reconstruct ecosystems that have been damaged by human or natural forces. Restoration of degraded natural communities is an important factor in reversing habitat loss and improving wildlife diversity and ecosystem functions. However, the preservation of intact environmental systems, natural communities, and habitats before they are degraded provides greater surety that these values do not have to be eventually recreated at a greater cost to the City. An important element in habitat preservation and restoration is the connectivity of that habitat with the greater ecological system.

Habitat fragmentation is a severe threat to species survival. Fragmentation of natural communities results in an overall decrease in habitat and creates isolated pockets of natural land surrounded by human impacted areas. Habitat fragmentation leads to smaller populations with less genetic diversity, and reduced biodiversity. Ecosystems become unstable when fragmented and may result in negative changes, including increased predators, competitors and parasites. Due to urbanization and human population growth, habitat fragmentation is one of the greatest threats to species and the ecosystems upon which they rely.

PROJECT FILED with the City of BARSTOW - - - The CASE is ASSIGNED to a PLANNER

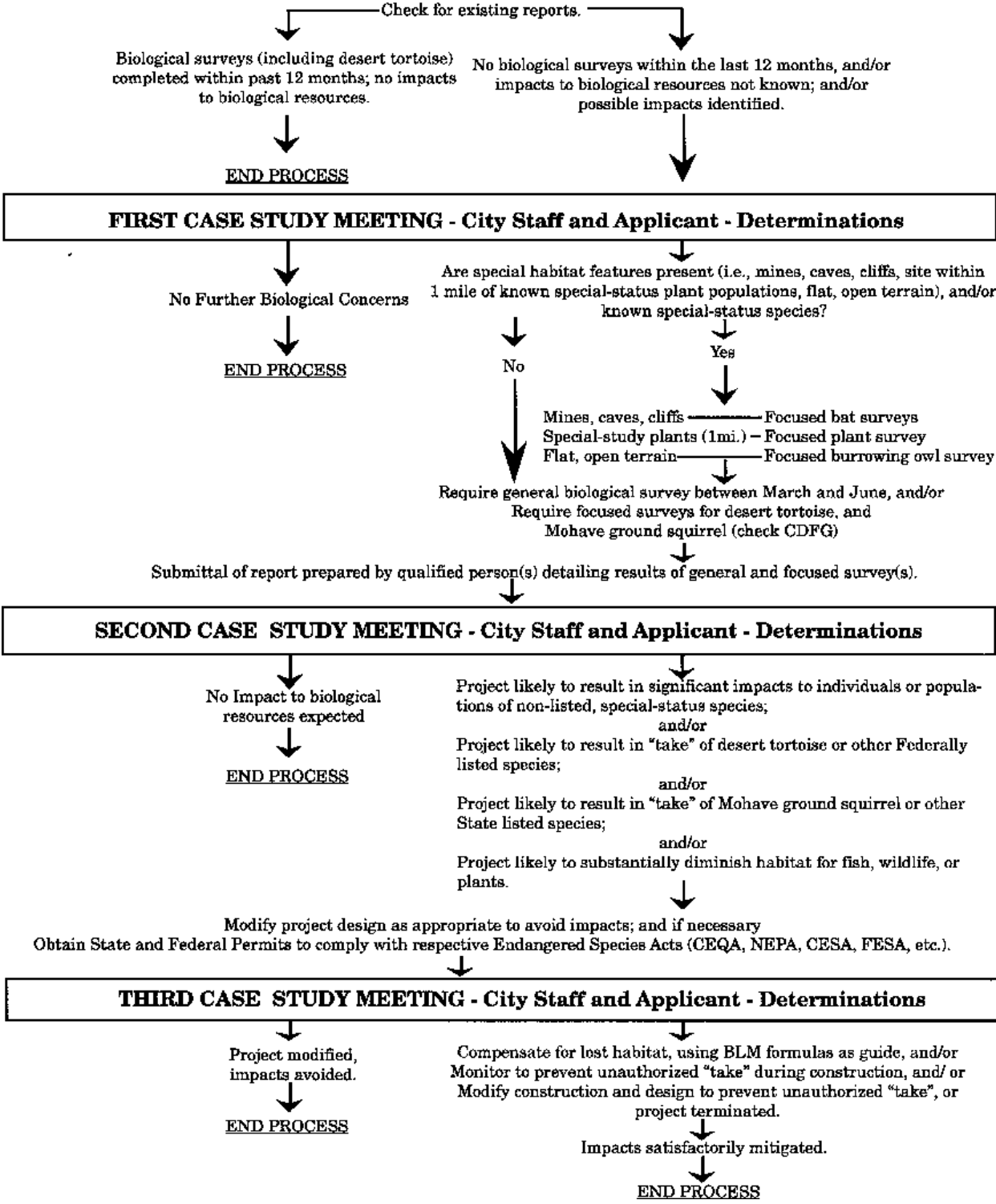


TABLE RC-1 –BIOLOGICAL RESOURCE PROCESS FLOW CHART

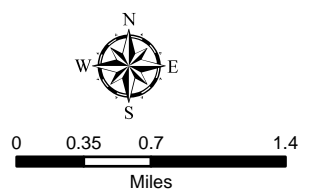
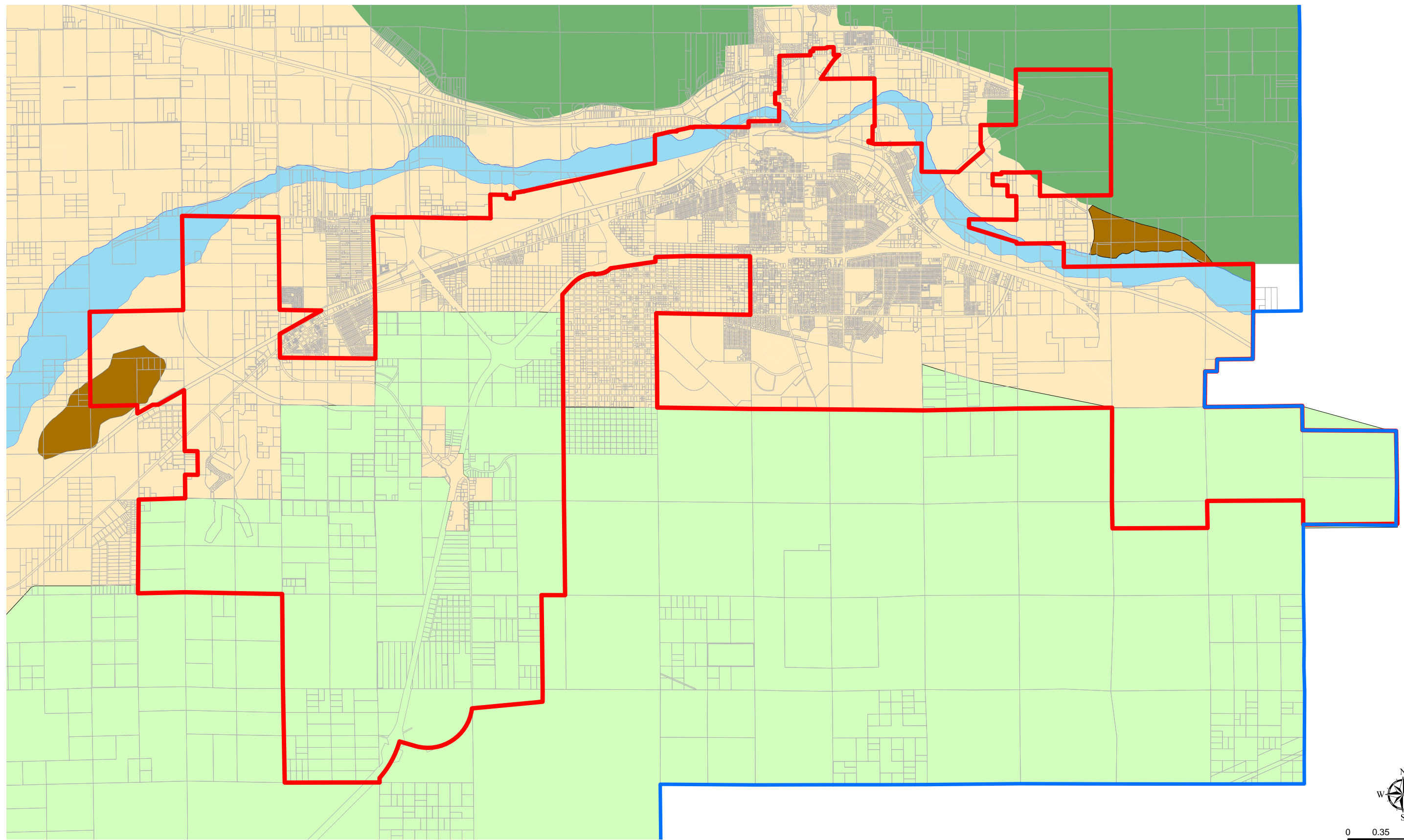


Exhibit RC-3
Biology Sensitivity

Legend
█ City Limits
█ Sphere of Influence

<ul style="list-style-type: none"> █ Critical Habitat Area █ Low Quality Habitat (Disturbed Areas) █ Mojave River 	<ul style="list-style-type: none"> █ Mesquite Hummocks █ Moderate Quality Habitat
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Habitat Connectivity

Providing an interconnected network with established corridors is crucial in minimizing biodiversity losses due to fragmentation. The City of Barstow and the Sphere of Influence contain areas of valuable habitat that support special status species. Wildlife corridors and designated special habitat areas should be preserved as open space, require species specific surveys for other land uses, and/or provide mitigation, if impacted.

