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SOLID WASTE MANAGEMENT IN NORTH DAKOTA*

DEAN T. MASSEY**

Changes in population size and character, increases in industrial activities, advances in technology, and the growing affluence of our society have profoundly affected the volume and nature of solid wastes that must be stored, regularly collected, transported, and ultimately disposed of on suitable land. The advance of certain industries, new marketing techniques, and the developing trend towards packaging goods in disposable containers have greatly multiplied the per capita rate of refuse production.¹ For example, refuse collected in urban areas has increased from 2.75 pounds per person per day in 1920² to an average of 5.32 pounds for the entire nation in 1968.³ By 1980 that figure is expected to reach eight pounds.⁴ The technology of solid waste storage, collection, and final

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1. For a comprehensive discussion of packaging goods in disposable containers and the waste disposal problems created by this trend see A. DARNAY, JR. & W. FRANKLIN, *THE ROLE OF PACKAGING IN SOLID WASTE MANAGEMENT 1966 to 1976* (Public Health Service Pub. No. 1855, 1969).

2. COUNCIL ON ENVIRONMENTAL QUALITY, *ENVIRONMENTAL QUALITY—THE FIRST ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY 106* (1970) [hereinafter cited as *THE FIRST ANNUAL REPORT*].

3. R. BLACK, A. MUEHICH, A. KLEE, H. HICKMAN, JR., & R. VAUGHAN, *THE NATIONAL SOLID WASTE SURVEY: AN INTERIM REPORT 12-13* (U.S. Dep't. of Health, Education & Welfare, Public Health Service, 1968) [hereinafter cited as *THE NATIONAL SOLID WASTE SURVEY*]. Of this, about three pounds were estimated to be household in origin and one pound to be commercial. The 1968 national average differed somewhat for urban and rural areas. Wastes collected daily in urban areas amounted to 5.72 pounds per person, while it was 3.93 pounds for the rural areas. Furthermore, only those materials known or estimated to be collected were included. Consequently, household, commercial, industrial, demolition, agricultural, and other wastes that were transported or disposed by the individual generator were not a part of the 1968 figure.

4. *THE FIRST ANNUAL REPORT*, *supra* note 2.

disposal has not kept pace with increases in production, social changes, and modern marketing practices.⁵

The total amount of solid wastes produced in the United States reached more than 4.3 billion tons in 1969.⁶ Over one-half of the wastes resulted from agriculture and agricultural related activities,⁷ with mineral⁸ and industrial⁹ solid wastes also contributing large amounts. A little under six per cent, or 250 million tons, was classified as residential, commercial, and institutional solid wastes. Approximately 190 million tons, or three-fourths, were collected by public agencies and private refuse firms. The remainder was abandoned, dumped, disposed of at the point of origin, or hauled away by the producer to a disposal site.¹⁰

Although residential, commercial, institutional, and industrial solid wastes comprise only a small portion of the total load produced, they are the most offensive to the environment and the most dangerous to health when permitted to accumulate near population centers.¹¹ Therefore, such wastes are the chief target for management planning and programs.¹² Agricultural and mineral wastes are generally more widely spread over the land. They are less likely to accumulate near concentrations of population and so far have not required special collection and disposal measures. However, as more is learned about the effects of agricultural wastes, particularly the enormous and concentrated quantities produced by cattle confined to feedlots, on the quality of air, water, and esthetics, steps

5. *Id.* See generally *id.* at 109-18 for a brief discussion of some of the recent techniques developed for recycling and disposing of solid wastes. For further discussion see R. ENGBAHL, SOLID WASTE PROCESSING: A STATE-OF-THE-ART REPORT ON UNIT OPERATIONS AND PROCESSES (Public Health Service Pub. No. 1856, 1969).

6. THE FIRST ANNUAL REPORT, *supra* note 2, at 107.

7. *Id.* at 2. 280 million tons, which included animal and slaughterhouse wastes, useless residues from crop harvesting, vineyard and orchard prunings, and greenhouse wastes.

8. *Id.* at 107-08. 1,700 million tons, which comprised 39 percent of the total solid wastes produced in the United States in 1969. Most were from the mineral and fossil fuel mining, milling, and processing industries. Eight industries, copper, iron and steel, bituminous coal, phosphate, rock, lead, zinc, alumina, and anthracite, are responsible for generating 80 percent of the total mineral solid wastes. By 1980, it is expected that the mineral industries will generate at least two billion tons of waste each year. *Id.* at 108.

9. *Id.* at 107-08. Of the 110 million tons generated in 1969, about 15 million tons were scrap metal and 30 million tons were paper and paper products. The electric utility industry produced more than 30 million tons of fly ash from burning bituminous coal and lignite. *Id.* at 108.

10. See generally *id.* at 107-08.

11. *Id.* at 107.

12. As of June 1, 1972, 32 states had completed statewide solid waste management plans, while in another 14 the plans were in draft stage. Plans must include an inventory of waste disposal facilities, a survey of problems and practices, and, whenever possible, provisions for recycling or recovery of materials from waste. COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL QUALITY—THE THIRD ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY 173-76 (1972) [hereinafter cited as THE THIRD ANNUAL REPORT]. See also COUNCIL ON ENVIRONMENTAL QUALITY, ENVIRONMENTAL QUALITY—THE SECOND ANNUAL REPORT OF THE COUNCIL ON ENVIRONMENTAL QUALITY 46-48 (1971) [hereinafter cited as THE SECOND ANNUAL REPORT].

to regulate such wastes and to facilitate their disposal will probably become more prevalent.¹³

Land, water, and the atmosphere are the only three repositories available to accept solid wastes. With all of their attended problems regarding health, blight, nuisance, and evident waste of natural resources, open dumps, unfortunately, are still the predominant disposal method in this country. For example, the final disposal point for an estimated 77 per cent of the 190 million tons of solid wastes collected in the country is some 14,000 open dumps.¹⁴ About 13 per cent is deposited into properly operated sanitary landfills, where wastes are adequately covered each day with earth of the proper type.¹⁵ Nearly 10 per cent of the remaining domestic solid wastes collected are processed through incineration. Three hundred municipal incinerators account for about one-half the tonnage burned, and the rest is consumed in thousands of small, privately owned trash burners.¹⁶ Small quantities of solid wastes are converted into soil conditioners by composting operations¹⁷ or dumped into the ocean.¹⁸

As indicated, land is the most commonly used repository for solid wastes. Many communities use land almost exclusively to dispose of their refuse. With the demand for space increasing at an enormous rate, governing bodies, particularly those in large metropolitan areas, are encountering difficulty in locating and acquiring suitable sites for landfill purposes. Some are unavailable because of restrictive land-use controls and regulations¹⁹ or permit

13. See THE FIRST ANNUAL REPORT, *supra* note 2, at 107-08. Some states have adopted statutes that in addition to requiring cattle feedlots to be licensed, regulate their location and operation. See, e.g., KAN. STAT. ANN. §§ 47-1501 to -1510 (1964), as amended, KAN. STAT. ANN. §§ 47-1503, 47-1504 and 47-1511 (Supp. 1971); N.D. CENT. CODE § 36-01-30 (Supp. 1917).

14. THE FIRST ANNUAL REPORT, *supra* note 2, at 110-11. Approximately 140 million tons.

15. *Id.* Approximately 25 million tons. A sanitary landfill has been defined by the American Society of Engineers as "... a method of disposing of refuse on land without creating nuisances or hazards to public health or safety, by utilizing the principles of engineering to confine the refuse to the smallest practical area, to reduce it to the smallest practical volume, and to cover it with a layer of earth at the conclusion of each day's operation, or at such more frequent intervals as may be necessary." AMERICAN SOCIETY OF CIVIL ENGINEERS, MANUAL NO. 39, SANITARY LANDFILL 1 (1959).

16. THE FIRST ANNUAL REPORT, *supra* note 2, at 110-12. Approximately 15 million tons are consumed by incineration. Municipal incinerators are used primarily in larger cities, where the volume of refuse and the high cost of land make incineration an attractive disposal method. *Id.* at 110.

17. *Id.* at 110-11, 113.

18. *Id.* The lack of suitable land disposal sites and stricter air pollution standards for incinerators have made ocean dumping more attractive to coastal cities and industries as method of disposing of their solid wastes. *Id.* at 113. The Marine Protection, Research, and Sanctuaries Act of 1972, among other things, requires that a permit be issued by the U.S. Environmental Protection Agency before any wastes, except those relating to dredged material, can be dumped in ocean waters. Pub. L. No. 92-532, §§ 101-12 (Oct. 23, 1972).

19. All states have enabling legislation authorizing local governing bodies to adopt zoning ordinances that may in some instances unduly interfere with municipalities acquiring and developing sites for waste disposal facilities either within their own boundaries or in rural areas. AMERICAN PUBLIC WORKS ASSOCIATION, MUNICIPAL REFUSE DIS-

or licensing requirements²⁰ imposed by local governing bodies, or the sites will not satisfy the environmental protection standards promulgated by state administrative agencies with regard to location.²¹ Other sites, if selected, would be deemed unsuitable because they are too remote to be economically operated²² or, if operated as a landfill, would be declared for one reason or another a public health hazard or nuisance.²³ Governing bodies are also finding that land suitable for waste disposal facilities is also in demand for many other more attractive uses.

Magic technical solutions do not exist to totally eliminate the need for land disposal sites. Recycling and reusing waste materials, when systematically developed and applied, appear to offer a future method for reducing pollution and conserving resources, while at the same time permitting the maintenance of a high standard of living. Realistically, however, it must be recognized that the technology of salvage and reuse, and the economic forces governing this endeavor, do not presently admit recycling as an immediate and total answer to a community's solid waste problem. Even when salvage and reuse become an integral part of every solid waste management system, a residual fraction can not be reclaimed and must be disposed.²⁴ Some residue exists after incineration²⁵ and only organic solid wastes can be converted into soil conditioners by composting operations.²⁶ Consequently, some form of land disposal

POSAL 98 (3rd ed. 1970). For an example of other enabling legislation permitting local governing bodies to restrict site selection and operation see Wis. STAT. § 144.44(2) (1971), which authorizes such bodies to adopt, subject to state approval, standards for the location, design, construction, operation, and maintenance of solid waste disposal sites and facilities that are more restrictive than those adopted by the state.

20. See, e.g., Wis. STAT. § 144.44(2) (1971), which authorizes local governing bodies to require licenses and permits for any solid waste disposal site or facility even though the state had already issued a license or permit to such a site or facility. See also Wis. STAT. § 60.72(1) (1971), which provides that any person or municipality transporting garbage, rubbish, or other refuse into or within any town for the purpose of dumping or otherwise disposing of it must first secure a permit to do so from the town board. The permit requirement, however, does not apply to a city or village that owns its own disposal site in the town, confines its dumping on that site to either the sanitary landfill or incineration method, the disposal is conducted in a sanitary manner satisfactory to the state and on a site approved by the state, and the use of such a site for waste disposal purposes is not contrary to any town or county zoning regulation.

21. As of June 1, 1972, rules and regulations governing the storage, collection, and final disposal of solid wastes have been adopted by the designated agency in 42 states. In some instances those rules and regulations set forth standards regarding the location of sanitary landfills. See, e.g., MINN. REG. SW; 6 WIS. ADM. CODE §§ NR 151.09, .10.

22. See generally AMERICAN SOCIETY OF ENGINEERS, *supra* note 15, at 3, 44-45; AMERICAN PUBLIC WORKS ASSOCIATION, *supra* note 19, at 96.

23. See generally AMERICAN SOCIETY OF CIVIL ENGINEERS, *supra* note 15, at 31-39; AMERICAN PUBLIC WORKS ASSOCIATION, *supra* note 19, at 93-95.

24. For further discussion on salvage and recycling see THE FIRST ANNUAL REPORT, *supra* note 2, at 114-18; AMERICAN PUBLIC WORKS ASSOCIATION, *supra* note 19, at 331-45. Portions of the Solid Waste Disposal Act of 1965 provide for federal grants and other assistance to conduct research and planning and to fund demonstration projects relating to recycling and reusing solid wastes. 42 U.S.C. §§ 3253-3254d (1970), as amended by the Resource Recovery Act of 1970.

25. Approximately 25 percent of the waste by weight remains—as ashes, glass, metals, and other noncombustibles, which must be removed and recycled, or disposed of by some method. THE FIRST ANNUAL REPORT, *supra* note 2, at 112.

26. Metals, glass, and similar inorganic materials must be sorted out before the re-

must be relied upon during the foreseeable future.

Storage, collection, transportation, and the final disposal of solid wastes from homes, businesses, and institutions is one of the major economic problems confronting urban areas and is exceeded only by expenditures for education, streets, and roads. Approximately \$3.4 billion was spent in 1969 to handle the 190 million tons of solid wastes collected—an average of \$18 per ton. Collection and storage accounted for about 80 per cent of the cost, \$14 per ton, and final disposal for the remainder.²⁷

I. EXISTING SOLID WASTE MANAGEMENT PRACTICES IN NORTH DAKOTA

Solid waste management, such as storage, collection, transportation, processing, and final disposal, is primarily the responsibility of local governments in North Dakota. A survey of existing community practices was completed in March, 1968, by the North Dakota Department of Health under a partial grant authorized by Section 206 of the Solid Waste Disposal Act of 1965²⁸ as a preliminary step to developing the State Solid Waste Management Plan.²⁹ Data was collected from each of North Dakota's 359 cities³⁰ and the 53 unincorporated communities operating some sort of land disposal site. In addition, all 412 of the refuse dumping sites were visited to determine existing operational, health control, and nuisance abatement practices.

