State of Nevada
Solid Waste Management Plan
2017

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For the

Nevada State Environmental Commission

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EXECUTIVE SUMMARY

Nevada's Solid Waste Management Plan *(Plan)* provides a current snapshot of the State's existing Solid Waste Management system in accordance with applicable statutes and regulations. The *Plan* describes the roles and responsibilities of State and local government, and current trends in solid waste management. It also identifies management challenges and proposes solutions for future consideration to improve solid waste management in Nevada.

Nevada Revised Statutes (NRS) 444.570 requires the State Environmental Commission (SEC), in cooperation with governing bodies of Nevada's municipalities to develop a plan for a statewide solid waste management system. The *Plan* strives to fulfill this requirement, providing information and guidance to support:

1. The SEC in their adoption of solid waste management regulations;
2. The Nevada Division of Environmental Protection (NDEP) in their efforts to effectively allocate solid waste management resources;
3. Nevada's municipal governments in their efforts to develop and implement effective solid waste management plans and ordinances; and
4. Stakeholders and their activities to provide solid waste services to Nevada's communities and businesses statewide.

In Nevada, state and local governmental entities share certain roles and responsibilities for solid waste regulations and program management. Governmental authority is defined in the Nevada Revised Statutes (NRS) 444.440 – 444.645 (see Appendix 5), and the Nevada Administrative Code (NAC) 444.570 – 444.7499 (see Appendix 6). In Southern Nevada, the authority to regulate solid waste is assigned by statute to Clark County's Southern Nevada Health District (SNHD), and in the North to the Washoe County Health District (WCHD). NDEP is the solid waste management authority for all other counties of the State.

Regulatory programs implemented by all three solid waste management authorities (SWMA) primarily focus on the administration of the environmental protection standards for the collection

and disposal of solid waste; however, the NDEP has additional responsibilities for statewide planning, public information, and educational activities. The local municipal governments are responsible for planning and implementing solid waste management systems for the solid waste generated in their municipalities.

Statewide Trends (Section 2)

This section addresses current trends in Landfills, Collection, Waste Generation and Recycling Rates, Importation, and Data Collection and Reporting.

> ***Noteworthy Trends…***
>
> *Since the early 1990's, the major trend in Nevada's solid waste management infrastructure has been toward regionalization. Landfills range in size from the very small (3 tons per day) to one of the largest in the U.S. (Apex, according to a 2016 report, receives over 6,800 tons per day). Nevada's two largest landfills (Apex in Southern Nevada and Lockwood in the North) receive about 90% of all the municipal solid waste disposed in the entire state.*
>
> *Solid Waste importation has decreased approximately 20% in the past 10 years; however, waste importation may increase due to an emerging trend toward existing landfills, and proposed new landfills, positioning themselves to accept larger amounts of imported waste.*

Solid Waste Management Systems (Section 3)

The solid waste management systems in each of Nevada's 17 counties are profiled in Appendix 3. Each description includes a map of the county showing where the solid waste facilities are located, and a companion profile describing the solid waste infrastructure and services.

Solid Waste Management Issues (Section 4)

The challenges facing landfills, Recycling and Waste Prevention, Importation of Solid Waste, Special Waste Management, Rural Solid Waste Management, Illegal Dumping and Open Burning, and State and Local Funding are covered in this section. The *Plan* provides suggestions for future consideration to improve Nevada's solid waste management system.

Noteworthy Changes and Challenges…

Due to new research on traditional landfill liner requirements, the Plan recognizes that site-specific conditions are critically important in the liner decision-making process. Nevertheless, any effort to further develop Nevada's solid waste disposal infrastructure must put the highest priority on carefully assessing new innovations in landfill design to ensure that they protect the environment.

Recycling and Waste Prevention (Section 4.2)

In 1991, Assembly Bill (AB) 320 was enacted and set the stage for Nevada's entrance into the world of recycling. Shortly thereafter, a 25% recycling goal was set in law for each municipality that is required to have a recycling program.

Noteworthy Changes and Challenges…

For the past several years, Douglas, Washoe, and Carson City counties have surpassed the 25% recycling goal. Nevada's largest county, Clark, surpassed the 25% goal in 2012, but has since struggled to repeat those numbers. Since Nevada began tracking recycling rates, the statewide rate steadily increased to over 28.8% in 2012, but has fallen back to 22.3% in 2016. Proven as a powerful tool for increasing both participation and recycling rates, the availability of single-stream recycling has expanded to approximately 90% of Nevadans through the diligent efforts of several of Nevada's larger municipalities.

As the largest county in Nevada, and as such, seen as the greatest opportunity for increasing the State's overall recycling rate, the NDEP continues to promote recycling in Clark County and has implemented even more measures to increase recycling activity.
To evaluate the pros and cons of specific types of recycling, the Nevada Legislature authorized two studies: an electronics waste (e-waste) study in 2009 and a deposit on recyclable products study in 2011. Neither study evidenced enough clear benefit to warrant passage.

In counties over 100,000 in population, a recent bill amendment mandated that recycling services must be made available to newly constructed and major renovated multi-family

dwellings (MFDs), such as apartment complexes and condominiums. For approval, plans for said construction and/or renovation must provide space for collecting recyclables on premises.

Waste Importation (Section 4.3)

Although importation has been in decline, business interests and rural community development planners are beginning to market Nevada's waste disposal capacity to out-of-state customers. Given this trend and the US Supreme Court's prohibition on restriction of waste flow, it appears Nevada will continue to receive imported waste.

Special Waste Management (Section 4.4)

Because of their physical, chemical and/or biological characteristics, "special wastes" have the potential to be hazardous to living organisms and therefore must be specially handled to prevent exposure to them or release to the environment.

Noteworthy Changes and Challenges…

Following several elemental mercury spills in school-settings, NDEP developed a webpage (https://ndep.nv.gov/land/mercury) and a brochure to inform the public of the dangers, proper handling and disposal of "household" mercury. A household generated solid waste with the identical characteristics of a hazardous waste is exempt from federal regulations as a hazardous waste.

Medical or pharmaceutical wastes generated by medical and veterinary facilities (e.g., businesses) are generally well-managed through the availability of commercial medical waste disposal services throughout the State. However, disposal services for home-generated medical and pharmaceutical wastes are harder to find as the demand continues to grow.

E-waste continues to grow in volume as does the concern with their components, many of which have been identified as hazardous waste (older model TV cathode ray tubes (CRTs)), computer monitors, and cell phones, etc.) As industry and government at the national level search for ways to relieve the accumulation of e-waste, the emphasis in Nevada is on public

education. Informing Nevadans of recycling and disposal locations available in their areas is a key element in e-waste management. NDEP continues to provide support for e-waste collection events and promotes reclamation efforts wherever possible.

Rural Solid Waste Management (Section 4.5)

Due to their sparse populations, many of Nevada's rural municipalities are struggling to provide even the basic elements of a solid waste management system. Rural solid waste management (SWM) systems could benefit greatly from more coordinated planning efforts among communities, landfill operator training programs, and public education regarding recycling and waste reduction. Reinstating the State's recycling and solid waste grant program could provide assistance to local governments to augment their planning efforts and acquire necessary equipment.

Illegal Dumping and Open Burning (Section 4.6)

In 2013, the Nevada Legislature passed Senate Bill 449 which increased enforcement penalties for illegal dumping in an effort to further protect the environment. Illegal, or open dumping, is a persistent problem for both rural and urban areas. Fundamentally local in nature, a combination of local solid waste management planning, local public education, and coordinated enforcement at the local level is essential for success in combating this problem. Local community groups have been instrumental in organizing efforts to control illegal dumping, such as community cleanup projects that include the participation of local government officials, and using public information campaigns to raise awareness and promote a sense of environmental stewardship in its citizenry.

State and Local Funding (Section 4.7)

To supplement their allotted State Tire Fund (tax) revenues, all three SWMAs have established fees on disposal, permitting, and other activities associated with solid waste management. In October 2014, the SEC approved the implementation of solid waste fees for NDEP with collection beginning in 2015. These new solid waste fees are only applicable to solid waste management facilities under the DCNR-NDEP's jurisdiction. This new funding source will help to defray the State's costs of managing and regulating solid waste.

Noteworthy Changes and Challenges…

Nevada's rural local governments may also require increased funding to support local waste management operations. Although local taxing authority may be available, the tax base for some communities may not be sufficient to generate needed revenue. In such locations, private solid waste companies may not be profitable, leaving the municipality to face significant challenges meeting their solid waste needs in a manner that complies with all applicable environmental regulations.

Key Stakeholders

Although NDEP is required to submit this *Plan* to the SEC, it is also intended to be used as a resource and guide for the State Legislature, NDEP, SNHD, WCHD, state and local agencies, and Nevada's municipal governments as they seek to craft effective Solid Waste Management laws, regulations and policies. It is hoped that the *Plan* also provides useful information to generators of solid waste (residents, businesses, and various industries) and solid waste service providers (refuse collectors, landfill operators, recyclers). Implementation of the suggestions provided for future consideration in each section of the *Plan* could further serve to enhance and strengthen solid waste management in Nevada.

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1. Introduction

1.1 Scope and Purpose

Solid waste management is vital to the infrastructure of every city and county. A comprehensive and effective management system includes the following key components:

- Reuse and Recycling Programs: these help to conserve resources, while instilling a "conservation ethic" in citizens and their communities;
- Cost-effective and efficient waste collection systems: these help to prevent illegal dumping while protecting public health and the environment; and,
- Properly designed and operated landfill sites: these ensure safe disposal of solid waste at the end of its life.

The responsibility for planning and implementing effective solid waste management systems lies with local government.

The State's primary role in solid waste management is regulatory through implementation of regulations adopted by the State Environmental Commission (SEC). Per NRS 444.570, the SEC is required to develop and update a statewide plan for solid waste management in Nevada. This update requirement provides the Nevada Division of Environmental Protection (NDEP) with the opportunity to meet with county government officials to review the efficacy of existing laws and regulations, and engage in an informational give-and-take as concerns challenges and planning efforts to improve their local solid waste management systems.

The regulations and statutes governing solid waste management are found in

- Nevada Revised Statutes (NRS) 444.440 – 444.645,
- Nevada Administrative Code (NAC) 444.570 – 444.7499,
- NRS 444A.010 – 444A.110; and
- NAC 444A.005 – 444A.655

For complete references to these statutes and regulations, please see Appendices 5 – 8. Amendments to these NRS and NACs are in Appendix 1.

In addition to regulatory oversight, the State bears additional responsibilities for solid waste management planning, inter-agency coordination, and public education.

Central to the mission of the NDEP-Bureau of Waste Management (BWM) is ensuring that solid waste is handled safely. To this end, this Solid Waste Management Plan (*Plan*) presents the current status of collection and disposal systems within each county, and reviews the adequacy of landfill standards, especially in light of the potential for importation of solid waste to rural disposal facilities. Finally, this *Plan* attempts to identify economic incentives to encourage efficient use of available resources, reduce waste generation, and optimize recovery of reusable/recyclable resources from the solid waste stream.

Annual Solid Waste disposal reports show that Nevada's infrastructure for solid waste collection and disposal has improved over recent years, especially in rural areas of the State. Curbside recycling services are now common place in our major urban areas, and a composting industry is taking root in Nevada. It is estimated that at the end of 2016, single-stream (co-mingled) curbside recycling services was being offered to approximately 90% of the residents of Nevada in the more urbanized municipalities in Clark, Washoe and Elko Counties.

1.2 Governmental Roles and Responsibilities

1.2.1 Municipal Governments

Per NRS 444.510 (App. 5), each municipality, or Health District, in Nevada is required to develop and implement a plan for a, "solid waste management system." A solid waste management system is defined in statute as, "The entire process of storage, collection, transportation, processing, recycling and disposal of solid waste. The term includes plans and programs for the reduction of waste and public education." Municipalities are also required to implement recycling requirements as found in NRS 444A.040 (App. 7). In order to carry out these responsibilities, the statutes give authority to municipalities to adopt ordinances, acquire land, offer franchises for solid waste collection, and levy appropriate fees (Note: these fees are not subject to the fee revenue cap specified in NRS 354.5989).

