
MEMORANDUM

TO: STEVE GIESBRECHT, BOROUGH MANAGER
 FROM: KARL HAGERMAN, UTILITY DIRECTOR *KAH*
 SUBJECT: SUBDIVISION ESTIMATION UPDATE AND REQUEST FOR ADDITIONAL SERVICES
 DATE: 9/13/2022
 CC: JODY TOW, FINANCE DIRECTOR
 DEBRA THOMPSON, CLERK
 PROJECT FILE

In response to the current housing crisis in Petersburg, you approved of the hiring of PND Engineers of Juneau to complete cost estimates of subdivision development for three different areas: an expansion of the Airport subdivision, an extension of Fram Street and the development of Ramona Street and Augusta Street in the Hungry Point area. The report detailing those estimates is attached to this memo.

In all cases, the engineers applied the current Borough standards for street and utility construction. This standard is to "core out" all muskeg to hardpan soils and to build 28' wide streets and utility foundations with compacted shot rock. The need to excavate muskeg at considerable depths pushes costs quite high. A breakdown of the overall costs per subdivision and the resultant cost per lot is presented below.

Subdivision	Total cost	Number of Lots	Cost per Lot
Airport Subdivision	\$3,112,278	25	\$124,491
Fram Street	\$2,107,814	10	\$210,781
Hungry Point	\$4,431,290	15	\$295,419

These costs do not include costs for upgrades to wastewater pump station upgrades at the Airport subdivision or Hungry Point, but they do include a small pump station at Fram Street to serve the lots between 10th and 11th Street. The Airport subdivision pump station and the pump station at Hungry Point already exist and it is conceivable that the upgrades to these stations would be considered as separate wastewater department projects.

As directed, I have requested a cost for PND to revise the cost of the Fram and Hungry Point subdivisions using a lesser construction standard. This standard would only provide cored out foundation for water and sewer mains, would reduce the finished road width to 24' and would "float" all parts of the road that surround the buried utilities. These subdivisions were chosen for this re-work in estimation due to the fact that they have utility work that is already needed and partially funded. The engineer has provided a cost proposal of \$4,000 for this evaluation, but it is anticipated that considerable cost savings will be seen in the construction estimates. The downside of this approach is that many roads in Petersburg were built using a standard that "floats" the rock on muskeg and these roads require substantially more maintenance than roads that are supported down to hardpan soils by compacted shot rock. However, it will be valuable information to see what initial cost savings can be expected by lessening construction standards.

Additionally, per your direction I have requested PND to estimate four additional areas for subdivision development. They are the East Sandy Beach Subdivision (Frederick Point Road out to City Creek), the Tidelands Subdivision (mobile home zoned lots east of Lumber street), Lake Street (from Galveston Street to Sandy Beach Road) and 8th Street (a short extension from Excel Street to the north to open up two large multi-family lots). PND has responded that the estimation services for these four prospects could be done for \$16,000.

To date, the Borough has spent \$10,700 for estimation services for Airport, Fram and Hungry Point developments. The cost to re-work the Fram and Hungry Point developments using the lesser construction standard is \$4,000. Let me know if you'd like to move forward with this effort.

At this time, and in consideration of the work already done and the high costs of proceeding with a single subdivision project, are you in favor of moving forward with additional subdivision estimates for the next four prospects? Perhaps this is a decision for the Assembly? In any case, I stand ready to engage PND Engineers as directed.

Thank you for your consideration.

August 30, 2022

PND 222073

Mr. Karl Hagerman
Utility Director
Petersburg Borough
PO Box 329
Petersburg, AK 99833

Re: Petersburg Subdivision Cost Assessments

Dear Karl,

PND Engineers, Inc. (PND) has completed reconnaissance level cost assessments for three potential residential subdivisions selected by Petersburg Borough. This report briefly summarizes the methods used to develop recommended budgets for each. The subdivisions include:

1. Airport Subdivision Extension
2. Fram Street Extension
3. Hungry Point Subdivision

Site information for each subdivision was obtained from the Borough's resources. Property boundaries, rights of way, topographical survey data, aerial photography and existing utility information was assembled from the Borough's GIS data base and asbuilt records. Muskeg depths were measured by Borough personnel at intermittent locations along each alignment to provide some basic geotechnical information for estimating earthwork quantities.