The City will apply standards set forth in the CEQA Guidelines for projects within or adjacent to wildlife corridors and special habitat areas. The Mojave River corridor is an important linkage area within the central portion of the City and Sphere of Influence in that it links a number of natural communities within the planning area. Washes also can serve as important corridors for movement.

CULTURAL RESOURCES

The Barstow Planning Area has a rich heritage stretching back to prehistoric times. An important component of the General Plan is the enhancement and preservation of this heritage. Figure IV.1 defines areas which have been the subject of cultural evaluations, as well as areas requiring additional study should they be significantly impacted by future development. Table IV.1 outlines the cultural review process which must be followed by discretionary development.

Procedures for general (non-discretionary) projects will be as follows:

- If human remains are encountered during grading and other construction excavation, work in the immediate vicinity shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5.
- In the event that Native American cultural resources are discovered during project development/construction, all work in the immediate vicinity of the find shall cease and a qualified archaeologist meeting Secretary of Interior standards shall be hired to assess the find. Work on the overall project may continue during this assessment period.
- If significant Native American cultural resources are discovered, for which a Treatment Plan must be prepared, the developer or his archaeologist shall contact the Morongo Band of Mission Indians.
- If requested by the Tribe, the developer or the project archaeologist shall, in good faith, consult on the discovery and its disposition (e.g. avoidance, preservation, return of artifacts to tribe, etc.).

These procedures will be adhered to by all projects which grade or disturb soil in the City of Barstow.

