

Chepachet Village Parcel Analysis Summary Tables

Parcel Size Distribution		
All Parcels		
Lot size	Number	Percent
<5000	9	4%
5-10,000	21	9%
10-40,000	109	44%
40-80,000	45	18%
>80,000	63	26%
Total	247	100%

Parcel use	CURRENT	FUTURE
Developed	82%	
Residential	61%	70%
<i>single family</i>	53%	61%
<i>multi family</i>	8%	8%
Commercial	13%	14%

Parcel Size Distribution - Developed Single Family Residential Lots							
Lot size (sq.ft.)	Density category	Number of lots	Percent lots by category	Area sq.ft.	Area acres	Average lot size sq.ft.	Average lot size acres
< 5,000	high	3	2%	9,782	0.2	3,261	0.08
5-10,000	med high	2	2%	17,414	0.4	8,707	0.20
10-40,000	med	74	56%	1,791,436	41.1	24,209	0.56
40-80,000	med low	28	21%	1,437,665	33.0	51,345	1.18
> 80,000	low	24	18%	4,005,168	91.9	166,882	3.83
Total		131	100%	7,261,466	166.7	55,431	1.27

Total area of parcel analysis 630 acres, 247 lots.

Total area of wellhead protection area evaluated for pollution risk is 1,055 acres.

Summary of Parcel Use - Current and Future					
Parcel use	CURRENT		Change in Use vacant and no data	FUTURE	
	Total Lots	Built		Build-out	Estimated ISDS
Single family	131	131	20	151	151
multifamily	20	20		20	60
commercial	33	33	2	35	35
institutional	18	18		18	18
No data	17		17	17	17
open space	5			5	5
vacant	23				
Total	247	202	39	246	286

Notes:

Future assumes vacant residential will be developed as single family dwellings
 Open space is farm forest and open space and may have existing dwelling and may be subdivided in future.

Multifamily is 2-5 dwellings /unit, average of 3 units, equivalent to 3 ISDS per unit.
 Commercial systems estimated equivalent to 1 single family isds on average.

Area of parcel analysis = 630 acres
 ISDS / acre @ 286/630 = 0.45 ISDS / acres

Future development potential. The build-out analysis shows that the village is largely developed, with only 20 vacant residential lots and 2 vacant commercial lots that are potentially developable.

Pollution risk from onsite wastewater treatment systems. The average number of onsite systems per acre for the parcel study area, at .45 ISDS per acre or about one system per two acres, is equivalent to the estimate for the larger wellhead protection area using RIGIS land use. This takes into account wetlands, larger parcels and open space within the study area. Although this is a relatively low density compared to the central village areas where homes are clustered at four units per acres, this level of unsewered development in a drinking water source area is ranked as a high risk to water quality based on the potential for improperly treated effluent to reach wells in the more densely clustered areas of the study area. Under the RI HEALTH source water assessment program, septic system densities of up to .50 are ranked within the 75th percentile compared to septic systems densities for all other major public water supplies within RI. Areas with more than .50 septic systems per acre rank within the 95 percentile compared to other water supply watersheds and recharge areas, with 1.15 isds/acre being the maximum found in source water areas for major community supplies in Rhode Island.

Single Family Residential Lots - Suitability for onsite wastewater treatment

Suitability based on lot size and soil type

type			Environmental constraints				Hydraulic suitability vs Environmental constraints			
Suitability for Conventional System*	Total Lots**	Percent suitable*	Public Well w/in 400ft	Water Body w/in 200 ft	Water Body w/in 50 ft	Wetland w/in 50 ft	Lots with \geq 1 environmental constraint	Percent lots in each suitability category with \geq 1 constraint	Lots with no constraints	Percent lots in each suitability category with no constraints
Suitable	96	64%	15	22	3	17	37	39%	59	61%
Small Mound	44	29%	8	7	0	10	19	43%	25	57%
Large Mound	1	1%	0	1	0	0	1	100%	0	0%
Unsuitable	10	7%	8	5	0	4	10	100%	0	0%
Total	151	100%	31	35	3	31	67		84	56%
Percent of total lots							44%		56%	

* Based only on lot size and soil type

** Includes 131 developed and 20 vacant residential lots

Single family residential Lots - Suitability for onsite wastewater treatment

Suitability for Conventional System*	Total Lots**	Percent suitable*	Lots with \geq 1 environmental constraint	Percent of all 1-family lots	Lots with no env. constraints	Percent of all 1-family lots
Suitable	96	64%	37	25%	59	39%
Small Mound	44	29%	19	13%	25	17%
Large Mound	1	1%	1	1%	0	0%
Unsuitable	10	7%	10	7%	0	0%
Total	151		67	44%	84	56%
Percent of total lots		101%	44%		56%	

** Includes 131 developed and 20 vacant residential lots

Notes

Environmental constraints primarily fell into three categories, each found in about one third of the lots : 400' of public well, 200' of waterbody and 50 ft within wetland buffer. Only 3 lots were found to be within 50' of waterbody.

