Township of Gillies

Asset Management Plan

Updated: October 2016

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1. EXECUTIVE SUMMARY

An asset management plan for The Township of Gillies is designed to assist with the maintaining, renewing, replacing, and funding of their assets. The assets included are 4 bridges, approximately 105 lane km of roadway, approximately 105 lane km of ditches (stormwater), 308 culverts, 3 buildings, 1 helipad, 5 equipment, 5 vehicles and 5 street lights.

The assets (except ditches) have been inspected by the Roads Maintenance Coordinator and the results have been inputted into Municipal DataWorks (MDW). The Bridge Condition Index (BCI) and Pavement Condition Index (PCI) have been calculated with MDW.

The asset management plan provides an evaluation of the current performance and characteristics of the assets. It provides recommended levels of service and a basic financial strategy based on this information. This is broken down into work to be done within certain timeframes.

Most of the assets are in fair to good condition; however the following are assets in poor condition:

- RD_0011 Parker Road
- RD_0013 Hymers Fair Drive
- RD_0028 Leeper Road
- and 45 culverts.

The next road inspection should be undertaken in 2019, and the next street light inspection should be undertaken in 2021.

The next bridge, equipment and vehicle inspection should be undertaken in 2015 and the next road and culvert inspection in 2016. The buildings and helipad should be inspected in 2018.

When training opportunities and staff demands permit, municipal employees shall endeavour to become as familiar as possible with MDW and update the information regularly. This will assist with managing the assets and predicting financial needs reasonably well.

2.0 INTRODUCTION

Asset management planning is the process of making the best possible decisions regarding the building, operating, maintaining, renewing, replacing and disposing of infrastructure assets. The objective is to maximize benefits, manage risk, and provide satisfactory levels of service to the public in a sustainable manner. Asset management involves a thorough understanding of the characteristics and condition of infrastructure assets, as well as the service levels expected from them. It also involves setting strategic priorities to optimize decision making about when and how to proceed with investments. Finally, it includes the development of a financial plan, which is the most critical step in putting the plan into action.

Good asset management is essential for all orders of government. It results in informed and strategically sound decisions that optimize investments, better manage risk — including the risk of infrastructure failure — and take into account the potential impact of other factors, such as climate change (e.g., damage due to extreme weather).

2.1 PURPOSE

The purpose of the asset management plan is to establish a workable document which will assist with decisions related to how The Township's infrastructure will be managed and provide the levels of service required to support The Township's goals.
An asset management plan is a business strategy to effectively and efficiently allocate available funds amongst valid and competing asset needs. It links expectations for asset conditions, performance, and availability with management and investment strategies. The asset management plan identifies the recommended work for the assets to perform at the level of service expected.

At the very core of public sector asset management are two fundamental considerations: providing satisfactory levels of service to the public, and ensuring the sustainability of infrastructure assets over the long term.

Asset management planning is the process of making the best possible decisions to achieve these outcomes. Importantly, these decisions are made with consideration to the entire lifecycle of assets, including building, operating, maintaining, renewing, replacing and disposing of infrastructure assets.

Good asset management planning requires an understanding of both the current and desired state of infrastructure, and the service levels that infrastructure provides. This requires an awareness of the condition of the infrastructure, risks related to this infrastructure, and financial considerations related to asset management objectives.

Lastly, asset management planning is about prioritization. A good asset management plan reflects an awareness of the choices that must be made in terms of planning and investment. A comprehensive asset management plan is one that incorporates all of the aforementioned considerations, and will result in optimized decision-making.

Reflecting all of these considerations in an asset management plan is the critical task to creating an excellent asset management program. This is the goal that we strive to achieve for all municipalities in Ontario, and this discussion paper is meant to help establish a regulation to achieve this goal.

2.2 SCOPE

The Township's assets consist of 4 bridges, approximately 52 km (105 lane km) of roadway, approximately 52 km (105 lane km) of ditches, 308 culverts, 3 buildings, 1 helipad, 5 equipment, and 5 vehicles. The investigation undertaken by the various organizations and staff, with respect to this plan and any conclusions or recommendations made in this plan reflect a combination of professional opinion based on the assets' conditions observed at the time of the inspections and on information available at the time of preparation of this plan. Extrapolation of visual detail data was necessary where there was no access.

The asset management plan is anticipated to be valid for 10 years (2013-2023) with diminishing returns and should be updated regularly. The plan should be evaluated and improved through updated data at every scheduled inspection.

The bridge inspections were performed according to the *Ontario Structure Inspection Manual* (OSIM); and the road inspections were completed with the *Manual for Condition Rating of Gravel Surface Roads* (SP-025). The street lights were visually inspected from the ground.

3.0 CURRENT ASSET PERFORMANCE

All assets have a natural service life span. To keep the assets in a safe and usable condition, regular maintenance should be scheduled based on inspection results, and service conditions. According to the Ontario Regulation 104/97, every public bridge in Ontario must undergo an inspection every two years by a trained inspector who is either a professional engineer or under their direction. The inspector reviews and rates each bridge component. Then, the bridge's current condition index is determined.

Similarly, roads, ditches and culverts should be inspected every three years, so that The Township can be aware of changing conditions and can plan maintenance and rehabilitation with confidence. Inspections should be carried out in late spring or in summer conditions to allow for the effects of frost heaving to dissipate, and the road to stabilize.

Buildings, land and streetlights shall be inspected every five years.

The equipment and vehicles are to be inspected yearly for maintenance.

3.1 INVENTORY OF ASSETS

All assets' key inventory information, such as length and location is stored in Municipal DataWorks (MDW). The inventory is listed in section 3.4 of this plan.

Ditches have yet to be entered into MDW.

3.2 ASSETS - CURRENT YEAR VALUE

The asset's estimated current value is taken as the ratio of their condition index and professional opinion of probable replacement cost. Both the estimated remaining useful life and current year value are listed in section 3.4 of this plan.

3.3 ASSET CONDITIONS

The current condition of the bridges was established with the Bridge Condition Index (BCI) as per the Ontario Structure Inspection Manual (OSIM), and the Pavement Condition Index (PCI) was provided as per MTO guidelines.

The current condition of the road was established with the Pavement Condition Index, which was generated by MDW.

The assets are generally in fair to good condition and are providing the expected levels of service.

The assets' condition is presented in section 3.4 of this plan. This plan includes three binders of inspection with photographs:

1. Bridges
2. Roads & Culverts & Ditches
3. Buildings, Helipad, Equipment & Vehicles

3.3.1 Bridge Condition Index

The bridges in The Township were visually inspected where safe access could be gained to determine their current condition and engineering characteristics.

The Bridge Condition Index (BCI) is a planning tool which assists with the scheduling of maintenance and upkeep. The BCI result is organized into ranges from 0 to 100. A higher number indicates a better overall condition. The BCI is a basic economic indication of the general percentage of the current value of an asset to its replacement cost. The current values are determined by the condition of each element required to be inspected and rated. Information data is provided into MDW and a BCI is produced. The Ministry Transportation Ontario's (MTO) guidelines for BCI are summarized in the table below

BCI	Condition	Significant Maintenance Work Required
71– 100	Good	Not usually required within the next five years
60 – 70	Fair	Usually scheduled within the next five years.
0– 59	Poor	Usually scheduled within approximately one year

3.3.2 Pavement Condition Index (PCI) and Riding Condition Rating (RCR)

The Pavement Condition Index is a numerical index between 0 and 100, which is used to indicate the general condition of a roadway. MDW has capabilities to calculate the PCI based on riding comfort and surface conditions. The Pavement Condition Index (PCI) is a simple, convenient and inexpensive way to monitor the condition of the surface of roads, identify maintenance and rehabilitation needs, and ensure that road maintenance budgets are spent wisely. It rates the current condition of the surface of a road network.

The Riding Condition Rating (RCR) is the degree of riding comfort which the pavement provides to the travelling public. During the inspection, the Roads Maintenance Coordinator drove over the road section at the posted speed and classified the riding condition according to the descriptions in the table below. The RCR has also been inputted into MDW and the values for each road can be found in the inspection binder.

RCR	Uniform Description of Riding Condition at Posted Speed	Guidelines
10	Excellent	Very smooth ride
7 – 9	Good	Smooth ride with a few bumps or depressions
4 – 6	Fair	Still comfortable ride with intermittent bumps or depressions
2 – 3	Poor	Uncomfortable ride with frequent bumps or depressions
1	Very Poor	Uncomfortable ride with constant bumps or depressions resulting in rattle and shake of rating vehicle; cannot maintain posted speed and must steer constantly to avoid bumps or depressions

The PCI is used as a guide for rehabilitation and maintenance decisions. A higher number indicates a better road condition. The table below provides a guideline for the improvements required for various road classifications. Using the PCI can help identify trigger points for preventive maintenance that can stop a road from deteriorating to the point that it needs expensive rehabilitation. It is based on ride comfort at posted speeds and surface conditions such as potholes, washboard, wheel rutting, or distortion.