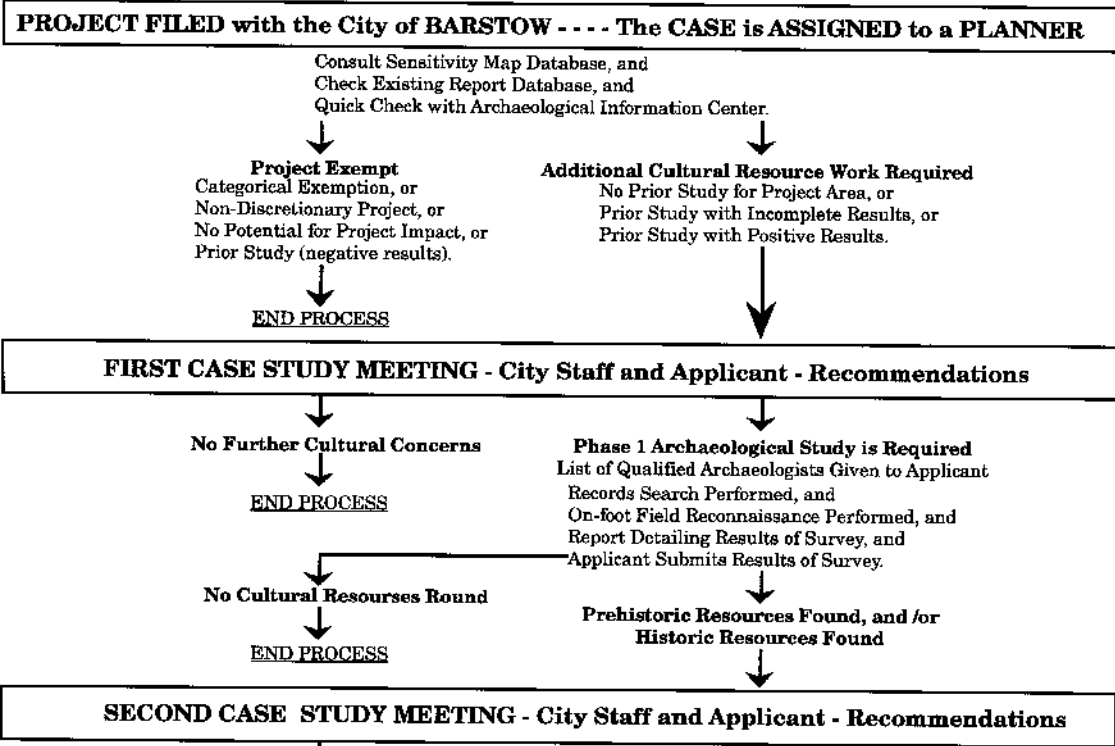


TABLE RC-2 – CULTURAL RESOURCE PROCESS FLOW CHART

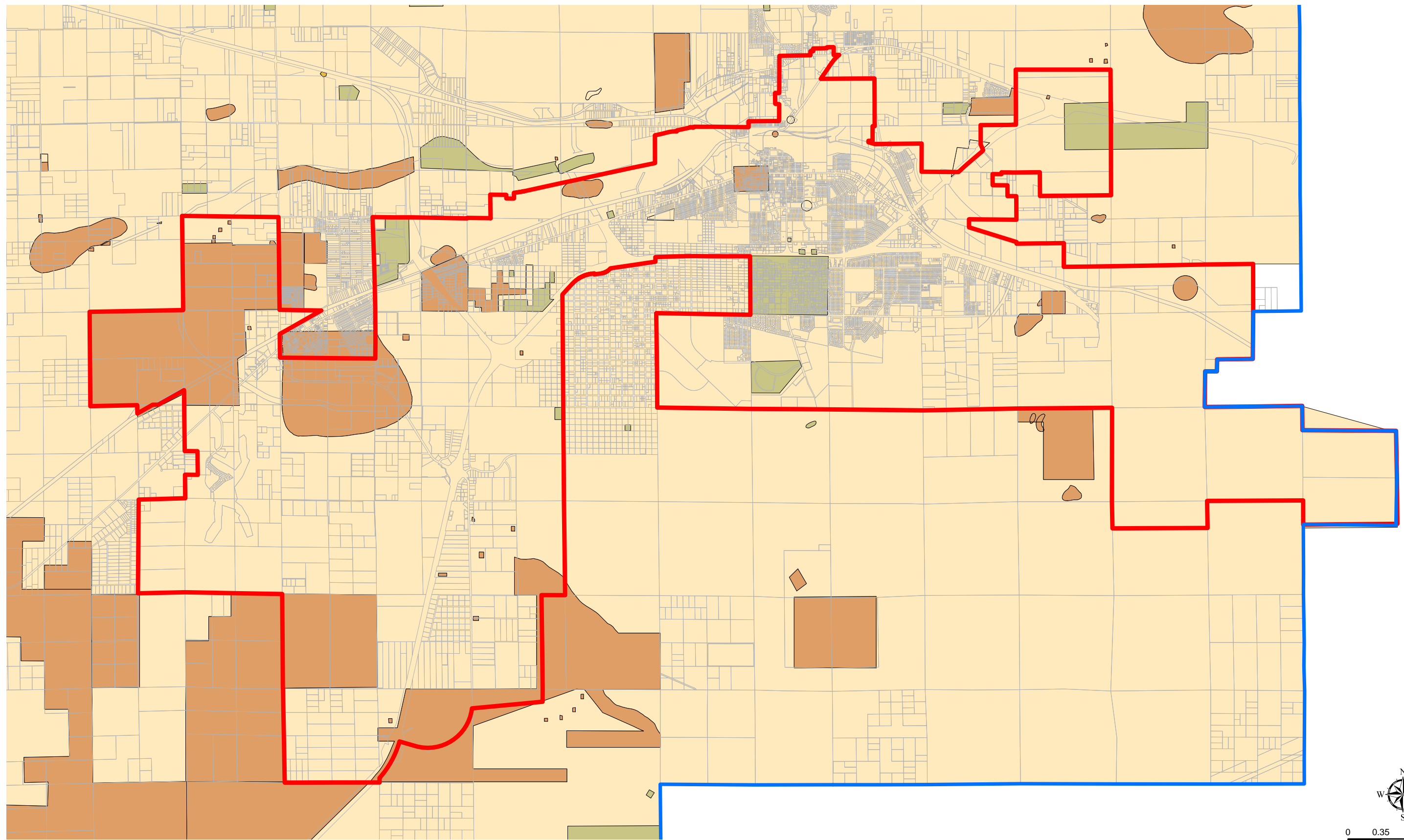


Exhibit RC-4
Cultural Resource Sensitivity

Legend
█ City Limits
█ Sphere of Influence

Area Not Surveyed
 Possible or Documented cultural resources
 Area has been surveyed and is not considered culturally sensitive. No further work necessary.