A summary of data collected from 357 of the state's cities revealed the following solid waste storage, collection, and final disposal practices:³¹

mainder can be converted to a peat-like organic fertilizer and soil conditioner. Composting has not been a popular method of disposal in the United States because land available for disposal sites has generally been inexpensive, compost products have not always been of uniform quality, the organic content of waste materials in this country is generally low, and composting has not been a profit-making venture. THE FIRST ANNUAL REPORT, *supra* note 2, at 113. For further discussion on composting see AMERICAN PUBLIC WORKS ASSOCIATION, *supra* note 19, at 293-330; NATIONAL ASSOCIATION OF COUNTIES RESEARCH FOUNDATION, GUIDELINES FOR LOCAL GOVERNMENTS ON SOLID WASTE MANAGEMENT 88-92 (Public Health Service Pub. No. 2084, 1971); M. JENSEN, OBSERVATIONS OF CONTINENTAL EUROPEAN SOLID WASTE MANAGEMENT PRACTICES 13-24 (Public Health Service Pub. No. 1880, 1969); S. HART, SOLID WASTE MANAGEMENT/COMPOSTING: EUROPEAN ACTIVITY AND AMERICAN POTENTIAL (Public Health Service Pub. No. 1826, 1968).

27. THE FIRST ANNUAL REPORT, *supra* note 2, at 108. Disposal costs are generally borne by society in general, rather than becoming a portion of the price of the goods paid by the consumer. With few exceptions, manufacturers have not accepted the responsibility for the costs of getting rid of products that have been sold and served their purpose. *Id.* at 106.

28. Act of Oct. 20, 1965, Pub. L. No. 89-272, 79 Stat. 992, 999.

29. See ENVIRONMENTAL HEALTH AND ENGINEERING SERVICE, N.D. DEP'T. OF HEALTH, NORTH DAKOTA SOLID WASTE MANAGEMENT PLAN (1971) [hereinafter cited as NORTH DAKOTA SOLID WASTE MANAGEMENT PLAN].

30. Villages have been eliminated as a form of municipal government in North Dakota, and all those existing on Mar. 15, 1967, assumed the powers of cities. 1967 N.D. SESS. LAWS ch. 323, §§ 283, 285.

31. See NORTH DAKOTA SOLID WASTE MANAGEMENT PLAN, *supra* note 29, at IV-1 & 2.

	Yes (per cent)	No (per cent)
Cities with an ordinance regulating on-site storage	26	74
Those cities with an ordinance, that enforce it	80	20
Cities where backyard burning of household refuse practiced	91	9
Cities regulating backyard burning	18	82
Cities with a garbage collection system	31	69
Cities exercising control over a collection system	37	63
Cities operating a dump as disposal site ³²	93	7
Cities exercising control over disposal site	86	14

The statewide survey showed that the refuse is collected by public employees as a municipal function in 16 per cent of the cities, while in another 22 per cent private firms are available for collection.³³ Individual generators of refuse, whether they be households, businesses, or industries, are responsible for collecting and hauling their own solid wastes to the disposal site in 62 per cent of the cities.³⁴

Sixty-one per cent of North Dakota's 412 disposal sites visited in the statewide survey were located on level areas. Eighteen per cent were in gullies, ten per cent on hillsides, six per cent in borrow pits, two per cent in sloughs, and the remaining three per cent in other areas.³⁵ Other data collected with regard to the 412 disposal sites indicated the following operational controls and conditions:³⁶

	Yes (per cent)	No (per cent)
Sites regulated by a zoning ordinance		
Operations regulated by health authority	4	96
Blowing paper controlled at sites	23	77
Blowing paper considered a nuisance	89	11

32. Each of the 357 cities studied operated a disposal site; however, 93 percent of them were considered to be open dumps.

33. NORTH DAKOTA SOLID WASTE MANAGEMENT PLAN, *supra* note 29, at IV-2, V-2. Thirty-one percent of the cities have a collection system. In 15 percent of the cities the services of private firms are used under the municipal collection system. Seven percent of the cities do not have a municipal collection system, but have private firms available to collect and haul refuse to the disposal sites. *Id.* at IV-1 & 2, V-2, VII-1.

34. *Id.* at IV-2, V-2.

35. *Id.* at IV-2.

36. *Id.* at IV-2 & 3.

Rodent control needed at sites ³⁷	97	3
Fly control needed at sites	21	79
Sites with some part of dump in water table	6	94
Sites providing fire protection (breakers)	22	78
Sites permitting salvaging	90	10
Sites where salvaging practical	75	25
Sites keeping quantity records	0	100
Sites considered to be sanitary landfills	7	93

Open burning was practiced at 78 per cent of the sites, and such burning was planned and controlled in an additional 14 per cent.³⁸ Daily cover was provided at only seven per cent of the sites,³⁹ while no cover at all was provided at 43 per cent. Some type of cover was provided at the remaining 50 per cent.⁴⁰ The data collected at the 412 sites in the state indicated that at least 80 per cent of them were considered to be unsightly.⁴¹

Data collected in 1967 and early 1968 by respective state solid waste planing agencies for consolidation and analysis on regional and national levels by the Solid Wastes Program, U.S. Department of Health, Education and Welfare, revealed similarities in waste storage, collection, and final disposal conditions, practices, and problems between the United States and North Dakota.⁴² An analysis of data from a little over 6,000 disposal sites surveyed,⁴³ which

37. Rodent control was provided at only 60 percent of the sites. *Id.* at VII-2.

38. *Id.* at IV-2. Open burning of refuse, except under certain circumstances, is prohibited in the state by the Air Pollution Control Regulations. N.D. DEPT OF HEALTH, REGULACION No. 82, § 4.100.

39. Daily covering is one of the criteria for a disposal site to be classified as a sanitary landfill. *See* note 15 *supra* and accompanying text.

40. NORTH DAKOTA SOLID WASTE MANAGEMENT PLAN, *supra* note 29, at IV-2.

41. *Id.* at VII-2.

42. In July, 1966, the states, recognizing their deficiency in experience and personnel to develop and plan required data-gathering activities to establish solid waste management programs, recommended through the Conference of State Sanitary Engineers, that the Solid Wastes Program Public Health Service, U.S. Department of Health, Education, and Welfare, prepare a list of essential data and guidelines for conducting statewide surveys. The Programs' response was to develop and initiate the National Survey of Community Solid Waste Practices, a nationwide survey, with each state collecting basis data for consolidation and analysis. THE NATIONAL SOLID WASTE SURVEY, *supra* note 3, at 2-3. For a partial analysis on both a regional and national level of some of the data collected prior to July 1, 1968, see A. MÜHICH, A. KLEE, & P. BRITTON, PRELIMINARY DATA ANALYSIS: 1968 NATIONAL SURVEY OF COMMUNITY SOLID WASTE PRACTICES (Public Health Service Pub. No. 1867, 1968) [hereinafter cited as 1968 NATIONAL SURVEY OF COMMUNITY SOLID WASTE PRACTICES]. *See* THE NATIONAL SOLID WASTE SURVEY, *supra* note 3, for a summary of the same data.

43. A disposal site included any location, whether publicly or privately owned or operated, on which solid wastes were dumped by either public or private collectors. Also included were any privately owned locations where householders or other persons dumped their refuse with the permission of public authorities and the private owner. Private sites owned and operated by industrial, commercial, or institutional establishments, and used solely for disposing of their own solid wastes, were not included in the survey. Seventy-nine percent of the sites surveyed were publicly operated, while the remainder were privately operated. However, because many municipally-operated sites are leased, only about 63 percent were publicly-owned. THE NATIONAL SOLID WASTE SURVEY, *supra* note 3, at 27-28, 33.

was less than one-half the total number in the country, showed that 94 per cent of them did not meet even the most modest criteria defining a sanitary landfill.⁴⁴ That is, open burning was permitted at the sites, refuse was not covered daily, or the sites were not designed to prevent water pollution problems.⁴⁵ Only 14 per cent of the sample indicated that daily cover was used; 41 per cent indicated no cover was used at all. About three-quarters of the sites surveyed were deemed to be unacceptable in appearance, while about the same proportion permitted open burning.⁴⁶

II. LOCAL GOVERNMENTAL RESPONSIBILITY FOR SOLID WASTE MANAGEMENT

The primary responsibility for solid waste management in North Dakota has traditionally rested with local governmental units. State regulatory agencies, particularly the Department of Health, became involved by promulgating rules and regulations relating to environmental protection and nuisance abatement activities that restrict site selection and operation.⁴⁷ Enabling legislation has granted the governing bodies of cities,⁴⁸ counties,⁴⁹ and, in some instances, special service districts⁵⁰ the authority to maintain management systems whereby solid wastes can be stored collected, transported, processed, and finally disposed.

A. MUNICIPALITIES

North Dakota's 359 cities, which range in population from 4 to 53,365, generate most of the solid wastes in the state requiring storage, collection, and final disposal. Approximately 80 per cent of the people now reside in those cities as compared to 67.7 per cent in 1960. The figure is expected to reach 85 per cent by 1980.⁵¹

Recent studies at two cities, Bismarck and New Salem, indicate that urban areas in North Dakota do not generate as much solid wastes as the national average for urban areas. Each person in Bismarck, which has a population of 34,703, generated an average of four pounds per day, while the figure was two pounds per person

44. *Id.* at 28-29, 34.

45. *Id.* at 28. See note 15 *supra* for the definition of a sanitary landfill.

46. THE NATIONAL SOLID WASTE SURVEY, *supra* note 3, at 29, 35.

47. See, e.g., N.D. DEP'T OF HEALTH, REGULATION NOS. 61, 62, 82, & 86. See also N.D. CENT. CODE § 23-01-03(3) (1970); N.D. CENT. CODE ch. 23-25 (Supp. 1971), which authorizes the Department of Health to adopt such rules and regulations.

48. See generally N.D. CENT. CODE ch. 40-34 (1968), as amended, N.D. SESS. LAWS 769, ch. 376 § 4 (1969); N.D. SESS. LAWS 549, ch. 249, § 18 (1971). See note 30 *supra* for elimination of villages as a form of municipal government.

49. N.D. CENT. CODE § 11-11-14(14) (Supp. 1971).

50. See, e.g., N.D. CENT. CODE ch. 11-28.1 (Supp. 1971).

51. NORTH DAKOTA SOLID WASTE MANAGEMENT PLAN, *supra* note 29, at VI-1 & 2.

per day in New Salem, a city with 943 people and consisting primarily of homes and businesses serving those homes.⁵²

Municipalities⁵³ in North Dakota are given broad statutory powers enabling them either individually or jointly through agreements, to own, acquire, construct, equip, improve, operate, and maintain garbage⁵⁴ and refuse⁵⁵ disposal systems and plants.⁵⁶ Land necessary to establish a sanitary landfill or any other type of disposal facilities, whether they be located within or outside the corporate limits of the municipality or within or outside the state, may be acquired by gift, grant, purchase or through condemnation proceedings.⁵⁷

When a municipality decides to own and operate a garbage disposal system and plant, either independently or jointly with another, the governing body, or the respective governing bodies, may designate certain officials or departments to supervise and control the disposal system and plant.⁵⁸ In addition, the governing body or bodies are expressly authorized by statute to make all necessary rules and regulations with respect to the use, operation, and control of the solid waste management system.⁵⁹ Even without this express authorization, governing bodies of municipalities have authority under the police powers granted to them by the state to adopt ordinances⁶⁰

52. *Id.* at IV-3 & 4. See also note 3 *supra* and accompanying text.

53. The term "municipality" or "municipal corporation" applies only to cities organized under the laws of North Dakota, and does not include any other political subdivisions. N.D. CENT. CODE § 40-01-01(1) (1968). Counties, townships, and special service districts are considered to be only quasi municipal corporations whose primary function is to administer the civil government. See generally *Vail v. Town of Amenia*, 4 N.D. 239, 59 N.W. 1092 (1894).

54. Garbage is defined by the State Department of Health as, "... putrescible animal and vegetable wastes resulting from the handling, preparation, cooking and consumption of food, including wastes from markets, storage facilities, handling and sale of produce and other food products." N.D. DEPT OF HEALTH, REGULATION No. 82, § 1.040 (12); N.D. DEPT OF HEALTH, REGULATION No. 86, § 2.3.

55. Refuse is defined in the State Department of Health's Solid Waste Management Regulations as being solid wastes. N.D. DEPT OF HEALTH, REGULATION No. 86, § 2.1. Solid wastes, in turn, are defined in the same Regulations as, "all putrescible and non-putrescible discarded material (except household sewage) including but not limited to garbage; rubbish; ashes; street cleanings; dead animals; abandoned vehicles and machinery; sewage plant screenings and sludge; and construction, demolition and industrial wastes." N.D. DEPT OF HEALTH, REGULATION No. 86, § 2.2. Even though solid wastes are not defined in the Department's Air Pollution Control Regulations, refuse is defined in those Regulations as, "... any combustible waste material, trade waste, rubbish, or garbage containing carbon in a free or combined state." N.D. DEPT OF HEALTH, REGULATION No. 82, § 1.040(28).

