



September 11, 2024

Willow Creek Pass Village Association
Steve Warnke
P.O. Box 1148
Clark, CO 80428

Job Number: 19-11514

Subject: Summary Report – 2024
Willow Creek Pass Village Road and
ROW Maintenance Program, Routt
County, Colorado.

Steve,

As requested by the Willow Creek Pass Village Association (WCPVA), NWCC, Inc. (NWCC) has prepared this summary report for the 2024 Willow Creek Pass Village Road and ROW Maintenance Program. This report outlines the proposed scope of work developed by NWCC, Wilderness Earthworks (WE) and members of the WCPVA in May and June 2024; the actual work completed at the project on a day by day basis in June and July 2024; actual costs incurred to complete the work; and recommendations for future roadway and ROW improvements for the next several years.

Proposed Scope of Work and Estimated Budget: Brian Len, P.E. of NWCC, Kris Lodwick of WE and Nate Marsh of WCPVA met at the site on May 14, 2024 to drive and observe the conditions along the subject roadways and to discuss and create a proposed scope of work and cost estimate for the 2024 Program to be completed in June.

Based on our site visits these past few months and discussions regarding the work completed during previous programs, the following scope of work and estimated budgets for completing the work were prepared:

- 1) WE will mobilize their equipment to the site, including motor grader, mini-trackhoe, skidsteer and dump trucks. The mobilization/demobilization fee has been estimated at **\$2,500.**
- 2) ROW Maintenance//Culvert Cleaning//Tree Removal//Inspections: WE has estimated that it would take 3 to 5 days to complete the ditch cleaning, relocating brush pile, and tree removal from the roadside ditches located within the ROW that are creating surface drainage problems, and to inspect a few culverts to determine if they need to be just cleaned or replaced and replace the failed HDPE culvert ends with CMP ends. Estimated

- fees are for cleaning and inspection of the culverts, but does not include a fee for replacing the culverts. Culvert inspections and ditch cleaning will be conducted along Olive Street, Frisco Place, Greenbird Place, Saturn Court, Neptune Place, Golden Tide Place, Jupiter Place, Pueblo Drive, Beaver Canyon Drive, Diana Place, Longfellow Way and Willow Gulch Drive. WE has estimated the fee for completing the above work will be approximately **\$6,000**.
- 3) Stabilize Roadway Surfaces: In an effort to stabilize the roadway surfaces which continue to pothole, ravel, and washboard, WE will be continuing placement of the recycled asphalt product (RAP) along Miners Dream Drive, at the Longfellow Way and Willow Gulch Drive intersection, Neptune Place, and for the first 100 feet of Olive Street located west of CR 129. The new test sections and extensions of the test sections constructed last year will be constructed by placing, wetting and compacting approximately 2 to 3 inches of RAP, which consists of rotomilled asphalt. The RAP will be imported from the Elam Craig Pit located approximately 45 miles west of Steamboat Springs, which is currently the only source of RAP selling to the public. WE has estimated the total fee for completing the above work will be approximately **\$29,000**, with WE fee being approximately **\$19,000**, including the trucking to and from the Craig Pit, and the estimated cost of the RAP purchased from the Craig Pit will be approximately **\$10,000**.
 - 4) Blade Shape and Compact Roadways: This scope of work also includes the reshaping, wetting and recompaction of all of the roadways prior to magnesium chloride placement. WE has estimated their fee for completing the above work will be approximately **\$14,000**.
 - 5) New ABC Placement: WE will add new/imported ABC to sections of the roadways that are lacking sufficient ABC cover and pit run materials are exposed. WE has estimated the total fee for completing the above work would be approximately **\$23,500**, with WE fee being approximately **\$18,000** including trucking, and the cost of the ABC materials imported from Clark Pit being approximately **\$5,500**.
 - 6) Magnesium Chloride Application: As has been the practice, all roads in the subdivision will be treated with magnesium chloride and roller compacted, which provides both stability and dust suppression of the roadway surfaces. EnviroTech of Glenwood Springs, CO will place approximately 30,000 gallons of magnesium chloride (Roadsaver) along the roadway surfaces after all of the maintenance work listed above is completed. WE is to provide the water truck, pump, and smooth drum compactor with operator required during this process. WE has estimated the total fee for completing the above work would be approximately **\$52,000**, with the WE fee being approximately **\$8,000** and the cost of the Roadsaver placed by EnviroTech being approximately **\$44,000**.