MINERAL AND SOIL RESOURCES

To protect community infrastructure and agricultural uses, conservation of specific soil types is necessary. The identification of soil types can assist in developing programs to conserve soils and protect prime agricultural lands. Although no significant agricultural lands occur within the City limits, preservation of these resources occurring in the Sphere of Influence will assure that agricultural productivity does not decline and the rural character of the City and vicinity are preserved.

Mineral resources are naturally occurring deposits that are considered useful in the production of materials. The only mineral resources actively exploited today are limestone and aggregate deposits, although there was extensive mining activity conducted between 1870 and 1900, and again in the 1930's. The region surrounding the planning area contains several notable mineral deposits. These notable mineral deposits are located north of Barstow in the Waterman Hills, northeast in the Calico Mountains, and southeast in the Newberry Mountains. Many of these mineral deposits, except for rock hounding, are presently uneconomical to develop and extract.

The only mineral resource identified by the State Department of Mines and Geology and actively being utilized within the Barstow Planning Area is aggregate for the manufacture of concrete. The study area is covered by the Department of Conservation's 2006 Geological Survey, "Aggregate Availability in California," under the heading of Barstow Victorville P-C Region which contains 133 million tons of permitted aggregate resources as of January 1st, 2006. In Barstow, the Mineral Resource Zones (MRZ) where significant mineral resources have been determined or inferred to be present are located primarily along the Mojave River and south of U.S. I-40. Most of the City, as well as the annexation areas, have been mapped within MRZs containing known mineral deposits of undetermined significance.

ENERGY AND SUSTAINABLE PRACTICES

Conservation of natural energy resources is a priority, both nationally and locally. Measures which result in the conservation of energy can be divided into three major categories: (1) incorporation of energy conserving features in new construction, (2) installation of energy conserving features into existing structures, and (3) residents practicing energy conserving measures. Most of the features which can be incorporated into new construction can also be installed in existing units.

Electricity for the City is provided by Southern California Edison (SCE). Currently sixteen percent of the total energy produced by the company comes from renewable resources. The remaining sources include natural gas, and fossil fuels. Natural gas is provided for the City by Southwest Gas Corporation (SGC). SGC purchases its natural gas from a variety of sources and distributes and sells it throughout California, Nevada and Arizona. Both SCE and SGC have established numerous programs and incentives to encourage and assist their customers in the efficient use of energy resources to help preserve and conserve the natural resources each uses in the production of their product.

While local, state and federal agencies work with energy producers to regulate the consumption of natural resources, it is the responsibility of the City to encourage its residents to conserve these resources by managing energy consumption. Implementing conservation methods, including the use of “green” building principles provides the City with opportunities to create well developed and designed structures that conserve resources, and are consistent with the state laws regulating greenhouse gas emissions.

GREEN BUILDING AND DESIGN

The City promotes energy efficiency by encouraging conservation measures. Another opportunity to reduce energy consumption within the City is through green building and design. Buildings utilize a large amount of energy and resources. Transforming the way buildings are designed, built, and operated can contribute to reductions in air pollution, water pollution, solid waste, and energy, as well as preserve natural resources and habitats. Green building is the practice of creating structures and using processes that are environmentally responsible and resource-efficient throughout a building's life-cycle: from siting to design, construction, operation, maintenance, renovation, and deconstruction. Green buildings provide optimal building performance and efficiency that reduces long-term operation costs, while providing healthier environments for users.

The U.S. Green Building Council promotes a whole-building approach to sustainability through its Leadership in Energy and Environmental Design (LEED) certification program. LEED recognizes performance in the following areas:

- *Sustainable Sites*. Development of sustainable sites discourages development on previously undeveloped land; minimizes a building's impact on ecosystems and waterways; encourages regionally appropriate landscaping; rewards smart transportation choices; controls stormwater runoff; and reduces erosion, light pollution, heat island effect and construction-related pollution.
- *Water Efficiency*. Encourages smarter use of water, inside and out. Water reduction is typically achieved through more efficient appliances, fixtures and fittings inside and water-wise landscaping outside.
- *Energy and Atmosphere*. Encourages a wide variety of energy strategies: commissioning; energy use monitoring; efficient design and construction; efficient appliances, systems and lighting; the use of renewable and clean sources of energy, generated on-site or offsite; and other innovative strategies.
- *Materials and Resources*. Encourages the selection of sustainably grown, harvested, produced and transported products and materials. It promotes the reduction of waste as well as reuse and recycling, and it takes into account the reduction of waste at a product's source.
- *Indoor Environmental Quality*. Promotes strategies that can improve indoor air as well as providing access to natural daylight and views and improving acoustics.
- *Locations and Linkages*. Encourages homes being built away from environmentally sensitive places and instead being built in infill, previously developed and other preferable sites. Homes should be built near already-existing infrastructure, community

resources, and transit. It encourages access to open space for walking, physical activity, and time spent outdoors.

- *Awareness and Education.* Encourages home builders and real estate professionals to provide homeowners, tenants and building managers with the education and tools they need to understand what makes their home green and how to make the most of those features.
- *Innovation in Design.* Encourages the use of new and innovative technologies and strategies to improve a building's performance well beyond what is required in green building considerations.

Although LEED certification of buildings is neither required nor formally encouraged by the City of Barstow, the principles enunciated in the certification guidelines provide a valuable resource for local planners and builders seeking to design and construct projects in an environmentally sensitive manner.

SOLID WASTE

The City of Barstow maintains a contract for solid waste and recycling services with Burrtec Waste Industries. Burrtec collects solid waste, including nonhazardous industrial waste, from Barstow and transports it approximately 5 miles to the Barstow landfill located to the South of the City. The landfill is part of the San Bernardino County landfill system.