PCI	
Local	Time of Improvement
81 – 100	Adequate
66 – 80	6 to 10 years
46 – 65	1 to 5 years
40 – 45	Rehabilitate within 1 year
0 – 39	Reconstruct within 1 year

3.3.3 Culverts

The culverts were located using the “GPS Essentials” app on a smartphone. These locations can be found in the inspection binder and in MDW. The culverts were rated as follows:

Rating	Condition	Time of Improvement
1	Very poor	Replacement within 1 year
2	Poor	Rehabilitation 1 year
3	Fair	Rehabilitation 1 - 5 years
4	Good	Rehabilitation 6 - 10 years
5	Very Good	Routine Maintenance

3.3.4 Buildings, Land, Equipment & Vehicles

The buildings, helipad, equipment and vehicles were rated as follows:

Rating	Condition	Time of Improvement
1	Poor	1 year
2	Fair	1-5 years
3	Good	6-10 years
4	Excellent	Routine Maintenance

3.3.5 Street Lights

The street lights were rated on a scale from 1 to 4, where the higher number indicates a better condition. The rating system is a simple way to see the condition of the street lights and whether or not the street lights need maintenance or to be replaced. The values and description can be found in the table below.

4	Excellent	Street light in new or nearly new condition	Routine maintenance
3	Good	Street light has a few minor problems	6-10 years
2	Fair	Street light beginning to deteriorate	1-5 years
1	Poor	Street light in need of repair or replacement	1 year

3.3.6 Ditches

The ditches were rated on a scale from 1 to 4, where the higher number indicates a better condition. The rating system is a simple way to see the condition of the ditch and whether or not the ditch needs maintenance or to be replaced. The values and description can be found in the table below.

4	Excellent	Ditch in new or nearly new condition	Routine maintenance
3	Good	Ditch has a few minor problems	6-10 years
2	Fair	Ditch beginning to deteriorate	1-5 years
1	Poor	Ditch in need of repair or replacement	1 year

3.4 ASSET NEEDS

The performance deficiencies and recommended work have been identified in the table below.

According to “Bank of Canada” (www.bankofcanada.ca), Canada’s current inflation is 1.2% (June 2013). This rate was applied towards the total recommended work in the near future, except for roads and streetlights which have an updated inflation of 1.5% (June 2016).

The Township of Gillies budgets approximately $100,000 per year for capital expenditure work.

In the tables below “Routine Maintenance” refers to maintenance work; this is where The Township’s road crew may complete the recommended work under the operations budget and not the capital expenditure budget.

To highlight the roads and culverts in worst conditions, the assets are sorted from smallest to largest condition index.

3.4.1 Bridges & Box Culverts

Asset ID	Name	Type	BCI	Remaining Useful Life (years)	Estimated Current Year Value	Condition	Recommended Work	1 year	1 – 5 years	6 – 10 years
BR_001	Dave's Rd	Bridge	70.69	53	$530,200	Good	Replace missing bolts	Maint.		-
							Re-grade and fix potholes at approaches	Maint.		
							Remove debris at joints, bridge deck, and abutment bearings	Maint.		
							Install guiderail at north approach		$13,700	
							Re-install guiderail transition at south approach	-	$10,000	-
							Re-install east railing with laps in direction of traffic	-	$6,000	-
							Replace abutment bearings	-	$15,000	-
							Replace portion of abutment timber crib	-	-	$6,000
BR_002	Parker Rd Round Culvert	Culvert	60	30	$60,000	Fair	Remove trees growing on top of culvert	Maint.	-	-
							Remove accumulated vegetation at culvert ends	Maint.		
							Replace sub-standard barrier system	-	$24,200	-
BR_003	Parker Rd Concrete Box Culvert	Culvert	84.93	42	$169,700	Good	Clean fencing at outlet	Maint.	-	-
							Install steel beam guiderail		$18,100	

BR_004	Neva Rd Concrete Box Culvert	Culvert	88.91	44	$177,800	Good	Remove trees on east side	Maint.	-	-
							Install steel beam guiderail		$18,100	

Total	**-**	**$105,100**	**$6,000**
Total with 1.2% inflation	**-**	**$108,929**	**$6,601**

3.4.2 Roads

Road Name	Road ID	PCI	Length(km)	Remaining Useful Life (Years)	Estimated Current Year Value	Distress Manifestation	Recommended Work	1 Year	1 - 5 Years	6 - 10 Years
Parker Rd	RD_0011	41	3.8	6.15	$34,276.00	• Pavement breakup • Potholes • Distortion • Rutting	Rehabilitation	$57,000		
Hymers Fair Dr	RD_0013	43.5	5.4	6.53	$51,678.00	• Potholes • Pavement breakup • Rutting	Rehabilitation	$81,000		
Leeper Rd	RD_0028	44	5.5	6.6	$53,240.00	• Wash boarding •Potholes• Pavement breakup	Rehabilitation	$82,500		
Couch Rd	RD_0005	46	3.2	6.9	$32,384.00	• Wash boarding• Potholes• Pavement breakup	Grading with addition of gravel and rolling		$16,000	
Neva Rd	RD_0007	52.5	5.4	7.88	$62,370.00	• Pavement breakup• Rutting• Distortion	Grading with addition of gravel and rolling		$27,000	

Chimo Rd	RD_0002	53.5	1.8	8.03	$21,186.00	• Distortion• Pavement breakup	Grading with addition of gravel and rolling		$9,000	
Oneill Rd	RD_0003	57	0.6	8.55	$7,524.00	• Pavement breakup• Distortion• Loose gravel	Grading with addition of gravel and rolling		$3,000	
Turk Rd	RD_0008	57.5	1.5	8.93	$19,635.00	• Distortion• Pavement breakup	Grading with addition of gravel and rolling		$7,500	
Old Silver Mountain Rd	RD_0010	59.5	2.5	8.93	$32,725.00	• Loose gravel• Pavement breakup• Distortion	Grading with addition of gravel and rolling		$12,500	
Annala Rd	RD_0009	60	2.3	9	$30,360.00	• Pavement breakup• Reverse crown• Potholes	Grading with addition of gravel and rolling		$11,500	
Silvaggio Rd	RD_0025	60.5	2.4	9.08	$31,944.00	• Pavement breakup• Potholes• Rutting	Grading with addition of gravel and rolling		$12,000	
Lysak Rd	RD_0022	60.5	0.1	9.08	$1,331.00	• Pavement breakup• Reverse crown• Distortion	Grading with addition of gravel and rolling		$500	
Prouty Rd	RD_0023	62	0.6	9.3	$8,184.00	• Rutting• Distortion• Potholes	Grading with addition of gravel and rolling		$3,000	
Badger Mine Rd	RD_0012	63.5	1.7	9.53	$23,749.00	• Potholes• Reverse crown	Grading with addition of gravel and rolling		$8,500	
Liddicoat Rd	RD_0006	64	1.1	9.6	$15,488.00	• Pavement breakup •Distortion	Grading with addition of gravel and rolling		$5,500	
Main St	RD_0027	67	2.2	10.05	$32,428.00	• Potholes• Wash boarding• Distortion	Grading with addition of gravel and rolling			$11,000

Daves Rd	RD_0014	67.5	1.1	10.13	$16,335.00	• Pavement breakup • Loose gravel • Distortion	Grading with addition of gravel and rolling			$5,500
Haymarsh Rd	RD_0020	69	0.1	10.35	$1,518.00	• Reverse crown• Loose gravel• Distortion	Grading with addition of gravel and rolling			$500
Palisades Rd	RD_0017	72	5.6	10.8	$88,704.00	• Loose gravel• Potholes• Wash boarding	Grading with addition of gravel and rolling			$28,000
Tomack Rd	RD_0016	73.5	0.1	11.03	$1,617.00	• Rutting• Reverse crown• Distortion	Grading with addition of gravel and rolling			$500
Mckechnie Rd	RD_0021	76	0.1	11.4	$1,672.00	• Reverse crown• Potholes	Grading with addition of gravel and rolling			$500
Union School Rd	RD_0024	77.5	1.6	11.63	$27,280.00	Loose gravel Potholes	Grading with addition of gravel and rolling			$8,000
Moore Rd	RD_0004	80	0.8	12	$14,080.00	• Potholes • Distortion	Routine Maintenance			
Wheal Rd	RD_0026	80.5	0.9	12.08	$15,939.00	• Potholes • Loose Gravel	Routine Maintenance			
Rose Valley Rd	RD_0001	84	0.5	12.6	$9,240.00	• Potholes	Routine Maintenance			
Woodbeck Rd	RD_0015	88	0.8	13.2	$15,488.00	• Loose Gravel	Routine Maintenance			
West St	RD_0019	88	0.1	13.2	$1,936.00	• Potholes	Routine Maintenance			
Pee Dee Rd	RD_0018	90	0.5	13.5	$9,900.00	• Potholes	Routine Maintenance			
							Total	$220,500	$116,000	$54,000
							Total with 1.5% inflation		$121,298	$60,830