56. N.D. CENT. CODE § 40-34-01 (1968).

57. N.D. CENT. CODE § 40-34-01 (1968). See N.D. CENT. CODE § 40-01-02 (1968), which provides that municipalities may acquire and hold real and personal property for corporate purposes. Governing bodies of municipalities are empowered to acquire both real and personal property and easements and rights of way within or without the corporate limits for all purposes authorized by law or necessary to exercise any powers granted by lease, purchase, gift, condemnation, or other lawful means, N.D. CENT. CODE § 40-05-01(55) (1968). See also N.D. CENT. CODE § 32-15-02(3) (1960) giving cities the right to exercise eminent domain powers for public uses.

58. N.D. CENT. CODE § 40-34-05 (1968).

59. *Id.* See also 7 MCQUILLIN, MUNICIPAL CORPORATIONS § 24.245 (3rd ed. 1968).

60. See N.D. CENT. CODE § 40-05-01(1) (1968), which provides that the governing body of a municipality shall have the power to "... enact or adopt all such ordinances, resolutions, and regulations, not repugnant to the constitution and laws of this state, as may

regulating garbage collection and disposal for the promotion of public welfare and health and suppression of disease.⁶¹ Accordingly, a municipal corporation may regulate the mode of removal and disposal of garbage and refuse,⁶² and specify and regulate the places where such solid wastes may be deposited.⁶³ They may license, or contract for, such collection and disposal,⁶⁴ or the municipality itself may collect and dispose of the solid wastes generated, and prohibit any other person from engaging in that business.⁶⁵

The organizational structure to supervise and control solid waste collection and storage systems may vary from city to city. The North Dakota legislature has not set forth a specific structure, but rather empowers the governing bodies of municipalities to designate certain officials or departments as deemed appropriate.⁶⁶ Those assuming responsibilities for managing the system could vary somewhat depending upon whether the city is organized under the council⁶⁷ or commission⁶⁸ form of government, or whether a city manager is employed as the chief administrative officer.⁶⁹ Regardless of the organizational structure the governing bodies choose, the structure should be easily identifiable by the public and have ample funds, equipment, and personnel available to efficiently operate a solid waste management system.⁷⁰

A public utility provides a system to accomplish this by integrating the needs and requirements of the community with sound fiscal policy. Such a utility can be administered by the department of public works or can operate as a separate entity within the structure of the municipal government. One North Dakota city, Bismarck,

be proper and necessary to carry into effect the powers granted to such municipality or as the general welfare of the municipality may require. . . ." See also N.D. CENT. CODE §§ 40-05-01(8), (14) (1968), giving governing bodies of municipalities the power to prevent and regulate obstructions to public streets and grounds; and prevent and regulate the throwing or depositing of garbage and refuse on public streets and grounds.

61. *Tayloe v. City of Wahpeton*, 62 N.W.2d 31, 35 (N.D. 1953). See also 7 McQUILLAN, *supra* note 59, § 24.245. Governing bodies of municipalities are empowered to promulgate regulations necessary or expedient for the promotion of health or for the suppression of disease. N.D. CENT. CODE § 40-05-01 (45) (1968).

62. 7 McQUILLAN, *supra* note 59, § 24.245. See generally *Tayloe v. City of Wahpeton*, 62 N.W.2d 31 (N.D. 1953).

63. 7 McQUILLAN, *supra* note 59, §§ 24.245, .253. See also *Moulton v. City of Fargo*, 39 N.D. 502, 167 N.W. 717 (1918).

64. 7 McQUILLAN, *supra* note 59, §§ 24.246, .251. See generally *Montain v. City of Fargo*, 38 N.D. 432, 166 N.W. 416 (1917); *Tayloe v. City of Wahpeton*, 62 N.W.2d 31 (N.D. 1953).

65. 7 McQUILLAN, *supra* note 59, §§ 24.246, .250; *Tayloe v. City of Wahpeton*, 62 N.W.2d 31 (N.D. 1953).

66. N.D. CENT. CODE § 40-34-05 (1968).

67. See N.D. CENT. CODE ch. 40-03.2 (Supp. 1971); N.D. CENT. CODE chs. 40-04, 04.1, 08, 14 (1968), as amended, N.D. CENT. CODE chs. 40-08, 14 (Supp. 1971).

68. See N.D. CENT. CODE chs. 40-03.1, 09, 15 (1968), as amended, N.D. CENT. CODE ch. 40-09 (Supp. 1971).

69. For a description of the city manager plan see N.D. CENT. CODE ch. 40-10 (1968), as amended, N.D. CENT. CODE ch. 40-10 (Supp. 1971).

70. For a complete discussion of the available organizational structures to operate solid waste management programs see AMERICAN PUBLIC WORKS ASSOCIATION, *supra* note 19, at 346-85; NATIONAL ASSOCIATION OF COUNTIES RESEARCH FOUNDATION, *supra* note 26, at 64-68.

which has a commission form of government, adopted an ordinance in 1948, creating a public utility to be known as the "Waste Collection and Disposal Utility" to operate the municipal collection system.⁷¹ This utility is charged with the responsibility of enforcing the ordinance and any revisions to it, as well as supervising and arranging for a garbage,⁷² rubbish,⁷³ refuse,⁷⁴ and trash collection system and any incinerator or landfill disposal system.⁷⁵ In addition, the Bismarck Board of City Commissioners has delegated the power and authority to the utility to purchase or lease in the name of the city such lands as are necessary to dispose of the garbage, rubbish, trash, and refuse,⁷⁶ and to purchase or lease the necessary equipment to operate the collection and disposal system.⁷⁷

All garbage accumulated in Bismarck except that from business establishments, must according to the ordinance, be collected, conveyed, and disposed of by the Waste Collection and Disposal Utility.⁷⁸ Any person, firm, partnership, association, corporation, or organization of any kind, unless issued a license by the City of Bismarck to collect and transport garbage or refuse generated by commercial establishments,⁷⁹ is prohibited from collecting and conveying solid wastes over any streets in the city or disposing of any such solid wastes.⁸⁰

The validity of a similar ordinance was tested in *Taylor v. City of Wahpeton*.⁸¹ Wahpeton's ordinance granted an exclusive license to collect and dispose of solid wastes, thereby preventing the owner or anyone else without a license from collecting and hauling solid wastes.⁸² The plaintiff had brought the action to enjoin

71. Bismarck, N.D., Ordinance 844, § 1, June 22, 1948. See also BISMARCK, N.D., REV. ORDINANCES art. 7, § 16.0701 (1966).

72. Garbage is defined as putrescible animal and vegetable wastes resulting from the handling, preparation, cooking, and consumption of food. BISMARCK, N.D., REV. ORDINANCES art. 7, § 16.0703 (1966).

73. Rubbish is defined as nonputrescible solid wastes, excluding ashes, consisting of both combustible and non-combustible wastes, such as paper, cardboard, tin cans, yard clippings, wood, glass, bedding, cookery and similar material. BISMARCK N.D., REV. ORDINANCES art. 7, § 16.0703 (1966). See also N.D. DEP'T OF HEALTH, REGULATION No. 82, § 1.040(29); N.D. DEP'T OF HEALTH, REGULATION No. 86, § 2.5, for similar definitions of rubbish.

74. Refuse is defined as all putrescible and nonputrescible solid wastes, including garbage, rubbish, ashes, street cleanings, dead animals, abandoned automobiles, and solid market and industrial wastes. BISMARCK, N.D., REV. ORDINANCES art. 7, § 16.0703 (1966).

75. BISMARCK, N.D., REV. ORDINANCES art. 7, § 16.0701 (1966).

76. BISMARCK, N.D., REV. ORDINANCES art. 7, § 16.0702 (1966). See also *id.* § 16.0709(1) for a description of the land owned by the city established and created as a public dumping ground.

77. BISMARCK, N.D., REV. ORDINANCES art. 7, & § 16.0702 (1966).

78. *Id.* art. 7, § 16.0704. See *id.* art. 7, § 16.0713 for provisions relating to garbage and refuse in business establishments.

79. *Id.* art. 7, § 16.0713(3). Any person, firm, or corporation hauling garbage or refuse for a business establishment must have a license issued from the City, and only one license, which is for a five year period, shall be issued by the City for that purpose. *Id.*

80. *Id.* art. 7, § 16.0704.

81. *Taylor v. City of Wahpeton*, 62 N.W.2d 31 (N.D. 1953).

82. *Id.* at 35, 38.

the city from enforcing the ordinance. He contended that the city, by depriving him of his right to engage in the business of collecting and disposing of garbage, was taking his property without due process of law. The North Dakota Supreme Court held that ordinances granting an exclusive license for the purpose of collection and disposal of solid wastes are valid because the performance of such a function is not a private enterprise, but rather a municipal duty, which the city must perform, either by itself or through its agents.⁸³ In addition, the court held that a city has the right to fix charges and fees for the removal and disposal of solid wastes.⁸⁴

Existing community practices surveyed by the North Dakota Department of Health as a preliminary step in developing the State Solid Waste Management Plan⁸⁵ revealed that many municipalities lacked ordinances regulating the storage, collection, and disposal of solid wastes⁸⁶ and controlling the operation of sanitary landfills.⁸⁷ Bismarck's "Garbage Collection and Disposal Ordinance," on the other hand, is a good example of an ordinance that sets forth detailed specifications governing pre-collection storage⁸⁸ and collection practices,⁸⁹ open burning of refuse,⁹⁰ the operation of the disposal grounds,⁹¹ and the collection and disposal of solid wastes generated by business establishments.⁹² In addition, the director of public works, or city engineer, who supervises the Waste Collection and Disposal Utility, has the authority under the ordinance to make and modify regulations concerning the days of collection, type and location of waste containers and other matters pertaining to the collection, conveyance and disposal as he finds necessary.⁹³

Operating a solid waste management system is one of the major economic burdens of an urban area.⁹⁴ Data collected for the 1968 National Survey of Community Solid Waste Practices⁹⁵ revealed that the average community budget was approximately \$1.42 per person per year for disposal activities, one sixth of which was for capital expenditures. Communities operating their own disposal systems spent approximately \$2.17 per person per year, with about one-third being for capital expenditures. An average budget for all communities in the country to collect solid wastes was \$5.39 per

83. *Id.* at 35.

84. *Id.* at 36.

85. See note 29 *supra*.

86. See notes 31 to 34 *supra* and accompanying text.

87. See notes 35 to 41 *supra* and accompanying text.

88. BISMARCK, N.D., REV. ORDINANCES art. 7, § 16.0706 (1966).

89. *Id.* art. 7, § 16.0707.

90. *Id.* art. 7, § 16.0708.

91. *Id.* art. 7, § 16.0709.

92. *Id.* art. 7, § 16.0713.

93. *Id.* art. 7, § 16.0705.

94. See note 27 *supra* and accompanying text.

95. See note 42 *supra*.

person per year. The collection budgets for communities actually operating their own system was \$5.60 per person per year for a once-a-week system and \$6.82 per person per year for a twice-a-week system.⁹⁶ Data on cost is not available for North Dakota; however, the average fee paid by householders in the state for solid waste collection and disposal activities was approximately \$24 per year in 1968.⁹⁷ This figure is expected to double in less than 10 years.

Local governing bodies have several sources of financial support for conducting activities related to solid waste disposal systems. Among them are tax levies; revenue, general obligation, and special assessment bonds; user fees and service charges; and grants-in-aid. Tax levies, which support the general fund, include property and income taxes and special use or assessment taxes against properties benefited. General obligation bonds are backed by the full faith and credit of the local government selling them and generally require approval from the voters before they can be issued by the governing body. As their name implies, revenue bonds are secured by the fees, charges and other earnings derived from the use of facilities owned by the issuer of the bonds. Except in rare instances, voter approval is not required. Financing solid waste programs through special assessment bonds entails levying a specified rate, often on a per foot frontage basis, or a flat sum for each type of property benefited. Service charges or fees for solid waste services are based on the amount and kind of service required and the benefits received by the customers.⁹⁸

Any municipality in North Dakota, through its governing body, or the governing bodies of several municipalities if they are acting jointly, may issue and sell the bonds necessary to purchase real and personal property to initiate the improve a solid waste disposal system.⁹⁹ Municipalities that already have outstanding bonds issued for either a sewage or garbage disposal system may issue additional bonds for the purpose of providing moneys to be deposited in escrow for the purchase or redemption of such bonds at or prior to maturity.¹⁰⁰

96. THE NATIONAL SOLID WASTE SURVEY, *supra* note 3, at 13-14. Approximately 10 percent of the budget for collection activities was spent for capital expenditures. Twice-a-week collection is about 20 to 25 percent more expensive than once-a-week collection.

97. NORTH DAKOTA SOLID WASTE MANAGEMENT PLAN, *supra* note 29, at VI-3. Note that the fee paid is based on householders rather than persons.

98. For further discussion on the various methods and alternatives of financing solid waste programs, a comparison of each method, and the advantages and disadvantages of each, see generally NATIONAL ASSOCIATION OF COUNTIES RESEARCH FOUNDATION, *supra* note 26, at 98-112; Clark & Toftner, *Financing Municipal Solid Waste Management Systems*, 96 J. SANITARY ENGINEERING DIVISION, ASCE 885-92 (1970).

99. N.D. CENT. CODE § 40-34-04 (1968). Such bonds shall be payable in not more than 30 years from the date of issuance. See N.D. CENT. CODE § 40-34-01 (1968). See also N.D. CENT. CODE § 40-05-01 (5) (1968), empowering the governing body of a municipality to borrow money on credit for corporate purposes and to issue bonds therefore.