In 2013, the City generated 5,302.48 tons of residential waste, 3,480.57 tons of multi-family unit waste, and 6,113.60 tons of commercial waste. The County's landfill located within the City's sphere of influence is where the material is hauled under a Waste Disposal Agreement with the county for all of the controllable waste in our City limits. This agreement will expire June 30, 2016. The county landfill system is comprised of 6 landfills, 8 transfer stations, 4 limited volume community collection centers and 32 inactive/closed sites. The County landfill system is experiencing an unprecedented loss in revenue within the system. Although the Barstow Landfill has capacity until 2071, the current rate structure is not designed for sustainability. With the State requiring more material to be removed from the waste stream through AB 32, AB 341 and now AB 1826; there is going to be a shortfall in future revenues as well. At some point there will be a need for a rate increase to cover this revenue shortfall in order for it to remain cost-effective to operate the local landfill and avoid the possibility that there will not be an open landfill within a 40 mile radius. Hauling the material will be costly and these costs will be borne by our ratepayers.

The City has an aggressive recycling/composting program which is used to cover the costs of diversion. When the markets are good, the dollar value is increased. As the mandatory composting of all organic material is implemented in the coming years, it will be imperative for the City to find alternatives for hauling the waste material 40 plus miles for disposal. The need for viable, practical and compliant programs is needed now more than ever.

The City's Solid Waste Department coordinates and facilitates household hazardous waste disposal. Under the authority of the County Fire Department's Household Hazardous Waste program, the City operates a collection center located at the City's Public Works Yard at 900 Avenue H. Materials accepted for disposal at this location include pesticides, wood preservatives and solvents, automobile batteries, and small electronic items such as television sets and computer monitors, as well as other materials. The center is open the first and third Saturdays of each month from 10:00 a.m. to 2:00 p.m. Approved County contractors categorize, sort, pack and haul wastes to approved facilities. Wastes are processed and packaged for off-site recycling or incineration, as applicable. Oil filters, oil, latex paint, antifreeze and batteries are among those items that are further recycled.

Small-scale generators of industrial hazardous wastes qualify for the County's "Conditionally Exempt Small Quantity Generators" (CESQGs) program. To qualify for the program, a business must generate less than 27 gallons or 220 pounds of hazardous waste, or 2.2 pounds of extremely hazardous waste, on a monthly basis. The San Bernardino County Fire Department will collect hazardous waste, or businesses can deliver waste to the County's collection facility, if such delivery can be accomplished safely and in compliance with all regulatory requirements. Wastes are then transported to a state-permitted processing facility located in San Bernardino and further recycled or incinerated.

Hazardous waste from businesses that generate more than the threshold amounts is collected by private contractors for disposal by County-approved hazardous waste disposal firms in accordance with state and federal regulations for such waste.

Municipalities in California are required, in accordance with the California Waste Management Act (AB 939), to reduce the amount of waste that is transported to landfills by 50 percent, as of year 2000. The City's recycling programs are responsive to AB 939. Individuals also have the option of participating through private recycling operators.

OPEN SPACE

Open space land is generally defined as any parcel or area of land or water that is essentially unimproved, vacant, or devoted to an open space use. Such lands are designated for the preservation of natural resources, including plant and animal species; for passive recreational uses (i.e. low-intensity such as walking trails); or for the production of resources, including agricultural production and mineral extraction.

There are two categories of Open Space Land Use listed in the Land Use Element. The first is Resource Conservation Open Space (ROS). ROS is for the most part government land managed by the Bureau of Land Management (BLM). This property is unlikely to be developed due to habitat designation or public use concerns. The second open space land use designation is Interim Open Space/Resource Conservation (IOS). IOS categorized land is both privately held and government land which is unlikely to develop within the period of the General Plan due to the lack of infrastructure and/or market demand. Open Space is also represented by Public Facilities (PF) where parks or fields are managed by the City or the school district.

The City of Barstow currently has 76,656 acres designated as open space within the City and Sphere of Influence. These facilities include washes, bluffs, the Mojave River, parks, OHV trails, and nearby regional recreation opportunities. These facilities provide for four significant open space purposes:

- Preservation Of Natural Resources
- Resource Management
- Recreation
- Public Health and Safety.

Some open space or park facilities are shown under the Public Facilities land use designation. This property is mostly government owned (typically local & state owned), set aside for recreation. Recreation and outdoor activity of all sorts is very important to the health and wellbeing of the population. Many of the recreational resources within the City are not under the City's direct control (i.e. shared facilities associated with the schools, BLM and Flood Control). The shared facilities are maintained by the associated agencies.

The City of Barstow has a system of parks which range from neighborhood to City wide park facilities. Exhibit RC-6 (Recreation Plan Map) shows the existing parks and areas with various levels of recreational opportunities. The City of Barstow's Park and Recreation Department is responsible for park and facilities planning, development, and maintenance within the general plan planning area. The existing park facilities were found to adequately serve community needs, based on commonly used National Recreational and Parks Association standards. In addition, the Parks Department provides an extensive recreation program. Future planned residential development in areas currently undeveloped may include additional park facilities and an expansion of recreational programs, if present levels of service and standards are to be maintained.