Actual Work Completed: The work for this project was started on May 16, 2024 and was completed on June 14, 2024. Channing Reynolds-Senior Field Engineer with NWCC was on-site to provide the construction quality assurance/project management services. Mr. Reynolds was

able to observe and document the majority of the work completed, as well as obtain the delivery tickets for the RAP, ABC and Magnesium Chloride being imported and used at the site. A summary of the work completed on each date is provided below:

May 16, 2024 to June 11, 2024: WE hauled RAP from the Craig Pit and Aggregate Base Course (ABC) from the Clark Pit during this period. Approximately 375 tons of RAP were hauled to the site from the Craig Pit, stockpiled and then placed. Approximately 471 tons of ABC were hauled to the site from the Clark Pit and then placed. WE used their CAT 924G loader to push the dumped materials into the stockpile from May 17, 2024 to June 5, 2024.

May 31, 2024: WE mobilized their CAT 143H Grader to the project site on this date and started the grading of the roadways.

June 3, 2024 and June 4, 2024: WE continued to mobilize the remainder of the equipment to the site and was grading the roadways.

June 3, 2024: Mr. Reynolds drove the roadways with Kris Lodwick and WE staff to observe and document the proposed scope of work for this year. The equipment on-site consisted of one motor grader/blade, Cat CS 56B compactor and one laborer to pump water.

June 4, 2024: The equipment on-site and used on this date consisted of one tandem axle dump truck, one wheeled skid loader, one mini excavator, one motor grader/blade, one water truck, one roller/compactor and one front end loader.

Ditch cleaning was started on this date and the excavator and skid loader were to be used to start cleaning the ditches along Lower Beaver Canyon Drive, Green Bird Place, Venus Place, Upper Beaver Canyon Drive, Clara Way, Diana Place and Pueblo Drive, and then load the spoils into the dump trucks. A chain saw was used to remove the larger trees.

Work on the existing RAP section on Lower Beaver Canyon was initiated by peeling back existing RAP shaping and then compacting existing ABC before existing RAP was placed over the ABC and new RAP was placed and compacted. Similar work was started and completed on Neptune Place and Miners Dream Drive.

The new culvert ends were delivered to the site. The damage culvert ends were removed and replaced with the new ends. The ends that were replaced were on culverts running under Saturn/Neptune and Willow Gulch.

June 5, 2024: The equipment on-site and used by WE consisted of one tandem axle dump truck, one side dump truck, one mini excavator, one front end loader, one motor grader and one compactor. WE continued to work on the ditching along Neptune, Saturn, Longfellow, Willow Gulch, Jupiter and Diana Court.

RAP work was completed at Longfellow and Willow Gulch intersection. In addition, ABC was placed at the intersection of Longfellow and Willow Gulch. In addition, ABC was placed on Jupiter at the electrical line crossing that had settled. Motor grader was used to shape and blade roadways.

Cul de sac at end of Saturn was regraded since the runoff from several of the driveways continues to flow out onto the cul de sac.

June 6, 2024: The equipment on-site and used by WE consisted of one tandem axle dump truck, skid loader, front end loader, compactor, CAT D3 dozer, motor grader, and one mini excavator.

WE placed new RAP along Olive Street located east of RCR 129 to a point past Frisco Place.

Mr. Reynolds drove the project site with WE to evaluate punch list items and to determine if any additional areas needing clearing/cleaning. It was determined that additional clearing/cleaning was required on Lower Olive Street.

The dozer was being used at the spoils dump pile located northeast of Golden Tide Place and RCR 129. Motor grader was being used to shape and blade roadways.

June 7, 2024: The equipment on-site and used by WE consisted of one tandem axle dump truck, skid loader, water truck, compactor, motor grader, and one mini excavator.

A skid loader was used today to regrade/reshape the cul de sac at the upper end of Olive Street. The mini trackhoe and dump truck were used to pick up piles along the roadways and transport them to the spoils dump pile.

Motor grader, water truck and compactor were used to prepare roadways for placement of Magnesium Chloride.

June 8, 2024: The equipment on-site and used by WE consisted of one mini excavator and one tandem axle dump truck. Ditch work/cleaning was completed on this date.

June 10, 2024: The equipment on-site and used by WE consisted of one mini excavator, D3 dozer and one tandem axle dump truck.