3.4.3 Culverts

Asset ID	Asset Name	Condition Index	Length (m)	Diameter (m)	Remaining Useful Life(yrs)	Estimated Current Year Value	Recommended work	1 year	1 - 5 years	6 - 10 years
CV 0121A	TURK ROAD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV 0187A	ROSE VALLEY RD	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0001	SILVAGGIO RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0002	SILVAGGIO RD	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0003	SILVAGGIO RD	1	12.192	0.61	7	$400	Replacement	$2,500		
CV_0004	SILVAGGIO RD	1	12.192	0.61	7	$400	Replacement	$2,500		
CV_0005	SILVAGGIO RD	3	15.24	1.829	21	$5,500	Rehabilitation		$6,600	
CV_0006	SILVAGGIO RD	5	15.24	0.914	35	$3,800	Routine Maintenance			
CV_0007	LIDDICOAT RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0008	LIDDICOAT RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0009	LIDDICOAT RD	4	12.192	0.559	28	$1,700	Rehabilitation			$700
CV_0010	LIDDICOAT RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0011	LIDDICOAT RD	1	9.144	0.381	7	$300	Replacement	$1,600		

CV_0012	PEE DEE RD	2	12.192	0.736	14	$1,200	Rehabilitation	$1,100		
CV_0013	PEE DEE RD	2	12.192	0.711	14	$1,200	Rehabilitation	$1,100		
CV_0014	PEE DEE RD	4	12.192	0.736	28	$2,400	Rehabilitation			$1,100
CV_0015	PEE DEE RD	3	12.192	0.762	21	$1,800	Rehabilitation		$1,100	
CV_0016	PEE DEE RD	3	12.192	0.762	21	$1,800	Rehabilitation		$1,100	
CV_0017	WEST ST	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0018	MCKECHNIE RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0019	MCKECHNIE RD	1	9.144	0.457	7	$300	Replacement	$1,600		
CV_0020	TOMACK RD	2	9.144	0.457	14	$600	Rehabilitation	$500		
CV_0021	HYMERS FAIR DR	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0022	HYMERS FAIR DR	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0023	HYMERS FAIR DR	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0024	HYMERS FAIR DR	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0025	HYMERS FAIR DR	3	15.24	0.914	21	$2,300	Rehabilitation		$1,400	
CV_0026	HYMERS FAIR DR	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0027	HYMERS FAIR DR	3	12.192	0.762	21	$1,800	Rehabilitation		$1,100	

CV_0028	HYMERS FAIR DR	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0029	HYMERS FAIR DR	2	12.192	0.61	14	$800	Rehabilitation	$800		
CV_0030	HYMERS FAIR DR	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0031	HYMERS FAIR DR	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0032	HYMERS FAIR DR	4	9.144	0.61	28	$1,300	Rehabilitation			$800
CV_0033	HYMERS FAIR DR	1	9.144	0.381	7	$300	Replacement	$1,600		
CV_0034	HYMERS FAIR DR	1	9.144	0.711	7	$500	Replacement	$2,300		
CV_0035	HYMERS FAIR DR	4	12.192	0.61	28	$1,700	Rehabilitation			$800
CV_0036	HYMERS FAIR DR	2	15.24	0.914	14	$1,500	Rehabilitation	$1,400		
CV_0037	HYMERS FAIR DR	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0038	HYMERS FAIR DR	4	12.192	0.762	28	$2,400	Rehabilitation			$1,100
CV_0039	HYMERS FAIR DR	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0040	HYMERS FAIR DR	3	12.192	0.914	21	$1,800	Rehabilitation		$1,400	
CV_0041	HYMERS FAIR DR	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0042	HYMERS FAIR DR	4	15.24	2.438	28	$11,000	Rehabilitation			$13,200
CV_0043	HYMERS FAIR DR	2	12.192	0.61	14	$800	Rehabilitation	$800		

CV_0044	HYMERS FAIR DR	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0045	HYMERS FAIR DR	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0046	HYMERS FAIR DR	3	12.192	1.219	21	$2,800	Rehabilitation		$2,800	
CV_0047	HYMERS FAIR DR	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0048	HYMERS FAIR DR	2	9.144	0.457	14	$600	Rehabilitation	$500		
CV_0049	PARKER RD	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0050	PARKER RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0052	PARKER RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0053	PARKER RD	3	9.144	0.457	21	$1,000	Replacement		$1,600	
CV_0054	PARKER RD	1	9.144	0.381	7	$300	Replacement	$1,600		
CV_0055	PARKER RD	3	12.192	2	21	$5,100	Replacement		$25,000	
CV_0056	PARKER RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0057	PARKER RD	1	9.144	0.381	7	$300	Replacement	$1,600		
CV_0058	PARKER RD	3	15.24	0.914	21	$2,300	Rehabilitation		$1,400	
CV_0059	PARKER RD	1	9.144	0.457	7	$300	Replacement	$1,600		
CV_0060	PARKER RD	1	12.192	0.457	7	$400	Replacement	$2,100		

CV_0061	PARKER RD	1	15.24	0.914	7	$800	Replacement	$3,800		
CV_0063	PARKER RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0064	PARKER RD	1	9.144	0.381	7	$300	Replacement	$1,600		
CV_0065	PARKER RD	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0066	PARKER RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0067	PARKER RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0068	PARKER RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0069	PARKER RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0070	PARKER RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0071	PARKER RD	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0072	PARKER RD	3	12.192	0.381	21	$1,300	Rehabilitation		$400	
CV_0073	PALISADES RD	1	9.144	0.381	7	$300	Replacement	$1,600		
CV_0074	PALISADES RD	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0075	PALISADES RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0076	PALISADES RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0077	PALISADES RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0078	PALISADES RD	1	9.144	0.381	7	$300	Replacement	$1,600		

CV_0079	PALISADES RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0080	PALISADES RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0081	PALISADES RD	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0082	WOODBECK RD	1	9.144	0.381	7	$300	Replacement	$1,600		
CV_0083	WOODBECK RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0084	WOODBECK RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0085	WOODBECK RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0086	WOODBECK RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0087	WOODBECK RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0088	WOODBECK RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0089	NEVA RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0090	NEVA RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0091	NEVA RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0092	NEVA RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0093	NEVA RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0094	NEVA RD	2	9.144	0.381	14	$600	Rehabilitation	$400		

CV_0095	NEVA RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0097	NEVA RD	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0098	NEVA RD	4	9.144	0.457	28	$1,300	Rehabilitation			$500
CV_0099	NEVA RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0100	NEVA RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0101	NEVA RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0102	NEVA RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0103	NEVA RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0104	NEVA RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0105	NEVA RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0106	NEVA RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0107	NEVA RD	3	12.192	0.914	21	$1,800	Rehabilitation		$1,400	
CV_0108	NEVA RD	2	12.192	0.914	14	$1,200	Rehabilitation	$1,400		
CV_0109	NEVA RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0110	NEVA RD	2	12.192	1.829	14	$2,900	Rehabilitation	$6,600		

CV_0111	NEVA RD	4	12.192	1.219	28	$3,700	Rehabilitation			$2,800
CV_0112	NEVA RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0113	NEVA RD	3	12.192	0.914	21	$1,800	Rehabilitation		$1,400	
CV_0113A	NEVA RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0114	TURK RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0115	TURK RD	4	9.144	0.457	28	$1,300	Rehabilitation			$500
CV_0116	TURK RD	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0117	TURK RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0118	TURK RD	4	12.192	0.61	28	$1,700	Rehabilitation			$800
CV_0119	TURK RD	4	12.192	0.61	28	$1,700	Rehabilitation			$800
CV_0120	TURK RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0121	TURK RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0122	TURK RD	4	12.192	0.61	28	$1,700	Rehabilitation			$800
CV_0123	TURK RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0124	TURK RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0125	ANNALA RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0126	ANNALA RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0127	ANNALA RD	2	9.144	0.457	14	$600	Rehabilitation	$500		
CV_0128	ANNALA RD	1	12.192	1.219	7	$900	Replacement	$4,600		
CV_0129	ANNALA RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0130	ANNALA RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	

CV_0131	ANNALA RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0132	ANNALA RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0133	LEEPER RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0134	LEEPER RD	3	9.144	0.559	21	$1,000	Rehabilitation		$700	
CV_0135	LEEPER RD	3	12.192	0.914	21	$1,800	Rehabilitation		$1,400	
CV_0136	LEEPER RD	1	9.144	0.381	7	$300	Replacement	$1,600		
CV_0137	LEEPER RD	3	12.192	0.381	21	$1,300	Rehabilitation		$400	
CV_0138	LEEPER RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0139	LEEPER RD	3	12.192	0.508	21	$1,300	Rehabilitation		$600	
CV_0140	LEEPER RD	3	12.192	0.508	21	$1,300	Rehabilitation		$600	
CV_0141	LEEPER RD	1	12.192	0.381	7	$400	Replacement	$2,100		
CV_0142	LEEPER RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0143	LEEPER RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0144	LEEPER RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0145	LEEPER RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0146	LEEPER RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0147	LEEPER RD	4	15.24	2	28	$8,600	Rehabilitation			$8,400
CV_0148	LEEPER RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0149	LEEPER RD	4	9.144	0.381	28	$1,300	Rehabilitation			$400
CV_0150	LEEPER RD	2	12.192	0.457	14	$800	Rehabilitation	$500		

