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The District Soil Conservationist,  
COOMA.

Summit Area Works Programme - 1969/1970.

H.O. file 62/1550.

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Approval for the 1969/70 Summit Area Works Programme was received on 5th February, 1970, and provided for an expenditure of \$32,600.

1. Summary of General Conditions and Operations.

Operations commenced in the last week of November, 1969 and were completed on 26th March, 1970.

The programme as outlined in the proposal submitted early 1969, was completed in full except that the proposed work at Bull's Peaks could not be done because funds were not provided. However with a surplus of funds on the Summit works, the track was completed to the south peak of the Bulls Peaks.

A total of 36.5 acres, outlined as Area <sup>12</sup>N on Map SCS3831 was given initial treatment and Areas 3, 8, 9, 10 on the same map were refertilised.

Labour arrangements proved very satisfactory and the improved work output can be directly attributed in part to the care of experienced personnel, which it has been possible to keep employed.

Catering arrangements in general were very satisfactory, especially as regards purchase of eggs, butter, cheese etc., and payment from the local advance Account. This has led to greater efficiency internally and greater harmony with local firms.

General efficiency has been further assisted by the employment of a Service Fitter and the appointment late in the season, of a Stores Clerk.

Although not as wet as the 1968/69 season, considerable time was nevertheless lost because of high winds and fog.

The access track is generally in good condition and was well prepared for the thaw run-off at the close of the season.

Seed of native spp. was again harvested and vegetative material of *Montia* was collected for potting and use in "Blow-out" areas. The material harvested in 1968/69 was sown or transplanted.

These points are dealt with in more detail in the following pages.

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## 2. Erosion Control Works:

Refertilising: The refertilising of areas 3, 8, 9 & 10, totalling 36.4 acres was done in the first week of operations to give vegetation as long a growing period as possible to take advantage of the plant nutrient. The areas were fertilized with 100lb 11:34:11.

Sown spp. showed a very obvious improvement in growth after fertilizing.

Visually, Snowgrass (Poa caespitosa) also appeared to benefit but there is no experimental proof.

### Initial Treatment:

The areas to be sown, amounting to 36.5 acres, were ripped with the Cooma Sub-district tractor (D6) and ripper in December. This area is indicated on Map SCS3831 as Area 12.

Following rain, sowing commenced early January and continued while ever climatic conditions were favourable.

Consequently, better growth was obtained over a large area because plants had a longer growing season in which to develop.

The species sown include:

- 9lb Tasmanian White Clover
- 5lb N.Z. Mother White Clover
- 6lb Ladino White Clover
- 8lb Tasmanian Rye Grass
- 2lb Chewings Fescue
- 2lb Alpine Timothy Grass
- 3lb Apanui Cocksfoot
- 6lb Creeping Red Fescue
- 3lb Kentucky Blue Grass
- 4lb Highland Bent.

Fertiliser consists of:

- 200lb 12:52:0
- 100lb 11:34:11
- 5lb Borax
- 20lb Magnesium Sulphate
- 600lb Lime.

The soil surface and seed were protected with hay mulch.

Previously this mulch has been applied at  $1\frac{1}{2}$ -2ton per acre throughout the season.

This year spot checks of soil temperature during the warmest part of the season i.e. in February, revealed that the temperatures were 5 - 10° lower under heavy mulch than under a light mulch or bare ground.

This must have a deleterious effect on plant growth. Consequently the rate of hay mulch was varied - the heavy rate above is applied early and late in the season to combat frost heave and because the mulch would then have a blanket affect.

In between these periods the rate gradually reduces to  $\frac{1}{2}$  acre and then builds up again.

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...../3  
assume:  $\frac{1}{2}$  t/acre

The mulch was held in place with anionic bitumen emulsion and proved very satisfactory. Only small isolated patches of hay were lifted by wind. The use of bitumen of course makes all operations much quicker.

The small blowout areas were treated with the pasture and fertilizer mixture and many of them were planted with *Montia* in peat pots. The *Montia* had been potted the previous season from material dug near the hut.

These blowouts were also covered with hay mulch.

Seed of the native spp., such as *Rumex* of *Celmisia* and *Craspedia* was included in the seed mixture.

### 3. Trials:

During the season, a close study has been made of all aspects of the alpine operations.

