RETURN

To an Address of the Legislative Assembly for copies of all correspondence between the Government and E. L. Derby, or any other person or persons, relating to any work carried on since 1st July, 1878, to date, under the provisions of the "Dyking Act, 1878."

By Command.

GEO. A. WALKEM,
Chief Commissioner of Lands and Works.

Lands and Works Department,
3rd March, 1878.

The Chief Commissioner of Lands and Works to Mr. Navarre.

LANDS AND WORKS DEPARTMENT,
Victoria, 11th July, 1878.

SIR,—I have the honour to inform you that Mr. Ellis Luther Derby has undertaken to dyke and drain a portion of New Westminster District, British Columbia.

Mr. Derby's scheme has been supported by an Act of the Provincial Legislature, a copy of which is enclosed for your information and guidance. A map of the said district is also enclosed for a similar purpose.

I have now to instruct you to superintend the construction of the necessary dykes, levees, drains, trestlework and flood-gates.

This work you will see carried out strictly in accordance with the plans and specifications signed and approved by my predecessor in office.

I hand you herewith a copy of the specifications; a copy of the plans is in the possession of Mr. Derby, and at all times they will be open to your inspection.

You will observe by a careful perusal of the Act and the plans, that your duties include suggesting from time to time any modification in the general line of dykes, mode of construction of the trestlework, etc., etc.

You will communicate with this Department prior to making any alterations, accompanying your reports with sketches setting forth accurately the intended deviations from the original design.

You will understand from personal conversations and the plans and specifications that, on account of the limited time at the disposal of the Department, the surveys and levels were not completed. This refers especially to the Hope and Camp Sloughs, and the necessary dyking from Cheam Bluff westward.

This portion of the work you will see carried out up to the specifications and general plans, being particularly careful that the dykes are fully up to the specified height above the freshet of 1876.

You will report on the general progress of the work monthly, and oftener if any difficulties arise.

Your salary will be at the rate of $150 per month with your travelling and other expenses,—the latter, in all instances, represented by vouchers.

Your engagement will date from the 23rd ultimo, and it is further to be distinctly understood that the Government retain the privilege of dispensing with your services without any notice whatever.

I have, etc.,

(Signed) GEO. A. WALKEM,
Chief Commissioner of Lands and Works.

Mr. Navarre to the Surveyor-General.

RIVERSIDE, B. C., July 18th, 1878.

SIR,—As you have kindly granted me permission, I ask you: 1st, Are there any instructions in relation to the bulkhead work in Matsqui? Is there a drawing, No. 1? If so, I have not seen it. Are the bulkheads in Matsqui to be the same as Sumass? Are there any other drawings of Matsqui embankments than that shown in drawing No. 2, Fig. 5? Am I not referred to right-hand view of front elevation in Fig. 1, in drawing No. 3, instead of Fig. 3, as stated in copy of specifications furnished me?

Do you think, if I ask, that Mr. Walkem will grant me permission to visit Victoria August 2nd, or is it necessary for me to ask by letter in form? Can you do me the favour without my writing him? I want a personal interview in any event, that I may learn his particular views on several subjects that are in my mind, in relation to the work. If you will oblige me with answers and accept my apology for troubling you, I shall feel greatly obliged.

I have, etc.,

(Signed) I. A. NAVARRE.

Mr. Navarre to the Chief Commissioner of Lands and Works.

MATSQUI, B. C., July 30th, 1878.

SIR,—I have the honour to submit the following as my first monthly report as Superintendent, under you, of the dyking improvements being done by Mr. E. L. Derby, at Matsqui, on the Fraser River.

In accordance with verbal and written instructions, I proceeded to the post of duty assigned to me, and arrived at Matsqui July 13th, 1878.

The only work being prosecuted at present is confined to the "Matsqui Division."

By frequent inspections I have familiarized myself with what has been done. The only work completed to this time is the earth embankment. No timber work is done as yet, though piles and other lumber are on the ground, and no doubt will be used as soon as the pile driver is completed and equipped for service.