CV_0151	LEEPER RD	3	12.192	0.305	21	$1,300	Rehabilitation		$300	
CV_0152	LEEPER RD	4	12.192	0.813	28	$2,400	Rehabilitation			$1,200
CV_0153	LEEPER RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0154	LEEPER RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0155	LEEPER RD	2	12.192	0.813	14	$1,200	Rehabilitation	$1,200		
CV_0156	LEEPER RD	2	12.192	0.381	14	$800	Rehabilitation	$400		
CV_0157	LEEPER RD	1	9.144	0.381	7	$300	Replacement	$1,600		
CV_0158	LEEPER RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0159	LEEPER RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0160	LEEPER RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0161	LEEPER RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0162	COUCH RD	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0163	COUCH RD	2	12.192	0.61	14	$800	Rehabilitation	$800		
CV_0164	COUCH RD	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0165	COUCH RD	4	12.192	0.61	28	$1,700	Rehabilitation			$800
CV_0166	COUCH RD	3	12.192	0.61	21	$1,300	Rehabilitation		$800	

CV_0167	COUCH RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0168	COUCH RD	3	12.192	0.914	21	$1,800	Rehabilitation		$1,400	
CV_0169	COUCH RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0170	COUCH RD	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0171	COUCH RD	4	12.192	1.2	28	$3,700	Replacement			$4,600
CV_0172	COUCH RD	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0173	COUCH RD	4	12.192	0.61	28	$1,700	Rehabilitation			$800
CV_0174	COUCH RD	2	9.144	0.305	14	$600	Rehabilitation	$300		
CV_0175	COUCH RD	1	9.144	0.381	7	$300	Replacement	$1,600		
CV_0176	COUCH RD	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0177	COUCH RD	1	9.144	0.457	7	$300	Replacement	$1,600		
CV_0178	COUCH RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0179	COUCH RD	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0180	COUCH RD	1	12.192	0.61	7	$400	Replacement	$2,500		
CV_0181	COUCH RD	4	12.192	0.813	28	$2,400	Rehabilitation			$1,200
CV_0182	COUCH RD	2	12.192	0.457	14	$800	Rehabilitation	$500		

CV_0183	COUCH RD	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0184	COUCH RD	3	12.192	1.829	21	$4,400	Rehabilitation		$6,600	
CV_0185	ROSE VALLEY RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0186	ROSE VALLEY RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0187	ROSE VALLEY RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0188	ROSE VALLEY RD	4	12.192	1.829	28	$5,800	Rehabilitation			$6,600
CV_0189	ROSE VALLEY RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0190	ONEILL RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0191	ONEILL RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0192	ONEILL RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0193	ONEILL RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0194	ONEILL RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0195	MOORE RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0196	MOORE RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0196A	MOORE RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0197	MOORE RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0197	MOORE RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0198	BADGER MINE RD	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0199	BADGER MINE RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0200	BADGER MINE RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0201	BADGER MINE RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0202	DAVES RD	2	12.192	0.457	14	$800	Rehabilitation	$500		

CV_0203	DAVES RD	4	12.192	1.524	28	$5,800	Rehabilitation			$5,500
CV_0204	DAVES RD	2	9.144	0.61	14	$600	Rehabilitation	$800		
CV_0205	DAVES RD	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0206	DAVES RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0207	UNION SCHOOL RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0208	UNION SCHOOL RD	3	12.192	0.914	21	$1,800	Rehabilitation		$1,400	
CV_0209	UNION SCHOOL RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0210	UNION SCHOOL RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0211	UNION SCHOOL RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0212	UNION SCHOOL RD	3	12.192	0.711	21	$1,800	Rehabilitation		$1,100	
CV_0213	UNION SCHOOL RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0214	UNION SCHOOL RD	4	9.144	0.457	28	$1,300	Rehabilitation			$500
CV_0215	UNION SCHOOL RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0216	UNION SCHOOL RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0217	CHIMO RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0218	CHIMO RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0219	CHIMO RD	1	12.192	0.61	7	$400	Replacement	$2,500		
CV_0220	CHIMO RD	2	9.144	0.305	14	$600	Rehabilitation	$300		
CV_0221	CHIMO RD	1	12.192	1.829	14	$1,500	Replacement	$6,600		
CV_0222	CHIMO RD	1	12.192	1.829	14	$1,500	Replacement	$6,600		
CV_0223	CHIMO RD	2	9.144	0.381	14	$600	Rehabilitation	$400		

CV_0224	CHIMO RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0225	CHIMO RD	3	15.24	2.134	21	$6,400	Rehabilitation		$9,000	
CV_0226	CHIMO RD	2	9.144	0.457	14	$600	Rehabilitation	$500		
CV_0227	CHIMO RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0228	CHIMO RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0229	CHIMO RD	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0230	CHIMO RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0231	CHIMO RD	1	9.144	0.457	7	$300	Replacement	$1,600		
CV_0232	CHIMO RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0233	OLD SILVER MOUNTAIN	3	12.192	0.787	21	$1,800	Rehabilitation		$1,200	
CV_0234	OLD SILVER MOUNTAIN	4	12.192	0.483	28	$1,700	Rehabilitation			$500
CV_0235	OLD SILVER MOUNTAIN	2	9.144	0.432	14	$600	Rehabilitation	$500		
CV_0236	OLD SILVER MOUNTAIN RD	4	9.144	0.381	28	$1,300	Rehabilitation			$400
CV_0237	OLD SILVER MOUNTAIN	3	9.144	0.406	21	$1,000	Rehabilitation		$400	
CV_0238	OLD SILVER MOUNTAIN	4	15.24	1.829	28	$7,300	Rehabilitation			$6,600
CV_0240	OLD SILVER MOUNTAIN	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0241	OLD SILVER MOUNTAIN	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0242	OLD SILVER MOUNTAIN	2	12.192	0.61	14	$800	Rehabilitation	$800		
CV_0243	OLD SILVER MOUNTAIN	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0244	OLD SILVER MOUNTAIN	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0245	OLD SILVER MOUNTAIN	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0246	OLD SILVER MOUNTAIN	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0247	OLD SILVER MOUNTAIN	4	12.192	0.457	28	$1,700	Rehabilitation			$500

CV_0248	OLD SILVER MOUNTAIN	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0249	OLD SILVER MOUNTAIN	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0250	OLD SILVER MOUNTAIN	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0251	OLD SILVER MOUNTAIN	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0252	PROUTY RD	4	12.192	1.219	28	$3,700	Rehabilitation			$2,800
CV_0253	PROUTY RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0254	PROUTY RD	3	12.192	0.609	21	$1,300	Rehabilitation		$700	
CV_0255	PROUTY RD	3	12.192	0.305	21	$1,300	Rehabilitation		$300	
CV_0256	PROUTY RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0257	MAIN ST	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0258	MAIN ST	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0259	MAIN ST	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0260	MAIN ST	2	12.192	0.61	14	$800	Rehabilitation	$800		
CV_0261	MAIN ST	3	12.192	0.406	21	$1,300	Rehabilitation		$400	
CV_0262	MAIN ST	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0263	MAIN ST	3	9.144	0.203	21	$1,000	Rehabilitation		$200	
CV_0264	MAIN ST	4	12.192	1.219	28	$3,700	Rehabilitation			$2,800
CV_0265	MAIN ST	4	12.192	1.219	28	$3,700	Rehabilitation			$2,800
CV_0266	MAIN ST	4	9.144	0.914	28	$1,800	Rehabilitation			$1,400
CV_0267	MAIN ST	4	9.144	0.914	28	$1,800	Rehabilitation			$1,400
CV_0268	MAIN ST	4	9.144	1.219	28	$2,800	Rehabilitation			$2,800

CV_0269	MAIN ST	1	9.144	0.457	7	$300	Replacement	$1,600		
CV_0270	MAIN ST	1	9.144	0.457	7	$300	Replacement	$1,600		
CV_0271	MAIN ST	1	9.144	0.381	7	$300	Replacement	$1,600		
CV_0272	MAIN ST	3	9.144	0.61	21	$1,000	Rehabilitation		$800	
CV_0273	MAIN ST	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0274	MAIN ST	4	9.144	0.457	28	$1,300	Rehabilitation			$500
CV_0275	MAIN ST	2	9.144	0.457	14	$600	Rehabilitation	$500		
CV_0276	MAIN ST	4	9.144	0.457	28	$1,300	Rehabilitation			$500
CV_0277	MAIN ST	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0278	PALISADES RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0279	PALISADES RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0280	PALISADES RD	1	12.192	0.457	7	$400	Replacement	$2,100		
CV_0281	PALISADES RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0282	PALISADES RD	4	12.192	0.457	28	$1,700	Rehabilitation			$500
CV_0283	PALISADES RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0284	PALISADES RD	4	12.192	0.914	28	$2,400	Rehabilitation			$1,400
CV_0285	PALISADES RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0286	PALISADES RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
CV_0287	PALISADES RD	2	12.192	0.61	14	$800	Rehabilitation	$800		
CV_0288	PALISADES RD	1	9.144	0.381	7	$300	Replacement	$1,600		
CV_0289	PALISADES RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	