One of the common challenges local governments face is unlawful (illegal) dumping. Municipalities and Health Districts are largely responsible for enforcing the statutory prohibitions against unlawful

dumping. Amendments to the solid waste statutes adopted by the 2001 and 2013 Nevada Legislature provide significant authority to local government agencies and peace officers to levy civil and criminal penalties for unlawful dumping. Penalties collected from unlawful dumping violations can be used to support the local government's solid waste management programs. Unlawful dumping is classified as a misdemeanor crime subject to penalties/fines, community service, and/or revocation of a business license.

1.2.2 Health Districts

The Health Districts (Southern Nevada Health District (SNHD) in Clark County, and Washoe County Health District (WCHD) in Washoe County), are the waste authorities and primary regulatory agencies over solid waste management in Nevada's two most populated and urbanized counties. The State's statutes (NRS 444.495) designate these agencies as the Solid Waste Management Authorities (SWMA) in their respective jurisdictions, with the programs of the Health Districts subject to periodic review by the NDEP. In addition to enforcing unlawful dumping provisions, the Health Districts are responsible for issuing permits to, and conducting compliance inspections at, disposal sites, transfer stations, materials recovery facilities (MRF), and other solid waste handling and/or processing facilities in their jurisdictions.

The governing boards of the Health Districts may adopt ordinances governing solid waste disposal sites and solid waste management systems, or any part thereof, which are more restrictive than those adopted by the SEC and other solid waste management regulations as long as they do not conflict with the SEC regulations.

1.2.3 State Government

NDEP is responsible for permitting and inspection solid waste disposal facilities and implementing public information programs outside of Washoe and Clark Counties. NRS 444A (App. 7) gave NDEP additional responsibility for encouraging statewide recycling programs. To ensure that solid waste management practices are consistent with state and federal criteria, all counties are required to submit their updated solid waste management plans to NDEP every five years for review and approval.

In 1994, the US EPA granted Nevada the authority to enforce the federal municipal landfill regulations. In order to receive that approval, the State had to demonstrate that its regulations were at

least as stringent as the federal landfill criteria, and that it had adequate resources and authority to enforce the standards. The NDEP and Health Districts have the responsibility to ensure compliance with the minimum federal standards for municipal landfills. While unlikely, procedures are established in statute for the NDEP to exercise authority over SNHD and WCHD, if necessary the US EPA retains authority to take enforcement action,. This may occur if evidence is found that handling or disposal of solid waste is presenting an imminent and substantial endangerment to public health or the environment, or in cases where there are violations of the federal landfill criteria and the State has failed to take remedial action.

1.2.4 Tribal Governments

The NDEP and the Health Districts do not have authority to regulate solid waste management on tribal lands. The Federal Subtitle D regulations are self-implementing on tribal lands; however the US EPA may issue site-specific flexibility waivers for landfills on tribal lands if a site wishes to establish a "flexible" performance standard rather than adhering to the prescriptive standards set forth in 40 CFR Part 258 (App. 9). This ensures that landfills located on tribal lands may apply for the same flexibility available to landfills in states with US EPA-approved municipal solid waste landfill permit programs.

Historically, coordination between the tribes and the NDEP has been informal regarding solid waste management. However, some issues do clearly cross jurisdictional boundaries. An example is waste collection and recycling services that must be coordinated between vendors and the tribes on and off tribal lands. Open burning (air pollution concerns) and protection of surface waters and groundwater from landfill contaminants are other concerns. NRS 444A.040 (App. 7) requires municipalities with approved recycling programs to make them available to reservations and colonies within their jurisdictions. In an effort toward improving coordination between NDEP and Nevada's tribes, a tribal liaison position was established in the NDEP in 2007.

1.2.5 Federal Facilities

The federal government operates several solid waste facilities in Nevada, including some with proprietary landfills at Department of Defense (DoD) and Department of Energy (DoE) installations. These landfills are for the federal installations' use and are not open to the public. A number of these facilities lie within publicly restricted areas but are regulated by the NDEP. NDEP's Bureau of

Federal Facilities oversees DoE facilities. The remaining solid waste facilities under federal control are regulated by the appropriate SWMA.

2. Statewide Trends in Solid Waste Management

2.1 Landfills

In the 1990's, more stringent state and federal landfill regulations were implemented which started the trend of regionalization of solid waste collection and disposal infrastructure. Faced with the option of upgrading to the new, "more costly" standards or closing their gates, more than 100 of Nevada's small, rural landfills chose the latter. In their place, large, regional municipal landfills became the dominant disposal end-destination for solid waste, served by a network of transfer stations and public waste bins to manage solid waste disposal/collection/storage needs in rural communities prior to transportation to the landfills. (*See Appendix 4 for the current map of Nevada's solid waste infrastructure*).

Roughly corresponding with Nevada's population distribution, Nevada's landfills can range in size from very large to the extremely small. Approximately 90% of all waste disposed of in Nevada (Fig. 1) goes to one of the following landfills: In the South, Apex Landfill serves the greater Las Vegas Valley area; in the North, Lockwood Landfill serves the greater Reno-Sparks area. Both of these landfills are privately-owned and operated.

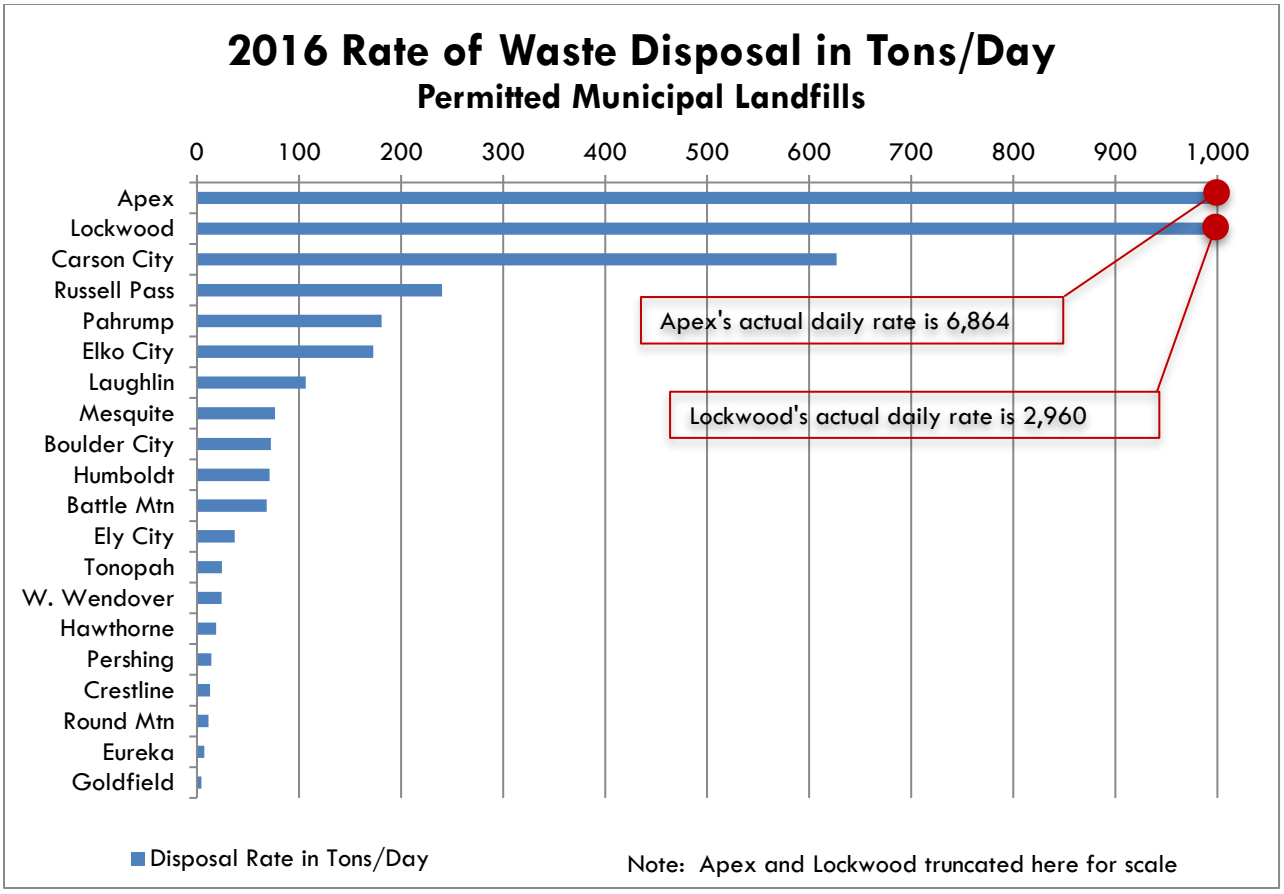

Figure 1. Daily disposal rate at Nevada's permitted municipal landfills (averaged over 365 days).

Apex, Nevada's largest landfill in Southern Nevada, ranks as one of the largest municipal landfills in the nation based on annual tonnage of solid waste received for disposal. According to 2016 data, Apex receives an average of over 6,800 tons of solid waste per day, while one of Nevada's smallest landfills, Goldfield Landfill in Esmeralda County, receives an average of only about 4 tons of solid waste per day (population of 900 or fewer per the 2010 census data).

The disposal capacity of Nevada's landfills is projected to be able to adequately accommodate Nevada's solid waste needs well into the future. However, the NDEP encourages municipalities to plan for, and take measures to ensure adequate future landfill capacity. A summary of the active municipal waste landfills, including their capacities and projected closure years, is presented in Appendix 2.

2.2 Collection and Transportation

In response to the municipal recycling requirements adopted in 1991, Nevada's solid waste collection has changed in two important respects. First is the trend toward bi-weekly recyclable collection

availability to single-family homes in Carson City, Clark and Washoe Counties pursuant to the 1991 municipal recycling program requirements. The second important change was the establishment of an extensive network of transfer stations and rural public waste (storage) bins from which waste is collected and hauled to the regional landfills, at minimum of weekly runs. Covered roll-off containers and waste transfer trucks are used to transport waste collected from transfer stations and public waste bins to the regional landfills. In more highly-populated areas such as Clark, Washoe and Story Counties, some of the public waste storage bin sites are staffed by attendants who collect fees from the public for waste disposal; however, most public waste bin facilities are unattended. Public waste bins are maintained by the counties at their expense, either by the county itself or through contracted services. The state's transfer station and public waste bin locations are listed below by county and the communities they serve (See App. 4 for a map of this information).

Transfer Stations

Clark:	Cheyenne (North Las Vegas), Henderson, Sloan
Churchill:	Fallon
Douglas:	Gardnerville
Elko:	Jackpot
Lyon:	Fernley, Smith Valley, Sutro (Dayton), Yerington
Washoe:	Incline Village, Reno, Stead

Public Waste Storage Bin Facilities

Clark:	Searchlight, Sandy Valley, Mt. Charleston, Moapa
Elko:	Wells, Midas, Jarbidge, Montello, Carlin, Pilot Valley, Wendover
Esmeralda:	Dyer, Silver Peak
Eureka:	Crescent Valley
Humboldt:	Kings River, Orovada, Paradise Valley, Denio
Lander:	Kingston, Austin
Lincoln:	Rachel, Alamo, Hiko, Panaca, Pioche, Dry Valley, Caliente, Ursine, Mt. Wilson
Lyon:	Silver Springs
Mineral:	Mina-Luning
Nye:	Beatty, Amargosa Valley, Belmont, Manhattan
Pershing:	Grass Valley, Unionville, Imlay
Storey:	Virginia City
Washoe:	Gerlach, Empire

Transportation services vary widely, from waste collection services provided by large corporations in urban areas, to individuals self-hauling in sparsely populated rural area. Subject to franchise agreements negotiated with, and awarded by, the municipalities they serve, Waste Management, Inc., and Republic Services of Southern Nevada (Republic), collect and transport nearly all of the municipal

solid waste in the urban areas of Reno/Sparks/Carson City and greater Las Vegas area, respectively. About 15 small companies provide waste pickup service to the balance of the state's smaller communities, while the cities of Fallon, Gardnerville, Minden, Lovelock, and Caliente operate their own garbage collection services. In sparsely populated areas, such as Esmeralda County, residents must self-haul their waste to the nearest landfill or public waste bin.

