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ARCHAEOLOGICAL SURVEY OF ALLUVIAL GOLD WORKINGS
(S44/44), SULKY CREEK, WESTLAND

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In 1987 an archaeological survey was undertaken of historical alluvial gold workings on the western side of Sulky Creek, near Taylorville in Grey County, Westland. Interest in this area by the New Zealand Historic Places Trust was stimulated by the recording of the site by Lance Beckford in 1984. Beckford described the site as "old claims" on the edge of Sulky Creek. A large gully had been sluiced out for about 300 m and some claims extended up small creeks. There were also some tail race outlets. An old claim high on a hill above part of Sulky Creek called the "Chinese Dam" was claimed to have had some old wheelbarrows, timber and fluming left as they were 60 years before. It was claimed that Chinese had worked the bed of the creek.

This was followed in 1986 by an application for a mining license. Initially the mining company sought to modify the entire site, but following objections from the N.Z. Historic Places Trust and the Westland Catchment Board their proposal was modified and approximately 70% of the site was withdrawn from the application. The syndicate had indicated that to work their 34 ha claim it was necessary to impound natural runoff in a depression situated in the northern 30% of the site. In collaboration with the Westland Catchment Board and Regional Water Board, the syndicate agreed to build a 3 m high and wide earth dam across the southern edge of the licensed 30% of the site to protect the remaining 70% from damage while mining operations were carried out on the licensed 30%. Thus authority was given to the mining company to destroy, damage, or modify the northern 30% of the site.

An archaeological survey of the licensed 30% was undertaken by the author, before the mining syndicate began work, to fulfil the condition that the affected part of the site should be surveyed before mining activity began. The remaining 70% was surveyed after the earth dam had been constructed by the mining syndicate.

Setting

S44/44 is at an altitude of 40 m a.s.l. and lies approximately 1 km north of the Grey River on the western side of Sulky Creek. A high pakihi terrace to the north and west of the site has been converted into farmland. This terrace comprises auriferous gravels of the Karoro Formation,

