



GOLDER

TransGas
A SaskEnergy Company

Hydroseeding to Limit Erosion during Pipeline Reclamation

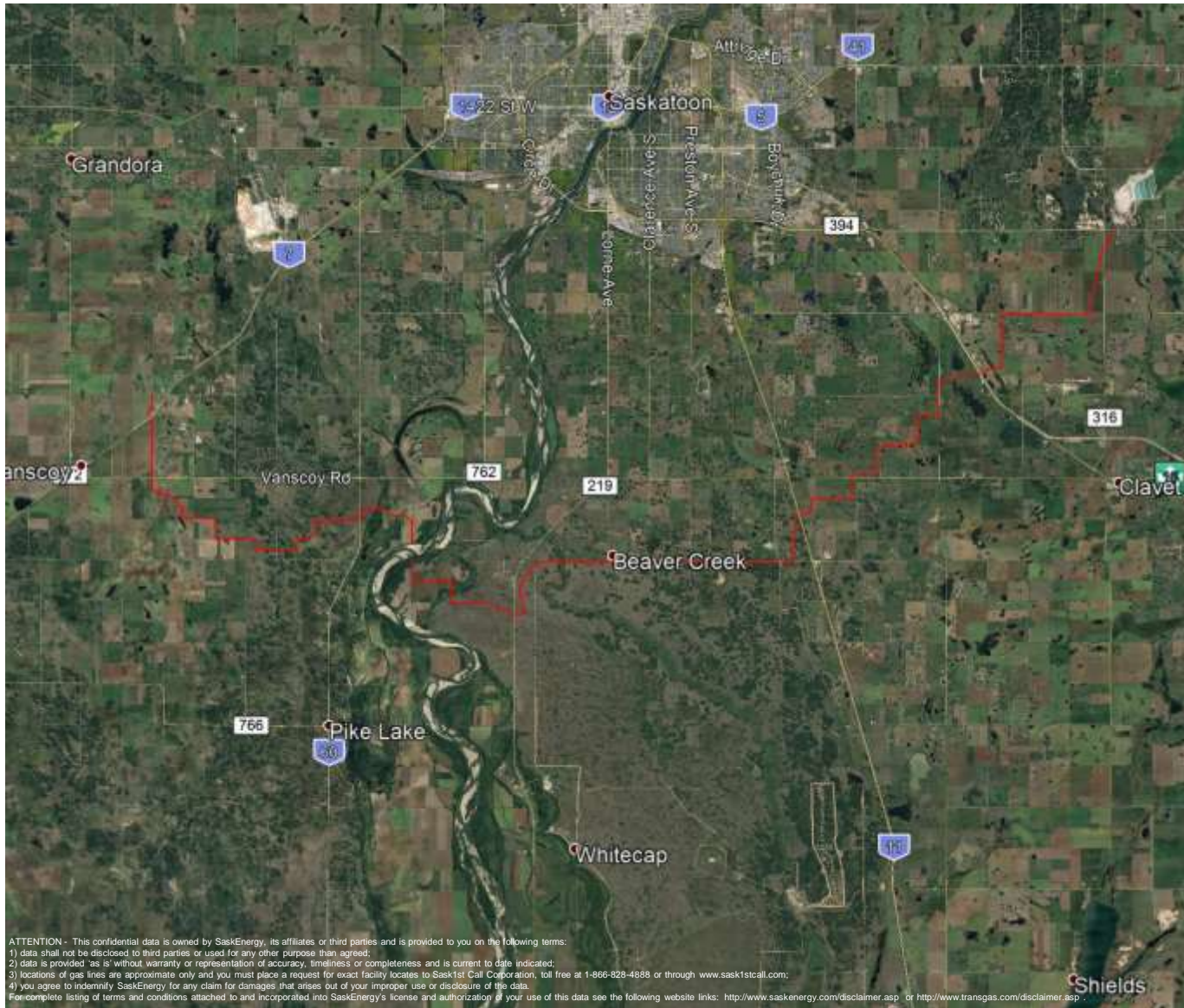
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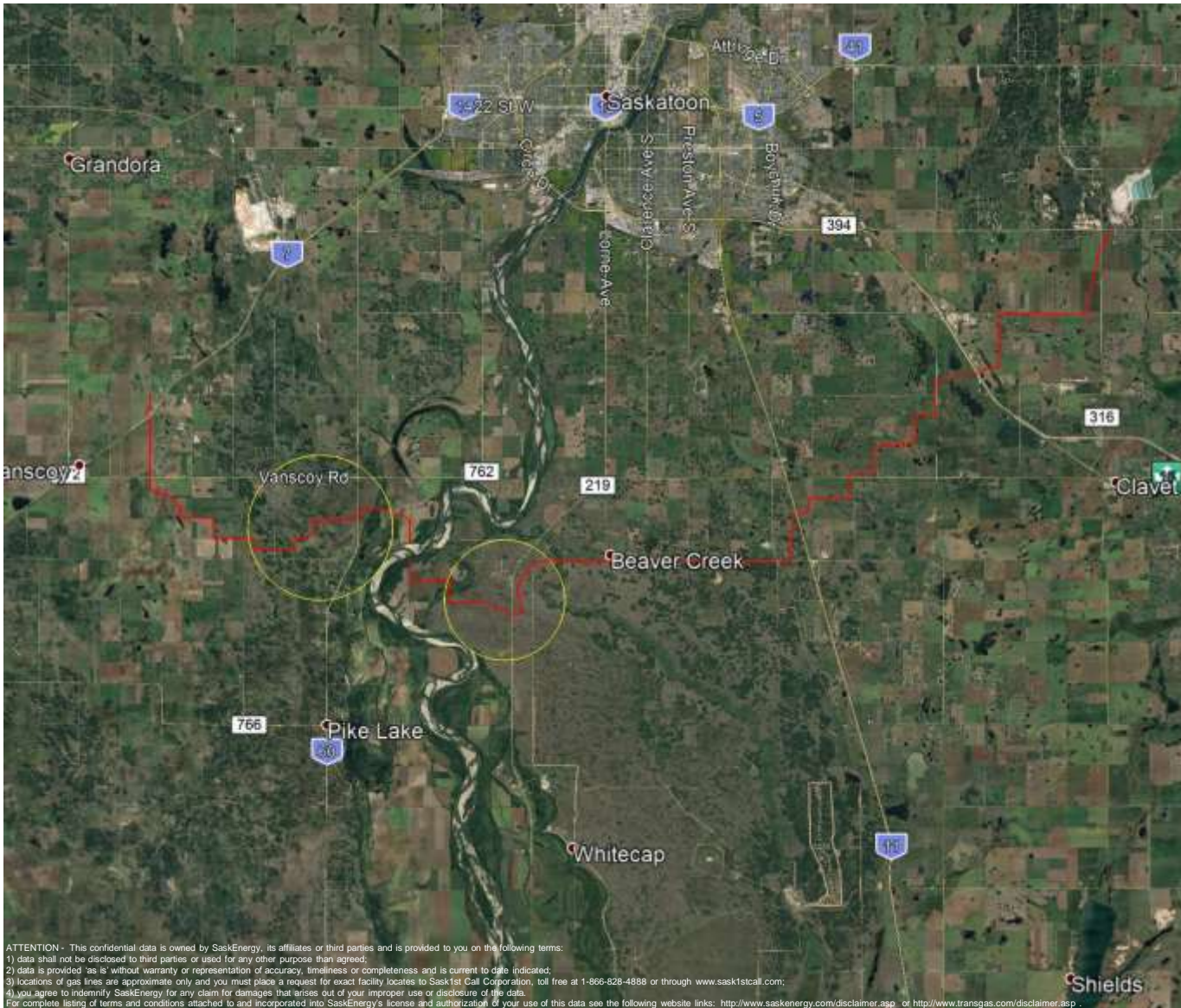
February 2020