100. N.D. CENT. CODE § 40-34-01 (1968).

The total cost of a garbage disposal system in North Dakota may be paid out of the general current tax revenues on hand and appropriated for that purpose,¹⁰¹ from the proceeds of the sale of general liability or obligation bonds,¹⁰² or partly out of the general current tax revenues on hand and appropriated for that purpose and the residue from the sale of general liability or obligation bonds, as determined by a majority vote of the governing body of the municipality.¹⁰³ Another method of paying the cost of a solid waste program is from moneys obtained by the issuance of mortgage bonds secured by the net revenues of the system and a mortgage or deed of trust upon the system issued by the municipality to finance up to 60 per cent of the system, with the remaining 40 per cent financed out of general current tax revenues or from the sale of general liability or obligation bonds.¹⁰⁴ Upon compliance with specific statutory requirements the total cost of the system may be obtained through the issuances and sale of first mortgage bonds secured by the assets and property of the system.¹⁰⁵ The requirement applicable to a solid waste program is that the pledge of the system's net revenues securing the first mortgage bonds must be set apart with interest as a sinking fund which pays the principal and interest of such bonds as they mature.¹⁰⁶

North Dakota municipalities are specifically empowered to issue general liability or obligation bonds, within the prescribed statutory limits, for the erection, construction, and enlargement of garbage disposal plants and for the purchase of sites and grounds, either within or outside the limits of the city, for the disposal of garbage and other refuse.¹⁰⁷ One of the limitations placed on the issuance of these bonds is that a city cannot incur an indebtedness in an amount which, together with all its other outstanding indebtedness, exceeds five per cent of the assessed value of the city's taxable property.¹⁰⁸ A couple of exceptions exist to this five per cent limit. Incorporated cities, for example, by a two-thirds vote of the qualified

101. N.D. CENT. CODE § 40-34-02(1) (1968). See N.D. CENT. CODE § 40-05-01(4) (1968), authorizing governing bodies of municipalities to levy and collect taxes on real and personal property for general and specific purposes.

102. N.D. CENT. CODE § 40-34-02(2) (1968). See N.D. CENT. CODE ch. 21-03 (1970), *as amended*, N.D. CENT. CODE ch. 21-03 (Supp. 1971), for the limitations placed on the issuance of bonds.

103. N.D. CENT. CODE § 40-34-02(3) (1968).

104. N.D. CENT. CODE § 40-34-02(4) (1968).

105. N.D. CENT. CODE § 40-34-02(5) (1968).

106. *Id.* If such a method is used to pay the cost of a sewage disposal system, the governing body must by resolution create a district, provide for and approve the plans and specifications and estimates of the cost, adopt and publish a resolution declaring the necessary work, and hold public hearing. *Id.* See N.D. CENT. CODE ch. 40-22 (1968), *as amended*, N.D. CENT. CODE ch. 40-22 (Supp. 1971).

107. N.D. CENT. CODE § 21-03-06(2)(c) (1970). See *Thomas v. McHugh*, 65 N.D. 149, 256 N.W. 763 (1934), which held that the provisions of Chapter 21-03 apply only to general liability or obligation bonds.

108. N.D. CENT. CODE § 21-03-04 (1970).

voters, may increase the debt limit by an additional three per cent of the assessed value.¹⁰⁹ Also, when authorized by a majority vote of the qualified voters, a city may issue bonds upon any revenue producing utility it owns, for the purchase or acquisition of the utility, or the building or establishment of it, in amounts not exceeding the physical value of the utility or enterprise.¹¹⁰ Another restriction placed on the issuance of general liability or obligation bonds is that they must be authorized by a two-thirds vote of all qualified voters voting on the question in municipalities having a population of less than 5,000, or a 60 per cent vote in municipalities having a population of 5,000 or more.¹¹¹

The issuing procedures, repayment methods and limitations imposed, differ for general liability and mortgage bonds. A municipality may issue mortgage bonds beyond the general limits of the bonded indebtedness prescribed for general liability or obligation bonds¹¹² for the purpose of paying part or all of the cost of a garbage disposal plant.¹¹³ Under North Dakota law such bonds cannot impose any general liability upon the issuing municipality but are to be paid only out of the revenues received from service charges or from the sale of the property under foreclosure of the mortgage or deed of trust.¹¹⁴ If a service rate is charged to the users of the solid waste disposal system a sufficient portion of moneys collected for the service is to be set aside as a sinking fund to pay the interest on the bonds and the principal at maturity, and constitutes a special fund not to be used for any other purpose.¹¹⁵ Municipalities not levying service charges to create a special fund to pay the principal and interest of the bonds issued, may raise sufficient funds through annual taxes, if the governing body deems this necessary to pay the interest on the bonds and create a sinking fund to pay the principal as it falls due.¹¹⁶ When the last maturing bonds secured by a first mortgage or deed of trust are due and not paid, the gov-

109. N.D. CENT. CODE § 21-03-04(1) (1970).

110. N.D. CENT. CODE § 21-03-04(2) (1970).

111. N.D. CENT. CODE § 21-03-07 (Supp. 1971). See N.D. CENT. CODE §§ 21-03-09 to 13, 18, 21 (1970), as amended, ch. 251, §§ 3, 5 [1971] N.D. Sess. Laws 566, 567, for the procedures for issuing general liability or obligation bonds, procedures to gain voter approval of the resolution, time and notice of the election, form and content of the ballots and bonds, and execution of the bonds.

112. See note 108 *supra* and accompanying text.

113. N.D. CENT. CODE § 40-34-03 (Supp. 1971). Mortgage bonds are not to be issued, however, without the affirmative vote of three-fifths or more of the members of the governing body of the issuing municipality. *Id.* See also *Anderson v. City of Fargo*, 64 N.D. 178, 184-86, 250 N.W. 794, 796-97 (1933), which held that bonds issued and secured by a mortgage on the utility are not a general obligation on the municipality, but are to be paid only out of revenues received from the services, hence a vote of the qualified electors in the municipality is not necessary.

114. *Id.* First mortgage bonds may be negotiated in the same manner and with the same legal effect as negotiable instruments. N.D. CENT. CODE § 40-34-07 (1968).

115. N.D. CENT. CODE § 40-34-06 (1968).

116. N.D. CENT. CODE § 40-34-14 (1968). However, the amount raised can not exceed the limitations imposed by Chapter 21-03.

erning body of the municipality or the governing bodies of the respective municipalities must levy a tax upon all taxable property within their limits to pay the deficiency.¹¹⁷

Bismarck's Garbage Collection and Disposal Ordinance establishes a service charge for the collection and disposal of solid wastes from residential areas,¹¹⁸ a disposal fee for commercial enterprises using the landfill,¹¹⁹ and a method for collecting such charges.¹²⁰ The Waterworks Department adds the monthly garbage collection and disposal charges to its charge for water services.¹²¹ Service charges must be paid to the Waterworks Department even by those residences or commercial establishments not using city water.¹²² Owners of residences in Bismarck may not refuse to accept the garbage and waste collection and disposal service furnished by the city, and the failure of anyone to receive such service does not exempt him from paying the charges, except in those instances where the person resides in an area not provided with collection service.¹²³ The proceeds from the collection of fees and charges are placed in a separate fund known as the "Waste Collection Fund" and all of the expenses incurred by the city in the collection and disposition of wastes and refuse are paid out of that fund.¹²⁴ An excess above the actual cost of furnishing service and of paying the principal and interest is kept in a separate fund known as the "Waste Collection and Disposal Fund" and used only for subsequent improvements to the city's waste collection and disposal system.¹²⁵

117. N.D. CENT. CODE § 40-34-08 (1968). See N.D. CENT. CODE §§ 40-34-09 to -13 (1968), for the procedures used when a municipality defaults on the payment of first mortgage bonds or deeds of trust. See also *Anderson v. City of Fargo*, 64 N.D. 178, 184-86, 250 N.W., 794, 796-97 (1933), which held that even though the deficiency in the rental fund to meet the last maturing bonds was made up by a tax levy, the mortgage bonds were not to be considered general liability or obligation bonds requiring the approval of the municipal electors.

118. BISMARCK, N.D., REV. ORDINANCES art. 7, § 16.0710(1) (1966). The fee for each water meter serving a residence or apartment building is \$1.25 per month for the first kitchen served, and 75 cents per month for each additional kitchen so served. *Id.*

119. BISMARCK, N.D., REV. ORDINANCES art. 7, § 16.0710(2) (1966). Each commercial unit is charged 15 cents per month for the use and maintenance of the landfill. A commercial unit is defined as being the average amount of garbage and refuse from the average single dwelling per month, with the number of units for each commercial enterprise established by the Bismarck Board of City Commissioners. *Id.* Bismarck does not provide a collection service for garbage and refuse generated at commercial establishments. *Id.* § 16.0704. Such solid wastes must be collected and conveyed to the landfill by a private collection firm licensed by the city, with the board of city commissioners empowered to set the collection rates. *Id.* § 16.0713(3), (4).

120. BISMARCK, N.D., REV. ORDINANCES art. 7, §§ 16.0711, .0712 (1966).

121. BISMARCK, N.D., REV. ORDINANCES art. 7, § 16.0711 (1966). Service charges for garbage collection and disposal shall become delinquent on the same dates as the water bill, and if not paid when due, the collection service will be suspended.

122. *Id.*

123. *Id.*

124. BISMARCK, N.D., REV. ORDINANCES art. 7, § 16.0712 (1966).

125. *Id.*

B. COUNTIES

Following a trend in other states,¹²⁶ North Dakota recently adopted legislation¹²⁷ empowering the board of county commissioners to establish a garbage and trash collection system encompassing all or any part of the unincorporated areas of a county.¹²⁸ The system which counties are authorized to establish can include the operation and maintenance of one or more sanitary landfill sites, or other types of processing sites for the disposal of trash and garbage.¹²⁹

If the board of county commissioners resolves to establish a solid waste management system, the expenses for establishing, operating, and maintaining the system may be financed by fees charged to persons receiving direct benefits or by a special assessment against the directly benefited land parcels, or by both fees and assessments.¹³⁰ The board is allowed to borrow money by issuing certificates of indebtedness, repayable from the fees or special assessments, or both, or in other manners permitted by law, in order to purchase the initial equipment and land necessary for operating the system.¹³¹ When special assessments are utilized as a method of repayment, the procedures used by the board of county commissioners are the same as those the board of county park commissioners use for special service districts.¹³²

C. COUNTY SPECIAL SERVICE DISTRICTS

To provide garbage collection and removal services and defray the costs involved, the board of county park commissioners¹³³ may create by resolution a garbage removal service district that is composed in part, or entirely, of real property not otherwise under the park commission's jurisdiction, but which is contiguous to real property under the jurisdiction of the commission and which would be directly benefited by the proposal to remove the garbage.¹³⁴

126. See, e.g., OHIO REV. CODE ANN. §§ 343.01-.08 (Page 1953), as amended, (Page Supp. 1971). See also WIS. STAT. § 59.07 (135) (1971), for very recent legislation enabling counties to establish countywide solid waste management systems.

127. Ch. 123, § 1 [1971] N.D. Sess. Laws 205.

128. N.D. CENT. CODE § 11-11-14 (14) (Supp. 1971).

129. *Id.*

130. *Id.* For further discussion of the user fee and assessments see note 98 *supra* and accompanying text.

131. N.D. CENT. CODE § 11-11-14(14) (Supp. 1971). Counties are not empowered to issue general obligation or liability bonds for solid waste management systems pursuant to Chapter 21-03. See N.D. CENT. CODE § 21-03-06(1) (1970).

132. N.D. CENT. CODE § 11-11-14(14) (Supp. 1971). See N.D. CENT. CODE ch. 11-28.1 (Supp. 1971). For further discussion on these procedures see notes 135-147 *infra* and accompanying text.

133. The board of county park commissioners consists of the board of county commissioners and two resident citizens appointed by the board of county commissioners. N.D. CENT. CODE § 11-28-01 (1960). See also N.D. CENT. CODE §§ 11-28-02 to 11 (1960).

134. N.D. CENT. CODE § 11-28.1-01 (Supp. 1971). The district must be designated by a

After a service district has been created, the county park commission prepares a resolution encompassing the plans, specifications, and estimates of the probable cost.¹³⁵ After adoption the commissioners publish a notice stating the time, date, and place of a meeting at which the commissioners hear objections to the proposed district.¹³⁶ Protests signed by the owners of more than one-half of the property area included in the service district and filed within 30 days after the hearing are a bar against proceeding further with the project if such protests are found to be sufficient. If no protests are filed, or if the board of county park commissioners finds them to be insufficient or invalid, the commissioners are allowed to initiate or carry on the project.¹³⁷

The expenses of maintaining the services provided by the district are assessed against the parcels of land benefited.¹³⁸ Estimates of the total cost of initiating a solid waste collection and disposal system within the district, reasonable allowances for extra work authorized under the plans and specifications, and engineering, fiscal agents' and attorneys' fees for any services rendered are all assessed against the parcels of benefited land.¹³⁹ The board of county park commissioners serves as the special assessment commission which determines the expenses of the service district.¹⁴⁰

A complete list of the annual benefits and assessments, setting forth each lot or tract of land assessed, the amount each lot or tract is annually benefited by the service, and the amount annually assessed against each, is prepared by the special assessment commission.¹⁴¹ This assessment list is published along with a notice giving the time, date, and place for a meeting to hear objections.¹⁴² After the meeting, the commission can confirm the list as correct and file it with the county auditor,¹⁴³ who then publishes it and gives notice of the time, date, and place that the board of county commissioners will meet to act on the list.¹⁴⁴ Prior to this meeting, any aggrieved person can appeal from the action taken by the county park commission.¹⁴⁵ After the board of county commissioners

name appropriate to the type of service provided, and a number distinguishing it from other service districts. Police protection districts may also be created under the same procedures.