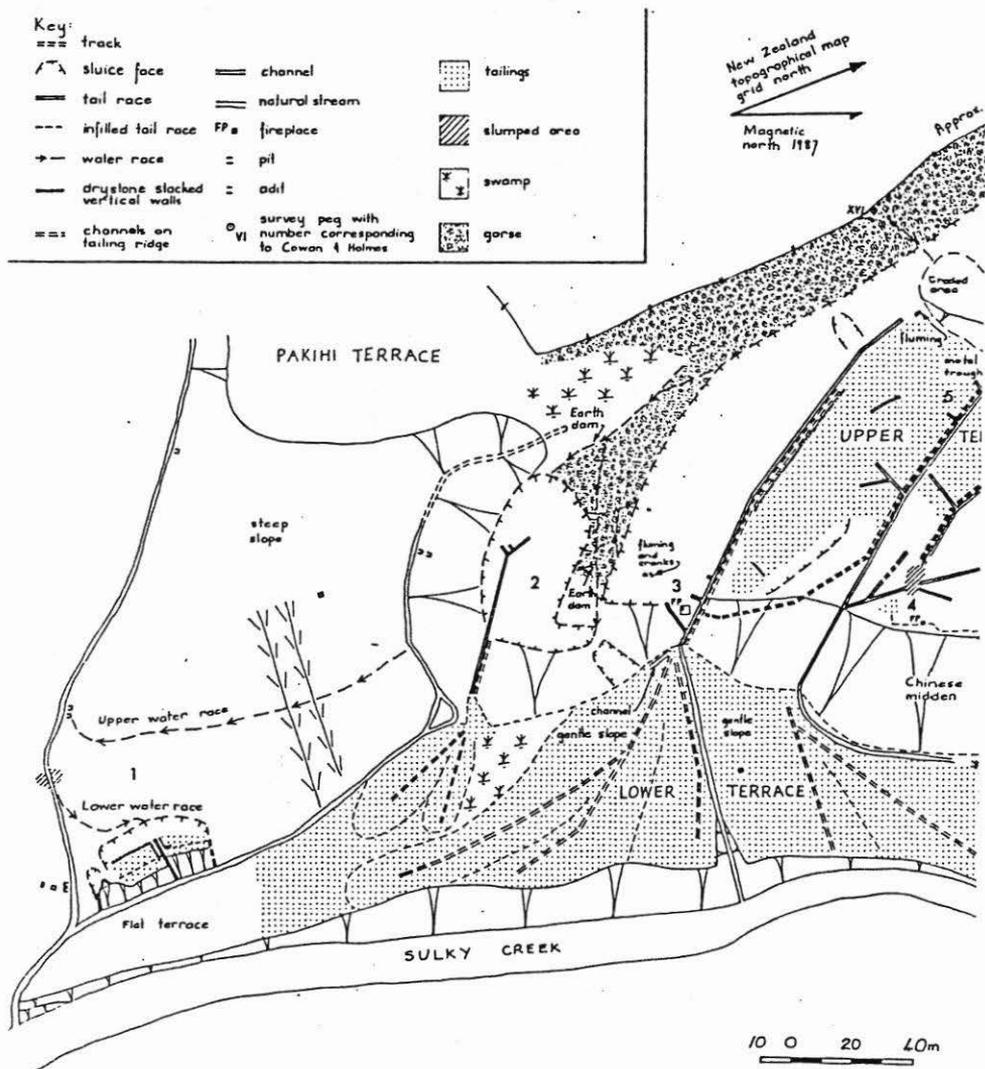
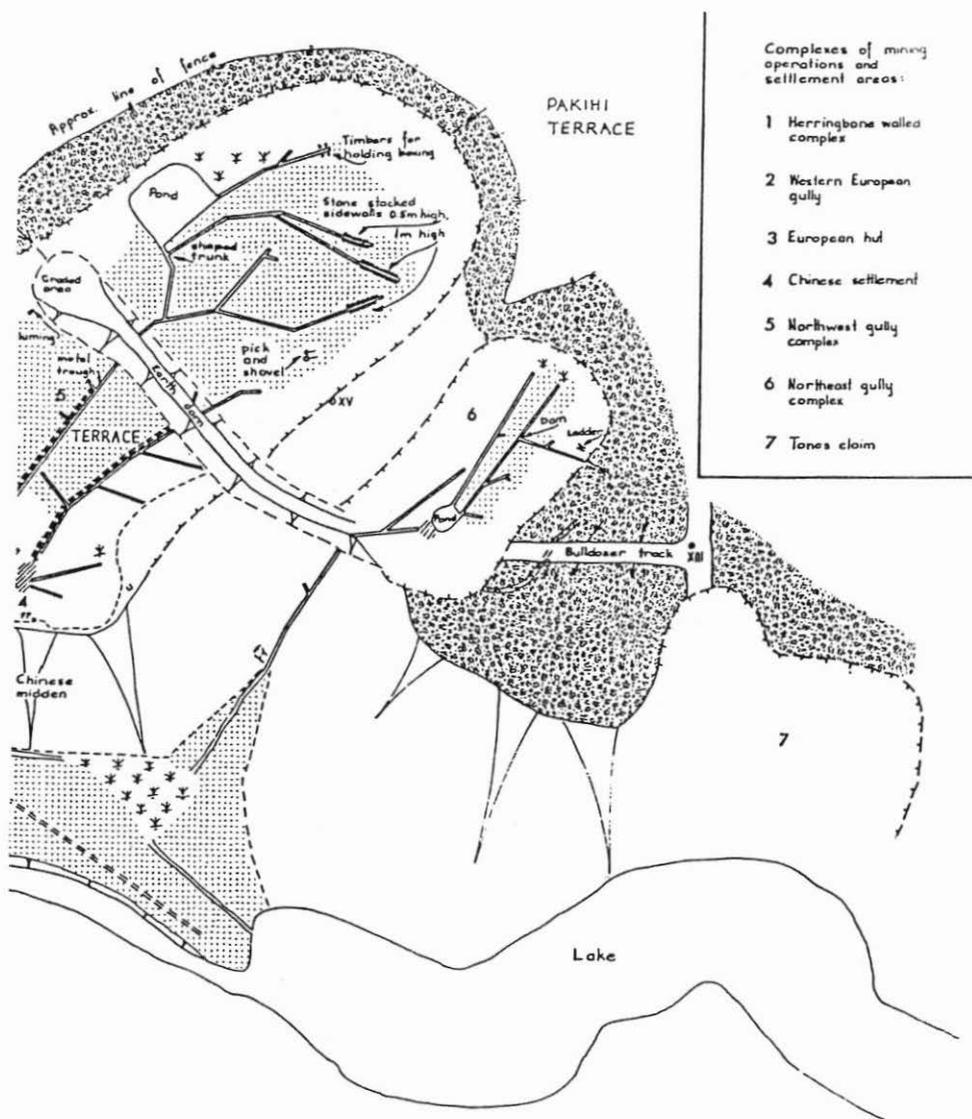