WE placed the flared ends on the culverts that needed replacement. Dozer was used to work/regrade the spoils dump pile.

June 11, 2024: The equipment on-site and used by WE consisted of one side dump truck, D3 Dozer, skidsteer, and mini trackhoe.

WE continued to work on the spoils dump pile with the dozer. One load of ABC was delivered and used for the culvert extension on Frisco Place. The skidsteer was completing final grading/touch up.

WE completed the final fine grading, wetting and compacting all of the roadways in preparation of the placement of Magnesium Chloride, which is to begin the next day, June 12, 2024.

Brian Len and Channing Reynolds drove all of the roadways to observe the work completed at the project site up to today's date. All of the roadways appeared ready for application of magnesium chloride.

June 12, 2024: The equipment on-site and used by WE included one water truck and one roller/compactor.

On this date, EnviroTech started the placement of the magnesium chloride (Roadsaver) across Olive, Myrtle, Frisco, Neptune, Saturn, Clara, Lower Beaver Canyon, Longfellow, Willow Gulch and Jupiter. The magnesium chloride was applied at a rate of 0.25 gallons/square yard. Approximately 13,307 gallons of Roadsaver was placed on this date.

WE watered the roadways, prior to placing the Roadsaver, using the water truck and then compacted them with smooth drum roller.

June 13, 2024: The equipment on-site and used by WE included one water truck and one roller/compactor.

On this date, EnviroTech completed the placement of the magnesium chloride (Roadsaver) across the subdivision roadways that did not receive any Roadsaver on June 12, 2024, which included all of the roadways located east of RCR 129. A second pass of magnesium chloride was applied to portions of all of the main subdivision roadways, including Lower Beaver Canyon, Neptune, Clara, Longfellow and Upper Beaver Canyon to the intersection with Pueblo. Approximately 15,791 gallons of Roadsaver was placed on this date. In addition, 223 gallons of Base Blend, a new product, was placed on the new RAP section on Lower Olive.

WE watered the roadways, prior to placing the Roadsaver, using the water truck and compacted the roads treated on the previous day with the smooth drum roller.

June 14, 2024: The equipment on site for WE included one roller/compactor and water truck. WE completed the final rolling/compacting of the roadways on these dates.

Cost Breakdown: The contractor's actual costs associated with completing this project, as well as the estimates provided by Wilderness Earthworks have been broken down for each of the line items discussed above.

Mobilization

	<u>Actual Costs</u>	<u>Estimated Costs</u>
Wilderness	\$2,500.00	\$2,500.00

ROW Maintenance/Tree Removal

	<u>Actual Costs</u>	<u>Estimated Costs</u>
Wilderness	\$12,681.00	\$6,000.00

Stabilize Roadway Surfaces

	<u>Actual Costs</u>	<u>Estimated Costs</u>
Wilderness	\$17,325.07	\$19,000.00
Elam RAP	\$9,040.53	\$10,000.00
	\$26,365.60	\$29,000.00

Blade, Shape and Compact Roadways

	<u>Actual Costs</u>	<u>Estimated Costs</u>
Wilderness	\$13,823.50	\$14,000.00

New ABC Placement

	<u>Actual Costs</u>	<u>Estimated Costs</u>
Wilderness	\$15,678.63	\$18,000.00
Elam - ABC	\$7,552.58	\$5,500.00
	\$23,231.21	\$23,500.00

Magnesium Chloride Placement

	<u>Actual Costs</u>	<u>Estimated Costs</u>
Wilderness	\$6,714.41	\$8,000.00
EnviroTech	\$43,488.90	\$44,000.00
	\$50,203.31	\$52,000.00

The total invoices for each of the contractors and NWCC are shown below.

Wilderness	\$85,315.72		
EnviroTech	\$43,488.90		
<u>NWCC</u>	<u>\$12,702.00</u>		
Actual Total Fees	\$141,506.62	Total Estimated Fees	\$141,000.00

Future Roadway Improvements: Based on our observations made this summer along the subject roadways and drainage features, we have prepared a list of recommended improvements to be completed within the roadways in the next 1 to 3 years. The recommended improvements are summarized below:

2025 Maintenance Program

- 1) The 60-inch corrugated metal pipe (CMP) situated beneath Lower Beaver Canyon Drive and west of CR 129 is failing and will need to be replaced or properly sleeved/lined. It is NWCC's understanding that this project will occur later this summer/fall.