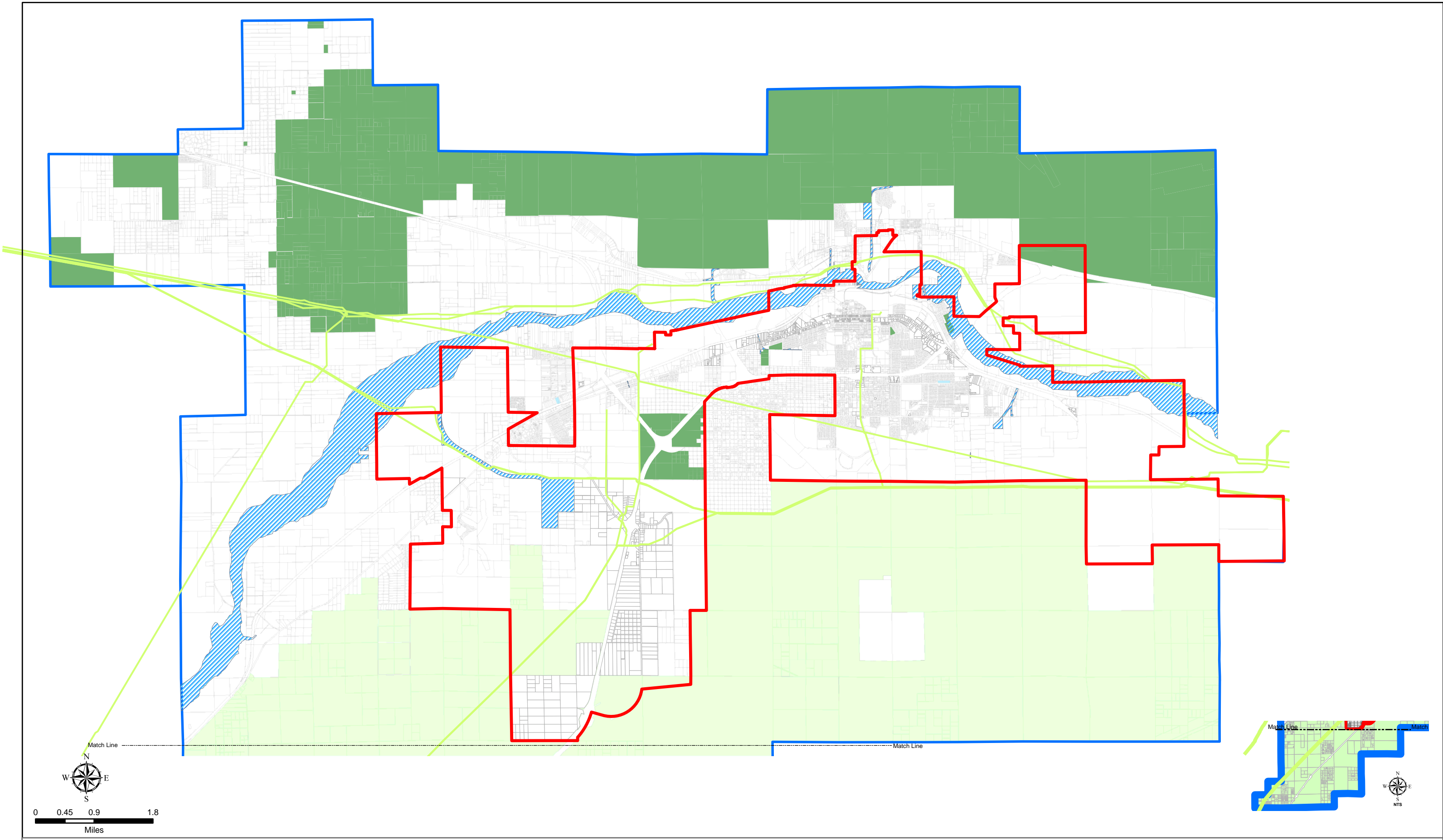


Exhibit RC-5
Open Space

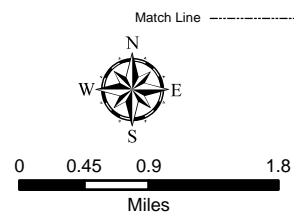
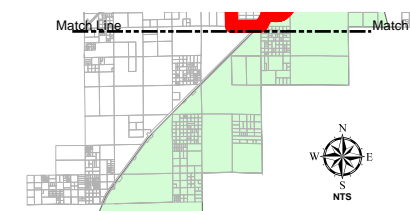
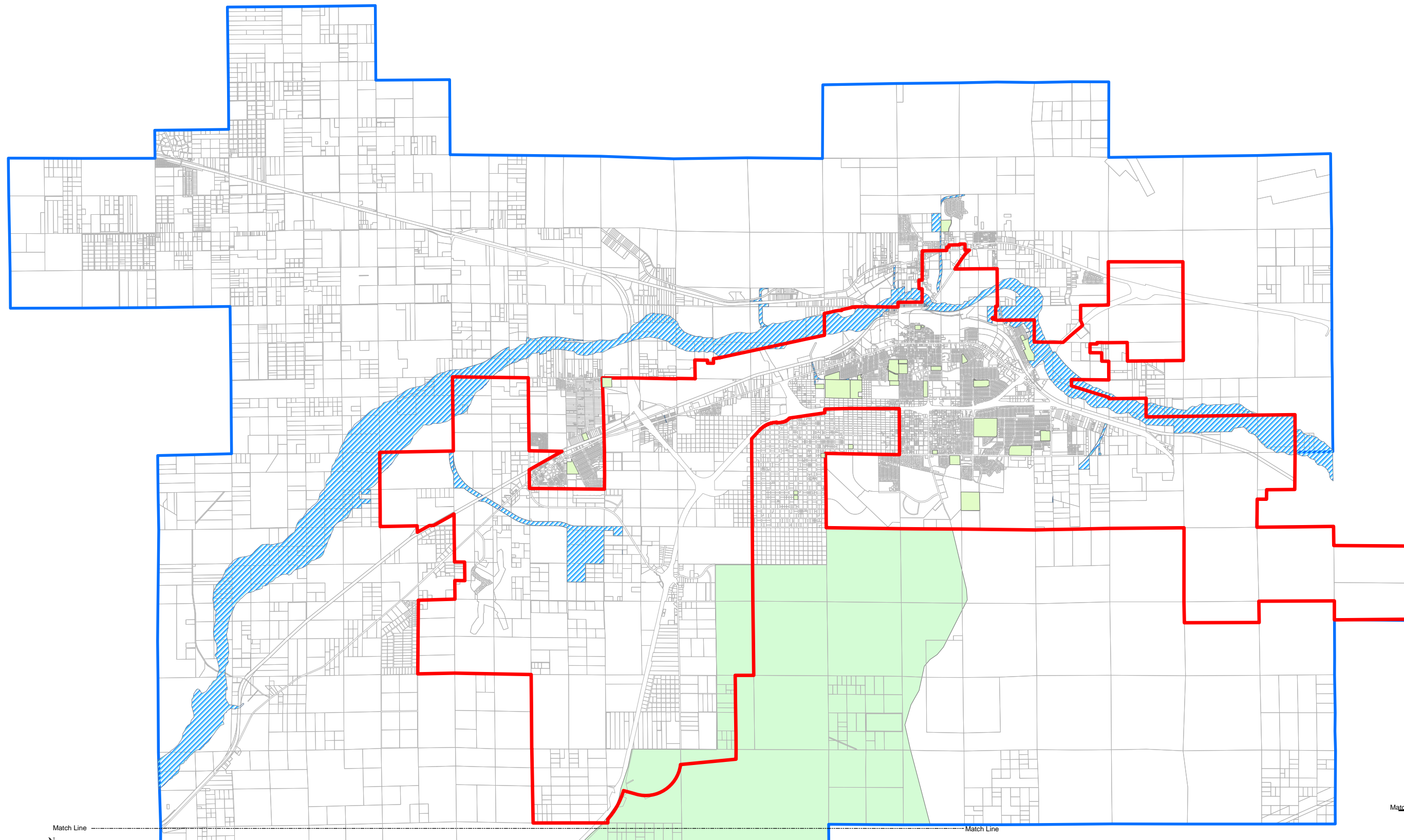
Legend