Figure 1. Site plan - S44/44.



Terangian Interglacial in age (Nathan 1978). The site, Sulky Gully workings, is on the side of this terrace fringing Sulky Creek. The western and northern boundaries of the site are considered to be demarcated by the fence approximately, 15 m back from Sulky Gully, on the pakihi terrace above. The southern boundary is marked by a small natural stream, although some small excavations were found on the southern bank of this stream. The eastern boundary is Sulky Creek. The entire complex, including water races on the pakihi terraces as far as the fence line, covers approximately 9 ha (Fig. 1).

About half way along the eastern boundary of the site, Sulky Creek is constricted and a lake has been formed upstream. The lake is locally known as the "chinese dam". A map of the Greymouth coalfield drawn in 1911 (Morgan 1911) indicates that water was "dammed back" at this point. On a map drawn in 1945 (Hayward in Gage 1952) the lake is named "dam". Local resident Mr Peter Warren (pers. comm. August 1987) reports that there never was a deliberately constructed dam across the creek here. The water was held back by the influx of tailings into the creek downstream. Field evidence supports this account.

Downstream from the site, Sulky Creek is a braided stream flowing over alluvial tailings. Mr Warren (pers. comm. August 1987) claims that this has worsened over the last ten years after someone sluiced the western tailings bank of Sulky Creek. There is evidence that erosion of the western bank of Sulky Creek has been increased in the last few years by human intervention. However, the map of the Greymouth coalfields drawn in 1945 (Hayward in Gage 1952) indicates that braiding occurred below the "chinese dam" of Sulky Creek at the time this map was drawn.

The vegetation on the site has changed since Europeans settled in this area. In 1887 Galvin (1887:176) stated that the miners in the Grey Warden's District had "great difficulties, owing to the densely-wooded nature of the country". Mr Warren (pers. comm. August 1987) remembers the area around the Chinese settlement (Fig. 1, #4) being, in 1937, covered with light scrub, mainly broadleaf, but that the area being worked at that time was treeless. The site is now covered in second growth beech forest. Trees appear to be mostly of two generations, about 80 years and 25 years old (Bob Lawn pers. comm. 1987), that is, having grown after clearance in the 1880s and again after the 1930s. On the unlicensed 70% of the site the trees tend to be of the older generation and the understorey tends to be more open, allowing easier passage. In the licensed 30% the younger generation predominates, with only a few, scattered, older trees and the ground is usually covered with water ferns.

History of site

Although the first gold discoveries in the Grey Mining Warden's District took place at the Greenstone Goldfield and Red Jack's in 1864 and further discoveries were made soon after on the marine beach north and south of the Grey River mouth, and at Marsden, Maori Creek, Arnold, Greymouth, and Moonlight (Galvin 1887:176), gold mining near Sulky Creek does not appear to have begun until either the late 1880s or early 1890s.