135. N.D. CENT. CODE § 11-28.1-02 (Supp. 1971).

136. N.D. CENT. CODE § 11-28.1-03 (Supp. 1971).

137. N.D. CENT. CODE § 11-28.1-04 (Supp. 1971).

138. N.D. CENT. CODE § 11-28.1-05 (Supp. 1971).

139. N.D. CENT. CODE § 40-23-05 (1968).

140. N.D. CENT. CODE § 11-28.1-05 (Supp. 1971). See N.D. CENT. CODE § 40-23-01 (1968), for the procedures a municipality must use to create a special assessment commission.

141. N.D. CENT. CODE § 11-28.1-26 (Supp. 1971).

142. N.D. CENT. CODE § 11-28.1-07 (Supp. 1971). At the hearing, alterations may be made to the assessment list to correct any errors. N.D. CENT. CODE § 11-28.1-08 (Supp. 1971).

143. N.D. CENT. CODE § 11-28.1-09 (Supp. 1971).

144. N.D. CENT. CODE § 11-28.1-10 (Supp. 1971).

145. N.D. CENT. CODE § 11-28.1-11 (Supp. 1971). The board of county commissioners,

confirms the assessment list,¹⁴⁶ all collections of special assessments are credited as received by the special fund maintained by the county for the payment of any obligations for which the assessments were levied.¹⁴⁷

III. THE AREAWIDE APPROACH TO SOLID WASTE MANAGEMENT

An areawide approach to solid waste management provides operating efficiency, reduces costs, permits flexibility in site location, allows greater coordination in air, land, and water pollution abatement activities, and offers a better opportunity for federal assistance.¹⁴⁸ Several different institutional arrangements are available to attain an areawide management system. One approach is through enabling legislation empowering counties, either individually or jointly, to collect, transport, and dispose of solid wastes. Another is for enabling statutes to permit municipalities to jointly operate disposal facilities. Contractual agreements between various local governmental units for joint management are still another vehicle for achieving an areawide system.¹⁴⁹ Such agreements sometimes provide for sharing disposal facilities on a fee or prorated cost basis.

A. COUNTIES

Some feel the county is the most appropriate unit of government to plan, initiate, and regulate a comprehensive areawide solid waste system. As one type of areawide government, the county provides economics of scale, a broader tax base, closer ties with state government, and potentially more land for a site than does a municipality.¹⁵⁰ An effective program would require the designated unit of areawide government to cooperate with the municipalities within it and sometimes with neighboring cities or other forms of govern-

at a regular meeting, shall hear appeals and objections made by persons aggrieved by the determination of the board of county park commissioners in regard to assessments, and may increase or diminish any assessment as it may deem proper, except that the aggregate amount of all the assessments returned by the county park commission shall not be changed, and no assessment as adjusted shall exceed the benefits to the parcel of land on which it is assessed as determined by the assessment commission. N.D. CENT. CODE § 11-28.1-12 (Supp. 1971).

146. N.D. CENT. CODE § 11-28.1-13 (Supp. 1971).

147. N.D. CENT. CODE § 11-28.1-14 (Supp. 1971). See N.D. CENT. CODE ch. 40-24 (1968), as amended, (Supp. 1971), for the procedure followed in collecting and disbursing the funds.

148. See NATIONAL ASSOCIATION OF COUNTIES RESEARCH FOUNDATION, *supra* note 26, at 7-8.

149. *Id.* at 14-15.

150. *Id.* at 2, 9-10. Space suitable for a disposal site should be available for at least 20 years. For a study on how a county-wide system was established in Humphreys County, Tennessee, see M. KRUTH, D. BOOTH, & D. YATES, CREATING A COUNTYWIDE SOLID WASTE MANAGEMENT SYSTEM: THE CASE STUDY OF HUMPHREYS COUNTY, TENNESSEE (U.S. Environmental Protection Agency, Solid Waste Management Series SW-110, (1972).

ment.¹⁵¹ As an example of several units of governments cooperating, the Southern West Virginia Regional Health Council brought together nine counties and 44 municipalities to operate five sanitary landfills.¹⁵²

To take advantage of the benefits of an areawide approach most states, including North Dakota,¹⁵³ have enacted legislation enabling counties to establish and operate solid waste management systems or participate in such systems jointly with other counties, cities, villages, or towns.¹⁵⁴ North Dakota's enabling legislation empowers the county board of commissioners to establish a garbage and trash collection system encompassing all or any part of the county, except for territory within the boundaries of incorporated cities, and to operate and maintain one or more sanitary landfills or other types of disposal facilities. Service fees charged or special assessments levied against the benefited property are used to repay the revenue bonds the county is authorized to issue.¹⁵⁵ A county may also operate a solid waste system in cooperation with one or more other local units of government.¹⁵⁶

Several opportunities exist in North Dakota to initiate a county or areawide solid waste management system. Under one method the board of county commissioners could establish a system to collect and dispose of all solid wastes generated in unincorporated areas. Incorporated cities could enter into contracts or agreements with the board of county commissioners to dispose of solid wastes collected within the county boundaries.¹⁵⁷ Under another system, the county could own and operate the sanitary landfill, and cities and townships could collect their own solid wastes and enter into contracts with the board of county commissioners to dispose of such wastes at the county landfill.¹⁵⁸ Each of the above methods would assist the State Board of Health in its attempt to reduce the number of dumps and dumping grounds within the state.

151. NATIONAL ASSOCIATION OF COUNTIES RESEARCH FOUNDATION, *supra* note 26, at 2, 9-10. A very successful countywide system that also involves four municipalities was recently established in Chilton County, Alabama, paper presented at Fifth Annual Meeting of Am. Public Works Ass'n Institute for Solid Wastes, Dallas, Texas, Sept. 29, 1970.

152. NATIONAL ASSOCIATION OF COUNTIES RESEARCH FOUNDATION, *supra* note 26, at 8-9.

153. N.D. CENT. CODE § 11-11-14(14) (Supp. 1971).

154. *See, e.g.*, ALA. CODE ANN. tit. 22 § 347 (Supp. 1971); OHIO REV. CODE ANN. §§ 343.01-08 (Page 1953), *as amended*, (Page Supp. 1971); S.D. COMP. LAWS §§ 7-33-1 to -6 (Supp. 1972); WIS. STAT. § 59.07(135) (1971).

155. N.D. CENT. CODE § 11-11-14(14) (Supp. 1971). *See also* notes 127-132 *supra* and accompanying text.

156. N.D. CENT. CODE § 11-11-14(14) (Supp. 1971). *See* N.D. CENT. CODE § 54-40-01 (1960), which provides that two or more governmental units having in common any portion of their territory or boundary, may jointly or cooperatively exercise their respective separate powers, by agreement entered into through action of their governing bodies, for the purpose of acquiring, constructing and maintaining any building for their joint use. *See also* N.D. CENT. CODE §§ 54-40-02 to -07 (1960), *as amended*, (Supp. 1971).

157. *See* N.D. CENT. CODE § 11-10-01 (1960); N.D. CENT. CODE § 40-01-02 (1968), which authorize counties and cities to make contracts.

158. A reverse of this arrangement is where the city owns and operates the landfill, and the county disposes of waste it collects in the unincorporated areas at the city landfill under some type of contractual agreement.

Stutsman County is the only county in North Dakota that has assumed any type of countywide jurisdiction for solid waste disposal.¹⁵⁹ In April of 1972, the board of county commissioners entered into a three year contract with a private hauler.¹⁶⁰ The hauler agreed to collect wastes weekly (from every household¹⁶¹ and business place,¹⁶² and from certain central collection points) in seven cities and seven unincorporated towns which had entered into an agreement with the commissioners, and to deliver the wastes to the sanitary landfill located within the City of Jamestown.¹⁶³ Since the county lacked jurisdiction over the seven municipal corporations, each of the cities had to sign formal contracts with the county. On the other hand, the arrangement with the unincorporated towns was more informal.

Under a contract between the board of county commissioners and the City Council of Jamestown, the city has agreed to accept all solid wastes delivered to its sanitary landfill under the county program at specific charges.¹⁶⁴ The township treasurers collect fees from the residents in the unincorporated towns and send monthly checks to the county treasurer. Residents pay their treasurer who then forwards the money to the county treasurer. The county treasurer, in turn, pays the City of Jamestown and the private hauler each month. Data collected in June of 1972, indicated that the county can expect an annual income of about \$30,240, and an annual collection and landfill cost of approximately \$27,810. (Under the contract the private hauler may also collect solid wastes from farmers located on his route, and deliver such wastes to the landfill in Jamestown.)¹⁶⁵

B. MUNICIPALITIES

Municipalities may jointly by agreement own, acquire, construct, equip, improve, operate, and maintain, either within or without the

159. See generally Rural Area Development Committee, Stutsman County Solid Waste Disposal Program (unpublished mimeo information report, undated). The Stutsman County Rural Area Development Committee, consisting of local representatives of the Farmers Home Administration, Soil Conservation Service, Agricultural Stabilization and Conservation Service, and the county agent, began meeting in December, 1970, to discuss the implications of the North Dakota Department of Health Solid Waste Management Regulations, Regulation No. 86, which prohibited burning household wastes accumulated from several homes and required that all wastes deposited in landfills be covered daily with at least six inches of soil. To implement these regulations a joint effort between the several towns was necessary for economic feasibility.

160. *Id.* \$76,681 for a three year period.

161. *Id.* About 800 households were involved at 2.25 per month per household. Solid wastes are not collected from farmers under the agreement.

162. *Id.* About 120 businesses were involved at \$6.00 per month per business.

163. *Id.* Jamestown was not one of the seven cities.

164. *Id.* Packer load, 50 cents per yard; dump or farm truck, \$2.00; trailer or pickup truck, \$1.00; car load, 50 cents; and car bodies, \$10.00.

165. *Id.* To cover landfill costs the private hauler pays the Jamestown Treasurer 10 percent of the service fees charged the farmers.

corporate limits of their boundaries, a system for the disposal of garbage.¹⁶⁶ Lands may be acquired for disposal systems either within or without the state by gift, grant, purchase, or through condemnation proceedings.¹⁶⁷ Operating procedures¹⁶⁸ and the method of paying the expenses of a joint system are the same as if the municipality were operating the system individually, except that in fiscal matters the respective governing bodies and qualified electors in each city must approve bond issues.¹⁶⁹

Several neighboring cities and townships have signed one year contracts with the City of Minot to use its sanitary landfill on a fee basis to dispose of their solid wastes.¹⁷⁰ Each township or city must contract with a hauler or operate its own collection system and provide transportation to the landfill.¹⁷¹ In addition, they are responsible for providing the Minot Sanitation Department with a record of customers, family units, and building areas necessary to determine the charges and to pay the City of Minot each month.¹⁷²

IV. SELECTING DISPOSAL SITES

One of the most difficult problems that municipalities are encountering with regard to solid waste management relates to the acquisition of suitable sites for disposal facilities.¹⁷³ In general terms, a site must comply with environmental protection and health standards and local land use regulations and permit requirements, and be located close enough to the source of solid wastes to permit an economical operation.¹⁷⁴ Citizens' attitudes also play a major role in site selection.¹⁷⁵

The survey of community practices made by the North Dakota Department of Health in 1968¹⁷⁶ revealed that the state's 412 disposal

166. N.D. CENT. CODE § 40-34-01 (1968). See also N.D. CENT. CODE § 54-40-01 (1960); note 156 *supra*.

167. N.D. CENT. CODE § 40-34-01 (1968). See also notes 53-57 *supra* and accompanying text.

168. See notes 58-70 *supra* and accompanying text.

169. See N.D. CENT. CODE § 40-43-02 (1968), as amended, (Supp. 1971); notes 94-117 *supra* and accompanying text.

170. Letter from Alan M. Walter, Secretary, Minot Planning Commission, to Dean T. Massey, University of Wisconsin, July 26, 1972; & Landfill Contract, City of Minot, North Dakota. The contract is considered to be a continuing one, unless cancelled by one of the parties on a 30 day notice.

171. Landfill Contract, City of Minot, North Dakota.

172. *Id.* See also Letter from Alan M. Walter, *supra* note 170, which states that the fees are 70 cents per residential unit and .0004 cent per square foot of floor space in commercial buildings.

173. See Letter from Alan M. Walter, *supra* note 170. For a discussion of a metropolitan solid waste disposal system see HENNINGSON, DURHAM & RICHARDSON, INC., COLLECTION AND DISPOSAL OF SOLID WASTE FOR DES MOINES METROPOLITAN AREA: THE PLANNING PHASE (U.S. Environmental Protection Agency, Solid Waste Management Series SW-14d, 1971).

174. See notes 19-23 *supra* and accompanying text.

175. See generally Klee, *The Psychology of Solid Waste Management*, REPORTER OF THE AM. PUBLIC WORKS ASS'N (Reprint, May 1969).