To clarify some of the thinking, a number of Spp. trials have been instigated and these are listed below:

The pilot trials commenced during the season are as follows:-

1. Investigation of the percentage germination, establishment and growth rates of several native species, e.g. *Brachycome nivalis*  
*Celmisia longifolia*  
*Craspedia uniflora*
2. Investigate whether further erosion is occurring over the whole area of a deflation area, at the perimeters or at the centres only.
3. To investigate the necessity for straw mulching and anionic bitumen as against bitumen only, in the warmer months.
4. Investigate the suitability of "Curasol", "Vitamol", and "Polycote" as binding agents for straw mulching.
5. Temperature recordings under straw mulch cover.
6. The use of liquid systemic fertilizers to force growth during the short growing season.
7. Investigate the use of black winter rye as the growing mulch crop, against spread hay mulch.
8. Investigate the adaptability of Crown Vetch (*Coronilla varia*) to the alpine area and its possible use in place of present species.

#### Observations from the Trials:

Trials 5 to 8 are the most important and could alter the works programme considerably.

From trial 5 it has been found that straw mulching is having a detrimental affect on growth in the middle of the season. By retaining the mulch at heavy rate the soil is being insulated from both directions. Frost action is being alleviated but the soil is remaining cold taking many weeks to reach a satisfactory growing temperature.

Mulch cannot be removed altogether, as it prevents the more detrimental affect of frost at the beginning and end of the season but during the warm months when frosts don't occur the mulch is better left out of the treatment.

Trial 7 indicates the biggest change that could possibly be made in the works programme.

Black winter rye is sown at a heavy rate (180lb per acre) and when well established the clovers are oversown as a pure stand or with Browntop bent only. The rye is sown with heavy rates of superphosphate (6 - 8cwt.). This figure was indicated by pot trials in 1967. The rye forms the protective cover and the clovers have been shown to produce much more cover than grasses.

To force the growth of rye, liquid or systemic fertilizers as indicated in Trial 6 can be used effectively at or before the sowing of clovers.

This programme has been used and is also advocated by A. Nordmeyer of New Zealand Forest Service.

Trial 8 has been covered separately in other correspondence and it will suffice to say that this species appears to have a place in the works programme.

#### 4. Access Track:

The condition of the access track from Charlotte's Pass improved tremendously to that of the previous year due to better weather conditions and the use of the Landrover and box trailer for transport, necessitating less trips.

The track has been well protected with side and cross drains against the Spring thaw.

#### 5. Climatic Conditions:

During the work season 22.17 inches of precipitation, as rainfall and snow were recorded. The hut opened in mid November and between the 18.11.69 and 9.12.69, 81 points were recorded as snow. This precipitation was distributed as follows:-

December, 1969	506
January, 1970	942
February, 1970	285
March, 1970	484

Please note the recordings were made over four months instead of three months in 1968/69 season.

A dry period between 17.1.70 to the end of February enabled rapid progress to be made with the reclamation work, although high winds restricted the sowing and fertilizing programme.

Very cold conditions prevailed at the beginning of December and again in March. In March the temperature range was 24°F to 47°F while during the second week of work (25.11.69) the range was 18°F to 46°F with the temperature remaining below freezing for three consecutive days.

During late January and February temperatures were high and on many occasions reaching 70°F. One high intensity storm was received during the work season which caused damage to some treated and many untreated areas. This storm occurred on 5.1.70 with a total fall of 474 points. A maximum intensity of 2" in the hour was reached for 20 minutes.

#### 6. Investigations:

Details of the Investigation programme could not be completed owing to the absence through illness of the Research Officer.

These details will be forwarded at a later date.

#### 7. Staff:

Mr. T. G. Kidston, formerly Soil Conservationist Mountains, was transferred in charge of Cooma Sub-district, and was replaced by Mr. R. B. Good.

A Stores Clerk commenced duties on 19th January, 1970 and this has greatly reduced the burden on the other members of the clerical staff, Mr. A. Godden, Miss J. Agnew and Part-time Office Assistant, Mrs. P. Pollard.

Very few problems either with administration or labour was experienced during the season due in no small part to the co-operation and efficiency of Mr. Good, Foreman P. Swain, ably assisted by Leading Hand, J. Blyton.

Unfortunately Mr. Swain has not yet been paid for overtime worked over the last ten months.

#### 8. Labour:

Employment was made on the same basis as last year and very few industrial problems arose. Those that did occur were handled by the Foreman on the job.