2.3 Waste Generation and Recycling Rates

As depicted in Figure 2, the total volume of solid waste disposed in Nevada steadily decreased from 2007-2012. The state-wide recession caused a population reduction and an accompanying decrease in construction starts, both of which contributed to a marked down-turn in waste generation. It is interesting to note that in 2010, within this time period, industrial and "Special Waste" increased slightly due to a resurgence of residential/ commercial construction and road construction projects; however, the upward trend was short lived.

Between 2007 and 2010, the statewide recycling rate hovered between 20-22%. In 2011 the rate jumped to over 25%, and to nearly 29% in 2012. This significant increase is due to Clark County's recycling rate jumping up 4% in 2011. Data suggests that the implementation of single-stream recycling programs in Clark County was responsible for this substantial increase. While significant local variations exist in recycling rates, Douglas, Washoe, and Carson City Counties have shown steady improvement in their recycling rates, consistently meeting or exceeding the State-wide recycling goal of 25%.

After several years of discussion and revealing pilot studies in multiple communities, single-stream recycling is proving to be a powerful new component in Nevada's recycling program. All franchise agreements in Clark County now offer single-stream recycling services. Washoe County and the Cities of Reno and Sparks are also offering single-stream recycling to their residents. Nevada's recycling rate is certain to continue to increase owing to the fact that about 90% of state residents are now offered residential single-stream recycling.

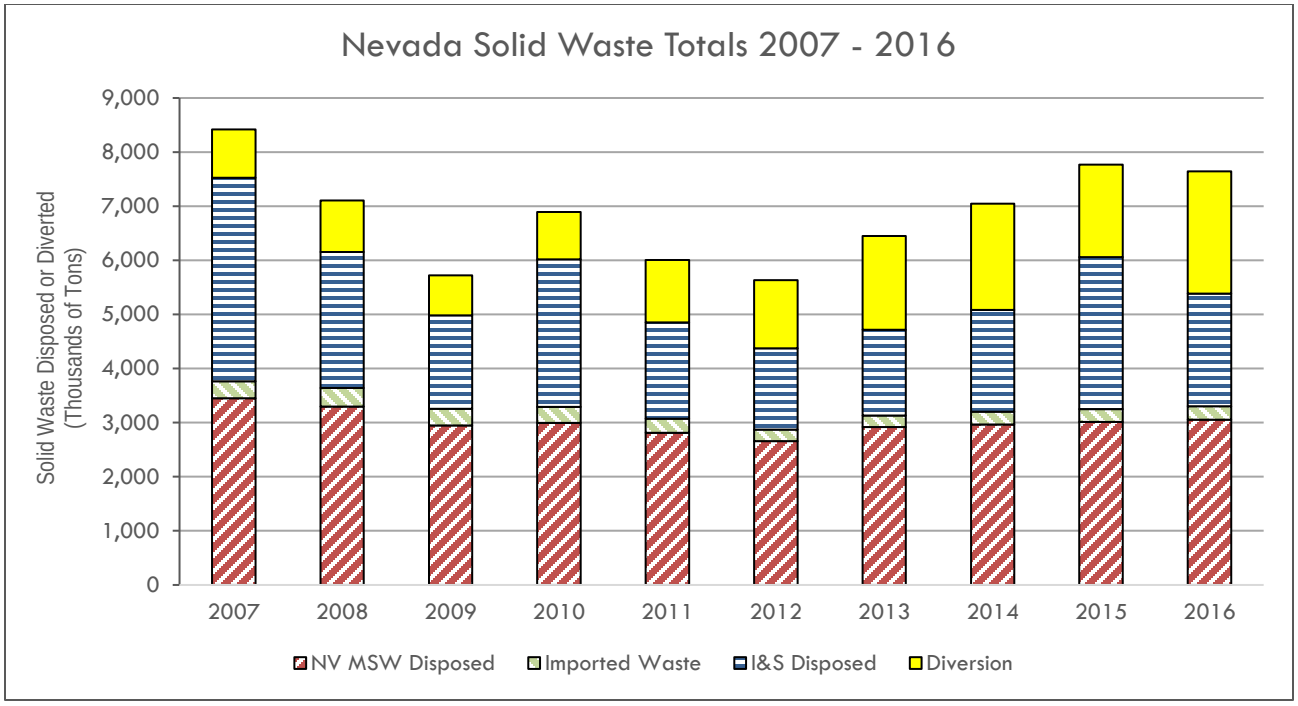

Figure 2. Total municipal solid waste plus industrial & special waste and imported waste disposed and diverted in Nevada.

2.4 Importation

The amount of solid waste imported from out-of-state sources decreased 20% due, in part, to the national recession. Of the total volume of solid waste imported into the State, the Lockwood Regional Landfill received greater than 94%. Lockwood, owned and operated by Waste Management, Inc., is the regional landfill for much of western Nevada (Washoe, Storey, Lyon, Douglas, and part of Churchill County), and also receives waste from several California regions including the Lake Tahoe Basin, and as far west as the City of Sacramento (Fig. 5). The volume of waste imported to Nevada presently accounts for about 7.5% of the municipal solid waste disposed in Nevada.

Although Apex is not currently receiving imported waste, the potential for increase solid waste importation is significant. This is due to the fact that it is privately-owned (Republic Services) and located along a rail line, and as such, is well-situated for future importation. Under its current permit, the estimated life of the Apex landfill is in excess of 100 years, and since Republic owns the land around the existing site, there is potential for its future expansion.

Another landfill poised for importation is Crestline Landfill. Located near Panaca in Lincoln County, Crestline is another privately-owned landfill situated on a rail line. The Class I MSWLF operating

permit was issued in December 2001 for the 660 acre parcel, which positioned them to receive a large volume of solid waste per day contingent on construction of lined disposal cells and demonstration of financial assurance to satisfy the landfill closure requirement. It remains to be seen when, or whether, the owners of the Crestline Landfill will obtain contracts for waste importation and disposal that would justify beginning operations at the Class I facility.

Other potential importation landfills include the Rawhide Landfill, located in Mineral County, and the Jungo Landfill in Humboldt County. Rawhide Landfill, owned by the Nevada Resource Recovery Group (NRRG) of Nevada, has not started operating as of this report, and may never open if a rail line is not extended to the site. In 2012, a Class I Landfill operating permit was issued for the Jungo Landfill project, but it too, is not operational. Jungo could receive solid waste imported from the San Francisco Bay area via railway.

Some municipal governments have shown interest in developing their own commercial waste disposal facilities for increased revenue. The City of Fallon recently increased its permitted disposal rate at the Russell Pass Landfill. The City of Elko and Humboldt County have also sought to expand their landfill capacities beyond the needs of the local communities.

These and other efforts to gain new or expand landfill capacities indicate an interest in the potential for significant importation of out-of-state waste for profit. Whether the potential for large-scale importation is realized or not depends on the regional market for solid waste disposal, the availability of disposal capacity in the region, and the feasibility of individual projects. Imported waste is generally what is referred to as "dead waste," already stripped of any valuable reclaimable, reusable, recyclable waste materials before it gets to Nevada landfills. Whether perceived by Nevadans as an opportunity for economic development, or as an exploitation of Nevada resources by other states, waste importation is a viable economic enterprise. As such, waste importation must be included in the solid waste discussion.

2.5 Data Collection and Reporting

Reliable data on the quantities of solid waste disposed and recycled are necessary in order to conduct State and municipal waste management planning, to ensure future disposal capacity, and provide

Nevada's citizens with a means to measure the success of local recycling and waste reduce efforts.

Terms used in the *Plan* include:

- *Municipal solid waste (MSW):* solid waste from residential, commercial and institutional waste generators
- *Industrial waste*: non-hazardous solid waste generated at industrial plants; also includes construction and demolition debris
- *Special waste*: solid waste that requires special handling due to its physical, biological or chemical nature (e.g., medical waste, asbestos waste).
- *Recycling rate:*

$$\frac{\text{MSW recycled}}{\text{MSW disposed + MSW recycled}} \times 100\%$$

Waste imported from outside of Nevada is not counted in Nevada's state recycling rate.

The data referred to in the above sections are useful for discussing trends and making comparisons, although there are areas where information is lacking or questionable. The following provides general comments on the quality and interpretation of the solid waste data.

2.5.1 Disposal Quantities and Per Capita Generation Rate

On a statewide basis Nevada's solid waste disposal data is reliable. Quarterly, semi-annual or annual disposal reports are required from all landfills. The larger landfills weigh the incoming waste on scales, which captures over 95% of Nevada's disposed waste. The smaller landfills, however, do not have scales and use volume estimates with conversion factors to calculate and report tonnage disposed. In the rural counties, wide variations in per capita generation rates, shown on Figure 3, highlight the inexact nature of volume estimates. For example, the anomalously low rate in Lander County is probably due to underestimating disposal volume. Figure 4 shows greater consistency in the disposal data gathered from landfills with scales. These data indicate a weighted average MSW generation rate of under 8.0 pounds/person/day.

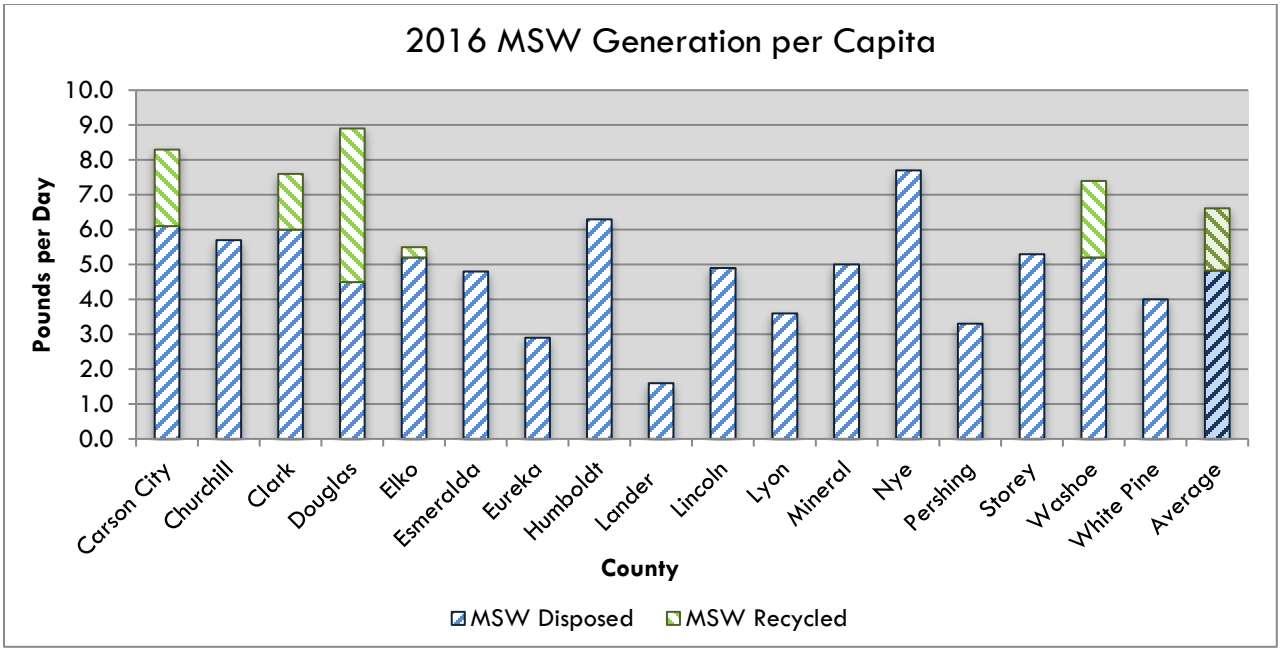

Figure 3. Municipal solid waste generated per capita for each County as reported by County. Esmeralda, Eureka, Lander, Lincoln, Mineral, Nye, Pershing, and White Pine weight is calculated from volume estimates. The generation rate in the figure represents landfilled or diverted MSW by County origin. The average represents the weighted average based on population. (The most current data compiled is calendar year 2016)