CV_0290	PALISADES RD	3	12.192	0.457	21	$1,300	Rehabilitation		$500	
CV_0291	PALISADES RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0292	PALISADES RD	3	9.144	0.61	21	$1,000	Rehabilitation		$800	
CV_0293	PALISADES RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0294	PALISADES RD	4	9.144	0.457	28	$1,300	Rehabilitation			$500
CV_0295	PALISADES RD	2	12.192	0.457	14	$800	Rehabilitation	$500		
CV_0296	PALISADES RD	4	9.144	0.457	28	$1,300	Rehabilitation			$500
CV_0297	PALISADES RD	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0298	PALISADES RD	4	12.192	0.61	28	$1,700	Rehabilitation			$800
CV_0299	PALISADES RD	4	9.144	0.457	28	$1,300	Rehabilitation			$500
CV_0300	PALISADES RD	1	9.144	0.381	7	$300	Replacement	$1,600		
CV_0301	PALISADES RD	3	9.144	0.457	21	$1,000	Rehabilitation		$500	
CV_0302	PALISADES RD	4	12.192	0.61	28	$1,700	Rehabilitation			$800
CV_0303	PALISADES RD	2	12.192	0.61	14	$800	Rehabilitation	$800		
CV_0304	PALISADES RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0305	PALISADES RD	4	12.192	0.61	28	$1,700	Rehabilitation			$800
CV_0306	PALISADES RD	3	12.192	0.61	21	$1,300	Rehabilitation		$800	
CV_0307	PALISADES RD	2	9.144	0.381	14	$600	Rehabilitation	$400		
CV_0308	LYSAK RD	3	9.144	0.381	21	$1,000	Rehabilitation		$400	
							Total	$153,700	$124,300	$91,700

3.4.4 Buildings

Asset ID	Name	Condition Index	Remaining Useful Life (years)	Estimated Current Year Value	Recommended Work	1 year	1 – 5 years	6 – 10 years
BD_002	Public Works Garage	2	30	$54,000	Ensure door closers close doors fully for security	$50	-	-
					Clean outdoor outlets of debris	$50	-	-
					Patch small cuts in exterior siding	$200	-	-
					Install line support for fuel line into building	$200	-	-
					Replace/repair window cap trim on west side	$150	-	-
					South floor drain has scale/debris to be removed	$100	-	-
					Oil interceptors look ready to empty	$100	-	-
					Weather-strip at man-doors	$100	-	-
					Weather-strip at middle overhead door	$500	-	-
					Paint Overhead door frames	$500	-	-
					Prime and paint man-doors	$500	-	-
					Build new frost box for line at northwest corner of shop	$500	-	-
					Install vehicle exhaust evacuation system	-	$3,000	-
BD_003	Fire Hall	3	30	$40,000	Remove saplings within 3’ of building	$50	-	-
					Reinstall intake air for radiant heater between overhead doors 1 and 2	$50	-	-
					Weather-strip man-door (new sweep)	$100	-	-

					Plug cable hole near man-door	$50	-	-
					Replace missing eaves trough	-	$200	-
					Extend downspout discharges further from foundation	-	$200	-
					Install snow guards on roof	-	$2,500	-
					Renovate overhead door thresholds to slope outside.	-	$1,000	-
BD_004	Gazebo	4	25	$10,000	Remove bird nest from beam	$50	-	-
					Total	$3,250	$6,900	-
					Total with 1.2% inflation	-	$7,151	-

3.4.5 Land

Asset ID	Name	Condition Index	Remaining Useful Life (years)	Estimated Current Year Value	Recommended Work	1 year	1 – 5 years	6 – 10 years
LD_005	Helipad	3	15	$14,000	• Re-stake marker pylons to ensure they don't blow away in rotor wash • Pack and grade patient loading area to more uniform surface	$500 $1,000	- -	- -
					Total	$1,500	-	-

3.4.6 Equipment

Asset ID	Name	Condition Index	Remaining Useful Life (years)	Estimated Current Year Value	Recommended Work	1 year	1 – 5 years	6 – 10 years
EQ_001	Recycling Bin Catwalk	4	25	$3,500	Paint, Replace signs	-	-	$500
EQ_002	Recycling Bin	4	25	$8,000	Paint	-	-	$500
					Door and/or hinge replace. Replace signage	-	-	$1,000
EQ_003	Sander Dump Box	3	20	$24,000	Regular maintenance to include chain and hydraulic system inspection	-	$4,000	-
EQ_004	Volvo Grader	3	15	$90,000	Regular maintenance to include oil changes, and inspection of belts, tires and lights	$2,000	-	-
EQ_005	John Deere Loader	3	10	$22,500	Regular maintenance to include oil changes, and inspection of belts, tires and lights	$2,000	-	-
					Total	$4,000	$4,000	$2,000
					Total with 1.2% inflation	-	$4,146	$2,200

3.4.7 Vehicles

Asset ID	Name	Condition Index	Remaining Useful Life (years)	Estimated Current Year Value	Recommended Work	1 year	1 – 5 years	6 – 10 years
VH_001	Fire Tanker	2	8	$11,000	Regular maintenance to include oil changes, and inspection of belts, tires and lights	$2,000	-	-
					General and preventative maintenance is required. The front steering tires should be replaced. There is an oil leak from the rear engine seal that may need to be addressed.	$900	-	-
VH_002	Fire Rescue Vehicle	2	10	$6,000	Regular maintenance to include oil changes, and inspection of belts, tires and lights.	$2,000		
VH_003	Fire Pumper	4	23	$165,000	Regular maintenance to include oil changes, and inspection of belts, tires and lights.	$2,000		
VH_004	Tandem Truck	4	25	$150,000	Regular maintenance to include oil changes and inspection of belts, tires and lights	$2,000		
					Tire Replacement every 5 years		$6,500	$6,500
VH_005	Half-ton Truck	3	4	$11,000	Regular maintenance to include oil changes, and inspection of belts, tires and lights	$500		
					Total	$9,400	$6,500	$6,500
					Total with 1.2% inflation	-	$6,737	$7,151

3.4.8 Street Lights

Street Light Name	Street Light ID	Coordinates	Rating	Recommended Work	1 Year	1-5 Years	6-10 Years
Hymers-01-595	SL-001	48.306175, -89.706837	2	Replace with LED		$1,200	
Hymers-02-HFD	SL-002	48.308336, -89.709266	2	Replace with LED		$1,200	
OSM-588	SL-003	48.280774, -89.743647	2	Replace with LED		$1,200	
PAL-595	SL-004	48.236102, -89.700945	2	Replace with LED		$1,200	
608-595	SL-005	48.239537, -89.70084	2	Replace with LED		$1,200	
				Total		$6,000	
				Total including 1.5% inflation		$6,274	

3.4.9 Ditches

Road Name	Road ID	Condition Rating	Length (km)	Recommended Work	1 Year	1 - 5 Years	6 - 10 Years
ANNALA RD	DT_0009	2	2.3			$11500	
BADGER MINE RD	DT_0012	1	1.7	Rehabilitation	$8500		
CHIMO RD	DT_0002	1	1.8	Rehabilitation	$9000		
COUCH RD	DT_0005	1	3.2	Rehabilitation	$16000		
DAVES RD	DT_0014	2	1.1			$5500	
HAYMARSH RD	DT_0020	2	0.1			$500	
HYMERS FAIR DR	DT_0013	2	5.4			$27000	
LEEPER RD	DT_0028	1	5.5	Rehabilitation	$27500		
LIDDICOAT RD	DT_0006	1	1.1	Rehabilitation	$5500		
LYSAK RD	DT_0022	1	0.1	Rehabilitation	$500		
MAIN ST	DT_0027	1	2.2	Rehabilitation	$11000		
MCKECHNIE RD	DT_0021	3	0.1			$500	
MOORE RD	DT_0004	3	0.8			$4000	
NEVA RD	DT_0007	2	5.4			$27000	
OLD SILVER MOUNTAIN RD	DT_0010	3	2.5			$12500	
ONEILL RD	DT_0003	1	0.6	Rehabilitation	$3000		
PALISADES RD	DT_0017	3	5.6			$28000	
PARKER RD	DT_0011	2	3.8			$19000	
PEE DEE RD	DT_0018	3	0.5			$2500	
PROUTY RD	DT_0023	2	0.6	Rehabilitation	$3000		
ROSE VALLEY RD	DT_0001	2	0.5			$2500	
SILVAGGIO RD	DT_0025	2	2.4			$12000	
TOMACK RD	DT_0016	2	0.1			$500	
TURK RD	DT_0008	2	1.5			$7500	
UNION SCHOOL RD	DT_0024	3	1.6				$8000
WEST ST	DT_0019	2	0.1			$500	
WHEAL RD	DT_0026	2	0.9			$4500	
WOODBECK RD	DT_0015	2	0.8				$4000
	Total				**$84000**	**$165500**	**$8000**

3.4.10 Limitations

It must be recognized that the recommended work given as the remedial measure for a particular distress manifestation is not necessarily the ultimate remedy, nor will the treatment necessarily effectively correct the cause or causes of the distress. The recommended work may only slow distress deterioration.
The following is the probable unit costs for the recommended work. These estimates include material and labour.