By a careful examination of the embankments, I discovered, in places, traces of solid bodies being buried in the same. At all such points I have caused the earth to be removed and the obstructions taken out. In some instances I found pieces of large roots, in others I found some small stumps. This foreign matter was put in by the workmen, no doubt to expedite the enlargement of the bank, as they ignorantly supposed.

I have caused trenches to be cut clear, three feet wide, varying in length to suit the circumstances of the case, sunk below all roots, at the foot of and parallel to the exterior slope, wherever I supposed any roots might extend from trees or stumps to any distance beneath the embankment. When the trench was clear, I had it filled with stiff clay taken from the ditch and well tamped when put in place.

In one instance I have caused the removal of the embankment on account of the encroachment of the foot of the interior slope on the berm. I consider it essential that, in this particular soil, there cannot be too much caution exercised to secure the embankment from sliding over or crushing the berm.

I have required an enlargement of the berm in all instances where the ground has been surveyed since my superintendency; for this reason, to wit: There is and will be a constant wearing away of the berm by reason of the action of the elements, particularly rain and frosts, until the earth has attained a much greater slope than that required to be given by the plans and specifications of this work.

I have noticed that much of the soil is of a very friable nature, and the sun and winds have a great effect on it in causing it to crumble. I think the planting of willow brush at the foot of the berm slope, in the ditch, would, without doubt, counteract the evil influences of the elements at particular seasons to a very material extent.

The embankment, as must be expected, is settling somewhat, and will settle more when the rains of winter set in; therefore more earth will be required to be put on in the spring.

With some retouching in spots, the embankment will be as substantial as it can be made with the quality of dirt at hand.

I have, in a few cases, caused the location to be changed a very short distance from a low ground to a higher ground, that the strength of a natural bank might be utilized.

There is about two thousand feet of earth embankment to be completed. The ground is prepared for the building of this embankment.

The balance of the work will be bulkhead, and the works in the sloughs. The whole distance of this work is about 12,000 feet.

The bulkhead work is in places where an earth-embankment would not be safe.

Total length of dyke is nearly 7.18 miles. I have found a ready willingness on the part of the contractor to aid me in having the work well and carefully done.

I have, etc.,

(Signed) I. A. NAVARRE,
Superintendent.

Mr. Navarre to the Chief Commissioner of Lands and Works.

MATSQUI, B.C., August 31st, 1878.

SIR,—I have the honour to submit this, my regular monthly report, for the month ending August 31st, 1878.

No work coming under the head of my superintendence has been done outside the Matsqui division.

During the month work has steadily progressed, but not with the rapidity of previous months by reason of the discontinuance from work of one entire gang of Chinamen. They quit on or about the last of July. And also the work done this month has been heavier, and the cutting in some places has been in very stiff clay.

There has been a fraction less than one mile of very heavy and substantial dyke built during the month.

The major portion of work is excellent clay cutting, and cannot be excelled for the purpose in which it has been used. In a couple of instances, I found only a thin coating of clay, the balance being sand in the ditch. This was for a distance of 300 feet. I put the clay in the heart of the embankment, and from necessity used the sand to complete the proportions of the bank. The average height of the embankment at these points is about five feet. To remedy, as far as possible, any weakness of this bank, I shall, as soon as the newly-disturbed earth is somewhat settled in place, cause clay to be brought from a distance, with which I shall reinforce the exterior and interior slopes. This will prevent sliding, be stiff and compact, and will afford perfect root hold for the revetment of grass sod which will form over it after seeding. The sand is very fine.

For a distance of two hundred and fifty feet, over work done before my arrival and charge here, I have caused the embankment to be considerably reinforced with stiff clay in the manner above described. This enlargement of the bank is at a point somewhat sandy, and too, where, during very high water, there will be a slight current, and as a consequence, the washing away of the sand and a material weakening of the bank. My precaution can, in no event, do harm. I have, etc.,

(Signed) I. A. NAVARRE,
Superintendent Sumass Dyking Scheme.