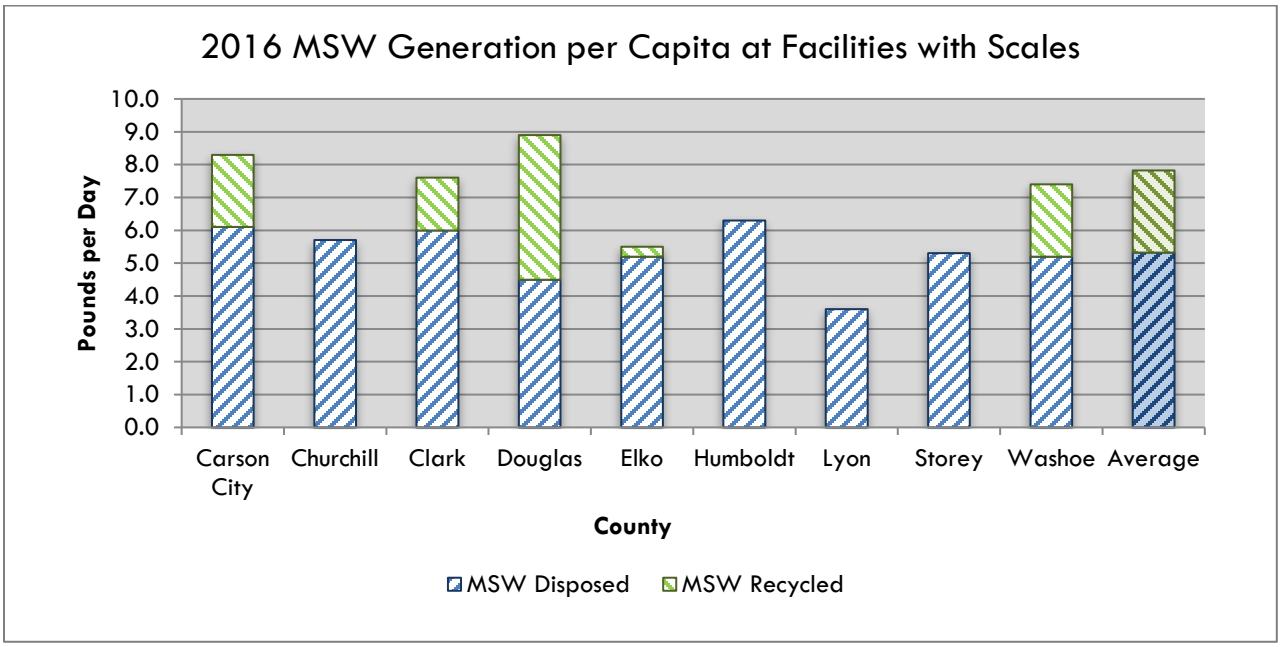

Figure 4. Municipal solid waste generated per capita for as reported by each county using scales at their disposal sites. The generation rate in the figure represents landfilled or diverted MSW by County origin. The average represents the weighted average based on population. (The most current data compiled is calendar year 2016)

It has been suggested that Nevada's tourism economy affects its municipal waste generation rate. The Las Vegas Convention and Visitor's Authority reported that over 42 million people visited the area during 2016. The visitor population, because it is considered a "transient" municipal solid waste

generating group, is not counted in with residential solid waste group. As such, per capita waste generation tends to be higher in the high-tourism areas than in non-tourism economies. A waste characterization study would be helpful to assess tourism waste generation patterns, and to better understand the variations in waste generation rates in Nevada's tourism affected municipalities.

2.5.2 Recycling Quantities

In 1991, the Nevada Legislature set a goal for 25% of the total solid waste generated in each municipality to be recycled. To assess Nevada's progress toward this goal, the NDEP conducts an annual survey of the counties to determine their recycling rates. While reporting the quantities of all the materials recycled each county seems pretty straight forward, it demands the combined efforts and cooperation of municipal governments, recycling centers, and disposal services to gather, record and report accurate data. In counties with populations greater than 45,000, the county recycling centers are required to submit a certified annual report of the types, and volume of materials recycled to their city/municipal government officials. The data is then compiled into the county's annual recycling rate and reported to the NDEP. As is often the case, the municipalities do not receive complete and/or accurate reports in a timely manner, requiring prompting and/or follow-up with the recycling centers. Although regulations require recycling centers to report, there are no penalty provisions for failure to submit.

The municipality must also take measures to ensure that double counting of materials is avoided. This happens when a recyclable material generator, and the receiving recycling center, both report it as recycled. NDEP conducts the final review of the municipal reports, checking the data to verify its accuracy. Any abnormal or inconsistent numbers are flagged, which then necessitates NDEP staff contacting the reporting county for additional information or clarification to resolve the discrepancies.

To answer the question, "*How well is Nevada recycling?*" the NDEP evaluates the county and statewide data in their biennial recycling and waste reduction reports. Comparing current data to that of past years verifies whether the State is making progress. A comparison of one county's recycling rate to that of another can provide useful information toward identifying whether the recycling measures or strategies being undertaken by higher recycling rate counties are worthy of duplication in lower rate counties. Yet caution must be used when attempting to draw conclusions. For example: In 2016, the urban municipality recycling rate varied between Clark County's rate of 20.5% in Nevada's

most densely populated county, to tiny Carson City's rate of 27.1%,andWashoe County's rate of 29.5%. These rates bring the data into question as to whether the differences are real, or simply a reflection of differing calculation methods.

It is incumbent upon the State and local governments to provide the recycling community with reliable and meaningful measures for recycling rate calculation. In order to build public confidence in the aforementioned reports, the data must also be verifiable. Simple, consistent terms and methodology must be applied uniformly across the recycling universe to ensure accuracy in recycling rate calculations. Furthermore, every element and result must be made available for public review. To this end, the SWMAs (NDEP, SNHD and WCHD) have agreed upon a standard set of reporting criteria, and are working with local governments and recyclers to improve the collection and reporting of recycling data.

NDEP and the SWMAs have partnered with U.S. EPA Region 9 in development of consistent recycling reporting data among the Pacific-Southwest states. This will help resolve recycling measurement issues by providing means to produce uniform, and hence, comparable data. In collecting and reporting data, the State and local governments will strive to clearly differentiate between solid waste types using U.S. EPA's definitions.

3. Profiles in Municipal Solid Waste Management Systems

Maps and corresponding one-page solid waste profiles for each county in Nevada are provided in Appendix 3. The maps provided a current "snapshot" of the existing solid waste management facilities and their locations (infrastructure), while their profiles provide specifics, such as,

- Name of the local solid waste planning authority
- Solid waste trends
- County population
- Active municipal solid waste landfills
- Solid waste and recyclables collection services
- Number of recycling drop-off sites
- Household hazardous waste collection services

Trends presented in the solid waste profiles are broken down into the following categories and defined as follows:

- **Municipal Solid Waste (MSW) generated:** solid waste generated from residential, commercial and institutional sources within the county's borders.
- **Industrial/"Special Waste" disposed:** solid waste generated from industrial sources that do not have disposal facilities on-site. This type of waste may come from within, or from outside, the county. Examples are construction and demolition debris, waste tires, and sludges.
- **Imported waste disposed:** solid waste disposed in Nevada that was generated outside the State.
- **Recycling rate:** Recycling rates are for MSW only and are presented as historically reported. The "recycling rate" is calculated by the tons recycled divided by the tons generated.

4. Current Solid Waste Management Issues and Future Considerations

Since their adoption and implementation in 1991, Nevada's disposal and recycling regulations have significantly changed the way solid waste is managed in Nevada. Our review of Nevada's current solid waste management systems reveals the persistence of a few "old problems," while new challenges have emerged. As Nevada's ultimate solid waste authority, it is incumbent upon NDEP to ensure that the solid waste management systems in the State,

- Comply with applicable Federal and State standards,
- Protect public health and the environment,
- Conserve natural resources

As Nevada strives to create an effective statewide solid waste management system, regular assessment of the adequacy of solid waste laws and regulations is essential. In this section of the *Plan,* issues that require attention are identified, along with proposed strategies to address them as concerns the following topics: Landfills, Recycling and Waste Prevention, Importation of Solid Waste, "Special Waste" Management, Rural Solid Waste Management, Open Dumping and Open Burning, and State and Local Funding.

4.1 Landfills

Since their establishment in 1991, landfill researchers and operators have identified problems with the federal Resource Conservation and Recovery Act (RCRA) Subtitle D criteria and have proposed alternatives to address them. For example, in arid environments such as Nevada, the requirement for

landfill liners and criteria for alternative cover have come into question, as have the landfill leachate and gas containment requirements as they relate to recent proposals for development of super-sized commercial solid waste disposal facilities.

4.1.1 Liner Requirements

All municipal waste landfills in Nevada are required to conform to the federal standards adopted under RCRA Subtitle D. According to the federal regulations and the approved State regulations, a composite liner (composed of clay and a layer of plastic membrane) is required for all new or expanding landfills that receive an average of more than 20 tons of waste per day (i.e., a Class I landfill facility).

Landfill owners/operators may apply to the SWMA for approval of an alternative liner design if the landfill owners/operator can demonstrate that the alternative design is sufficiently protective of the waters of the State against degradation caused by the introduction of landfill pollutants and/or contaminants. The *Plan* recognizes that site-specific conditions should be taken into consideration as we plan for future development of our disposal infrastructure, and that, with attention to detail and careful oversight, alternative liner designs can provide surface and groundwater protection equal to, or even superior to the current standard.

4.1.2 Bioreactor Landfills

The standard approach to landfill design in Nevada is what is commonly known as "dry tomb" landfilling achieved by the exclusion of liquids from buried waste resulting in minimization of leachate generation. Dry tomb landfilling has been criticized by some researchers contending that, because it delays waste decomposition, the waste will *always* present a threat to groundwater. To address this threat, an alternative technology has emerged, the "bioreactor" landfill, and it is gaining the attention of the waste industry and government regulators.

Bioreactor landfills promote waste decomposition by recirculating the leachate inherently produced by the waste mass with controlled application of additional liquids. This technology is already in use in several other states; however, in Nevada, with its arid climate and its unique hydrogeologic conditions, whether bioreactor designs prove to be a safe and economical landfill alternative remains to be seen. Until such time as a bioreactor landfill is proposed and receives SWMA approval, dry tombing is likely to continue.

In March 2004 the US EPA revised its municipal landfill criteria to allow states to issue Research, Development and Demonstration (RD&D) permits with associated variances from the standard criteria and requirements (specifically those concerning landfill design, operation, final cover, and closure/post-closure care). With the flexibility offered by RD&D permits, a variety of innovative landfill designs are possible as long as they, "*include terms and conditions at least as protective"* as the standard municipal landfill design. By the same token, because of their high degree of flexibility, one of the requirements of an RD&D permit is data collection and reporting on the performance of alternate designs. The data gathered under an RD&D rule requirement will help federal and state regulators, and landfill owners, evaluate the performance of these designs under different climatic conditions.

In general, the US EPA envisioned that RD&D permits would be issued for a three (3) year period, and extendable up to a maximum of 12 years. In order for Nevada to be able to offer the flexibility to try new technologies such as the "bioreactor" landfill, the solid waste regulations would have to be amended to adopt the RD&D rule.

4.1.3 Post-closure Care Period

After landfill closure, owners are required to provide post-closure care for a 30-year period. In general, post-closure care involves, but is not limited to, the following activities: maintenance of the final cover, monitoring and management of explosive gas, groundwater monitoring, and maintenance and operation of the leachate collection system. Advocates for revision of the post-closure care criteria contend that the 30-year time period is arbitrary, and propose that the standard should instead be risk-based: post-closure care should continue until the waste no longer poses a groundwater and/or explosive gas threat. Another concern with all landfills, current and future, is with the long-term integrity of the final cover. Due to the action of natural forces (wind, rain, dry, cold/heat, geologic shifting), all final covers will eventually fail, potentially compromising the integrity of their waste containment systems.