- Road rehabilitation $15,000/km
  - (Additional gravel, grading, and rolling)
- Grading with addition of gravel and rolling $5,000/km
  - (Light layer of gravel)
- Ditching $5,000/km
- 450 mm culvert $175/m
- 600 mm culvert $205/m
- 900 mm culvert $250/m
- 1200 mm culvert $380/m
- 1800 mm culvert $600/m
- 2000 mm culvert $700/m
- 2400 mm culvert $900/m

The following culvert assets were rated as poor as they were not accessible for inspection or could not be located from the list provided by The Township of Gillies:

1. CV_0004 Silvaggio Rd.
2. CV_0011 Liddicoat Rd.
3. CV_0052 Parker Rd.
4. CV_0054 Parker Rd.
5. CV_0061 Parker Rd.
6. CV_0064 Parker Rd.
7. CV_0073 Palisades Rd.
8. CV_0078 Palisades Rd.
9. CV_0092 Neva Rd.
10. CV_0124 Turk Rd.
11. CV_0133 Leeper Rd.
12. CV_0136 Leeper Rd.
13. CV_0157 Leeper Rd.
14. CV_0175 Couch Rd.
15. CV_0177 Couch Rd.
16. CV_0180 Couch Rd.
17. CV_0269 Main St.
18. CV_0270 Main St.
19. CV_0271 Main St.
20. CV_0281 Palisades Rd.
21. CV_0288 Palisades Rd.

4.0 PLANNED ACTION STRATEGY

4.1.0 NON-INFRASTRUCTURE SOLUTIONS

Non-infrastructure solutions can produce lower, more sustainable costs in maintaining existing assets. Non-infrastructure solutions include solutions that do not include the physical repairs of the assets. It is an organizational approach that will aid in the future by lowering cost, having organized data, saving time, and therefore resulting in efficiency. Inspection reports should identify the maintenance work required, within a timeframe for the work, and an opinion of probable cost. To extend the service life of an asset, The Township should use the information acquired from the inspections to update their financial plan accordingly and ensure that the plan is implemented. For this Township, it is recommended that staff personnel be trained in using their asset management software, Municipal DataWorks. MDW is a management tool that stores the asset's historical data and provides an organized future path forward.

Municipal DataWorks is a powerful tool dedicated solely to asset management. It has capabilities to analyze and determine condition indexes, current values, useful lives, and much more on a variety of asset types. There are many municipalities that have adopted this management system and tutorial videos are available online and through the developers. The software has the capabilities to store data and show the attributes of an asset, show the condition of an asset and track repairs, and turn data into information useable by policy-makers in understanding the level of investment required to maintain infrastructure.

It is important to accurately keep the Municipal DataWorks up to date; or The Township increases the risk of having inconsistent and inaccurate information produced. This would make the value of assets incorrect and future values very difficult to determine. It also compromises any other asset information such as construction costs, replacement information, or useful life.

Mr. Brian Anderson (brian@ogra.org) of the Ontario Good Roads Association (OGRA) is the primary contact for Municipal DataWorks technical support, and will be able to assist The Township if needed.

4.2.0 MAINTENANCE ACTIVITIES

Regular maintenance is essential to managing municipal assets. The expected level of service often relies on maintenance activities. It is imperative that The Township schedules regular inspections for their assets. Inspectors identify the needs for maintenance work and the required timeframe. They will also identify if immediate action should be taken to address any safety concerns. Regular maintenance can add significant life to assets and save The Township money. Routine maintenance and minor repair work to an element can be normally performed without professional engineering direction.

The following is the recommended inspection schedule for each asset type:

Type	Schedule	Opinion of Probable Cost
Bridges	Every 2 years	$5,000
Roads & Ditches & Culverts	Every 3 years	$10,000
Buildings & Helipad	Every 5 years	$7,000
Equipment & Vehicle	Every year	$5,000
Street Lights	Every 5 years	$2,000

Whenever possible, inspections shall be carried out in late spring or in summer for a more detailed and accurate result. The information regarding the characteristics, value, and condition of assets should be updated into MDW after every inspection.

4.2.1 Bridges

Preventative actions can have substantial impacts on the life and preservation of the assets. Sand and debris trap moisture and when removed from the structure, it can prevent damages to significant elements. Bridge maintenance may include:

- Repairing impact damage or deterioration
- Ensuring deck drainage is free of debris
- Tightening railing systems to posts
- Regularly removing debris and sand from joints and bearings
- Removing obstructions restricting water flow
- Correcting bumps and depressions occurring at the approaches

4.2.2 Roads

The major objectives for maintaining gravel surfaces are to provide a smooth, safe riding surface free from defects, eliminate hazards to traffic, and protect the investment in the road surface. The maintenance may include:

- Signing/flagging soft wet areas, such as frost boils that move under traffic until the problem is rectified
- Removing rocks greater than 50 mm in diameter that heaved to the surface by frost action or grading
- Maintaining a crown with a crossfall of approximately 2%
- Removing gravel windrows in excess of 100 mm at the outside edge of the road or at intersections
- Applying calcium chloride annually for dust control (0.6 kg/m^2)

The work recommended labeled “Grading with addition of gravel and rolling” includes a light layer of gravel.

4.2.3 Ditches & Culverts

The major objective for culvert maintenance is to ensure the flow of surface water running in natural streams or collected on the high side of the right-of-way, or running down the ditch line, under roads or driveway entrances. The maintenance may include:

- Removing obstructions restricting the flow of water through culverts
  - Beaver control ($4,000/year)
- Repairing damaged embankments at culvert inlets or outlets
- Clearing ditch lines from vegetation growth and obstructions ($810/km)
- Clearly marking culverts to identify their location

4.2.4 Public Work Garage

Although the garage is an older steel structure, it seems to be in good structural condition with little to no corrosion noted on the exposed structural components. The interior seemed adequately lit, and anecdotally, is comfortably heated in the winter.

There are no major concerns to note. The primary comment would be regarding maintenance on the building, as far as keeping the small items up to date. Two points of preventative maintenance to note would be installing a support bracket to the incoming fuel line to prevent stress and possible failure on the line, or accidental contact from something. The other is replacing the insulated box around the heat traced line at the back of the building. It looks very weathered and not very capable of retaining heat as expected.

A review of the Ontario Building Code may reveal further possible non-compliant issues such as the construction of the handrails and guards on the stairs and mezzanine, as well as exhaust fan in the washroom, however these items are grandfathered in and will not likely be mandated to change until a renovation is undertaken.

4.2.5 Fire Hall

The fire hall is a more recent wood framed single storey structure in good condition. Maintenance on and around this building is more of a factor than the municipal garage and should be undertaken before winter arrives. Of primary note, the exterior of the building needs saplings and vegetation to be removed or cut back to prevent any deterioration of the subgrade surrounding the foundation with roots and water retention. Also, rainwater needs to be addressed. The eaves trough and downspout discharges need repair or replacement to prevent water erosion around the foundation.

On the interior, there is evidence of environmental issues as they pertain to heat and humidity. Dirt lines at the stud and rafter locations are typically indicators of condensation due to thermal bridging during the heating season. While the indoor air is heated and somewhat moist, the studs are conducting the cold from the outside, causing the moisture to condense along those locations, allowing airborne dirt particles to stick to those lines. It is not an issue in and of itself, but indicates that the envelope and HVAC are not optimized. As it is a little occupied building, a thermal retrofit would not seem to have much return on investment, nor would an upgraded HVAC system; however a dehumidifier may remove some of the dampness. Also, the intakes for the HRV seem to be relatively close to the exhaust for the infrared heaters. This may or may not be an issue, but should be reviewed with a mechanical professional. It is expected that it has been reviewed previously and passed inspection.

4.2.6 Gazebo

The gazebo is a very simple structure consisting of a framed hip roof on four columns. The metal roof has snow guards and the columns and beams are metal wrapped. The only maintenance item is to remove a bird’s nest from the beam to prevent any deterioration to the beam. It may also be advisable to remove the built up soil from around the base of the columns where they sit on the concrete posts to prevent any corrosion to the steel post saddle likely used there.

4.2.7 Helipad

The main gravel pad for the helipad is a good and stable base of compacted granular B, with a perimeter ring of marker pylons. There is an additional patient loading area constructed later with a finer grade of granular that appears less uniform or compacted than the main pad. The pylons seem to be in good condition, but some of the anchors are missing or not fully set in the ground. This would seem to be the main point of maintenance to prevent them blowing away or into something when a helicopter lands.

4.2.8 Sander Dump Box

With an aggressive maintenance schedule and routine inspections this piece of equipment should last the life of the 2014 truck it is mounted on. Regular maintenance includes chain and hydraulic system inspection.

4.2.9 Volvo Grader

The road maintenance equipment is a grader nominal 198 h.p. with 12' moldboard, front pusher blade and wing. This piece of equipment has multiple duties from snow clearing to road maintenance and repair. The average monthly usage is 43 hours. General maintenance is required. Regular maintenance / replacement items may include the following: cutting edges, hydraulic hoses, fittings, pumps, filters, and hydraulic oil. Depending on usage and wear, the tires need to be replaced in the next 5 years. Regular maintenance also includes oil changes, and inspection of belts, tires and lights. With regular preventative maintenance and inspections, this vehicle should be in service for another 15 years.