- City Limits
- Sphere of Influence

General Plan Land Use

- INTERIM OPEN SPACE/
RESOURCE CONSERVATION
(IOS/ROS)
- MOJAVE RIVER AND FLOOD CONTROL
OPEN SPACE (MFOS)

- RESOURCE CONSERVATION
OPEN SPACE (ROS)
- PIPELINE OPEN SPACE (POS)



**Exhibit RC-6
Recreation Plan Map**

- Legend**
- City Limits
 - Sphere of Influence
 - Schools and Parks
 - Off Road Vehicle (OHV) Area

GOALS AND POLICIES

GOAL 1: Ensure protection of water quality and quantity for the community by working in cooperation with all water purveyors in the area to preserve, augment, capture and purify all waters in the Mojave River system.

POLICY 1 A: Ensure a water supply system capable of meeting normal and emergency demand through cooperation between the City and water purveyors.

STRATEGY 1.A.1 Encourage Golden State to continually to monitor water quality within the Planning Area and to notify the City on an on-going basis of its findings.

STRATEGY 1.A.2 With input from the Lahontan Regional Water Quality Control Board, Mojave Water Agency and the local water purveyor(s), annually evaluate all aspects of the potable water supply, ensure that it is adequate, and alert the legislative body of any abnormalities immediately.

POLICY 1 B: Ensure protection of water quality and quantity for the community by working in cooperation with all water purveyors in the area to preserve, augment, capture and purify all waters in the Mojave River system.

STRATEGY 1.B.1 Crops which utilize large quantities of water (e.g. alfalfa, barley, etc.) shall be discouraged, unless reclaimed water can be utilized as the water source.

STRATEGY 1.B.2 Encourage upgrading of all sewer treatment plants (municipal or otherwise) located along the Mojave River drainage system to provide tertiary treatment to all waters entering the system.

POLICY 1 C: Strive to ensure that adequate water remains available to the community in order to maintain continued growth.

STRATEGY 1.C.1 Cooperate with the Mojave Water Agency, San Bernardino County Flood Control District and any other resource agency to consider long term improvements (including long-term maintenance) within the Mojave River corridor (dry areas only) which would capture storm run-off, allowing percolation into the aquifer rather than running across the top layer and into the Caves Basin.

STRATEGY 1.C.2 Support other agencies in eliminating all sources of pollution which may contaminate water quality in the Mojave River system.

STRATEGY 1.C.3 Encourage the use of xeriscape landscaping and plantings throughout the City and as an integral part of all landscape related guidelines, policies,

procedures, plans and programs within the City's control. This shall include development reviews and encouragement to local businesses, especially nurseries.

STRATEGY 1.C.4 New development located outside areas served by existing infrastructure shall be required to provide all services (e.g. sewer, roads, etc.) without creating a burden on the existing system.

POLICY 1 D: Coordinate efforts with other agencies to ensure that all property owners within Barstow's Sphere of Influence have adequate sewer and water facilities.

STRATEGY 1.D.1 Utilize and oversee compliance with the Sewer Master Plan.

STRATEGY 1.D.2 Encourage the use of "gray-water" to the greatest extent possible and for the widest potential range of uses.

POLICY 1 E: Maintain a storm drainage system adequate to protect the lives and property of Barstow residents.

STRATEGY 1.E.1 Periodically evaluate the size and condition of the storm drainage system to ensure its ability to handle expected storm runoff.

STRATEGY 1.E.2 Evaluate the impact of all new development and expansion of existing facilities on storm runoff and ensure that the cost of upgrading existing drainage facilities to handle the additional runoff, and maintenance thereof, is paid for by the development which generates it.

STRATEGY 1.E.3 All designs for new development are required to comply with the National Pollution Discharge Elimination System (NPDES) Permit and Waste Discharge Requirements for Lahontan Region and San Bernardino County. The Developer will be required to prepare and submit for approval of a construction activities erosion control plan to include waste disposal and construction recycling methods. In addition, the developer shall obtain any necessary General Permits for storm water discharge associated with construction and land disturbance activities from the State Water Resources Control Board. A Water Discharge Identification Number (WDID #) from the State Water Resources Control Board shall be provided to the City prior to issuance of a grading or other city issued building permits.

GOAL 2: Ensure protection of air quality by reducing air pollution and emissions of pollutants.

Policy 2 A: Work with the Mojave Desert Air Quality Management District, San Bernardino Association of Governments, San Bernardino County and neighboring jurisdictions to implement the federal ozone and PM10 & PM 2.5 non-attainment plans and meet federal state air quality standards and reduce overall emissions from mobile and stationary sources.