While the 30-year post-closure period is the standard in Nevada regulations, SWMAs have the authority to alter the timeframe. A shorter period may be approved if the owner demonstrates that it is sufficient to protect the environment; a longer period may be required if the authority determines that it is necessary to protect the environment. In the absence of a universally accepted methodology for

making such demonstrations, the 30-year period was accepted as default by most states. As a result, post-closure care planning and cost estimates have historically been developed based on a 30-year care period. In order to inject post-closure care flexibility in the regulation, a methodology needs to be developed to evaluate landfill performance and environmental risk during the post-closure period. Such a methodology would provide regulatory agencies with the necessary criteria for approving owner post-closure care demonstrations, and would provide an incentive as well for landfill owners to design, operate, and close landfills in a manner that would shorten their post-closure care duration, and conceivably reduce their associated costs. The Environmental Research and Education Foundation (EREF) took the lead in development of such a methodology and published its progress in an on-line document entitled, *A Performance-Based Approach to Ending Post-Closure Care at Municipal Solid Waste Landfills*.

4.1.4 Final Cover Design

The current prescriptive standard for a municipal solid waste landfill cover consists of two elements: an "infiltration" layer which contains at least 18-inches of compacted clay, topped by a 6-inch erosion layer of soil capable of supporting vegetation. The purpose of the clay layer is to provide a moisture percolation barrier to impede water seepage into the waste mass. The final cover material must have a permeability less than, or equal to, the bottom liner/layer. However, landfill researchers have determined that atmospheric wetting-drying cycles cause cracks to develop in the clay layer, causing the current prescriptive cover to fail within only a few of these wetting-drying cycles.

While several alternative final cover (AFC) designs have been conceptualized, one alternative, the evapo-transpiration cover (ET cover), is showing the most promise for Nevada's arid climate. Such covers can be designed to exceed the percolation reduction performance of conventional covers, and may offer other advantages such as ease of construction and increased long-term cover integrity. Nevada's existing regulations allow Solid Waste Management Authorities to approve AFC designs that achieve an equivalent reduction in percolation as the prescriptive cover design; however, few of the landfill applications received to date have proposed incorporating AFC designs. The fact that little AFC design work is being done in Nevada may be due to lack of familiarity with AFCs in general, the absence of a standardized approach to equivalency demonstration, or an understandable reluctance on the part of applicants to be subjected to the likely delays associated with regulatory review of an innovative design.

As noted previously (Sect 4.1.2), US EPA's recent amendment of the federal landfill standards allows states to issue RD&D permits that authorize variations from certain of the criteria, including the final cover design. While the RD&D rule would require that any alternative cover be at least as protective as the prescriptive design, the owner/operator of the landfill would be required to demonstrate that no moisture would escape from the landfill to the surrounding surface and groundwater.

4.1.5 Landfill Gas

Since the federal municipal waste landfill criteria were adopted in 1991, landfill design and operation for the proper management of landfill gas in Nevada is a relatively new concept. Written primarily to prevent explosions at landfills caused by methane gas generation and migration, the federal regulations were initially thought to be inapplicable to Nevada based on the commonly held belief that landfills in arid regions do not generate significant quantities of landfill gas. As such, the need to address landfill gas was given low priority on the landfill management task list in Nevada. This belief was proved to be incorrect by the fact that both Lockwood Landfill, located in northwest Nevada, and Apex Landfill in southern Nevada, are collecting gas from their landfills, through gas-to-energy facilities located on their sites, and supplying electric power to the grid. Lockwood is currently producing 3.2 megawatts of renewable energy, providing enough power for approximately 1,800 homes, and has applied for a permit to expand this capacity. Apex's on-site gas-to-energy facility produces 11 megawatts of renewable energy, enough to service about 6,000 homes.

Due to changes in the federal Clean Air regulations, and information accumulated from on-going landfill research and operational data collection, landfill gas is beginning to be seen in a different light. Three points deserve mention:

- In 1996 *New Source Performance Standards* (NSPS) and *Emission Guidelines* (EG) were adopted under provisions of the federal Clean Air Act to reduce emissions of air pollutants resulting from waste decomposition at municipal landfills. Six Nevada landfills are subject to NSPS or EG requirements because they exceed the permitted capacity threshold established in the federal rules.

  In conjunction with these rules, US EPA established the *Landfill Methane Outreach Program* to promote gas collection and energy recovery development. Landfill gas projects may help Nevada's larger landfills meet their financial objectives while reducing air pollution, conserving energy, and complying with the air pollution standards. Data collected pursuant to these regulations may prove useful to designing better landfills, and improving their operation, monitoring, closure and post-closure care.

- The assumption that arid landfills do not produce gas was contradicted by the experience of our two largest landfills. Both Lockwood Landfill (in Storey County) and Apex Landfill (Clark

County) have been collecting gas for some time now. While it has been suggested that this apparent anomaly is due to an inherent higher moisture content in municipal waste, the HDPE liners impeding downward migration of the gas may well be a contributor.

- Landfill gas migration is now recognized as a potential source of groundwater contamination. Remediation investigations at arid landfills in Arizona, California and elsewhere suggest that the migration of volatile organic compounds (VOC) in the gas phase is a more likely mechanism of groundwater contamination at such sites than leachate migration.[1]

4.1.6 Items for Future Consideration

1. SWMAs should conduct comprehensive, detailed engineering evaluations of landfill permit applications, whether new or proposed expansions to existing landfills, that propose to use alternative liner designs to ensure that they conclusively demonstrate that their proposed designs are sufficient to protect the waters of the State from contamination.
2. SWMAs should consider seeking NAC amendments that would allow them to issue RD&D permits for bioreactor landfills and alternative final covers in conformance with federal requirements (see App. 9, CFR 40 §258.4).
3. SWMAs should monitor the development of risk-based tools, methods and criteria (EREF and others) that can be used to establish the end of post-closure care based on landfill performance (e.g., determining when the landfill has ceased to pose a threat to human health and the environment).
4. For safety and energy generation reasons, SWMAs should continue to monitor and evaluate landfill gas detection and collection data from Nevada's municipal waste landfills and investigate the conditions of landfill gas generation.

4.2 Recycling and Waste Prevention

Every county in Nevada engages in recycling activities, and achieves some level of diversion from waste landfilling. Offered as a baseline, all rural municipalities divert scrap metal, white goods (large household appliances), and vehicle antifreeze and used motor oil from landfilling. As directed by NRS 444A population thresholds, only six of Nevada's 17 counties are required to establish recycling programs: Carson City, Clark, Douglas, Elko, Lyon and Washoe Counties. Lyon, the newcomer to the group, joined the ranks after the 2010 decennial census and is currently engaged in the planning and budgeting process. However, the County has yet to provide the State with a recycling program implementation schedule.

[1] Murray, R., Samorano, D., Masbruch, K., and Petersen, N. 1991. An Empirical Model for Vapor Transport in Arid Landfills. Seminar Presentation, 1991.

Since the 25% recycling goal was established by legislation adopted in 1991, Carson City, Douglas and Washoe counties have made significant progress toward increasing recycling participation in their counties. Their efforts exceeded the 25% goal early in this endeavor and are still successful. The 2016 recycling rates were: Carson City 27.1%, Douglas 49.6%, and Washoe 29.5%.

Clark County's recycling rate didn't exceed 22% until 2011, but then made an astonishing jump to over 27.5% in 2012. However, the increases in Clark County's rate were short lived: in 2013 the rate dropped to 22%, further down to 17.7% in 2015 before rebounding to 20.5% in 2016. These fluctuations are not easily explained. It may be due to a drop in commodity pricing, variability in the reporting process, or more likely a combination of several factors.

In 2012, the City of Elko implemented single-stream recycling in efforts to increase their recycling rate. Over the past 5 years, the Elko County recycling rate has hovered between 5-6% with the 2016 rate being 5.5%. Over the last several years, single-stream recycling has been implemented widely throughout Clark and most of Washoe County – equating to offering this service to over 90% of Nevadans. The greater Las Vegas area, owing to the fact that the majority of Nevada's population resides there, is foreseen as Nevada's greatest opportunity for further increasing our state recycling rate.

4.2.1 Improving Recycling in Clark County

Over the past several years Clark County's recycling rate rose at a slow but steady pace, and then jumped to 27.5% in 2012. The implementation of single-stream recycling in multiple municipalities was believed to be a reason behind the substantial improvement, but the rate dropped to 17.7% in 2015 before rebounding to 20.6% in 2016. In 2008, several pilot single-stream recycling programs started up and grew to include over 80,000 homes. The solid waste and recycling franchisee in the region, Republic Services, Inc., initially reported that their preliminary data predicted an increase in recycling of between 500-600%, which would have brought the pilot project diversion rate up to between 25-30%. The City of North Las Vegas was the first community to adopt single-stream recycling; followed by Clark County Unincorporated, and then recently the City of Henderson and the City of Las Vegas joined the ranks. The 2016 disposal data shows that Clark County generates about 60% of

all solid waste generated in Nevada. Increasing the volume of collected marketable recyclable materials could attract more recycling-oriented businesses to move into the Clark County area.

NDEP continues to promote and implement measures designed to increase recycling activities in Clark County. To this end, recycling education and outreach programs are seen as powerful approaches toward increasing recycling participation. The NDEP developed a free 12-week recycling education curriculum that can be teacher adapted to any K-12 classroom and student learning level. The Recycling & Waste Reduction curriculum is available free of charge via download from the NDEP's website (http://nevadarecycles.nv.gov/curriculum). Through an integrated teaching approach with ready-made, thought-provoking, and entertaining lessons and demonstrations, the Recycling & Waste Reduction curriculum also meets various science, math, language arts, and social studies objectives. The curriculum received certification and is listed as a professional development course for teachers by the Clark County School District. NDEP workshops are conducted to assist teachers with development of strategies to adapt the curriculum to various grade-level learners.

The NDEP Recycling Ambassadors Program is a recent endeavor that was initiated in the Clark County School District during spring 2012. Through this program, NDEP aims to continue educating young students on the value of resource conservation. By training motivated high school students to teach lessons in elementary school classrooms, they have the opportunity to gain community service hours, develop leadership and communication skills, and share their enthusiasm about recycling, reusing, and reducing. The program started with a small group of select students from Western High School. As of 2017, the program is still operating and has expanded to include additional high schools in Clark County.

4.2.2 Legislative Changes to Municipal Recycling Programs

NRS and NAC Chapter 444A established a 3-tiered structure for the provision of municipal recycling programs based on county population size: counties with populations greater than 100,000 are required to provide the highest level of services; smaller counties (populations between 45,000 and 100,000), a lesser level of services; while the small counties (less than 45,000 population) are exempt from the requirement to offer any recycling services. Clark and Washoe Counties occupy the upper, highest level tier; Carson City, Douglas, Elko and Lyon Counties occupy the second tier.

In recent years, a total of nine solid waste and recycling bills were adopted by the state legislature. A complete list of the bills, by year and bill number, is included in Appendix 1, with a brief summary of each. In the 2017 legislative session, no bills related to solid waste and recycling were passed.

4.2.3 Recycling at Public Buildings

Public buildings continue to present an untapped opportunity for waste reduction and increased recycling. AB 564, passed in 1999, amended several statutes related to recycling at public buildings, specifically the bill:

- Broadened requirements for the recycling programs in Clark and Washoe Counties to ensure the availability of recycling collection services at public buildings.

- Authorized appropriate rule-making bodies to prescribe procedures for the recycling of paper and other similar waste materials generated by the following governmental entities:

    - Courts
    - Legislature
    - State government offices
    - School Districts, and
    - University of Nevada and Community College System

- Assigned the responsibility for assisting State agencies in developing and carrying out recycling programs within State buildings to NDEP.

Pursuant to the amended statutes above, the SEC adopted NAC revisions to the municipal recycling program regulations (Ch. 444A), and the State agency recycling requirements (Ch. 232). In October 2001, the NDEP issued a model plan for public building recycling programs.