In 1887, Galvin (1887:176) reported that although a large quantity of gold had been won in the Grey District, there still remained a large area unworked and to a great extent unprospected. Further, he reported that considerable areas had been tested, and would prove payable if the ground could be sluiced; but at that time they were unworked. Gold had been found in all the tributaries of the Bald Range; but the Blackball and Moonlight goldfields had not been in much favour with the miners because other places offered greater advantages in the way of roads and stores. By this time there had been a very large expenditure in bringing in water. About 100,000 pounds had been spent by miners in the construction of water races, tail races, and dams in different parts of the Grey District; whilst 90,000 pounds had been expended by Government on the Nelson Creek water race.

The oldest written record of gold mining close to S44/44 found by the author was on a Topographical Plan of Cobden District compiled in 1883. Mining is indicated on the bank of Sulky Creek opposite S44/44.

In the 1890s, S44/44 was mined by both European and Chinese miners, both European and Chinese names appearing in the Grey Warden's Court mining applications register from 1896-1900 (Table 1). The applications register held at the National Archives, Wellington, begins in 1896 and it has not yet been ascertained whether the records began at an earlier date or if these are the earliest surviving records. However, it appears that mining was carried out earlier than 1896 near Sulky Creek, as applications for "extended claims" appear in 1896 suggesting that at least one claim was already in existence at that time. Table 1 lists applications for claims made between 1896 and 1900 that are definitely within the boundaries of S44/44 or on the opposite side of Sulky Creek.

In the 1930s only Europeans mined Sulky Gully. The most recent mining license in Sulky Gully (prior to the application made in 1986) was held by Tones. This represented the last non-mechanized mining at Sulky Creek. Tones' license expired in June 1980 (Mining Index, applications for mining and prospecting, plan No. J31, Mines Division, Ministry of Energy).

TABLE I: EXTRACTS FROM GREYMOUTH MINING WARDENS COURT APPLICATION REGISTER
- SULKY CREEK LOCATION

Date of application	Name of applicant	Location of claim	Type of claim	Date granted
2-7-96	B.J. Stewart I. Blewith	Fourmile Creek	Extended claim	23 July 1896
29-3-97	Peter Dafforum	Fourmile Creek	Extended claim	28-4-97
6-12-97	Peter Dafforum	Fourmile Creek	Tunnel	12-1-98
14-4-98	Patrick Loftus	Fourmile Creek	Extended claim	11 May 1898
14-4-98	Joseph Taylor	Fourmile Creek	Tailrace	
25-4-98	E.W. Tomkies	Fourmile Creek	Extended claim	11 May 1898
23-6-98	Frank Wills	Sulky Gully	Dam	14-7-98
19-7-97	Ah Yuhe, Ge Vie Ah Tom, Ah Tom	Sulky Gully	Extended claim	14 Sept 1897
3-8-98	Ah Yuhe, Gee Ki Ah Tom	Fourmile Creek	Dam	23 Aug. 1898
29-8-98	Sue Thim	Sulky Gully	Extended claim	14 Sept 1898
29-8-98	Sue Thim	Sulky Gully	Drainage area	14 Sept 1898
29-8-98	Sue Thim	Sulky Gully	Dam	14 Sept 1898
31-8-98	John Henderson	Fourmile Creek	Water race	Granted as dry race. 28 Sept 1898

TABLE I continued:

Date of application	Name of applicant	Location of claim	Type of claim	Date granted
17-12-98	Frank Wills	Sulky Gully	Protection for Extend claim and water race	11 Jan 1899
20-4-1900	Ah Dem, Ah Yuhe Ge Ki, Ah Tom	Sulky Gully	Tailrace	21 May 1900
3-5-1900	James Isdell	Sulky Gully Ck.	Prospecting License 80 acres	
3-5-1900	George B. Ritchie	Sulky Gully	Prospecting License 100 acres	11 June 1900
6-11-1900	Edio Tomkies	Near Fourmile Creek	Ordinary claim 1 acre	3 Dec 1900

NOTE: The author thinks that the Fourmile Creek location may be on the opposite bank of Sulky Creek to S44/44, but Sulky Gully would definitely be S44/44. This theory is based on the evidence that Mr Peter Warren (pers. comm. August 1987) told the author that Tomkies had a claim on the opposite bank to S44/44.