PND developed the enclosed concept level base maps to illustrate the anticipated development limits as directed by the Borough for each subdivision. We calculated preliminary earthwork quantities for excavation and fill using the muskeg probes and applying the Borough's typical roadway section for a 28' wide gravel street as represented by Standard Detail 20-1 of the 2012 Petersburg Standard Specifications for Streets, Drainage, Utilities and Parks. Earthwork quantities include complete muskeg core out and removal to competent subgrade for all roadways and driveways to the property line. Shot rock embankment is assumed available from the Borough's airport quarry or other economically viable private sources. Water and sewer utility extensions were assessed based on topographic relieve, existing utility conditions and connections and discussions with the Utility Director. Electrical utility extensions were assessed by PMPL. Preliminary drainage improvements were assessed based on aerial photography and site contours. Preliminary assessments were also made for replacing existing sewer lift station infrastructure at both the Airport and Hungry Point Subdivisions.

Budget level cost estimates were prepared following the described engineering assessments. PND calculated material quantities for roadways and utilities and utilized unit price bid data from several recent civil projects in Petersburg and other Southeast communities to formulate and justify the construction cost estimates. Each estimate includes 15% cost contingency as well as indirect development costs for predesign surveys, site geotechnical investigations, wetlands delineation, permitting, final design, contract documents, bid phase assistance, contract administration and construction inspection. A total recommended project budget including construction and indirect costs was prepared for each subdivision based on year 2022 pricing. Sewer lift station replacement costs were isolated as additive alternates due to the potential for differing project funding streams. All other roadway and utility costs were combined under base bid estimates. Considering current inflationary pressures, the Borough may wish to add price escalation factors to each of these budgets if the improvements are being planned several years down the road. Detailed line item budgets are enclosed and are summarized in the following table.

Subdivision	Base Bid – Road & Utilities	Add Alt – Lift Station
Airport Sub. Extension	\$3,126,260	\$593,112
Fram Street Extension	\$2,113,750	N/A
Hungry Point Sub.	\$4,465,614	\$1,313,508

We appreciate the opportunity to provide these preliminary subdivision budgets to the Borough and are available to discuss any comments you may have. Feel free to contact me at your convenience and we have enjoyed working with you on this project.

Sincerely,

PND Engineers, Inc. | Juneau Office



Dick Somerville, P.E. | Vice President

Enclosures: Site Plans and 2022 Budget Estimates

PETERSBURG BOROUGH
AIRPORT SUBDIVISION - BASE BID
2022 Project Budget Estimate (Predesign)