Mr. Navarre to the Chief Commissioner of Lands and Works.

MATSQUI, B.C., August 31st, 1878.

SIR,—The matters herein mentioned, not coming under the head of items connected with my regular monthly report to you, I have the honour to submit the same as a supplemental report.

During the month of August, machinery has been forwarded to Sumass to be put into a saw-mill, which mill, as I am informed by the proprietor of the same, is framed and ready for erection as soon as a further complement of machinery is received. I am also informed that said mill is intended to supply the lumber to be used in the construction of the dykes, gates, etc., at Matsqui, Sumass, and other points.

I am further informed by the said proprietor that he has 80,000 feet of logs (cedar) on hand ready to saw.

I expect work will progress quite rapidly during the month of September.

I have, etc.,

(Signed) I. A. NAVARRE,
Superintendent Sumass Dyking Scheme.

The Chief Commissioner of Lands and Works to Mr. Derby.

LANDS AND WORKS DEPARTMENT,
Victoria, Oct. 14th, 1878.

SIR,—As I understand that you are about to leave town, I beg leave at once to impress upon you the necessity of recouping the Government for the expenses incurred by this Department for surveys and salaries, etc., on the Fraser River dyking lands.

I trust that you will give this letter your earnest attention, as the account cannot be allowed to remain longer in its present unsatisfactory condition. I have also to notify you to proceed with the work as rapidly as possible.

I have, etc.,
(Signed) GEO. A. WALKEM,
Chief Commissioner of Lands and Works.

Mr. Navarre to the Chief Commissioner of Lands and Works.

MATSQUI, B.C., October 19th, 1878.

SIR,—I have the honour to report that, agreeable to your instructions, I have returned to Matsqui.

That by reason of verbal instructions received from the Surveyor-General at Victoria, I did not make my usual written monthly report on the first of the present month.

Work on the Matsqui division of the dyke is resumed. Men are cutting and removing brush to receive earth embankment.

An examination of work constructed does not show any damaging effects from the heavy rains more than was anticipated.

The embankment is settling nicely. By the time the winter rains are over, the embankment will be in a fit state to give it the final addition of earth and trimming, preparatory for seeding. Cattle have, in some places, done damage to the embankment.

The berm and scarp of the ditch are, so far, intact, which, if they continue so, will be an assurance of the permanency of the embankment.

I have, etc.,
(Signed) I. A. NAVARRE,
Superintendent Sumass Dyking Scheme.

Mr. Navarre to the Chief Commissioner of Lands and Works.

MATSQUI, B.C., 21st October, 1878.

SIR,—I have the honour to address you on the subject of the construction of Matsqui dyke.

Mr. Derby purposes building 1,800 or 2,000 feet of bulkhead in this dyke, at points where the heaviest embankment will be. I do not agree with him that so much bulkhead is necessary or advantageous. I am satisfied that at a few points bulkhead is the proper thing, with this qualification, that the crown of the earth embankment shall be up to grade.

I object to a bulkhead having four feet of destructable material exposed to the air and action of the elements, as such structure will, in a few years, entail enormous expense for repairs, and will be the first portion of the work to give way in the event of an unusual flood.

Earthwork in structures of this kind, with the base of the embankment protected from standing pools of water, or with a staunch structure of timber in the centre, to prevent undermining, is, in my opinion, preferable to a semi-embankment of earth surmounted with projecting timbers that will in any event crumble in a few years, and the work that can be done now, will then have to be completed at a great risk of an overflow in the meantime.

As these matters were undoubtedly anticipated in the arrangements made with Mr. Derby, I will very respectfully request to be instructed :

1st, If you approve of the building of bulkhead in this work, as purposed by Mr. Derby ?