STRATEGY 2.A.1 Implement measures to reduce fugitive dust from unpaved areas, parking lots, and construction sites.

STRATEGY 2.A.2 Implement measures to reduce exhaust emissions from construction equipment.

STRATEGY 2.A.3: Limit new sensitive receptor land uses in proximity to significant sources of air pollution.

STRATEGY 2.A.4: Review discretionary land use applications for residential uses for potential objectionable odor impacts in proximity to potential significant sources of odors.

STRATEGY 2.A.5: Require an air quality impact analysis using the methods promulgated by the District for all projects that are subject to CEQA review and which meet or exceed District emissions thresholds. Ensure that air quality impacts identified during CEQA review are consistently and fairly mitigated.

STRATEGY 2.A.6: Encourage developers to propose innovative measures to reduce air quality impacts, such as bike path and trail systems to facilitate non-vehicular transportation.

STRATEGY 2.A.7 Implement air quality mitigation measures 3.3.1 - 3.3.15 of the 2015-2020 General Plan Master EIR and monitor these measures on an annual basis.

POLICY 2 B: Public Facilities and Operations - Local government should take a leadership role in reducing the emissions from its own vehicle fleet as a model for the private sector.

STRATEGY 2.B.1: Replace or convert City conventional fuel vehicles with clean fuel vehicles as feasible.

STRATEGY 2.B.2: Enact local ordinances to promote clean technologies.

GOAL 3: Seek to preserve biological resources within the Planning Area.

POLICY 3 A: Conserve suitable habitat for threatened and endangered species found in the region and facilitate mitigation of impacts where unavoidable.

STRATEGY 3.A.1: Perform site-specific studies prior to development activities to determine the precise mitigation necessary to preserve and enhance biological resources, with particular attention given to the preservation of areas identified as having a high biological significance and sensitivity.

STRATEGY 3.A.2: Establish corridors for the movement of wildlife between the established Desert Wildlife Management Areas (USFWS 1994a) and Desert Tortoise Critical Habitat (USFWS 1994b).

STRATEGY 3.A.3: Strive to maintain native riparian and associated natural habitats along the Mojave River. When applicable, require a US Army Corps of Engineers 404 Permit.

STRATEGY 3.A.4: Maintain the Mojave River as a travel and watershed corridor, retaining the link between natural areas to the north and south of Barstow.

GOAL 4: Strive to preserve and protect important features and sites (historic, archaeological and paleontological), as defined under this Element's Cultural Resources Management Plan, from degradation or destruction.

POLICY 4 A: The City shall encourage efforts to collect and preserve available local historical resources.

STRATEGY 4.A.1: The City shall help coordinate the efforts of interested groups and organizations concerning areas of historical importance in Barstow.

STRATEGY 4.A.2: The City shall make every effort to preserve all historical landmarks as identified by the State of California, Federal Government and/or the County of San Bernardino.

STRATEGY 4.A.3: The City shall preserve and protect, to the greatest extent possible, archaeological and paleontological sites and features.

STRATEGY 4.A.4: For development in areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources shall monitor all ground-disturbing activities.

GOAL 5: Adhere to the environmental assessment process required under CEQA to communicate with other agencies and the public on the air quality impacts of development within the community.

POLICY 5 A: Communication of the impact of development on environmental quality with the impacted state and federal agencies as well as the general public in a clear and concise manner.

STRATEGY 5.A.1: Geographic information systems (GIS) can allow planners and decision makers to more easily visualize and understand the complex interactions created when land uses and circulation are changed. The City will, therefore support investment in cost-effective modeling and geographic information system (GIS) technology.

STRATEGY 5.A.2: Continue to support and work collaboratively with programs that educate the public on environmental quality issues..

Goal: 6: Provide programs and incentives to encourage residents, businesses and developers to reduce consumption and efficiently use energy resources.

Policy 6.A Educate the development community with regard to green building principles and other strategies for conserving natural resources.

STRATEGY 6.A.1 Informally encourage the use of green building standards and Leadership in Energy and Environmental Design (LEED) or similar programs in both private and public projects.

STRATEGY 6.A.2 Educate the public about energy conservation techniques.

STRATEGY 6.A.3 Reduce energy consumption in both existing and future developments by coordinating with the local energy provider to develop policies and procedures for energy conservation.

STRATEGY 6.A.4 Encourage residents and businesses to utilize the incentives provided by local energy providers to retrofit their buildings and businesses for energy efficiency and conservation.

STRATEGY 6.A.5 Continue the existing recycling program and utilization of the material recovery facility program while exploring additional methods of reducing waste.

STRATEGY 6.A.6 Incentivize businesses that provide solutions for recycling and re-use of specific waste streams such as food waste and cooking oils..

Strategy 6.A.7. Work with all interested parties, as appropriate, to implement a community-wide food scrap collection and composting program.

GOAL 7: Recognize the Planning Areas' unique desert environment through the integration of various natural features and open space areas with development.

POLICY 7 A: Enhance existing circulation corridors that tie outlying development to the community while establishing new linkages and implementing streetscape concepts geared toward creating a unified design theme for the City.

STRATEGY 7.A.1: Work with the utility companies owning large "cross-town" easements to ensure that these areas remain as open space for recreation, circulation, etc.

STRATEGY 7.A.2: Work with the Mojave Water Agency and all applicable County, State and Federal governmental agencies to compile a multiple use recreation plan. The plan shall address potential improvements, implementation time frames, cost estimates and possible funding sources.

STRATEGY 7.a.3: Consider acquiring open space for habitat preservation and possible mitigation of biological resource impacts of development elsewhere in the City.

STRATEGY 7.A.4: Utilize the Interim open space designation to guide the timing and pattern of future development so as to limit leapfrog development and urban sprawl.

STRATEGY 7.A.5: Interconnecting areas for pedestrian, bicycle and alternative transportation trails shall be provided throughout the City.