In 1925 Sulky Gully was set apart for purposes of Part III of the Coal-mines Act 1925, but in both 1931 and 1934 it was exempted from operation of this Act and in 1935 was reserved under the Scenery Preservation Act 1908 (drawn on Harris 1924 at Mines Division, Wellington).

The survey

The author was contracted by the Historic Places Trust to survey and map S44/44, both the northern 30% subsequently impacted by mining operations plus the remaining 70% outside the mining license area. An intensive two day archaeological survey of the 30% area was conducted in March with the voluntary assistance of Mr Bob Lawn, retired filekeeper for Westland. In the following August, seven days were spent surveying the remaining 70% of the site with the voluntary assistance of Dr Ian Raine, geologist, Geological Survey. A tape and compass map was drawn covering the entire site (Fig. 1).

The site may be geographically divided into three terraces: upper and lower terraces within Sulky Gully itself, and the pakihi terrace rimming Sulky Gully to the north and west. These terraces will be referred to as upper, lower, and pakihi terraces respectively. The upper terrace was formed by gold miners sluicing away the pakihi terrace. Tail races have been cut into the terrace and mounds of tailings have been stacked on it. The lower terrace is a natural stream terrace formed by Sulky Creek. It is covered with one large and two smaller side fans of alluvial tailings washed down tail races from the terrace above. Two natural streams occur at the southern end of the site. Between these two streams the natural slope from the lower terrace up to the pakihi terrace has not been sluiced, and no upper terrace has been formed.

All gold was extracted from the alluvium of Sulky Gully using the ground sluicing technique (Fig. 2). Hydraulic sluicing, a more efficient technique of extracting gold from alluvium, was never used at this site probably due to a lack of sufficient cheaply obtainable water, despite several attempts to obtain a better water supply (A.J.H.R. 1894 C-3A:28, A.J.H.R. 1895 C-3A:28, A.J.H.R. 1895 C-3A:176).

Five discrete mining complexes of ground sluicing operations were identified within Sulky Gully. These are: the herringbone walled complex, western European gully (where the pattern of tailing mounds suggest that only Europeans have worked), northwest gully complex, northeast gully complex and Tones claim. Each complex comprises sluice face, excavated water race channels, excavated tail race channels and tailings.

The largest sluice face was one associated with the northwest gully complex, with vertical faces up to 15 m high. The next largest sluice faces were those associated with the northeast and western European gully complexes which had vertical faces up to 10 m. Tones' claim had a slightly lower sluice face. These faces had an alluvial fan at their base. These four gullies were separated by 10-15 m high ridges, remnant natural hill slopes. The lowest sluice face, only 3.5 m high, was part of the herringbone walled area.

Water race channels excavated into the pakihi terrace supplied water to most of the workings. They derived from small streams on the pakahi terrace, tributaries of McLean's Creek (Morgan 1911). The water race channels averaged about 700 mm deep and wide. An exception was those which supplied the herringbone workings. These were smaller, being only 300 mm deep on the lower side of the slope with the upslope side ranging from 500 mm to 1.5 m; the width was 500 mm. The slope of the water race channels was very low being hardly perceptible on some races, for example, those to the herringbone workings.