2nd, If yes, is the mode of construction to be in accordance with the plan, etc., of the Sumass dyke ?

I am constrained to address you on this subject for the reason that I cannot find in the plans, specifications or drawings anything that relates to bulkhead work on Matsqui except in the sloughs and their banks.

I have etc.,

(Signed) I. A. NAVARRE,
Superintendent Sumass Dyking Scheme.

The Chief Commissioner of Lands and Works to Mr. Derby.

LANDS AND WORKS DEPARTMENT,
Victoria, October 23rd, 1878.

SIR,—I have to draw your attention to the fact that Mr. Turner's salary as Surveyor, and Mr. Navarre's salary as Superintendent of the works, as well as numerous other accounts in connection with the surveys which have been executed under the "Sumass and Chilliwhack Dyking Scheme," still remain unpaid.

I have therefore to request that you will be good enough to make, at an early date, a further payment on this account, as the Government are desirous of having those liabilities liquidated. I have, etc.,

(Signed) GEO. A. WALKEM,
Chief Commissioner of Lands and Works.

Mr. Navarre to the Chief Commissioner of Lands and Works.

MATSQUI, B.C., November 2nd, 1878.

SIR,—In this my regular monthly report for the month of October, I have the honour to state that, since my report made to you at the time of the resumption of work by Mr. Derby, the force of workmen has been increased. There are now about sixty Chinamen and forty white men at work.

About seven hundred feet in length, averaging about eight feet in height, of earth embankment has been thrown up. I have, etc.,

(Signed) I. A. NAVARRE,
Superintendent Sumass Dyking Scheme.

Mr. Navarre to the Chief Commissioner of Lands and Works.

VICTORIA, November 6th, 1878.

SIR,—Agreeable to request, I have the honour to submit herewith a sketch of plan for bulkhead to be built in the Matsqui division of the dyke, at those points where such work was not anticipated.

In height it conforms to the grade line established, viz., one foot above high water of 1876.

The same is respectfully submitted for your consideration.

I have, etc.,

(Signed) I. A. NAVARRE,
Superintendent Sumass Dyking Scheme.

The Chief Commissioner of Lands and Works to Mr. Derby.

LANDS AND WORKS DEPARTMENT,
Victoria, B.C., 7th November, 1878.

SIR,—I have the honour to inform you that Mr. I. A. Navarre has submitted and recommended a plan (enclosed herewith) as a modification of the original plans and specifications for the Matsqui portion of the Sumass Dyking Scheme, with regard to those portions of the dyke, exclusive of the work connected with damming the sloughs. This alteration has been agreed to with this proviso, viz.: That you are at liberty to

place bulkhead work in the said dyke, in conformity with the enclosed plan, but not otherwise, and subject to the orders of the Government Engineer in charge of the works. In carrying out this work in conformity with the enclosed plan, you will drive the piles and sheet piling to solid clay. The timbers, piling, etc., will be of the sizes set forth in the drawings. All timber used must be cedar. You will please distinctly understand that no work will be accepted as a satisfaction of the conditions of the Dyking Act unless it has the approval of Mr. Navarre. The Superintendent, the Agent of the Lands and Works, under the Sumass Dyking Scheme Act, has no authority to move personally in any matter that pertains to a modification of the work to be done by virtue of said Act. Through him, when any change becomes necessary, you are at liberty to communicate with this office, when due consideration will immediately be given to the subject.

I have, etc.,

(Signed) GEO. A. WALKEM,
Chief Commissioner of Lands and Works.

Mr. Navarre to the Surveyor-General.

RIVERSIDE, B.C., Nov. 15th, 1878.

SIR,—Mr. Derby requests I will accompany him to Victoria next Tuesday for the purpose of seeing you and Mr. Walkem in relation to matters touching the construction of Matsqui dyke. Will you please to signify to me, by telegraph, your approval or disapproval of my going? I will venture to say you will receive better satisfaction if I am present.