4.2.10 John Deere Loader

The road maintenance equipment is a front end loader nominal 100 h.p. with 1.5 – 1.8 yard capacity bucket. This piece of equipment has multiple duties from snow clearing and removal, to loading the dump truck with material for road maintenance and repair. The average monthly usage is 30 hours. Regular maintenance includes oil changes, and inspection of belts, tires and lights.

General maintenance required. Regular maintenance / replacement items may include the following: cutting edges, hydraulic hoses, fittings, pumps, filters and hydraulic oil. A center pin rebuild replacement should be scheduled. Front glass needs to be replaced. Depending on usage and wear, the tires may need to be replaced in the next 5 years. However, based on a cost of approximately $6,000 for 4 new tires, the age and life expectancy of the machine, used tires may be purchased. The unit is in good shape with only 7536 hours of use, but it is 23 years old and parts and repair costs will have to be addressed.

With regular preventative maintenance and inspections this vehicle should be in service for another 7 – 10 years. Repair costs and the frequency of repairs on this 23 years old piece of equipment will start to increase. To invest $6,000 in tires and the costs for the center pin rebuild in a 23 years old unit worth $20,000 - $25,000 may not be advisable. A replacement plan to purchase a newer unit may be a better use of the funds.

4.2.11 Fire Tanker

The fire department tanker truck nominal 200 h.p. gasoline engine with a 5 speed standard transmission has a two speed split rear axle. The vehicle is equipped with a standard 3 person cab and a hydraulic braking system. This vehicle is used by the

fire department to shuttle water to emergency incidents and carries auxiliary equipment to an emergency scene. The average monthly usage is unknown at this time, but would be based on the number of emergency calls responded to, and the amount of usage at training sessions.

A used 1500 – 2000 gallon tanker, year 2000 or newer, has an estimated cost of $90,000 to $150,000. Depending on age, options and mileage on the vehicle, the cost could be lower. A regular maintenance includes oil changes, and inspection of belts, tires and lights. General and preventative maintenance is required. The front steering tires should be replaced. There is an oil leak from the rear engine seal that may need to be addressed. The body looks to be in good shape with only minimal surface rust showing.

With regular preventative maintenance and inspections, this vehicle should be in service for another 7 years. The unit is in fair to good shape with only 63,571 km on the odometer, but the number of operating hours is usually higher than normal for emergency vehicles. Due to the age of the vehicle, any major repair costs may exceed the value of the vehicle.

4.2.12 Fire Rescue Vehicle

The fire department rescue/utility vehicle, diesel engine has an automatic transmission. The vehicle is equipped with a standard 2 person cab and hydraulic brake system. The cab and chassis are from Ford with the apparatus supplied and installed by Paul Demers Inc. This vehicle was an ambulance and has been converted for use in the Fire service. This vehicle is the fire department's rescue/utility vehicle responding to emergency calls. The average monthly usage is low with extended periods of non-road running use. A new vehicle meeting the requirement of a rescue utility vehicle for fire service may be $100,000 - $120,000.

Regular maintenance includes oil changes, and inspection of belts, tires and lights. General and preventative maintenance is required with this vehicle given the high mileage. With regular preventative maintenance and inspections, this vehicle should be in service for another 10 years. The limited use of the vehicle means a longer life, but also means that regular inspection and maintenance should be performed to ensure the reliability of the equipment. With the high mileage on the vehicle, yearly inspection should be scheduled. Major repair costs may exceed the total value of the vehicle.

4.2.13 Fire Pumper

The fire department pumper truck, nominal 300 h.p. diesel engine has an automatic transmission. The vehicle is equipped with a standard 3 person cab with an air brake

system. The cab and chassis are International / Navistar with the fire apparatus supplied and installed by Holland Enterprises. With a 500 GPM pump and a 1,000 gallon tank, this vehicle is the fire department's main emergency vehicle responding to house and wild land fires. The average monthly usage is low with extended periods of non-road use. A new vehicle meeting the requirement of a triple combination pumper and basic option is $200,000 - $230,000.

Regular maintenance includes oil changes, and inspection of belts, tires, lights, pump maintenance and testing. General and preventative maintenance is required. With the truck being new, there should be few repairs and only regular maintenance required. With regular preventative maintenance and inspections, this vehicle should be in service for another 23 years. The limited use of the vehicle means a longer life but also means that regular inspection and maintenance should be performed to ensure the reliability of the equipment.

4.2.14 Tandem Truck

This roads truck is a tandem axle drive with regular cab and is also a multi-use truck. It is used daily for the upkeep and maintenance of the roads within The Township. This multi-purpose use includes dump box complete with bi-directional sander, front and wing snow plow attachments. The vehicle is in excellent shape as it has just been purchased.

The regular maintenance includes oil changes and inspection of belts, tires and lights; and a tire replacement every 5 years. General maintenance of attached equipment is required. Regular maintenance / replacement items may include the following: cutting edges, hydraulic hoses, fittings, pumps, filters, and hydraulic oil. With regular maintenance and inspections, this vehicle should be in service for another 25 years. Due to the technologies used, specialized tools and training may be necessary for the maintenance and repair of this equipment.

4.2.15 Half-ton Truck

This roads truck is a 2 wheel drive with regular cab. It is a half-ton pickup truck, used daily for the transportation of personnel and small equipment. It has a 3 person max capacity. It is driven on average 1,300 km per month. This vehicle is in good shape with no visible body damage. The interior is in good shape, all glass is intact, and all tires are in good shape.

Regular maintenance includes oil changes, and inspection of belts, tires and lights. With regular maintenance and inspections, this vehicle should be in service for another 4-5 years.

4.2.16 Street Lights

The Township has five street lights located at various locations. The street lights are installed on of wood poles, which are not owned by The Township. There are three Mercury-Vapour (MV) light fixtures and two High Pressure Sodium (HPS) light fixtures. The street lights are all rated in fair condition, with no immediate maintenance required for them.

4.3 RENEWAL/REHABILITATION ACTIVITIES

Rehabilitation of the assets is necessary when the levels of service do not conform to the standards. Significant repairs designed to extend the life of the asset are determined at every inspection. It is essential to schedule the regular inspections to monitor the asset's conditions.

The rehabilitation activities determined from the field inspection are provided below. The work recommended will improve the asset's rating and help ensure that the asset provides the desired level of service.

Rehabilitation over replacement is advantageous when there are only few components that need repair. Occasionally, the number of repairs is too extensive and rehabilitation is deemed unfeasible. This judgement is different for every case and sometimes replacement is the more cost effective alternative when considering future repairs.

4.3.1 Bridges

Asset ID	Name	BCI	Work
BR_001	Dave's Rd. Bridge	70.69	→ Install guiderail at north approach → Re-install guiderail transition at south approach → Re-install east railing laps in direction of traffic → Replace abutment bearings → Replace portion of abutment timber crib
BR_002	Parker Rd. Round Culvert	60	→ Replace sub-standard barrier system
BR_003	Parker Rd. Concrete Box Culvert	84.93	→ Install steel beam guiderail
BR-004	Neva Rd. Concrete Box Culvert	88.91	→ Install steel beam guiderail

4.3.2 Roads

It should be understood that the recommended work suggested for gravel roads are short-term. Below is one asset example; see section 3.4.2 for details.

Asset ID	Name	PCI	Distress Manifestation	Work
RD_0009	Annala Rd.	45	• Loose gravel • Breakup • Flat/Reverse Crown	• Rehabilitation • Additional gravel • Grading & rolling
RD_0011	PARKER RD	41	• Pavement breakup • Potholes • Distortion • • Rutting	• Add gravel • Roll • Grade

General rehabilitation activities may include:

- Correcting the causes of water lying on the surface of the road
- Repairing potholes in excess of 100 mm in depth
- Correcting washboard conditions (corrugations)

4.3.3 Culverts

Rehabilitation of culverts with pipe liners is one method available for extending the life of an existing culvert. The pipe liner's length is three times the size of the culvert's diameter and they are inserted at both the culvert's inlet and outlet. It is often cost effective when compared to complete replacement. Below is one asset example; see section 3.4.3 for details.

Asset ID	Name	Condition Index	Work
CV_0174	Couch Rd.	2	• Rehabilitation

4.3.4 Buildings

Asset ID	Name	Condition Index	Work
BD_002	Public Works Garage	2	• Build new frost box for line at northwest corner of shop • Install vehicle exhaust evacuation system
BD_003	Fire Hall	3	• Extend downspout discharges further from foundation • Install snow guards on roof • Renovate overheard door thresholds to slope outside

4.3.5 Land

Asset ID	Name	Condition Index	Work
LD_005	Helipad	3	• Pack and grade patient loading area to more uniform surface

4.3.6 Ditches

Removing of brush and vegetation is one method available for extending the life of an existing ditch. When deemed necessary, ditches shall be cleaned out by means of an excavator or other piece of heavy equipment.

4.4.0 REPLACEMENT ACTIVITIES

Replacement is considered when extensive damage or deterioration has occurred to the asset. Replacing assets is sometimes costly and requires considerable additional review; such as detailed investigations. These activities are expected to occur once an asset has reached the end of its useful life and renewal/rehabilitation is no longer an option.