The work force varied from four to twelve and worked quite efficiently due in no small way to the care of experienced men who have been kept employed over the previous twelve months.

This is borne out when the increased output of this year, is considered in relation to other years.

#### 9. Plant Operations, Maintenance and Purchase:

The Cocma Sub-district Caterpillar D4D was employed to prepare the eroded areas by deep ripping.

The Haflinger SCS1648 was idle for a considerable period at the height of the works season awaiting parts. To ensure that supply of materials was maintained to the work force, the Landrover and box trailer were used with the remaining Haflinger.

This move proved very successful, since the Landrover could transport approximately four times as much as the Haflinger.

Consequently materials were on the works area sooner than previously and with less trips necessary, the access track remained in better condition. This arrangement will be used again next year.

The long periods lost with plant under repair in local garages didn't occur this season with the employment of a very experienced fitter.

Our improved output is in no small way due to his efficiency.

The seven ton vehicles SCS1424 & 1454 proved quite a problem by boiling frequently during the long, slow trip to Charlottes Pass.

Inevitably the motors were "cooked" and a major overhaul was necessary. These vehicles are no longer suitable for this work and that associated with hydromulching and must be replaced.

New plant purchased but not yet used on the alpine area includes a replacement refrigerator, & a three ton four-wheel drive International truck.

Aluminium cladding has been added to the main walls of Carruthers Hut. The work was done by tender by a local firm - Schuten Constructions.

All plant will be overhauled during the off-season to ensure it is in top condition for the next works season.

#### 10. Materials Used:

These were similar to previous years.

Hay was purchased locally and from the Hunter Valley. Both proved satisfactory although the local product had been baled wet and was difficult to open up. However it only cost \$10.00 per ton.

Supplies of bitumen always arrived in good condition and no problem was experienced with split drums as was the case when less than full truck loads were ordered.

Bitumen was found satisfactory in holding hay in place on all slopes and no netting was used at all.

Seed and fertiliser was again sown by hand. This is very laborious and every effort will be made in the off-season to mechanise this operation.

Multi-step inoculation is done by Service personnel using Snowy Mountains Authority equipment. This arrangement has proved very satisfactory.

#### 11. Stores, Requisitions, Accounts and Costing:

The new arrangements implemented this season, in the payment for meat, vegetables, fruit and bread from the Advance Account has proved highly satisfactory to all parties.

The payment on a monthly basis for eggs, butter and cheese purchased from P.D.S. also proved satisfactory but can be improved and this is the subject of a separate submission.

Many problems previously experienced in Stores accounting have now been resolved with the employment of a Stores Clerk.

The present arrangement for payment of wages viz. the pay fortnight finishes on a Tuesday and payment is made on the Thursday, is very satisfactory and approval will be asked for this to continue.

Expenditure to 31.5.70 was \$29,190.28.

Details are given below:

Wages	13,749.78
Less Messing Credit 8/6/70	12,935.78
Estimates Values C.I.B.	2,773.19
Stores	6,963.60
Plant Rental	3,721.00
Rail Freight	568.40
Staff Exp.	181.00
Swain Salaries	2,047.31
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TOTAL	\$29,190.28
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#### 12. Assistance from Other Organisations:

We should record the assistance given by personnel of interested organisations, particularly the Snowy Mountains Authority and Kosciusko National Park.

The Authority has provided radio communication at Carruthers Hut as usual. However, they have further provided four more mobile radios which has proved of tremendous benefit to general organisation and safety. These mobiles are located at the Cooma office, the Resident Soil Conservationist's official vehicle, the Landrover and the Haflinger. The latter mobile can be removed to the seven ton vehicle as required.

The personnel and equipment of both the Authority and the Park have always been readily available.

13. Bulls Peaks:

Work in this area was included in the 1968/69 estimates but because of a shortage of funds they were excluded.

However, because of greater efficiency, the proposed works programme at the Summit was completed within the estimate.

It was decided to continue the road construction at Bulls Peaks and this was prepared as far as the South Peak before bad weather forced a closedown.

14. Observations:

1. Bitumen will entirely replace netting as the "tacking" agent with hay.
2. Some laborious operations require mechanising.
3. The result of the Ryecorn trial indicates this to be most effective ground cover. The yields obtained this season will be improved by better fertilizer practice (See Programme for 1970/71 season).
4. Propagation of Montia should be continued.

The above is presented for your consideration.

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