176. See note 29 *supra* and accompanying text.

sites contained 5,251 acres of land. Only 25 per cent of those acres were being used for disposal purposes, leaving 75 per cent, or 3,912 acres, in reserve.¹⁷⁷ With this reserve, and because North Dakota's cities do not have large industries generating significant amounts of solid waste and the per capita rate of solid wastes generated is not expected to change significantly in the next 10 years, the cities are not faced with a lack of land in total acreage.¹⁷⁸ Assuming that 600,000 people live in North Dakota cities, and applying the rule of thumb of one acre per 10,000 persons per year compacted in cells three feet deep, 60 acres will be needed for landfill purposes each year, or 600 acres in 10 years.¹⁷⁹

Many communities that are presently using an open dump are too small to economically operate a sanitary landfill. An areawide approach will have to be initiated before they can comply with the State Department of Health regulations.¹⁸⁰ Much of the acreage now in reserve will be converted to other uses as the open dumps are eliminated and areawide sanitary landfills are developed. Consequently, properly located land will have to be acquired, and the image created in the eyes of the public by the present open burning, rat infested dumps will make the purchase of new areas for disposal sites difficult.¹⁸¹

Site selection is the process of locating and obtaining the use of suitable land. If possible, sanitary landfill sites should be provided for in the comprehensive land use plan for the local community.¹⁸² Enabling legislation in North Dakota, which authorizes a municipality to prepare and adopt a master plan for the physical development of the city and any land outside its boundaries having a relationship to the planning of the city, does not specifically enumerate solid waste disposal sites as an item to be included in the plan.¹⁸³ The statute does, however, state that the master plan may include the general location, character, and extent of public grounds and property.¹⁸⁴

Many factors must be evaluated to determine the suitability of a site for a landfill. Some of the considerations that must be taken into account include landfill space requirements, cost of the land, availability of adjacent land for expansion, population, roads that will facilitate access to the site, average hauling distance for

177. NORTH DAKOTA SOLID WASTE MANAGEMENT PLAN, *supra* note 29, at VI-2.

178. *Id.*

179. *Id.* at VI-3.

180. See N.D. DEP'T OF HEALTH, REGULATION NOS. 61, 82, 86.

181. NORTH DAKOTA SOLID WASTE MANAGEMENT PLAN, *supra* note 29, at VI-2 & 3.

182. See generally Clark & Toftner, *Land Use Planning and Solid Waste Management*, PUBLIC WORKS MAGAZINE (Reprint, March 1972).

183. See N.D. CENT. CODE § 40-48-8 (1968).

184. N.D. CENT. CODE §§ 40-48-8(1), (2) (1968).

collection vehicles, proximity to residences and industry, citizen reaction and the likelihood of public acceptance for a site, availability of acceptable cover material, topography, drainage, soil composition, special climatological problems, ultimate uses and reclamation value of site, possibility and significance of underground or surface water pollution, nuisance problems, and zoning and other local land use regulations.¹⁸⁵

Sites should be chosen which will meet the anticipated needs for a 20 to 30 year period. Generally, the larger the parcel of land, the more economical it will be—if the distance to the site is not unreasonably difficult to travel.¹⁸⁶ The ideal location (on the basis of length of haul) is the center of the refuse producing area. This, however, is not usually practical due to the lack of undeveloped land at such locations and the probable public disapproval of such a site. The distance wastes can be economically hauled also depends upon the type and size of collection equipment. Where disposal sites are distant, transfer stations may be required.¹⁸⁷ The site should have sufficient access roads, and if possible, such access roads should be away from residential, commercial, and industrial areas.¹⁸⁸

Depressed areas in which the grade must be raised are usually considered topographically and economically suitable for sanitary landfill sites, provided the fill operations are conducted so that proper surface drainage is maintained. Proper drainage for the landfill itself is necessary, but it is also important to consider what effect the fill will have on natural drainage in the area. Care must also be taken not to cause damage to adjacent property.¹⁸⁹

The composition of the soil, including that to be used for cover material, is another important factor in site selection. Ideal soil for sanitary landfill operations contains from 50 to 60 per cent sand with the balance being approximately equal amounts of clay and silt. A sufficient amount of soil for daily cover should also be available. Purchasing and hauling cover material can raise costs 25 to 50 per cent. Weather conditions may be important

185. See generally AMERICAN SOCIETY OF CIVIL ENGINEERS, *supra* note 15, at 3-5; AMERICAN PUBLIC WORKS ASSOCIATION, *supra* note 19, at 93-98; NATIONAL ASSOCIATION OF COUNTIES RESEARCH FOUNDATION, *supra* note 26, at 80-84; T. SORG & H. HICKMAN, JR., SANITARY LANDFILL FACTS 4-6 (Public Health Service Pub. No. 1792, 2d ed. 1970).

186. NATIONAL ASSOCIATION OF COUNTIES RESEARCH FOUNDATION, *supra* note 26, at 80-81.

187. AMERICAN SOCIETY OF CIVIL ENGINEERS, *supra* note 15, at 3; AMERICAN PUBLIC WORKS ASSOCIATION, *supra* note 19, at 96.

188. AMERICAN PUBLIC WORKS ASSOCIATION, *supra* note 19, at 96. For further discussion on transfer stations see E. ZAUSNER, AN ACCOUNTING SYSTEM FOR TRANSFER STATION OPERATIONS (Public Health Service Pub. No. 2034, 1971).

189. AMERICAN SOCIETY OF CIVIL ENGINEERS, *supra* note 15, at 4; AMERICAN PUBLIC WORKS ASSOCIATION, *supra* note 19, at 94, 96-97. Assistance to solve drainage problems can be gotten through the Soil Conservation Service, U.S. Department of Agriculture. See NATIONAL ASSOCIATION OF COUNTIES RESEARCH FOUNDATION, *supra* note 26, at 120-21.

in some areas in evaluating a site. In extremely cold climates trench excavation and cover material may present a special problem. During periods of prolonged rain, some areas may become unusable, necessitating the use of alternate sites.¹⁹⁰

Future uses of land to be filled should be determined insofar as possible when selecting a site. A completed landfill project will raise the previous elevation of the ground unless large quantities of earth are disposed of elsewhere. Swampy areas, ravines, abandoned borrow pits, and low-lying areas are thus natural locations for a sanitary landfill operation. However, the site's ultimate use may dictate that certain areas should be filled with dirt or other material rather than with refuse, or that elevations should vary in different areas of the fill. A well planned program may result in the reclamation of landfill sites for many beneficial community projects.¹⁹¹

In planning for a site, one must determine whether or not garbage is going to be a component part of the landfill and the ratio of garbage to other elements of refuse. Depending upon the type of fill, moisture conditions, amount of compaction, depth of the fill, and the amount of cover, there may be obnoxious odors, gas, and settlement.¹⁹² While it is unlikely that methane generation will affect the reclamation value of a properly operated landfill, this possibility should not be overlooked in planning the future use of the area.¹⁹³

Completed landfills, if properly planned beforehand, may be used for golf courses, parks, playgrounds, parking lots, levee improvements, airports, runway extensions, and in some instances, for building and industrial sites. By far the greatest percentage of filled sites are used for parks and playgrounds.¹⁹⁴

Several different legal arrangements are available to North Dakota local governments that permit completed landfills to be used for parks, playgrounds, and for other recreational purposes. Lands acquired by municipalities¹⁹⁵ or counties¹⁹⁶ for disposal sites may

190. AMERICAN SOCIETY OF CIVIL ENGINEERS, *supra* note 15, at 4-5; AMERICAN PUBLIC WORKS ASSOCIATION, *supra* note 19, at 94-96.

191. AMERICAN SOCIETY OF CIVIL ENGINEERS, *supra* note 15, at 3-4, 40.

192. *Id.* at 4, 40-42. For further discussion of gas and compaction problems see Eliassen, *Load-Bearing Characteristics of Landfills*, ENGINEERING NEWS-RECORD, Sept. 10, 1969, at 103-05; Eliassen, *Why You Should Avoid . . . Housing Construction on Refuse Landfills*, ENGINEERING NEWS-RECORD, May 1, 1947, at 90-94; Eliassen, O'Hara & Monahan, *Sanitary Landfill Gas Control*, THE AMERICAN CITY, Dec. 1957, at 115-17; Winkler, *Compaction, Settlement of Sanitary Landfills*, REFUSE REMOVAL JOURNAL, Dec. 1958, at 8-9, 24-25; Sowers, *Foundation Problems in Sanitary Landfills*, 94 J. SANITARY ENGINEERING DIVISION, ASCE 103-16; MacFarlane, *Gas Explosion Hazards in Sanitary Landfills*, PUBLIC WORKS MAGAZINE, May 1970, at 76-78, 138.

193. AMERICAN SOCIETY OF CIVIL ENGINEERS, *supra* note 15, at 4.

194. *Id.* at 42.

195. See N.D. CENT. CODE § 40-34-01 (1968).

196. See N.D. CENT. CODE § 11-11-14 (14) (Supp. 1971).

be transferred to the city¹⁹⁷ or county¹⁹⁸ park boards for recreational purposes when use as a landfill has been completed, or lands can be acquired by the city or county park boards for potential recreational use, but leased to the local waste disposal utility for a period of years. Existing state and local parks may also have space available in them for use as a landfill.¹⁹⁹

Local zoning ordinances present one of the greatest hindrances to locating a site for landfills. To counteract this problem, municipalities have recently been seeking governmental immunity from those restrictions. Sometimes the restrictions are contained in the municipalities' own zoning ordinances, but most often cities find that restrictions imposed by local townships and counties create the greatest problems. The argument is advanced that in operating a disposal site, the city is acting in its governmental capacity as opposed to its proprietary capacity, so therefore, it does not have to comply with the zoning regulations.

Cities,²⁰⁰ townships,²⁰¹ and counties²⁰² in North Dakota are empowered to enact zoning regulations and restrictions. Governing bodies of municipalities may divide the city into districts of such number, shape, and area as they deem necessary,²⁰³ and regulate and restrict, among other things, the size of buildings, structures, and land for trade, industry, or other purposes within each district.²⁰⁴ All regulations must be in conformity with the comprehensive master plan adopted by the governing body.²⁰⁵ A board of adjustment may be appointed for the purpose of determining or varying how the regulations are applied so that they are in harmony with their general purpose and intent and in accordance with general or specific rules contained in them.²⁰⁶

197. See N.D. CENT. CODE § 40-05-01 (56) (1968), which empowers the governing body to sell, dispose of, or lease real property. See also N.D. CENT. CODE §§ 40-49-01; 12(1) (1968), authorizing the board of park commissioners to acquire lands for park purposes.

198. See N.D. CENT. CODE §§ 11-11-14(11), (12) (1960). See also § 11-28-05(2) (1960) empowering the board of county park commissioners to acquire lands for park purposes. For the provisions authorizing the board of county commissioners to transfer property see N.D. CENT. CODE ch. 11-27 (1960), *as amended*, (Supp. 1971).

199. See generally, N.D. CENT. CODE ch. 55-08 (Supp. 1971) for provisions governing state parks.

200. See N.D. CENT. CODE ch. 40-47 (1968), *as amended*, (Supp. 1971).

201. See N.D. CENT. CODE §§ 58-03-11 to 15 (1960), *as amended*, (Supp. 1971).

202. See N.D. CENT. CODE ch. 11-33 (1960), *as amended*, (Supp. 1971).

203. N.D. CENT. CODE § 40-47-02 (1968).

204. N.D. CENT. CODE §§ 40-47-01, 02 (1968). Under these sections, regulations shall be uniform for each class or kind of buildings throughout each district, but the regulations in one district may differ for those in other districts.

205. N.D. CENT. CODE § 40-47-03 (1968). See N.D. CENT. CODE § 40-48-02 (1968) regarding the adoption of the master plan.

206. N.D. CENT. CODE § 40-47-01 (1968); N.D. CENT. CODE § 40-47-07 (Supp. 1971). See N.D. CENT. CODE §§ 40-47-08, 09 (1968), for appeal procedures of the board of adjustment.

Zoning ordinances from three North Dakota cities, Grand Forks, Jamestown, and Minot, were examined to determine how they handled sanitary landfills. Sanitary landfills were located within the corporate boundaries in Jamestown and Minot. Land uses devoted to garbage, offal, or dead animal reduction or dumping are restricted to the "M-2," Heavy Industrial, District in Minot.²⁰⁷ Even though the Grand Forks' ordinance regulates junk yards,²⁰⁸ it is silent with regard to dumps or sanitary landfills.²⁰⁹ The Jamestown zoning ordinance²¹⁰ defined a dump as any area used for outdoor storage, keeping or abandonment of junk or discarded materials, rubbish, trash, cans, bottles, garbage, vehicles, and machinery or parts.²¹¹ Uses devoted to dumps or garbage, offal, dead animal or fish reduction or dumping are permitted only in the "P-O-C," Public, Open Development and Conservation, "M-1," Limited Industrial and Manufacturing, and "M-2," General Industrial and Manufacturing, Districts, and then only after securing a special use permit with the approval of the board of adjustment.²¹² A special use permit is issued by the zoning administrator²¹³ only after the board of adjustment finds that the proposed use in the proposed location will not be dangerous or otherwise detrimental to persons residing or working in the vicinity, or to the public welfare, and will not impair the use, enjoyment or value of any property.²¹⁴

Boards of township supervisors may establish one or more zoning districts in accordance with a comprehensive plan²¹⁵ and regulate and restrict the uses of land within each district.²¹⁶ Two or more townships may adopt the same zoning ordinance and establish a joint commission to recommend boundaries of the various districts and appropriate regulations and restrictions applicable to each.²¹⁷

Three townships, Williston, Stony Creek, and Pherrin, in Williams County, North Dakota, adopted the same zoning ordinance

207. MINOT, N.D., 1962 REV. GENERAL ORDINANCES § 23-03-12(2)(f) (amended, Oct. 7, 1968).

208. See GRAND FORKS, N.D., CITY CODE §§ 19-0204(A), 0218(A)(11), 0220(E).

209. See generally GRAND FORKS, N.D., CITY CODE, ch. 19, art. 2.

210. Jamestown, N.D., Ordinance No. 329, Nov. 7, 1960.

211. *Id.* § 3(13). The ordinance uses the same definition for junk yards.