Although the legal authority to implement recycling programs has been significantly broadened, public building recycling programs to date have achieved only spotty success, even in urban areas where collection services should be established and readily available. The following provides possible improvements for consideration to expand recycling programs in public buildings:

- Increase the amount of space allotted for staging and use of recycling containers
- Include recycling provisions in contracts for janitorial services
- Provide information on the availability of collection services for recyclable materials
- Included collection of recyclable materials in franchise agreements with solid waste management service providers at public buildings

It is important to note that a waiver is included in the amended statutes for exemption from the requirements for paper and paper product recycling should the cost(s) be deemed unreasonable, or place an undue burden on agency operations.

4.2.4 Items for Future Consideration

1. Coordinate with the State Public Works Board and other agencies to promote space allocation and facilities for recycling in new public buildings.
2. Improve the submission of recycling center reports by seeking statutory changes that would establish penalties for non-reporting, and make submission of the report a condition of municipal business license renewal. Add a statutory provision for confidentiality to protect the interests of reporting businesses.
3. Improve accountability of municipalities with approved recycling programs by enforcing the existing requirement to conduct a periodic assessment of their recycling programs, including recommendations for inclusion in their SWMP.
4. Establish a program for State recognition of individuals, institutions and businesses for outstanding efforts to reduce waste and recycle.
5. Continue to investigate the feasibility of adoption of a State "Bottle Bill," or beverage container redemption value.
6. Coordinate with State agencies on recycling within agency offices to conform to NAC 444A.500 (App. 8), and pursue expansion of the recycling efforts to include other recyclables such as bottles, cans, etc.
7. Encourage and support opportunities to develop organic materials composting and/or anaerobic digestion for green waste, wood waste, food waste, and food soiled paper.

4.3 Importation of Solid Waste

Waste importation has become a controversial issue nationally, especially in Eastern states where space is a premium and solid waste tends to "flow" across state lines from areas of higher to lower urbanization. In 1994, the US Supreme Court ruled that waste is an article of commerce, which means that no state or local government can establish rules that discriminate against disposal of waste based on its state of origin.

Federal landfill standards established in 1991 caused a trend toward regionalization of landfills. As previously noted, in addition to the large increases in waste importation over the last decade, both business interests and rural community development planners have begun to market existing, and

potential, Nevada disposal capacity to out-of-state customers (Fig. 5 - depicts the origin and disposition of Nevada's current waste importation).

Given this trend and the Supreme Court's prohibition against restrictions on the flow of waste, it appears as though Nevada is likely to remain a "net" waste importer (i.e., Nevada imports more solid waste than it exports out of state). Arguments can be made that solid waste importation provides an economic benefit to local communities by providing jobs and offsetting community solid waste management costs. Nevada should focus on preparing to manage the additional waste in a manner that continues to protect public health and the environment, while at the same time promoting waste reduction and resource conservation ethics.

While some may see the economic benefits of waste importation, there are also costs. With increased solid waste importation comes increased solid waste transportation (truck) traffic on Nevada roads and highways, and increased roadside litter along the routes to Nevada's landfills. Increased importation poses an increased regulatory burden as well: establishing new landfills, installation of additional transfer stations, and solid waste transportation services all require permits, with associated application reviews and facility inspections for the duration of the operating life of these facilities. Industrial and special wastes generated in other states and brought to Nevada would also bring new regulatory challenges.

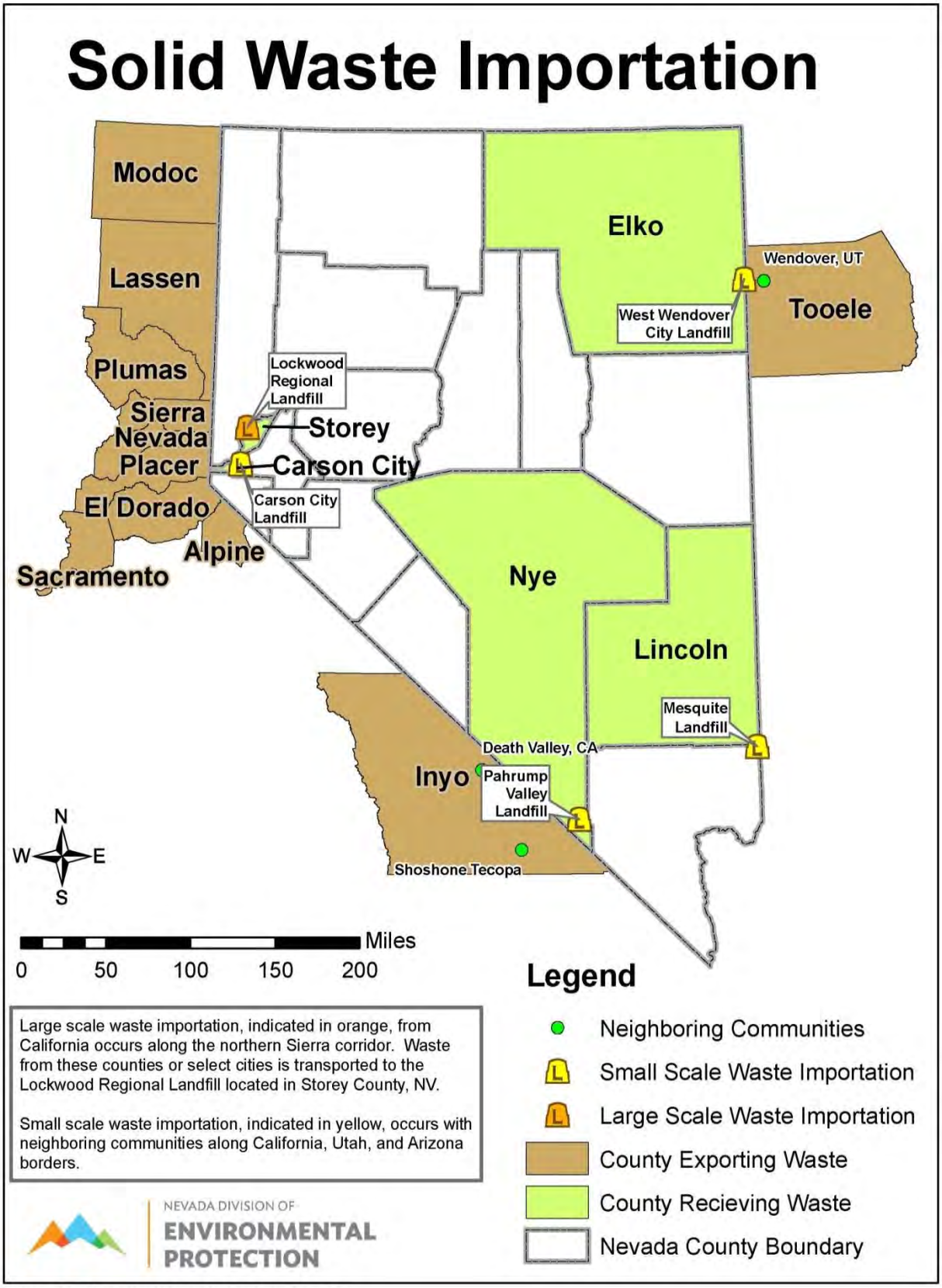

Figure 5. Solid waste importation into Nevada.

4.4 Special Waste Management

"Special wastes" are those that require special handling or disposal because of their physical, chemical, or biological characteristics. Examples of special waste types include waste vehicle tires, vehicle batteries, vehicle motor oil, household hazardous waste, medical (bio-hazardous) waste, liquid waste (septic pumping), petroleum contaminated soil, large appliances (white goods), junk automobiles, and electronic wastes (computers, monitors, etc.). For the most part, Nevada's municipal waste programs have developed adequate procedures and facilities for management of these wastes; however, there are a few persistent, and new, emerging problems with special wastes as noted in the next sections.

4.4.1 Electronic Waste (E-waste)

This waste stream (televisions, home computers, cell phones and other electronic devices and equipment) is being generated in increasing quantities in homes, schools and businesses nationwide. Some of these wastes fail hazardous waste toxicity characteristic testing and must, therefore, be managed according to the hazardous wastes rules. Most notably, cathode ray tubes (a.k.a., CRTs, or the glass screen component of older TVs and computer monitors) typically contain several pounds of lead. There is a cost involved with proper disposal of a standard-sized monitor, or to have these items shipped to glass recycling facilities. Due to the costs associated with management of this type of waste, e-waste is often stored indefinitely in warehouses and garages.

The e-waste problem is not unique to Nevada. Twenty-five states have already adopted laws and regulations to identify the responsibilities for funding and building the infrastructure to manage this waste. In the 2005 Legislative Session, AB 65 was introduced to impose a ban on the landfilling of, "CRTs, laptop computers and similar video display devices," and would have required the NDEP to establish a Statewide program to recycle these wastes; however, the bill died in committee. The 2007 Legislative Session introduced AB 471, which would have provided $4,000,000 from the General Fund to The Blind Center, a non-profit organization in southern Nevada, to foster electronic waste reuse/recycling, but AB 471 also died in committee.

The 2009 Legislative Session introduced AB 426, which, through amendment, ultimately directed the NDEP to conduct a study of existing and proposed programs for the reuse and recycling of computers and other electronics. The report resulting from the study was submitted to the 2011 Legislative Session recommending that no legislative action be taken. "End-of-life" management of electronic

wastes is an issue that may become more pressing for Nevada unless a national program is established by Congressional action.

4.4.2 Household Hazardous Waste (HHW)

Solid wastes that have hazardous waste characteristics are exempt from hazardous waste regulation if generated by households. While household wastes such as solvents, cleaning compounds, and pesticides can be legally disposed in municipal landfills, many citizens and local governments are seeking environmentally preferable alternatives. NRS 444A.040 (App. 7) provides that municipalities with populations greater than 45,000 shall establish programs for HHW management. In Carson City, Clark, Douglas, and Elko Counties, comprehensive HHW drop-off services are available to residents at no charge. In the Reno-Sparks area of Washoe County, private companies (H2O Environmental and others) provide HHW management services (drop-off) for a fee. However, it is unlikely that it efficiently serves the purpose of diversion of HHW from the municipal waste stream. Residents are far less likely to use such a service if they have to pay. As is often the case, rural counties collect used vehicle batteries and oil for recycling, but few have established comprehensive HHW programs.

In recent years, elemental mercury originating from households received much media attention following several release incidents in Nevada. This attention raised awareness among Nevada residents causing many to inquire about proper disposal of elemental mercury perhaps discovered in containers in their garage among stored household items, or in mercury-containing devices such as thermostats and thermometers they'd replaced with newer digital models. As a result, the NDEP developed a webpage and informational brochure for the public regarding proper disposal of household waste mercury. It is important to point out that the local waste disposal companies, or Health Districts, remain the first points of contact for this type of information; however, NDEP is always ready to provide information and assistance in this regard.

4.4.3 Medical Waste

Services for collection and disposal of medical waste generated by health care and veterinary industries are available for a fee in Nevada. Home pick-up services are available in some areas to citizens with mobility issues. Sharps (needles, lancets, and other medical instruments) generated in the home are of particular concern because they can present a route of blood-borne pathogen infection to other household residents as well as to sanitation workers who manage household waste at municipal

waste facilities. While fully eliminating sharps from the municipal waste stream may not be possible, services that encourage separation from the municipal waste stream and increased use of sharps containers could further reduce the hazards to sanitation workers.

In 2015, the SNHD adopted new ordinances to provide for safer storage, handling, processing, and disposal of medical waste in Clark County. WCHD previously established comprehensive Biohazardous Waste ordinances to regulate medical waste, including sharps. According to WCHD's SWMP, there are three means of disposal for Washoe County residents including mail-in programs (subscription services), medical waste drop-off locations, and in-home care (collection) arrangements.

For the generation, storage, and transportation of medical waste, the NDEP defers to OSHA and DOT standards. However, once medical waste arrives at various disposal locations, NDEP retains oversite as to how the landfills manage it.

4.4.4 Pharmaceuticals and Personal Care Products

Formerly, the favored method for household disposal of unused pharmaceutical drugs was flushing down the sink or toilet. However recent studies show that common substances such as drugs and the chemical components of personal care products (e.g., plastic micro-beads in toothpaste and cosmetics) accumulate in surface and ground waters. While advances in chemical analysis have made it possible to detect even trace levels of these contaminants in drinking water sources, little is yet known about their potential to affect human health and the environment at any level. Although the potential for human health effects due to the presence of pharmaceutical wastes in drinking water is of concern, the effects on aquatic life and water-dependent organisms may be more pronounced due to their continuous exposure.