Project Introduction

SASKATOON SOUTH BYPASS PROJECT

- 62 kilometre 508.0 millimetres (NPS 20) high pressure natural gas line
- The Project required a new 30 metre (m) wide right-of-way (ROW)
- Approximately 26.4 ha of native grassland and 19.9 ha of modified grassland was crossed by the project





Construction Phase

NATIVE GRASSLANDS



Initial Reclamation

NATIVE GRASSLANDS



- Reclamation activities completed in November/December 2018, concurrent with construction
- Initial ROW preparation was completed by harrowing, followed by the use of a drill seeder. Native seed mix was seeded at an approximate rate of 10 to 12 kg/ha
- Fall rye cover crop seeded at 2 to 4 kg/ha in native grassland areas
- For small areas, seeding was completed by ATV and hand broadcasting

Initial Reclamation Results

HOT AND DRY SPRING CONDITIONS



- Total precipitation for April and May less than 5 mm
- Concerns over initial establishment
- Potential for erosion loss due to dry windy conditions

Initial Reclamation Results

WIND EROSION POTENTIAL



Supplemental Reclamation Efforts

HYDROSEED PRODUCTS

- Hydromulch – product manufactured from natural fibers with tacking agents. Fibers weave into a wood cellulose matrix
- Tackifier - hydraulically applied erosion and sediment control product used as a soil stabilizer and dust control agent

Supplemental Reclamation Efforts

HYDROMULCH

- Two different pieces of equipment used; a semi truck with a 4000 gallon tank and a rock truck modified to carry a 4000 gallon tank
- Rock truck used to move through steep sandy terrain to minimize disturbance to soil surface
- Fall rye seeded at a rate of approximately 4-8 kg/ha



Supplemental Reclamation

TACKIFIER



- Contracted to apply tackifier throughout portions of the ROW that were sandy and not easily accessible
- Fall rye seed that was mixed to spread at a rate of approximately 4-8 kg/ha

Supplemental Reclamation

INITIAL OBSERVATIONS



Hydromulch

- Easy to see where it had been applied
- Consistent application



Tackifier

- Hard to see where it had been applied
- Seed application not consistently uniform

Post-Construction Vegetation Assessment

OBJECTIVES AND METHODS

- Mid-season survey to assess vegetation establishment on ROW
- 0.5 m x 0.5 m quadrats
- Completed every 500 m on right-of-way and temporary workspaces
- Data collected include species composition and percent cover
- Pedestrian survey to identify potential erosion issues