212. *Id.* §§ 5.9(B)(5), 5.11(1).

213. *Id.* § 12(D).

214. *Id.* § 10(E).

215. N.D. CENT. CODE § 58-03-12 (1960). Consideration is to be given to the character of each district, its peculiar suitability for particular uses, the normal growth of municipalities in the township, various land uses in the area, and traffic movements.

216. N.D. CENT. CODE § 58-03-11 (Supp. 1971). All regulations and restrictions must be uniform throughout each district; however, those in one district may differ from those in another. In addition, they may not apply to or prevent the use of land or buildings for farming or any of the normal incidents of farming.

217. N.D. CENT. CODE § 58-03-13 (Supp. 1971). Representatives from each municipality in the area to be affected by the ordinances are on the township zoning commissions.

in 1961.²¹⁸ Since that time, however, Pherrin Township has adopted its own ordinance,²¹⁹ which prohibits the use of any land in the commercial district for a sanitary landfill area, unless it is an approved community dump.²²⁰ The 1961 ordinance applicable to the three townships²²¹ specifically excludes dumps from the public use²²² and commercial²²³ districts, but is silent as to establishing dumps in industrial²²⁴ or heavy industrial²²⁵ districts. A sanitary landfill has been established by the City of Williston in Williston Township under a lease agreement with a private landowner. The township has an agreement with the city allowing township residents to haul their garbage to the landfill and the township pays the city a small fee from its tax funds for each family.²²⁶

Before a county zoning ordinance can become effective in a particular township, the board of township supervisors must, by resolution, relinquish their power to enact zoning regulations.²²⁷ In a sample of four county zoning regulations obtained, two did not contain provisions regarding dumps or landfill sites.²²⁸ Garbage or refuse disposal areas used for the disposal of any animal, vegetable, or mineral matter were classified as special uses under the Morton County Zoning Regulations and were to be located in an industrial district²²⁹ only when approved by the board of county commissioners, and then only if all operations were conducted within an area enclosed on all sides by a solid wall, compact evergreen or an equivalent hedge, or by an uniformly painted fence, not less than six feet in height, and the operations were to conform to the standards established by the State Department of Health.²³⁰ Sanitary landfills may be located in the "A-1," Agriculture, District under the Ward County Zoning Ordinance, provided such landfill operations are approved by the county building inspector and the State Department of Health.²³¹ In addition, land located in the "M-2," Heavy

218. Williston, Stony Creek & Pherrin Townships, Williams County, N.D., Zoning Regulations, Mar. 7, 1961.

219. Pherrin Township, Williams County, N.D., Zoning Resolution.

220. *Id.* § 2-B-2(2). The township has only two districts, residential and commercial.

221. Williston, Stony Creek & Pherrin Townships, Williams County, N.D., Zoning Regulations, Mar. 7, 1961.

222. *Id.* § 8-A-1(4).

223. *Id.* § 9-A-1(1).

224. *Id.* § 10.

225. *Id.* § 11.

226. Letter from Mrs. Pat Marburger, Clerk-Treasurer, Williston Township, Williston, N.D., to Dean T. Massey, University of Wisconsin, Sept. 9, 1971.

227. N.D. CENT. CODE § 11-33-20 (1960). County zoning ordinances are applicable only in unincorporated areas. See N.D. CENT. CODE §§ 11-33-01, 02, 04 to 12, 16 to 18 (1960), for the powers and procedures used to adopt and enforce county zoning regulations.

228. BARNES COUNTY, N.D., ZONING REGULATIONS (1965); BURLEIGH COUNTY, N.D., ZONING REGULATIONS (1959), as amended, (Jan. 1, 1963).

229. MORTON COUNTY, N.D., ZONING REGULATIONS art. 11 (1967).

230. *Id.* art. 14, § 12.

231. WARD COUNTY, N.D., ZONING RESOLUTION No. 6, art. 6, § 2(J) (1962).

Industrial, District may be used for garbage, offal, or dead animal reduction or dumping if such use has been approved by the county planning commission.²³²

V. PUBLIC HEALTH AND NUISANCE CONSIDERATIONS

Public health and nuisance considerations must be taken into account when selecting a waste disposal site and operating such a facility. To meet public health standards and requirements for controlling air and water pollution, fire hazards, and nuisances, a sanitary landfill, or any other type of disposal facility, should preclude the direct transmission of disease-vector breeding or sustenance by eliminating all possible harborage and food supplies for rats, flies and other vermins; minimize the possibility of polluting surface and ground waters; prevent air pollution from smoke, dust and odors; effectively control nuisance factors by making the system aesthetically acceptable and keeping noise to the minimum; minimize fire hazards; and minimize traffic hazards from refuse trucks.²³³

When locating a site for a sanitary landfill and operating that facility, one of the most important factors for consideration is the effect on underground and surface water supplies. The distance a landfill is to be located from watercourses and wells must be taken into account, as well as the various soil types and rock formations that tend to permit seepage of waste to water bearing strata and wells.²³⁴

Sufficient surface drainage should be provided to assure minimum runoff to and into the fill. Drainage provisions should also be made to prevent quantities of water from eroding the fill. A minimum slope of one per cent is recommended for the final grade, and the fill surface should be maintained by additional cover if needed, with subsequent regrading and seeding, and grassed waterways to assure the permanent stability of the fill site after completion.²³⁵ The maintenance of a site may also have legal consequences. In an action brought by landowners against the City of Minot to recover damages they sustained as a result of flooding, the North Dakota Supreme Court held that where a municipality maintained its sanitary landfill in such a location as to permit the rains to send down surface water laden with silt and other material onto the landowners' property, such maintenance constituted a private

232. *Id.* art. 14, § 2(f).

233. See AMERICAN SOCIETY OF CIVIL ENGINEERS, *supra* note 15, at 31; AMERICAN PUBLIC WORKS ASSOCIATION, *supra* note 19, at 93.

234. AMERICAN SOCIETY OF CIVIL ENGINEERS, *supra* note 15, at 5.

235. *Id.* at 33-34. Assistance with drainage and soil erosion problems can be obtained from the Soil Conservation Service, U.S. Department of Agriculture.

nuisance, entitling the landowners to bring a civil action for damages against the municipality.²³⁶

If sanitary landfills are properly located and operated, very little danger exists of polluting the underground water supplies. Both bacteria and chemicals are potential pollutants to underground water, with the latter possibly being more important than the first when it comes to sanitary landfills.²³⁷ Data collected by the North Dakota Department of Health in its statewide survey of disposal sites indicated that six per cent of them had some portion located in the water table.²³⁸ A total of 34 per cent were located in borrow pits on hillsides or in gullies.²³⁹

Ample statutory authority and administrative regulations are available in North Dakota with regard to solid waste disposal to prohibit such wastes from polluting both surface and underground waters. For example, regulations of the State Department of Health and Water Conservation Commission provide that before a system for the disposal of garbage or refuse, tending to pollute water courses, can be installed or expanded by any public agency or corporation, satisfactory plans and specifications for the installation or expansion of the system must be submitted and approved by both agencies.²⁴⁰ Another regulation of the State Department of Health also provides that the site of every sanitary landfill shall be such that surface or ground water pollution resulting from runoff or seepage will be minimized.²⁴¹ Each time a municipality requests permission to locate a landfill, personnel from the State Department of Health make a physical inspection of the premises to determine the possibility of surface water pollution and the premises are evaluated for ground water pollution by the North Dakota Geological Survey.

Some specific statutes seek to control pollution. For example, any person depositing or placing, or causing to be placed, any dead animals, offal, or other refuse matter offensive to the sight or smell or deleterious to health, upon the banks or in the waters of any

236. *Thorson v. City of Minot*, 153 N.W.2d 764, 770 (N.D. 1967).

237. AMERICAN SOCIETY OF CIVIL ENGINEERS, *supra* note 15, at 35. For further discussion on polluting underground water supplies see A. FUNGAROLI, POLLUTION OF SUBSURFACE WATER BY SANITARY LANDFILLS (U.S. Environmental Protection Agency, Solid Waste Management Series SW-12rg, 1971); G. HUGHES, R. LANDON, & R. FARVOLDEN, HYDROGEOLOGY OF SOLID WASTE DISPOSAL SITES IN NORTHEASTERN ILLINOIS (U.S. Environmental Protection Agency, Solid Waste Management Series SW-12d, 1971).

238. NORTH DAKOTA SOLID WASTE MANAGEMENT PLAN, *supra* note 29, at IV-3.

239. *Id.* at IV-2.

240. N.D. DEPT. OF HEALTH, REGULATION No. 61, § 1; N.D. WATER CONSERVATION COMMISSION, SANITARY REGULATION No. 1. See N.D. CENT. CODE § 61-02-21 (1960), which provides that any facility for the disposal of waste substance shall be constructed only with the approval of the State Water Conservation Commission, and that approval will be granted only after approval from the State Department of Health. See also N.D. CENT. CODE § 40-22-04 (1968).

241. N.D. DEPT OF HEALTH, REGULATION No. 86, § 5.2.1.

lake or stream within the jurisdiction of the state, is guilty of a misdemeanor, and is punished by a fine.²⁴² Refuse matters from privies; livestock stables, pens, sheds, yards or corrals located less than 60 feet from the bank of a lake or stream; or cemeteries located less than 80 feet from a lake or stream are construed to be offensive.²⁴³ Persons throwing or depositing any gas tar or refuse of any gas house or factory into any public waters, river, stream, or into any sewer or stream emptying into such public waters, river, or stream, is guilty of a misdemeanor.²⁴⁴

Garbage has been identified as being an important link in the chain of transmission of certain diseases including trichinosis in man, and trichinosis, hog cholera, and vesicular exanthema in swine. Since the chain of transmission is broken when swine do not have access to garbage, the use of sanitary landfills can effectively prevent the perpetuation of these diseases merely by insuring the disposal of refuse containing garbage without allowing swine to have access to it.²⁴⁵ Even though North Dakota still permits cooked²⁴⁶ garbage²⁴⁷ to be fed to swine after obtaining a permit,²⁴⁸ a permit for such feeding has not been issued by the State Livestock Sanitary Board since July 1, 1971.²⁴⁹

Those responsible for a solid waste management system must provide for proper insect and rodent control measures during storage and collection periods and while operating and maintaining the landfill. The State Department of Health survey of 357 cities revealed that 26 per cent of the cities had ordinances regulating behind-the-house storage, and that only 80 per cent of those with ordinances enforced them.²⁵⁰ A collection system was provided for in 31 per cent of the cities and some type of control was exerted over

242. N.D. CENT. CODE § 61-01-13 (1960).

243. N.D. CENT. CODE § 61-01-14 (Supp. 1971). This, however, is not construed to prevent any city within the state from discharging its untreated sewage or waste into any river temporarily on an emergency basis, provided that such discharges are determined by the State Health Department not to be detrimental to public health and safety.

244. N.D. CENT. CODE § 61-01-12 (1960). See N.D. CENT. CODE § 61-01-25 (Supp. 1971) for the penalty that may be imposed.

245. AMERICAN SOCIETY OF CIVIL ENGINEERS, *supra* note 15, at 31. For further information see T. HANKS, SOLID WASTE/DISEASE RELATIONSHIPS: A LITERATURE SURVEY (Public Health Service Pub. No. 999-UIH-G, 1967); AMERICAN PUBLIC WORKS ASSOCIATION *supra* note 19, at 269-92; NATIONAL ASSOCIATION OF COUNTIES RESEARCH FOUNDATION, *supra* note 26, at 95.

246. Before being fed to hogs all garbage regardless of previous processing must be thoroughly heated to 212 degrees Fahrenheit for at least 30 minutes. N.D. CENT. CODE § 36-01-25 (1960).

247. Garbage is defined as animal or vegetable waste matter resulting from the handling, preparation, cooking, and consumption of foods, including animal carcasses or parts thereof, except that dairy products from a licensed creamery or dairy are not considered to be garbage. N.D. CENT. CODE § 36-01-21(1) (1960).

248. N.D. CENT. CODE § 36-01-22 (1960) (a person feeding garbage from his own household need not apply for a permit.)

249. Agricultural Research Service, U.S. Dep't. of Agriculture, ANH Form 13-2A, *National Status on Control of Garbage-Feeding* (July 1971 thru Dec. 1972). See N.D. CENT. CODE §§ 36-01-21, to -23 (1960).