While the discharge of pharmaceuticals from manufacturing sources and the medical profession is already well-defined and controlled, quantities released from diffuse sources (e.g. household waste) are harder to estimate or control. Examples of "diffuse sources" include human excretion of ingested substances, drug disposal down sanitary sewer systems, and introduction of home septic systems seepage to the water table. It is recommended that Nevada solid waste managers monitor emerging data on pharmaceutical wastes and their impact on the environment so that they may develop effective management programs to address them. Currently, in some counties, there are community groups,

pharmacies and sheriff's departments that sponsor collection events for their residents' waste medicines and medical supplies. These are generally not regularly scheduled activities so you are encouraged to check with you pharmacy and your county sheriff's department for turn-in opportunities.

4.4.5 Waste Tires

Waste tire regulation in Nevada began with the passage of Assembly Bill 320 in 1991 which established disposal methods for waste tires and authorized the State Environmental Commission to begin adopting regulations governing waste tire handling and transportation. In March 2009, SB 186 passed setting the standards for the permitting and operation of facilities for the management of waste tires. The regulations provide for issuance of permits for the design, operation and closure of waste tire management facilities, registration of haulers, and transportation of waste tires.

In addition, SB 186 banned landfilling of tires in counties that have permitted waste tire management facilities. There are some exceptions dealing with unavailability of services and unintentional disposal. There are currently three permitted waste tire management facilities in Nevada: Lunas Construction Clean-up in Clark County, permitted by SNDH; Ray's Tire Exchange and Rubber Enterprises in Washoe County, permitted by WCHD; and GreeNu in Lyon County permitted by NDEP. Thus, the landfill ban currently affects only Clark County as there are no permitted landfills in Washoe County and the GreeNu site in Lyon County is not yet operating.

In Nevada's regulations a waste tire is defined as one that is not suitable for its intended purpose because of wear, damage or defect. Retreaded and serviceable tires are not considered waste tires as they will be reused as originally intended. As noted above, Nevada has limited restrictions on placing waste tires in landfills and most landfills in Nevada accept used tires from the public and commercial haulers. Because the cost to landfill waste tires is low, and the cost to recycle them is relatively high, recycling markets for waste tires are not fully developed in Nevada.

The goals of the state's waste tire management program are to minimize the threat to public health and the environment posed by improper storage and disposal of waste tires and to develop a program that balances the costs and benefits to protect public health and the environment. NDEP supports conserving natural resources by promoting recycling and reusing/repurposing of waste

tires. Likewise, Nevada's waste tire management plan is predicated on the premise that despite their name, waste tires are actually a resource. This approach places the primary responsibility for developing uses for waste tires on the private sector. Regulatory actions taken by the State legislature are intended to encourage the private sector to develop uses and markets.

In August 2009, the NDEP conducted a statewide survey of tire dealers, tire re-treaders, landfill operators and mining operations in an effort to assess the status of waste tire disposal issues in Nevada. The results indicated that about one-third of waste tire generators self-haul their tires for disposal while the balance contract with disposal companies or registered tire haulers to transport their waste tires. Another 30% of waste tire generators send their tires to a processor, or to be retreaded. The balance is disposed of in landfills. The majority of landfill sites (39%) reported receipt of less than 500 tires per year, while 36% indicated receipt of 1,000 to 5,000 tires per year.

In urbanized counties such as Clark and Washoe, access to affordable recycling and/or reuse/repurposing alternatives are readily available. However, that is not the case in rural Nevada. For this reason, the only available option for many rural communities is to use a permitted landfill for waste tire disposal. Given the underdeveloped waste tire recycling market in Nevada, fewer waste tires are recycled or recovered in end-use markets. Also, landfills typically charge a low fee for tire disposal. Thus, the majority of waste tires are buried in landfills throughout the state. Notably, respondents and the Health Districts indicated that they are not aware of any existing waste tire stockpiles, in their jurisdictions.

NRS 444A.090 established the “Tire Fund” requiring that sellers of new tires collect a fee of $1.00 per tire from purchasers. According to 2016 tax revenue generated, about 1.9 million new tires were purchased in Nevada. Data from the county solid waste recycling reports indicate approximately 1.1 million of those replaced tires, were recycled. During the same period, the solid waste disposal reports indicate 0.4 million tires were landfilled. The difference between the figures, 0.4 million tires, can be accounted for in the number of tires being reused and/or retreaded, plus a degree of estimation inaccuracy owing to the number of landfills that do not use scales.

Overall, the largest generator of waste tires in Nevada is tire retailers. However, businesses can not readily sell the waste tires they generate at their retail outlets. Despite the costs to retailers of

commercial handling, an almost equal amount of waste tires are hauled away by disposal services versus being self-hauled. Whether residentially or commercially generated, the following four waste tire management options are available to most Nevadans:

1. Self-haul to a permitted management or disposal facility
2. Contract with a registered waste tire hauler to transport them to a permitted management or disposal facility
3. Recycle or reuse/repurpose waste tires
4. Re-sell waste tires (if they have commercial value).

Although most permitted landfills charge a modest disposal fee per tire, these fees are believed to be the chief contributor to illegal dumping of waste tires in Nevada's desert areas. Open dumping, burning and stockpiling of waste tires are not acceptable alternatives to landfilling as they are prohibited by NRS 444.583. At most Nevada landfills, waste tires are mixed in with other municipal wastes in the landfill mass. When not mixed in, waste tires must be chipped or split to reduce their volume in the landfill mass, eliminate water collection and vector propagation potential.

For most landfills in Nevada, remaining space is not a limiting factor. However, because of their physical properties, landfilling waste tires is an extremely inefficient use of landfill space. Volume reduction of large quantities of tires is highly desirable to conserve landfill capacity. As a landfill management issue, waste tires will become increasingly important as available capacity decreases in existing landfills and new landfills become more difficult to site due to rising permitting and operating costs.

Some alternatives to landfilling waste tires are available. The U.S. Tire Manufacturers Association (USTMA) Scrap Tire Committee estimates 3,551.3 thousand tons of waste tires were generated nationwide in 2015[1]. Uses other than landfill disposal include Tire Derived Fuel (TDF), ground rubber applications, civil engineering applications and exportation.

In 2015, an estimated 48.6% of all waste tires generated in the U.S. were used as an alternative fuel source over coal in industrial processes (cement kilns, paper mills, industrial utility boilers, etc.). Of

[1] U.S. Tire Manufacturers Association (USTMA), 2017, 2015 U.S. Scrap Tire Management Summary report

the balance, 25.8% were used in ground rubber applications, such as playground surfaces and sports field applications; 11.4% were landfilled and only 2.6% was exported. The civil engineering market used 7.0% in highway/roadway projects and the final 4.6% was used in miscellaneous uses.

Used whole, or shredded depending on the combustion device type, waste tires are used for fuel because of their high heating value, typically as a supplement to traditional fuels, such as coal or wood, in industrial applications. Unfortunately, Nevada's only two coal-fired power plants, Valmy and Reid-Gardner, employ ball-mill coal incineration preparation systems that do not lend themselves to waste tire fuel supplementation. Therefore, the capital costs necessary to modify these existing plants to be able to use whole tires or TDF, not to mention the costs associated with TDF production, render power production via waste tires as a fuel source a noncompetitive alternative to coal at the present time.

One common method for waste tire management is to recycle them into ground rubber (also called granulated, crumb or pelletized rubber). The crumb rubber is used as stock material for highway paving and other surface applications such as athletic/recreational surfaces. Although "asphalt-rubber" is a more expensive paving material due to the costs of adding an additional ingredient to asphalt blends and the specialized equipment required to manufacture and apply it, the addition of rubber to asphalt creates a far superior material to asphalt alone. It can be adapted to perform in a variety of environmental conditions (heat, cold, wet, dry, etc.). Applied to roads, asphalt-rubber dampens tire noise, is more durable than asphalt, thereby increasing the life-expectancy of pavement. Ground rubber has also proven to be a superior material in applications such as ground cover under playground equipment, competitive running tracks, ADA compliant trail systems, and is an integral component in synthetic sports-turf.

Exportation as a national waste tire management strategy is showing a marked reduction in recent years. In 2015, the volume of waste tires exported decreased about 43% over the 2013 reported volume. Another positive fact from the USTMA is that in 2015, over 93% of the waste tires that were stockpiled across the U.S. have been cleaned up.

4.4.6 Items for Future Consideration

1. **Waste Tires:** Continue to evaluate practices for effective landfilling methods (ex: whole vs quartered tires), associated hazards, and disposal costs of landfilling tires; investigate the potential use of TDF; seek out and promote new tire recycling markets in Nevada.
2. **Household Hazardous Waste:** Continue to offer household hazardous waste start-up grant funding especially to rural local governments willing to cover program maintenance costs.
3. **Elemental Mercury hazards mitigation**: Continue to promote and assist in efforts to collect elemental mercury from the public; continue to develop public educational programs and materials to explain the hazards of elemental mercury and the availability of non-hazardous alternative products.
4. **Medical Waste:** Promote development of community collection programs to address household-generated sharps; increase public hazard awareness associated with sharps; promote proper disposal of sharps by providing information on available local collection points and mail-in programs.
5. **E-waste:** Continue to provide support for e-waste collection events; continue to provide public education and outreach efforts to encourage public, residential and business (or manufacturer) take-back programs.

4.5 Rural Solid Waste Management

An effective solid waste management system depends upon adequate infrastructure, proper equipment, trained personnel, and good planning. Compared to urbanized areas, solid waste management programs in rural Nevada face unique challenges:

- Weaker economic base due to limited tax revenue
- Insufficient personnel resources
- Poor economy of scale
- Long transportation distances to resources = increased costs
- Lack of recycling infrastructure

With only a couple of exceptions, all of Nevada's rural landfills are owned by the local governments and operated by their public works departments. Although most are exempt from the federal requirements for engineered landfill liners and ground-water monitoring, they are subject to the federal standards as they apply to location, design, operation, closure/post-closure care, and financial assurance. Since implementation of the RCRA Subtitle D criteria, Nevada's rural solid waste infrastructure fundamentally shifted from a few "open" dump sites scattered across the state, to engineered regionalized landfills served by a network of satellite public waste storage bins and transfer

stations. With this shift came an increased need for landfill equipment (bins for storage, trucks for hauling, bulldozers, compactors, and earthmovers) and demand for new skills in landfill operations, solid waste planning, and environmental compliance. Responsible for meeting these new demands and holding up their ends in the new infrastructure model, rural counties often fell into non-compliance, unable to meet the required elements of the solid waste regulations due to their economic difficulties and staffing short-falls.

4.5.1 Items for Future Consideration

1. Coordinate solid waste planning with land use master planning; investigate the use of the State Land Use Planning Advisory Council as a solid waste planning forum.
2. Enhance existing, or establish new, training programs to help rural landfill operators meet certification requirements.
3. Provide grants to support rural local governments with solid waste planning, equipment acquisition, and illegal dump site clean-up activities.

4.6 Illegal Dumping and Open Burning

Nevada's rural and urbanized areas alike suffer from one common, and persistent problem: illegal, or open, dumping. Because it is fundamentally local in nature, planning at the municipal solid waste management level is seen as best suited to address this problem. The first condition for reducing illegal dumping is the establishment of a local system that provides convenient, and reasonably priced, solid waste services. Once that system is in place, the municipal government can begin to address illegal dumping through a two-pronged approach: providing public information as a preventive measure (e.g., where to properly dispose of trash and various recyclables, advising that open dumping is an illegal, punishable offense), while enforcing the laws against it through local authorities. NRS 444.621 through 444.645 (App. 5) provides municipal governments with the authority to prosecute and penalize illegal dumpers.