There are extensive tail races on the upper terrace. The tail race channels are deeper and wider than the water race channels, being on the average 1-2 m wide and 1.5 m deep. A maximum of 7 m depth was reached in the western European gully complex at the junction of the upper and lower terraces. The slope of the tail race channels was much greater than that of the water race channels, being greatest at the upper/lower terrace boundary. Where the tail race channels reach their greatest depth 100 mm diameter poles were wedged horizontally across the tail race. These poles may have been used for standing on while forcing tailings down the race. Some tail races have stepped cross-sections, for example, the upper 1.8 m of the main tail race of the herringbone walled area was 700 mm wide while the lower 700 mm is only 400 mm wide. Dry stone walling is present on the sides of some tail races, for example, in the northwest gully complex in the 30% impacted area. Here the walls ranged from 0.5 - 1.1 m in height. Some lateral tail races, especially on the eastern side of the upper terrace, may have served the dual purposes of controlling stormwater runoff as well as removing mining debris.

Most of the upper and lower terraces are covered with tailings. Tailings on the upper terrace have been either loosely stacked in roughly formed mounds (1-2 m high) or stacked very tightly with vertical walling around the perimeter of the mound. Similar vertical walls are present in the herringbone walled area where herringbone walling, a method of stacking tailing boulders away from the working face, has been used. Here, the main tail race had been

extended and lateral tail races constructed as work advanced. Obsolete lateral tail races were filled in with tailings. This left a distinct pattern of herringbone tailing mounds. This technique is typical of, although perhaps not unique to, the systematic neatness practised by Chinese miners. The lower terrace has disorganised tailings.

Tracks are present in some areas, on the sides of slopes, and along the sides of tail races on the upper terrace where tailings had been stacked 1 m back from the edge of the tail race. Other possible tracks were found on the lower terrace. Shallow channels (300 mm deep and 1 m wide) on the top of the lobes of tailings on the lower terrace were described to the author as "Chinese tracks". The channels were probably formed naturally by water action then later used as tracks and in some cases enlarged and used as support for tail race boxing. A tail race, for example, had been built in the groove of the central lobe of the largest tailings fan.

The complexes described above are not all contemporaneous and some areas have been reworked, perhaps at several different times. It is difficult to place the mined areas in order of working but the herringbone tailings complex on a low terrace of Sulky Creek which exhibits a distinctive pattern of tailings typical of Chinese workings is likely to have been worked exclusively by Chinese in the 1890s. Most of the remainder of the site may have been worked more than once. The southern end of the northwest gully complex was probably worked in the 1890s as the westernmost tail race on the southern end of the upper terrace was probably the first operated in this area. Tailings from this tail race form the apex of the fan of tailings on the lower terrace and thus control the direction of the flow of water from the more eastern tail races debauching into Sulky Creek. Herringbone walling was also found between this tail race and the central tail race, the only place this was observed on the upper terrace. The northern part (north of the recently constructed earth dam) was probably worked mostly by Europeans in the 1930s, perhaps being an extension of the 1890s gully. Fig.2 was taken almost directly above the earth dam. A tunnel was excavated at the head of this gully in the 1930s (Warren pers. comm. 1987).

The bulk of mining in the western European gully was probably done in the 1890s but a small amount definitely dates from the 1930s. Mining was probably undertaken in the northeast gully during these two periods. A well-preserved wooden ladder and a wooden dam/hopper/sluice box construction in the northeast gully suggest that this gully has been worked since the 1930s. Tones' claim was probably not worked in the 1890 episode of mining but was worked more or less continuously on a small scale from the 1930s until 1980.



Figure 2. Ground sluicing on the western face of Sulky Gully in 1937. This method of extracting gold from alluvium involved passing a stream of water over the face of a terrace to assist with the mobilisation of gravels by pick, bar and rake. It is a laborious, but simple and inexpensive way of putting increased amounts of material through a sluice-box.

All earth, stones and any other waste material as well as the gold was carried by its own gravitation, with the aid of water from a stream, pipe, or bucket to the upper mouth of a tail race incorporating sluice boxes. Gold, being of higher specific gravity, and therefore heavier, sank and was caught in riffles and matting at the bottom of the tail races. When sufficient material had accumulated in the bottom of the boxing the gold was carefully separated by panning. Photo: Mr Peter Warren.