I have, etc.,

(Signed) I. A. NAVARRE,
Superintendent Sumass Dyking Scheme.

Mr. Navarre to the Chief Commissioner of Lands and Works.

RIVERSIDE, B.C., December 1st, 1878.

SIR,—I have the honour to submit herewith my regular monthly report for the month of November, 1878.

No work has been done except on the Matsqui division of the dyke.

The amount of work has been the throwing up of about eight hundred feet of embankment in length, averaging nearly seven feet in height, and the cutting of three ditches three feet by three feet, and 2,543 feet long, at the extreme upper end of the dyke, commencing at the mountain and emptying into a small creek. The said creek heads in the mountains, on the river side of the dyke, thence courses across the line of dyke, and finds its way into the river through a slough some five miles from point of origin. The object of the said ditches is to drain a swamp and peat bed which lies next to the mountain, and is touched by the line of dyke at a point 1,800 feet from the mountain.

The source of the creek is so located that it can be diverted into the river without much cost or difficulty, and thereby avoid crossing the line of dyke. The waters draining from the mountain inside the dyke line, for a short distance, cross the said dyke line coursing towards the river until they drop into the said creek. This drainage can and must be stopped before it reaches the dyke ditch, by means of a drain ditch, commencing at the mountain, running thence parallel with the line of dyke at a safe distance from any of the works until it will reach the creek.

The peat bed mentioned, commences at 1,400 feet from the mountain, and increases in depth from six inches to eight feet two hundred feet from the mountain, and then dips so that at twelve feet I could not find clay. From necessity a different class of work than any specified will be required for this. I will submit a supplemental report with a sketch of plan which will conform with the other work, and be a safeguard in the said distance of 1,800 feet.

The rain has been excessive, and much of the earth work done during the month will require rehandling. It never has, and never will, pay to construct earth embankments during wet weather.

It is with pleasure that I inform you that your letter of instructions, written on or about the 7th of November, to Mr. Derby, has had a very beneficial effect. Work

measured off since the receipt of said letter conforms to contract, and the work done by such measurements shows, and is, a very material improvement on that previously constructed. As I have informed you heretofore, very much of the work thrown up last summer and spring is deficient in quantity of earth, and manner of construction. The scarp of the ditch and the interior slope of the embankment are deficient in their slopes. The lack of slope in an earth embankment reduces the quantity of earth and necessarily makes the power of resistance so much less, as well as destroying the angle of repose, and thereby creating a greater tendency to sliding. The major portion of work so improperly done was constructed previous to my arrival here in July, and that done since my arrival was so done against my personal protest to the engineer-in-charge under Mr. Derby, and during the absence of Mr. Derby at San Francisco. There was very little work done of that sort after the commencement of my inspectorship. Immediately on Mr. Derby's return to Victoria I informed him of these defects, and he said, then and there, they would be remedied. These embankments are not as yet defective, inasmuch as they can be made to comply with the contract at the time of the finishing touch being applied. I mention these things as I believe it a part of my duty as your servant to do so.

On November 23rd all except thirteen white men were discharged. There remains sixty Chinamen who work in the intervals of fair weather.

Mr. Derby informs me he will commence work on the gates of Matsqui sloughs in a couple of weeks. The pile driver is completed and prepared for work.

I shall submit my supplemental report, with sketch, in the course of one week.

I have, etc.,

(Signed) I. A. NAVARRE,
Superintendent Sumass Dyking Scheme.

Mr. Navarre to the Chief Commissioner of Lands and Works.

MATSQUI, B.C., January 1st, 1879.

SIR,—I have the honour to submit herewith my monthly report for the month of December, 1878.

The only work done this month has been the building of earth embankments. The amount put up is about 800 feet in length, averaging a fraction over eight feet in height.

The Chinamen are the only men who worked on the dyke. The white men have been engaged on private work. There are about sixty Chinamen and eight white men.

No work has been done on the sloughs as I was led to believe there would be.