250. NORTH DAKOTA SOLID WASTE MANAGEMENT PLAN, *supra* note 29, at IV-2.

the collection systems in 37 per cent of the cities.²⁵¹ Generators of solid wastes had to haul their own refuse to the disposal sites in 62 per cent of the cities.²⁵²

Most of the problems concerning insects and rodents during storage and collection should be solved when municipalities begin to comply with the regulations the State Department of Health adopted in 1970.²⁵³ Under those regulations solid waste must be stored so that it does not attract rats, flies, or mosquitoes and does not allow vectors, which may carry disease, to find shelter or to breed within its contents.²⁵⁴ Each household or place of business must have a sufficient number of suitable containers²⁵⁵ to accommodate all solid waste materials accumulated between scheduled collections.²⁵⁶ Unless the containers are placed on a smooth, impervious surface, storage racks or container supports should be provided for individual containers to minimize corrosion and to prevent breeding of insects and rodent harborage.²⁵⁷ Bulk containers should have a capacity compatible with the collection equipment, be equipped with tight-fitting lids or doors to prevent entrance of insects or rodents, and be watertight, leak and weather-proof.²⁵⁸

The state health regulation specifies that the city or county is responsible for collecting solid wastes and requires that they exert rigid control over the collection agency.²⁵⁹ Solid wastes are to be collected at frequent intervals to prevent nuisances, at least once a week.²⁶⁰ Only covered vehicles are to be used to collect wastes, and the vehicles must be constructed in such a way that they can be easily cleaned and do not permit refuse to be spilled during loading or when being transported to the disposal area.²⁶¹

Insect and rodent control can be instituted at the landfill site through proper compaction of the refuse, covering and maintaining a minimum of two feet of compacted earth cover at the desired final grade. The survey of 412 disposal sites in North Dakota revealed that rodent control was needed at 97 per cent, fly control at 21 per cent, and that daily cover was provided at only seven per cent

251. *Id.* at IV-1.

252. *Id.* at IV-2.

253. N.D. DEP'T OF HEALTH REGULATION No. 86.

254. *Id.* § 3.1.

255. Individual containers shall not exceed 32 gallons in capacity and be equipped with tight-fitting insect and rodent proof lids. *Id.* § 2.3.1. See BISMARCK, N.D., REV. ORDINANCES art. 7, § 16.070(4) (1966), for container requirements in that city.

256. N.D. DEP'T OF HEALTH, REGULATION No. 86, § 3.2.

257. *Id.* § 3.4.3.

258. *Id.* § 3.4.4.

259. *Id.* § 4.1. See notes 262 to 264 *supra* and accompanying text for a discussion of the actual practice. For a sample of detailed storage and collection regulations see BISMARCK, N.D., REV. ORDINANCES art. 7, § 16.0706, .0707 (1966).

260. N.D. DEP'T OF HEALTH, REGULATION No. 86, § 4.2.

261. *Id.* § 4.3.

of the sites.²⁶² Under the state health regulations every sanitary landfill site must have sufficient material available to cover the open face with at least 24 inches of compacted earth.²⁶³

North Dakota's Air Pollution Control Regulations²⁶⁴ prohibit, with certain exceptions, the disposition of refuse and other material through open burning.²⁶⁵ Burning is permitted to eliminate fire hazards,²⁶⁶ remove dangerous or hazardous materials,²⁶⁷ manage forest and rangelands,²⁶⁸ and clear land, rights-of-way and agricultural crops.²⁶⁹ Burning must be done only during daylight hours, when the wind will blow the smoke away from populated areas, and in such a manner as not to be dangerous or hazardous.²⁷⁰ Where municipal collection and disposal service is not available, refuse may be burned, provided the material is not from more than three households, the burning is conducted on the property where the wastes were generated, and the burning is done during daylight hours.²⁷¹

VI. LITTERING, ABANDONED AUTOMOBILES AND JUNKYARDS ADJACENT TO HIGHWAYS

The responsibility for keeping North Dakota's public streets, roads, highways and grounds free from litter rests with all levels of government. Two general anti-littering statutes that are similar in nature prohibit persons and firms from throwing or depositing, or causing to be thrown or deposited, garbage, glass, cans, bottles, boxes, nails, tacks, wire, rubbish of any kind, or any other substance likely to cause injuries to persons, animals, or vehicles upon any public street, road, or highway of the state.²⁷² Those dropping or throwing destructive or injurious material on the highway in violation of these statutes must remove it immediately.²⁷³ An additional provision requires that any person removing a wrecked or damaged vehicle must also remove any glass or injurious substances dropped on the highway.²⁷⁴ Persons violating the provisions of the

262. NORTH DAKOTA SOLID WASTE MANAGEMENT PLAN, *supra* note 29, at IV-2 & 3. Cover was not provided at all at 43 percent of the sites.

263. N.D. DEP'T OF HEALTH, REGULATION No. 86, § 5.2.3.

264. N.D. DEP'T OF HEALTH, REGULATION No. 82. *See* N.D. CENT. CODE Ch. 23-25 (1970), *as amended*, (Supp. 1971), for enabling legislation with regard to air pollution control.

265. N.D. DEP'T OF HEALTH, REGULATION No. 82, § 4.000.

266. *Id.* § 4.202.

267. *Id.* § 4.203.

268. *Id.* § 4.205.

269. *Id.* § 4.206.

270. *Id.*

271. *Id.* § 4.207.

272. *See* N.D. CENT. CODE § 24-12-03 (1970); N.D. CENT. CODE § 39-10-59(1) (1960). *See also* N.D. DEP'T OF HEALTH, REGULATION No. 62, § 1.

273. N.D. CENT. CODE § 39-10-59(2) (1960).

274. N.D. CENT. CODE § 39-10-59(3) (1960).

statute²⁷⁵ are guilty of a misdemeanor, and if convicted are to be punished by a fine or imprisonment or both.²⁷⁶ Governing bodies of local units are authorized to offer an appropriate reward for information leading to the conviction of any person throwing or depositing material on public streets, roads, or highways under their jurisdiction.²⁷⁷

Municipalities²⁷⁸ are charged with the duty of keeping their public streets and grounds free from obstructions.²⁷⁹ To accomplish this, enabling legislation authorizes governing bodies to adopt ordinances and regulations²⁸⁰ and to provide penalties for their violations.²⁸¹ Specifically, cities are empowered to regulate or prevent any practice having a tendency to annoy persons frequenting streets, alleys, avenues, sidewalks, crossings, and public grounds, and to prevent and regulate obstructions and encroachments upon them.²⁸² Another anti-littering statutory provision grants municipalities the power to adopt ordinances designed to “. . . regulate and prevent the throwing or depositing of ashes, offal, dirt, garbage, or any offensive matter in, and to prevent injury to, any street, avenue, alley, or public ground.”²⁸³

Governing bodies of cities operating under either the council or commission forms of government have additional enabling power permitting them to adopt an ordinance that provides for the taking, storage, and disposal of any personal property abandoned or left unclaimed upon the streets, alleys, or other public ways of the city for a period of more than ten days.²⁸⁴ After holding the property for at least 60 days, and upon giving proper notice, such property may be sold at a public sale.²⁸⁵ Similar legislation permitting sales provides that motor vehicles coming into the possession of any county or municipal law enforcement agency and remaining unclaimed (where the towing, storage, and other charges are unpaid for a period of one month after coming into the agency's possession,

275. N.D. CENT. CODE § 24-12-03 (1970).

276. N.D. CENT. CODE § 24-12-05 (1970).

277. N.D. CENT. CODE § 24-12-03 (1970).

278. See note 53 *supra* for the definition of municipalities or municipal corporations.

279. *Moulton v. City of Fargo*, 39 N.D. 502, 167 N.W. 717, 718 (1918).

280. See N.D. CENT. CODE § 40-05-01(1) (1968), for municipal powers to adopt ordinances and regulations.

281. See N.D. CENT. CODE § 40-05-01(1) (1968); N.D. CENT. CODE § 40-05-06 (Supp. 1971).

282. N.D. CENT. CODE § 40-05-01(9) (1968). For the similarity between authority of cities to regulate and prevent annoying practices and the definition of a nuisance see N.D. CENT. CODE § 42-01-01 (1968).

283. N.D. CENT. CODE § 40-05-01(14) (1968). For the powers of a governing body of a municipality to keep sidewalks free from obstruction see N.D. CENT. CODE § 40-05-01(13) (1968).

284. N.D. CENT. CODE § 40-05-02(20) (1968).

285. *Id.* At least 10 days notice must be given. The owner of the property has six months to apply for the proceeds resulting from the sale, upon payment of the storage costs and other expenses incurred by the city.

and the owners cannot be found) shall be sold by the law enforcement agency at a public sale after giving proper notice.²⁸⁶

Powers and duties delegated to municipal governing bodies enabling them to adopt ordinances and regulations designed to protect the public health,²⁸⁷ and to declare, abate, and remove nuisances²⁸⁸ can also be used as anti-littering tools. Such governing bodies are also empowered to enact ordinances regulating animals and poultry,²⁸⁹ packing houses and other offensive businesses,²⁹⁰ and unwholesome or nauseous places.²⁹¹ The rules and regulations that county, city, and township boards of health may adopt to protect and preserve public health and safety may conceivably be used to assist in litter prevention.²⁹²

Boards of park commissioners having authority over city²⁹³ parks and recreation areas are given adequate powers to promulgate rules and regulations relative to litter prevention in the facilities over which they have jurisdiction.²⁹⁴ The approximately one and one-half pounds of solid wastes generated each day by tourists is primarily the concern of the State Highway Department, which maintains rest areas along the highways.²⁹⁵ Adequate powers are available to the North Dakota Park Service to formulate rules and regulations, and enforce them, with regard to the prohibition of littering in state parks, recreation areas, and historical sites.²⁹⁶ Rules and regulations are unenforceable unless a sufficient number of containers are placed in the state parks and other recreational areas for the tourists to deposit their garbage and refuse.

New junkyards, auto graveyards or scrap metal processing facilities may not be established and maintained within 1,000 feet of the nearest edge of the right of way of a highway on the state highway system unless permission has been granted by the North Dakota State Highway commissioner.²⁹⁷ Those established in viola-

286. N.D. CENT. CODE § 40-05-15 (Supp. 1971).

287. N.D. CENT. CODE §§ 40-05-01(1), (45) (1968). See *Taylor v. City of Wahpeton*, 62 N.W.2d 31, 34 (N.D. 1953), which stated that municipal ordinances intending to protect the public health are founded upon the police power inherent in the state and was granted by the state to the municipality.

288. N.D. CENT. CODE § 40-05-01(44) (1968). See also N.D. CENT. CODE chs. 42-01, 02 (1968).

289. N.D. CENT. CODE § 40-05-01(47) (1968).

290. N.D. CENT. CODE § 40-05-01(48) (1968).

291. N.D. CENT. CODE § 40-05-01(49) (1968).

292. N.D. CENT. CODE § 23-05-01 (1970). Such boards of health are known as local boards of health. See N.D. CENT. CODE §§ 23-05-04, to 06 (1970), for the authority of local boards of health to abate and remove nuisances and the sources of filth regarded to be detrimental to public health.

293. N.D. CENT. CODE § 40-49-12 (1968).

294. N.D. CENT. CODE § 11-28-05 (1960). For the powers of joint boards of county park commissioners see N.D. CENT. CODE § 11-28-16 (1960).

295. See NORTH DAKOTA SOLID WASTE MANAGEMENT PLAN, *supra* note 29, at V-6.

296. N.D. CENT. CODE § 55-08-03(8) (Supp. 1971).

297. N.D. CENT. CODE § 24-16-03 (1970).

tion of the law are declared to be a public nuisance and the highway commissioner can enter upon private property to abate such nuisances without liability for his action.²⁹⁸

If a junkyard lawfully existed prior to December 3, 1965, and is or may be screened by natural objects, plantings, fences, or other appropriate means so as not to be visible from the main traveled way of the state highway system, it is allowed to remain within 1,000 feet of the nearest edge of the right of way of any state highway, although the owner of a yard not effectively screened must do so when ordered by the commissioner.²⁹⁹ The owner is fully reimbursed for the costs expended pursuant to the commissioner's order and design.³⁰⁰ Those junkyards that can not be effectively screened must be removed,³⁰¹ with the owners being paid just compensation for reasonable damages.³⁰² If the commissioner deems it necessary, he may acquire the lands used as a junkyard by gift, purchase, exchange or through condemnation proceedings.³⁰³

VII. CONCLUSION

Sanitary landfills will remain the primary method of disposing of solid wastes in North Dakota for the foreseeable future. The survey of the state's 359 cities and 412 disposal sites by the Department of Health indicated a lack of community control over the storage and collection systems. It also pointed out that only seven per cent of the sites could be classified as sanitary landfills and that health standards and nuisance factors were problems at most sites.

The primary responsibility for solid waste management in North Dakota rests with the local units of government. Both municipalities and counties have adequate authority to regulate refuse storage, collect solid wastes, and acquire land for a disposal facility. Funds for such a system can be obtained through tax levies, service charges and fees, special assessments, and by selling general obligation and revenue bonds.

Several methods exist to operate solid waste management systems on an areawide basis. For example, a county can operate a system under various contractual agreements.

Local zoning and other land use control restrictions and state environmental standards seem to pose the most difficulty for local communities selecting landfill sites. Solid waste collection and disposal has been held to be a governmental function in North Dakota,

298. *Id.*

299. N.D. CENT. CODE § 24-16-04 (1970).

300. *Id.*

301. N.D. CENT. CODE § 24-16-05 (1970).

302. N.D. CENT. CODE § 24-16-07 (1970).

303. N.D. CENT. CODE § 24-16-08 (1970).

therefore, a possibility exists that local units are exempt from abiding by either their own or other local zoning regulations. Other factors to be considered in selecting a site are space requirements, the cost of the land, accessibility to the site, topography, soil characteristics, drainage, future uses of the site, and the possibility of water pollution.

Public health and nuisance considerations must be taken into account when selecting and operating a site. Factors to be considered are insect and rodent controls, air and water pollution, transmission of diseases, smoke, dust, odor, safety, fire hazards, and aesthetics. The State Department of Health has adopted sufficient regulations, which, if followed, will abate nuisances and alleviate health hazards. In addition, enabling legislation is available that can prevent littering and prohibit junkyards from locating near state highways.