At this point in time, replacement is not seen to be a cost effective option for The Township. The roads and street lights are largely still meeting the expected level of service. The assets that are no longer meeting the expectations remain at a level at which they can be rehabilitated to again meet the desired level of service.

Ditches may not be replaced; only rehabilitated or improved.

4.4.1 Culverts

In 2013, GENIVAR Inc. determined 45 culverts should be replaced, including the ones listed in section 3.4.8. It should also be noted that there are four wooden culverts which should be replaced with corrugated steel pipes.

1. CV_0053 Parker Rd. 450 mm culvert – 5 years $1,600
2. CV_0055 Parker Rd. 2000 mm culvert – 5 years $25,000
3. CV_0059 Parker Rd. 450 mm culvert – 1 year $1,600
4. CV_0171 Couch Rd. 1200 mm culvert – 10 years $4,600

Below is one asset example; see section 3.4.3 for details.

Asset ID	Name	Condition Index	Work
CV_0011	Liddicoat Rd.	1	• Replacement

4.4.2 Public Work Garage

This garage was previously audited and it was noted that it would be more efficient to control the heating by separating the area into two zones; garage bay and human occupancy. Air sealing and insulating the building envelope would also help retain the heat in the garage. With programmable thermostats, the temperature would be controlled more efficiently during the cold weather. Occupancy lighting sensors would eliminate unnecessary energy consumption, and finally, high levels of carbon monoxide and extreme humidity can be addressed with a commercial carbon monoxide detector and a Heat Recovery Ventilation system.

This building may be considered inefficient and a detailed study with life cycle costing is recommended for possible replacement. ($4,000)

4.4.3 Municipal Office

Although The Township of Gillies once owned and used a stand-alone municipal office building, that property was sold. Municipal Council of the day considered the

building at the end of its useful life for municipal purposes. Municipal administration is presently undertaken from leased premises. Two rooms within the Whitefish Valley public school are rented to The Township by the Lakehead District School Board. General repairs and maintenance of the building are undertaken by its owner, the School Board.

While it is physically adequate for staff and Council, the municipal office is deficient as a public service office in that it does not meet the standards that municipalities are required to meet to comply with Accessibility for Ontarians with Disabilities Act, 2005 (S.O. 2005, c. 11). Significant capital expenditures would be required to create accessible entrances and washrooms. The lease does not provide a long term security of tenure to the municipality. The current lease expires on June 30th, 2016. The tenant does not enjoy a right of renewal of the lease, although it can be released on mutual consent.

Without a long term security of tenure in the premises, the municipality is not inclined to make significant capital investments, such as those required for renovations to become AODA compliant.

The Township of Gillies has started to put funds away to replace the municipal office space with owned infrastructure that is compliant with relevant and applicable legislation, however, the amount saved to date does not approach the amount that will be required. ($300,000)

4.5 DISPOSAL ACTIVITIES

There is no disposal activity anticipated; as the assets generally meet the level of service expected.

The level of service defines the current and future operating conditions of assets using qualitative measures. The operating conditions and level of service are normally defined by The Township, and the characteristics generally include speed, travel time, delay, traffic interruptions, and convenience.

The level of service also describes what the governing body, ‘customer’ or community wants, how much it will cost to achieve, and whether it is affordable. Therefore, the levels of service should be specific and measureable, and linked to the strategic objectives and outcomes of The Township.

4.6 OVERVIEW OF RISKS

Understanding risks is important to the safety and functionality of the community as it relates to its infrastructure. Having assets perform at the expected level of service is important for The Township. If the assets have to shut down or are compromised, it becomes inconvenient for all.

Key Indicator	Issue	Potential Impact	Current Controls	Action Plan
Condition Index PCI 45	Annala Rd. (RD_0009) requires rehabilitation	Road closure will cause inconvenience	Current load limit: 10,000 kg Registered Gross Vehicle Weight(R.G.V.W.)	Rehabilitate road
Condition Index PCI 41	Parker Road(RD_0011) requires rehabilitation	Road closure will cause inconvenience	Current load limit: 10,000 kg Registered Gross Vehicle Weight(R.G.V.W.)	Rehabilitate road
Condition Index PCI 43.5	Hymers Fair Drive(RD_0013) requires rehabilitation	Road closure will cause inconvenience	Current load limit: 10,000 kg Registered Gross Vehicle Weight(R.G.V.W.)	Rehabilitate road
Condition Index PCI 67	Main St (RD_0027) requires rehabilitation	Road Closure has created inconvenience	Road Closed to throughfare traffic with cement barricades	Rehabilitate road (fix steep grade, etc)
Condition Index PCI 44	Leeper Road(RD_0028) requires rehabilitation	Road closure will cause inconvenience	Current load limit: 10,000 kg Registered Gross Vehicle Weight(R.G.V.W.)	Rehabilitate road
Condition Index1	45 culverts See section3.4.3	Road closure will cause inconvenience and detours	None	Replace culverts

5.0 FINANCING STRATEGY

A management strategy of planned actions will enable the assets to provide the desired levels of service and extend their useful lives. The budget values of the past two years were found in The Township of Gillies Budget 2016, approved on June 27, 2016. This forecast will help The Township prepare for expenses associated with maintenance, rehabilitation, and replacement costs. The following demonstrates the work recommended and probable costs: categorized by 1 year, 1 - 5 years, and 6 - 10 years timeframes.

5.1 EXPENDITURE FORECASTS

Type	Recommended Work	1 year	1 – 5 years	6 – 10 years
Maintenance activities and inspections				
	Bridges		$10,000	$15,000
	Roads & Culverts	$130,000	$152,000	$292,000
	Buildings & Land	$3,250	$10,700	$7,000
	Equipment & Vehicles	$13,400	$31,500	$31,500
	Street Lights	–	$2,000	$2,000
Renewal/ rehabilitation activities				
	Bridges	-	$105,100	$6,000
	Roads	$220,500	$116,000	$54,000
	Culverts	45,800	$97,700	$87,100
	Buildings & Land	$1,500	$3,200	-
	Street Lights	–	$6,000	–
	Ditches	$84,000	$165,000	$8000
Replacement activities				
	Culverts	$107,900	$26,600	
	Buildings	$4,000	$300,000	$4,600

The Township depends on grants and funding for infrastructure as the tax base is too low to undertake any major projects without it. If these grants were not available, The Township would not have been able to cover the costs. It is understood that The Township of Gillies budgets approximately $100,000 per year for capital expenditure work. The assets are well maintained and are meeting the level of service expected. However there is a funding shortfall. The Township of Gillies must prioritize the recommended work based on their asset's goals and their level of service expected. This expenditure forecast was developed with section 3.4 and 4.2 of this plan.

6.0 ACCOUNTABILITY AND FEEDBACK

6.1 PERFORMANCE MEASURES

The Township will request condition indexes such as BCI and PCI values at every inspection. These will be an excellent and easy way to monitor the conditions of the assets over the years, and forecast replacement when necessary.

It is also recommended that inspections include recommended work (categorized by 1 year, 1 – 5 years, and 6 – 10 years). If the available funds are not sufficient, then strategic decisions must be made in an effort to maintain the required level of service within The Township. The work must be prioritized by considering The Township's level of service expectations.

6.2 LIFE OF ASSET MANAGEMENT PLAN

6.2.1 Assets excluding roads and streetlights

This plan will cover the period from August 2013 to August 2023 with diminishing returns. The financial needs should be updated when regular inspections are completed and when conditions are re-assessed. It is highly recommended to perform inspections during the spring/summer months for a better representation of the actual conditions.

6.2.3 Roads and Streetlights

This plan will cover the period from August 2016 to August 2026 with diminishing returns. The financial needs should be updated when regular inspections are completed and when conditions are re-assessed. It is highly recommended to perform inspections during the spring/summer months for a better representation of the actual conditions.

6.3 DOCUMENT HISTORY

This consolidated AMP was created using the following documents & updates:

Original AMP (Genivar)	2013	initial review of assets
Update AMP Report (WSP)	2016	update roads; add streetlights
Consolidation/Review	2016	
Update AMP	2016	add ditches

NOTE: Backup documentation is retained in a binder labelled “Asset Management Plan Amendments – Backup Documentation”

6.4 COLLABORATION OF DOCUMENTS

The AMP is to be used in collaboration with the following documents:.

- Gillies Official Plan
- Gillies Capital Plan
- Government funding ex Gas Tax, OCIF
- Annual Budget

7.0 CONCLUSION

Asset management is one of the most cost effective ways to balance the preservation, upgrade and replacement of assets. The implementation of the plan will provide guidance for The Township of Gillies to meet the asset’s level of service and improve the infrastructure over the timeframe of this plan.

The staff shall continue to use the AMP for long-term transportation planning, capital program development, and performance accountability. Being aware of the conditions and the total costs will improve The Township’s ability to select options for operations, maintenance, renewal and replacement of roads and bridges.

The investigation undertaken by various staff and outside agencies with respect to this plan and any recommendations made in this plan reflect professional opinion based on the sites’ conditions observed at the time of the inspections and on information available at the time of preparation of this plan. Extrapolation of visual detail data was necessary where there was no access.