At present the cold is such that I think earth work will have to be discontinued for a few days, or until the weather moderates. I have, etc.,

(Signed) I. A. NAVARRE,
Superintendent Sumass Dyking Scheme.

Mr. E. L. Derby to the Chief Commissioner of Lands and Works.

RIVERSIDE, B. C., 7th February, 1879.

SIR,—I have prepared a sketch shewing the position and nature of the land where I think it will be necessary, or at least prudent, to replace the embankment shewn on the plans furnished by your department by bulkhead work; also sketches shewing exact cross sections of the sloughs, from which you will see that it will be impracticable to put in the flood-gates exactly as shewn on plans, together with plans of the modifications I propose. I expect to be in Victoria in about ten days, and will submit same to you for approval.

I have no disposition to ask for any modification of the original plans, simply with a view to saving expense in the construction, the only modifications I wish, are such as may better ensure the success of the enterprise. With regard to the bulkhead work, the original intention was, that I should use this, with partial embankment, wherever it should be considered likely, from the nature of the soil, to make a better protection than embankment alone.

During construction, I have found on the line of dyke various kinds of earth and sediment, and there are some places where I do not consider an earth embankment

secure. In one place for about 1,000 feet, I have found a quicksand under a three-foot clay bed. Here, with an earth embankment, we might expect an underseepage, the very thing we are most anxious to guard against. The dyke here is over eleven feet high, and the material for construction not of a quality to warrant the erection of earth embankment alone.

There are three more places, one of about 600 feet, the other two about 275 feet each, all low ground where the material for embankment is a light slippery clay. The embankment required would average 9 feet. I have already some embankment of the same material constructed of an average height of seven feet, and find that it is slipping away very much, and I do not consider it safe to erect heavier embankments of this material. Neither should I consider it safe in most of the places where bulkhead is necessary to have anything more than a very light ditch outside of the bulkhead.

Owing, probably, to the hurried nature of Mr. Mahood's survey, there is an error in his estimate of the contents of the Matsqui dyke. Instead of 61,000 cubic yards, as estimated by him, the amount is over 85,000 cubic yards, making already an addition of one third to the anticipated cost.

I expect to be able to begin the bulkhead work immediately on my return from Victoria, of which I think it right to notify you, as you may think it desirable that your inspector should be on the ground while the work is going on. In this connection I wish to state that from what I have seen of Mr. Navarre, I do not consider him competent for the position, as it was clearly understood that it might be necessary, from the better information obtained during the progress of the work, to materially modify Mr. Mahood's plans, and Mr. Navarre does not seem to me to be sufficiently qualified as an engineer to be able to understand when a modification is necessary or in what direction the modification should be. Should it be the intention of your department to re-engage Mr. Navarre, it would only be justice to me, before you do so, to allow me to understand what Mr. Navarre's experience has been, and upon what ground he is considered competent, and I think I will have no difficulty in satisfying you that you are under a misapprehension in the matter.

I have, etc.,

(Signed) E. L. DERBY.

Mr. Derby to the Chief Commissioner of Lands and Works.

VICTORIA, 27th February, 1879.

SIR,—I regret that your time has been so occupied that I have had no opportunity on this occasion of submitting to you the profiles and sections of the ground in Matsqui in which bulkhead work is necessary, and the nature of the bulkheading which I wish to submit for your approval.

I wish to leave for Riverside to-morrow to proceed with the driving of the piling in the sloughs immediately on my return, as there may be difficulty in getting the flood-gates properly built before high water should this part of the work be longer delayed.

May I beg of you to give the earliest possible attention to my last communication to you, as, in order to secure the section of the Matsqui lands from the freshet this year, it will not be safe to postpone the completion of the work longer than the beginning of May, so that it is necessary to proceed with the construction without delay. Should the works, in their present unfinished condition, be exposed to even a medium high water the consequences would be very serious.

I have, etc.,

(Signed) E. L. DERBY.