Post-Construction Vegetation Assessment

1.5+ MONTHS AFTER APPLICATION



Hydromulch

- Mulch noticeably still present on soil surface
- No soil erosion observed

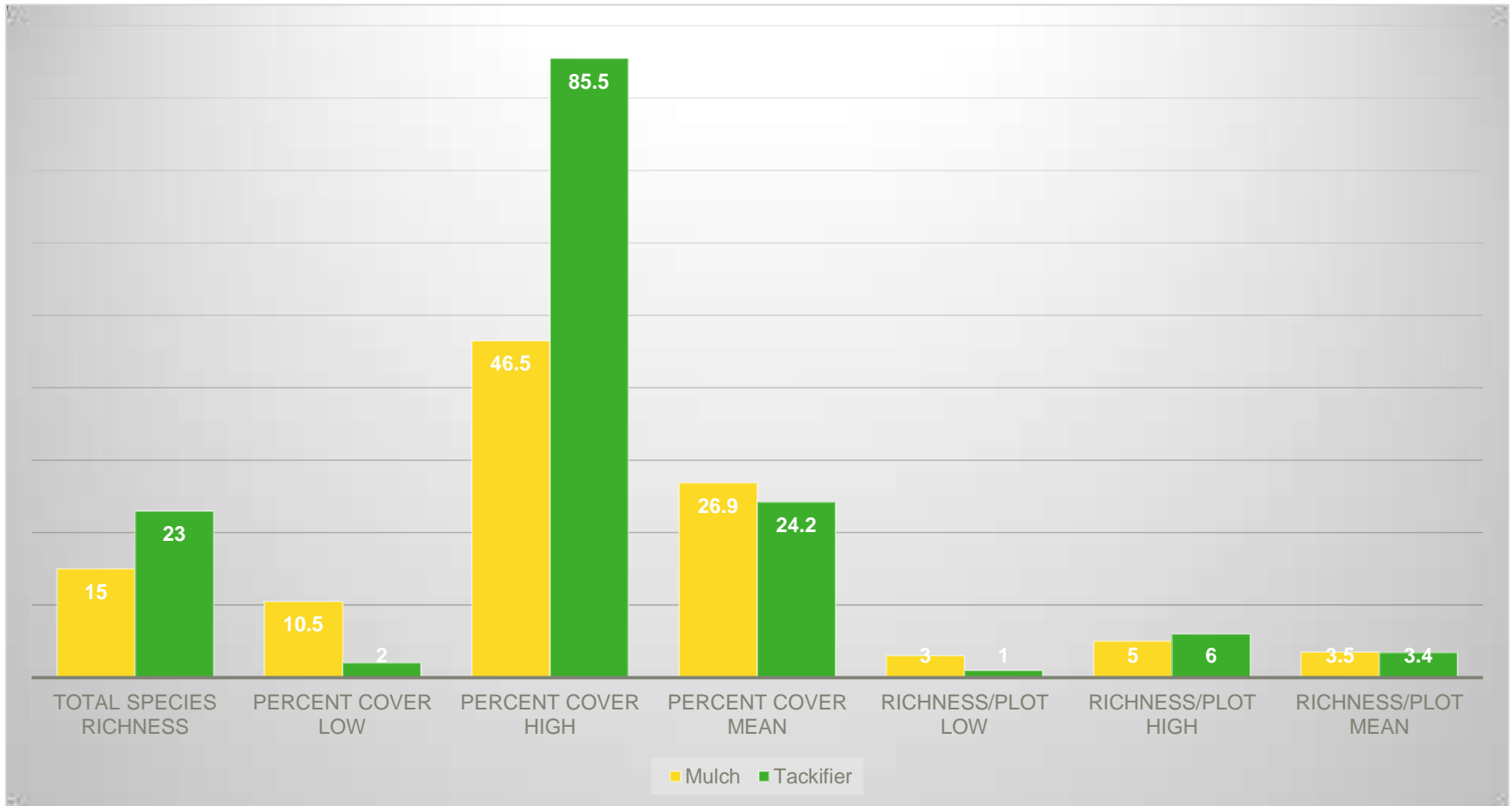


Tackifier

- Tackifier not visible on surface
- Little to no soil erosion observed

Post-Construction Vegetation Assessment

+1.5 MONTHS AFTER APPLICATION



Post-Construction Vegetation Assessment

+1.5 MONTHS AFTER APPLICATION



Conclusions

RECLAMATION AND LONG-TERM MONITORING

- Both products had the desired effect of reducing wind erosion
- Tackifier and hydromulch products may occupy a great niche in reclamation activities due to changes in climate
- Hydromulch product was easy to apply due to visual cues
- When applying seed in conjunction with tackifiers or hydromulch a tank agitator is needed to help provide uniform application
- Terrain and access are important consideration for proper equipment
- Slight differences in species richness and abundance were observed, but not a significant factor between the two products
- Long-term vegetation monitoring will continue to be assessed for the next five years, goal of achieving 75% live cover after five years



Thank you

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