Adits and pits were found on various slopes excavated into the auriferous alluvial deposits. Pits varied from 500-700 mm square. Adits were usually 500 mm wide and excavated 1-2 m into the bank with a depth of 1-2 m at the back. An excavation just south of the southernmost stream, opposite the herringbone walled complex, comprised partially collapsed tunnel 1.6 m above the stream measuring 800 mm wide x 1 m high excavated into the stream bank. Another adit, 1.8 m above the stream and 1.5 m west of the first adit measured 500 mm square.

Two dwelling areas were also identified, a "Chinese settlement" and a European hut. The Chinese settlement is thought to have been occupied by perhaps 20 Chinese miners in the 1890s while the European hut was occupied by a single European miner in the 1930s (Grey District Warden's Court Application Register 1896-1900; Mr Peter Warren pers. comm. August 1987). Another hut which stood on the pakihi terrace close to the sluice face of Tones' claim may have been occupied until recent years by a European miner, until it was burnt down (Warren pers. comm. 1987).

On the lower terrace several holes usually about 300 mm in diameter were found. These varied in depth, some being very deep. These were formed by the decay of trees which died upright after being inundated with tailings. Some larger trunks are still standing.

Artefacts:

Several artefacts were recovered from the surface of the site. In March, a pick and shovel, and a perforated riffle, found in association with the dam/hopper/sluice box construction were recovered from the licensed area. These were subsequently deposited in the West Coast Historical Museum, Hokitika. In August, several ceramic and glass sherds were found near both the European hut and Chinese settlement. These included fragments of a Chinese manufactured porcelain rice bowl with celadon glazing and part of a cobalt blue Chinese mark or seal; a European style dark brown glazed ceramic teapot with a rustic handle; and a dimpled vinegar bottle (Aldridge and Aldridge 1978:34). These were given to the Department of Conservation, Wellington for storage.

Mr Peter Warren has a small collection of artefacts which he collected as a boy of 13 years of age while fossicking around the midden on the slope behind the Chinese settlement. His collection includes a stone soya sauce jar, three glass vials and a metal chisel.

A few sherds were also collected near the gate on Taylorville Road close to Sulky Creek through which access was

gained to S44/44. This site was the old homestead of the Blewith family who had a claim at Fourmile Creek in the 1890s (see Table I). The house was bought by Mr Peter Warren's parents in 1916 and was occupied by the Warren family from 1916 until about 10 years ago when it was burnt down (Mr Warren pers. comm. August 1987). Today only a concrete slab foundation, probably of a shed adjoining the house, ceramic and glass sherds, and bricks remain of the homestead. Several pine trees along with blackberries are growing on the site.

Condition of site

The 70% unlicensed southern part of the site is very well preserved. Although most of the timber associated with the tail races, that is, boxing, gold collecting structures and "spreaders", have disappeared, the excavated channels of the tail races are well preserved. Only a small area near the Chinese settlement has collapsed, leaving a depression covering a total of about 100 square metres.

The boxing of water races has also disappeared. The excavated channel of the water race which supplied the herringbone walled complex is still easily followed. The excavated channels of water races which formerly existed on the pakihi terraces are still well preserved close to the sluice faces. Beyond the fence separating the site from farmland they become less obvious due to ploughing and the recent construction of ditches.

The mounds of tailings, and trees which have regrown on the site since gold mining ceased are still sufficiently small not to have caused disturbance of cultural features on the site.

Summary

The workings at S44/44 (Sulky Gully) were never great producers of gold. Unlike most of the alluvial gold mining on the West Coast during the 1890s which used the hydraulic sluicing technique Sulky Gully was mined using less efficient ground sluicing. The lack of sufficient water supply forced miners to use the latter technique and to abandon the workings when the sluice faces became too high for safe working. The same technique was used again in the 1930s when this area was mined again.

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