It is recommended that local solid waste planners consider whether the following measures would help to control illegal dumping in their communities:

- Increase the convenience and/or decrease the costs associated with use of authorized disposal services and facilities
- Encourage full enforcement of the laws against illegal dumpers in small communities

- Promote coordination among local peace officers, prosecutors, and courts to address illegal dumping problems

Progress toward controlling illegal dumping activity depends upon the citizens and their elected municipal officials putting a high priority on having a clean community.

The City of Elko is an outstanding example of a rural Nevada community that has embraced this concept. The City of Elko has led a concerted effort to reduce illegal dumping by involving its citizens and civic leaders in community cleanup events, free dump days and single stream recycling. In Clark County, the SNHD holds regular public meetings for the purpose of hearing solid waste violation cases, most of which are illegal dumping.

Open burning of household garbage and non-vegetation refuse is not only illegal, and a public nuisance, but it also presents a threat to public health and the environment due to toxic substance emissions. The US EPA determined that open burning constitutes the largest source of dioxins released to the environment in the United States, far exceeding emissions from commercial waste incinerators. Dioxins are carcinogenic (cancer-causing) substances that persist in the environment and can be taken up into the food chain. Exposure routes for dioxins include inhalation, and absorption by ingestion of dioxin contaminated food. Fire smoke can carry and drop dioxins onto crops where they are absorbed by the plants, and ultimately consumed by animals and humans.

In 2004 the NDEP Bureau of Air Quality tried to address this problem by proposing new regulations limiting the open burning of solid wastes. As a result of opposition expressed to this change, especially from certain rural areas, it was determined that additional public information and education is needed before this issue will be resolved statewide. The proposed amendments were withdrawn, but some local ordinances were adopted to address this issue.

4.6.1 Items for Future Consideration

1. Provide assistance to rural local government elected officials and staff that want to address illegal dumping problems, including the following:

   - Public information and education
   - The use of State grants to improve rural solid waste infrastructure
   - On-site workshops to develop local strategies that include all entities and personnel that can influence open dumping

2. Local governments, in jurisdictions where illegal dumping has become a commercial enterprise, should consider adoption of a "generator responsibility" ordinance.

3. Conduct public outreach and education about the risks of open burning and build support for burn restrictions in rural communities.

4.7 State and Local Funding

4.7.1 Solid Waste Management Authorities (SWMAs)

Nevada's three SWMAs are statutorily approved to collect fees and fines through permitting, as well as compliance and enforcement actions involving solid waste management. In 1991, State Legislature authorized a bill that approved a $1 fee (Tire Fee) per retail tire sold, which became the solid waste management account. Funds from the tire fee must be used exclusively for solid waste management, in accordance with statute.

The Tire Fund partially funds the solid waste management programs of the three SWMAs and is collected by the State Department of Taxation. Sellers of new tires are required to submit 95% of each tire fee to Taxation and are authorized to keep the other 5% to offset their administrative burdens. The revenue collected by Taxation is distributed among the three SWMAs, on a quarterly basis, as follows:

NV Division of Environmental Protection:	44.5%
Southern Nevada Health District (SNHD):	30%
Washoe County Health District (WCHD):	25%
NV Department of Taxation:	0.5%

Figure 6 shows tire fee revenue by fiscal year from 2007 through 2016. Except for 2009, which recorded a loss of over 20%, revenue has only fluctuated about 5% from year to year. The huge 2009 drop can be attributed to the national recession that began in late 2008.

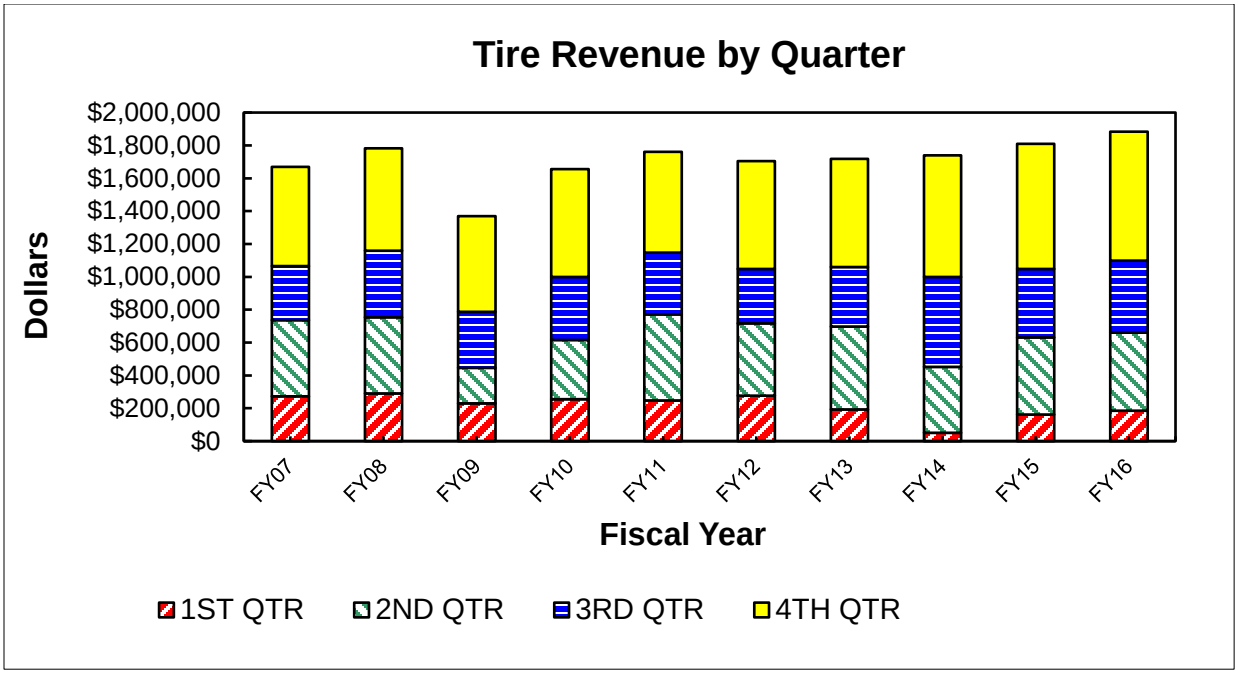

Figure 6: Revenue collected from tire fee for fiscal years 2007-2016.

This revenue source is not directly related to the regulatory workload of the Solid Waste program; while the number and complexity of regulated solid waste management facilities has increased, tire fees have remained flat and proved to be inadequate to support program needs.

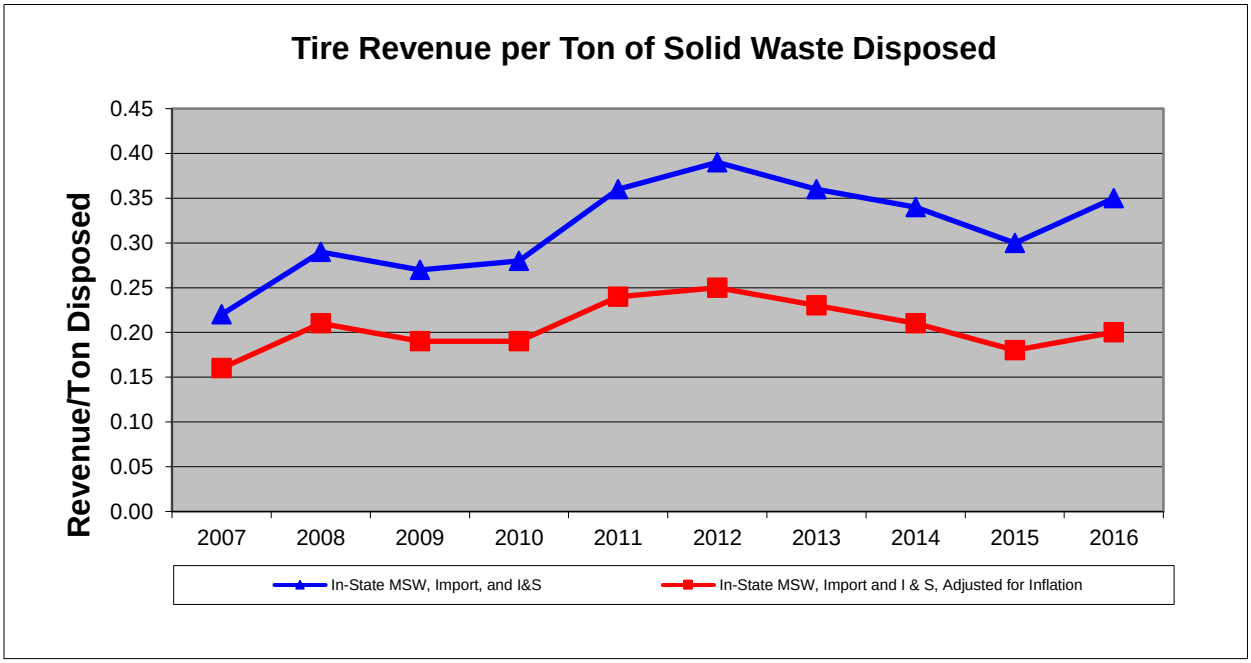

Figure 7: Trend of revenue collected for each ton of solid waste disposed. The red line is deflated pursuant to the average inflation rate of 1.9 for years 2007-2016 (U.S. Department of Labor, Bureau of Labor Statistics, not seasonally adjusted, west urban, all items)

In 2007, Tire Fee revenue brought in about 22¢/ton of waste disposed; nine years later (2016) it amounted to 35¢/ton (Fig. 7). The upper curve in Figure 7 shows the change in ratio of Tire Fee revenue per ton of waste disposed. The lower curve is the same ratio adjusted for an average inflation rate of 1.9% annually showing 17¢/ton in 2007 increasing to 20¢/ton in 2016. In 2016, the revenue was 11.4% higher than 2007 as the tons of waste disposed dropped 28.5%.

In October, 2014, the SEC adopted a schedule of fees (applicable to facilities under the authority of NDEP only) for the issuance of permits and other approvals for the operation of solid waste management facilities. These include annual operating fees, post-closure fees, and permit modification fees (NAC 444.6395, see Appendix 6). The schedule of fees is based on a volume threshold to capture our largest Class I Municipal, and Class III Industrial, landfills. Historically, permits for large facilities demand more time and effort to review and maintain, as well to ensure facility compliance through reporting which requires regulatory staff review, and inspections conducted by regulatory staff.

The new schedule of solid waste management permitting fees will provide a supplemental source of revenue that is directly tied to the regulatory workload. In addition, the new fees will enable the Division to offset certain expenses currently funded by hazardous waste fees to help address recent revenue shortfalls in the Hazardous Waste Management Fund.

4.7.2 Local Government

Local government has responsibilities for municipal solid waste planning, recycling program development and implementation, as well as providing public information and education for prevention of illegal dumping. Additionally, most of Nevada's rural governmental entities own and operate their community disposal sites. Local solid waste management activities may be funded through disposal fees collected at the landfill gate, property tax assessments, general funds, or a combination of any of these methods.

Due to the high cost of operating a municipal landfill in compliance with State and Federal regulations, many of Nevada's rural landfills have been driven to closure, leaving remote communities faced with a dilemma to either build a landfill themselves, or pay for long-distance waste transportation services. Budget shortages in some of Nevada's sparsely populated counties have led to

inadequate staffing, lack of training, equipment, and insufficient operating funds for landfills. These conditions have contributed to rural landfills operating in violation of regulations and permit requirements.

As a strategy for revenue generation, several rural governments are exploring waste importation, not only as part of their regular solid waste management programs, but also as general fund enhancement. At present, these are two options under consideration: municipalities can either establish and operate commercial landfills themselves, or, negotiate a "host" fee with existing private landfills (based on tons of waste received at the landfill, a percentage of the disposal fees paid is returned to the county/municipality in which the landfill is located).

4.7.3 Items for Future Consideration

1. Evaluate each rural county's costs and funding sources for solid waste management to determine whether local governments are in need of financial assistance.
2. Increase the current tire tax ($1 on each new tire sold) to defray NDEP's costs to manage and regulate solid waste in Nevada. This revenue source could also fund grants for solid waste management projects statewide.
3. Establish a State tipping fee on each ton of solid waste disposed in landfills statewide. This revenue source could be used to fund grants for solid waste management projects statewide.