The base of the CMP has rusted and rotted out from the south end of the pipe to a point approximately 50 feet north into the pipe, which appears to be approximately 92 +/- feet in length. Approximately 1 to 2 feet of the bearing soils at the base of the pipe have scoured/eroded, as a result of the failure at the base of the pipe and the water flows in the pipe. In addition, a rather large bulge has formed in the roof of the culvert pipe near the inlet.

It also appears that the 60-inch pipe has deformed severely with the greatest amount of deformity being located closer to the inlet end of the pipe. If a new pipe is used to line the existing culvert, the new pipe cannot be greater than 36 inches in diameter or the section of pipe that is bulging will have to be removed or pushed up.

- 2) NWCC strongly recommends that the sections of roadways in which the RAP test sections were constructed (Lower Beaver Canyon Drive, Neptune Place, Miners Dream Drive and Longfellow/Willow Gulch intersection) be monitored over the next 8 to 10 months to determine if the placement of the RAP in these areas is performing adequately and the amount of potholing and wash boarding has been reduced. If this method of stabilization/reconstruction appears to be working, then NWCC recommends that the placement of the RAP materials be continued along the roadways. We still recommend that RCP be placed in lieu of the RAP, if it is available next year. It should be noted that RCP was not available this year.
- 3) NWCC believes that continuing settlement of the Illuminate trenches within the roadways will still occur. NWCC recommends that these areas be evaluated next spring after the snow has melted. In addition, several of the Illuminate boxes and wooden shoring have been installed directly in the existing drainage ditches. The drainage conditions should be evaluated next spring during the snowmelt to determine if these boxes and shoring are having adverse impacts on the existing drainages and determine if they may need to be moved or stabilized differently.
- 4) NWCC recommends continuing the practice of reshaping and compacting the roadways with a smooth drum roller after they are regraded in the spring and summer.
- 5) NWCC recommends that the WCPVA continue with a maintenance program similar to the one that was completed this year. NWCC recommends that new/additional Class 6 ABC, RAP or RCP (if available) be added to the roadways, as necessary and that the roadways get regraded, compacted and have magnesium chloride applied every year. A new product, Base Blend, was placed over the new RAP placed along the east end of

Olive Street. This area should be monitored to determine if this product may be a better application than the magnesium chloride that is placed over the existing RAP.

Future Maintenance Programs

- 1) The existing asphalt aprons at the intersections with CR 129 at Lower Beaver Canyon Drive, Neptune Place and Miners Dream Drive are in fair to poor condition and will most likely have to be replaced within the next 2 to 3 years. Based on our conversations with the Routt County Road and Bridge Department, it appears that CR 129 will most likely be chip sealed at these approaches within the next 5 years and the County does not intend on overlaying CR 129 for another 10 to 15 years. NWCC recommends that these aprons be reconstructed with reinforced concrete or a full depth asphalt section.
- 2) The adverse surface drainage conditions within the cul-de-sacs located at the western ends of Neptune Place and Saturn Court continue to deteriorate and are most likely causing the pumping and deflection in the roadway areas. Cleaning or regrading of the ditches is very difficult based on the number of existing driveways and buried utility lines within these areas. Therefore, NWCC believes that it may be more feasible to increase/raise the grade at the center of the cul-de-sacs so that surface drainage from the adjacent properties is directed around the cul-de-sacs rather than across them. NWCC recommends that the raising of the cul-de-sacs occur within the next 1 to 3 years.
- 3) The condition of a large number of the existing, private culvert pipes running underneath the driveways across the subdivision have been compromised and/or are not functioning as they should. Excavating/deepening the roadside ditches is no longer an option along the majority of the roadways due to very shallow dry utility lines (Electric and Communication). A program to evaluate these culvert pipes and then determine how and/or who will repair or replace them should be developed.
- 4) The intersection of Miners Dream Drive and Miners Dream Place will need to be modified/reconfigured for safety reasons. It is presently a T intersection and the head/northeast side of the roadway drops off severely into a wetland area. NWCC understands that a number of vehicles have driven/slid off this part of the roadway in the winter months.

If you have any questions concerning this report, or if we may be of further service, please contact this office.

Sincerely,
NWCC, INC.

Brian D. Len, P.E.
Principal Engineer