Sixty four percent of all lots were found to be suitable for onsite treatment based on hydraulic function considering lot size and soil type, and an additional 29% were likely to be suitable with a small mound. In each case, about 40% of these sites had one or more environmental constraints that may make advanced treatment necessary to protect wells or surface waters.

Sites ranked suitable for onsite wastewater treatment systems without filling or with use of a small mound had fewer environmental constraints than less suitable sites. In comparison, 100% of sites found unsuitable for onsite systems or requiring a large mound, were also found to have environmental constraints.

Summary Suitability Rating for Residential Lots*									
	Suitability for conventional onsite systems		Residential lots		Single family lots		Multi-family lots		
RATING	Soils and lot size ¹	Environmental Constraint ²	Number	Percent	Number	Percent of single family lots	Number	Percent of multi-family lots	
Good	Suitable	None	59	35%	59	39%	0		subtotal
Fair	Small mound	None	28	16%	25	17%	3	15%	
GOOD - FAIR			87	51%	84	55%	3	15%	
	Suitable	≥ 1	43	25%	37	25%	6	30%	subtotal
	Small mound	> 1	24	14%	19	13%	5	25%	
POOR			67	39%	56	37%	11	55%	
	Large mound	> 1	1	1%	1	1%	0	0%	
	Unsuitable	> 1	16	9%	10	7%	6	30%	
UNSUITED			17	10%	11	8%	6	30%	subtotal
			171	100%	151	100%	20	100%	Total lots
POOR - UNSUITED³			84	49%	67	45%	17	85%	

* Includes current and future 151 single family and 20 multifamily lots

1. Suitability for hydraulic function of leach field based on soil permeability, depth to water table and lot size.
2. Env. constraint: parcel is within 400' of public well, within 200' of waterbody, and/ or within 50' of wetland or surface waterbody.
3. Sites ranked high-extreme are likely to require advanced treatment either due to unsuitable site or to avoid large mound system.

Notes - Suitability for onsite wastewater treatment

GOOD to FAIR

Approximately 50 percent of all residential lots were ranked as good to fair for onsite wastewater treatment using conventional septic systems. 35 percent of these are suitable for a conventional onsite wastewater treatment and have no identified environmental constraints. Another 16 percent may require at least a small mound but also have no other environmental constraint.

POOR

A relatively small proportion of residential lots (10 percent) are considered unsuitable for onsite wastewater treatment due to either lot size and soils or need for large mound; however, an additional 40 percent of lots which are suitable without modification or with a small mound have environmental constraints which put them in the poorly suited category. As a result, approximately 50 percent of lots are ranked as poorly suited or unsuitable due to either site conditions or environmental constraints. Advanced treatment systems using either onsite systems or off-site treatment may be required to ensure proper function, to avoid a extensive filling, and to better protect nearby wells and surface waters. The town should consider setting treatment standards requiring advanced treatment for new systems and repairs located within buffers of public wells, within 100 feet of private wells, and buffers to surface waters and wetlands to protect public health and avoid increased risk of improper treatment in variances from current DEM standards are granted. Because all systems are located within the wellhead protection areas that encompasses the village, using advanced treatment on these higher risk sites will better protect groundwater recharge quality within this wellhead area.

Multi-family lots are more likely to have limitations for onsite wastewater treatment using conventional systems. This breakdown shows that 30 percent of these lots are unsuited based on hydraulic function, and a total of 85 percent are likely to be unsuitable when environmental constraints are considered.

Commercial and institutional uses have not been taken into account because of the wide range of flows possible, from less than a single family dwelling, to high volume, high strength waste from restaurants and other high-water users.

Since these estimates do not take into account locations of private wells, the number of lots that may be unsuitable for conventional treatment due may be higher than indicated here due to proximity to private wells.

All estimates are suitable for planning purposes only; in all cases site investigation is necessary to verify actual conditions.

Estimated Wastewater Flows						
Rating	single family ISDS	Multifamily ISDS (3 units/lot)	Equivalent ISDS	flow/du (gpd)	Total Flow	Percent
good-fair	84	9	93	450	41,850	44%
poor	56	33	89	450	40,050	42%
unsuited	11	18	29	450	13,050	14%
					94,950	100%
poor and unsuited	67	51	118	450	53,100	56%