Prepared By PND Engineers - August 30, 2022
PND Project No. 222073



Item	Item Description	Units	Quantity	Unit Cost	Amount
15.01	Mobilization and Demobilization	LS	All Req'd	\$169,932	\$169,932
20.02	SWPPP	LS	All Req'd	\$10,000	\$10,000
20.04	Cleaning & Grubbing	LS	All Req'd	\$5,000	\$5,000
20.10(a)	Usable Excavation	CY	200	\$12	\$2,400
20.10(b)	Unusable Excavation & Disposal	CY	24,000	\$16	\$384,000
20.21(a)	Type II Classified Fill & Backfill	CY	20,000	\$30	\$600,000
20.21(b)	Type II-A Classified Fill & Backfill	CY	1,000	\$42	\$42,000
20.22	Leveling Course	CY	1,000	\$52	\$52,000
20.25	Geotextile Fabric	SY	2,000	\$7	\$14,000
50.02(a)	Furnish & Install 8" PVC C900 Gravity Sewer Pipe	LF	1,850	\$150	\$277,500
50.02(b)	Furnish & Install 6" PVC Sewer lateral Pipe	LF	625	\$150	\$93,750
50.03	Construct Sanitary Sewer Manhole, Type A	EA	7	\$9,500	\$66,500
50.05	Connect to Existing Sewer Manhole	EA	1	\$2,000	\$2,000
50.10	Sanitary Sewer Service Tee Connection, 8x8x6	EA	25	\$800	\$20,000
55.02(a)	Furnish & Install 18" CPEP, Type S Pipe	LF	750	\$90	\$67,500
55.02(b)	Furnish & Install 24" CPEP, Type S Pipe	LF	200	\$110	\$22,000
55.24	Storm Drain Outlet Protection	EA	1	\$1,000	\$1,000
60.02	Furnish & Install 8" HDPE Water Pipe	LF	1,700	\$150	\$255,000
60.03	Furnish & Install 8" Gate Valve & Valve Box	EA	6	\$3,500	\$21,000
60.04	Furnish & Install Fire Hydrant Assembly (Single Pumper)	EA	3	\$8,000	\$24,000
60.05	Furnish & Install 6" HDPE Fire Line w/6" Gate Valve	EA	3	\$7,500	\$22,500
60.06	Water Service Connection, 1", 1.5" or 2" HDPE	EA	25	\$2,000	\$50,000
60.13	Connect to Existing Water Main	EA	2	\$1,000	\$2,000
65.02	Construction Surveying	LS	All Req'd	\$20,000	\$20,000
70.11	Standard Signs	LS	All Req'd	\$2,000	\$2,000
70.12	Traffic Maintenance	LS	All Req'd	\$5,000	\$5,000
70.19	Erosion and Sediment Control	LS	All Req'd	\$10,000	\$10,000
70.22	Insulation Board - 2'x8'x2" Thick	EA	40	\$75	\$3,000
75.04	Seeding, Hydraulic Method	LS	All Req'd	\$10,000	\$10,000
80.01	PMPL Overhead Electrical Utility Extension	LS	All Req'd	\$40,000	\$40,000
Subtotal Estimated Construction Cost (2022)					\$2,294,082
Project Contingency (15%)					\$344,112
Total Construction Cost w/ Contingency (2022)					\$2,638,194
Predesign Survey & Geotechnical Site Investigation					\$52,764
Wetlands Delineation & USACE Permitting (Assumes No Mitigation Req'd)					\$39,573
Final Design & Bid Phase Assistance					\$211,056
Contract Administration & Construction Inspection					\$184,674
TOTAL RECOMMENDED PROJECT BUDGET					\$3,126,260

PETERSBURG BOROUGH
AIRPORT SUBDIVISION - ADD. ALT. PUMP STATION & REPLACEMENT
2022 Project Budget Estimate (Predesign)



Prepared By PND Engineers - August 30, 2022
PND Project No. 222073



Item	Item Description	Units	Quantity	Unit Cost	Amount
15.01	Mobilization and Demobilization	LS	All Req'd	\$32,376	\$32,376
20.12	Dewatering	LS	All Req'd	\$10,000	\$10,000
20.21(b)	Type II-A Classified Fill & Backfill	CY	250	\$42	\$10,500
20.22	Leveling Course	CY	100	\$52	\$5,200
30.07	Sewer Lift Station Concrete Slab on Grade	LS	All Req'd	\$15,000	\$15,000
50.02	Furnish & Install Sewer Pipe	LF	60	\$150	\$9,000
50.14	Bypass Pumping & Temp Sanitary Sewage Flows	LS	All Req'd	\$15,000	\$15,000
50.22	Decommission Existing Lift Station	LS	All Req'd	\$10,000	\$10,000
50.23	Furnish & Install Sewer Wet Well, Piping & Equipment	LS	All Req'd	\$85,000	\$85,000
50.24	Furnish & Install Valve Vault, Piping & Equipment	LS	All Req'd	\$75,000	\$75,000
50.25	Furnish & Install Submersible Pumps & Equipment	LS	All Req'd	\$65,000	\$65,000
50.26	Furnish & Install Power & Controls for Lift Station	LS	All Req'd	\$100,000	\$100,000
70.12	Traffic Maintenance	LS	All Req'd	\$2,000	\$2,000
70.19	Erosion and Sediment Control	LS	All Req'd	\$3,000	\$3,000
Subtotal Estimated Construction Cost (2022)					\$437,076
Project Contingency (15%)					\$65,561
Total Construction Cost w/ Contingency (2022)					\$502,637
Permitting					\$10,053
Final Design & Bid Phase Assistance					\$45,237
Contract Administration & Construction Inspection					\$35,185
TOTAL RECOMMENDED PROJECT BUDGET					\$593,112

PETERSBURG BOROUGH
FRAM STREET EXTENSION - BASE BID
 2022 Project Budget Estimate (Predesign)



Prepared By PND Engineers - August 30, 2022
 PND Project No. 222073

P | N | D

Item	Item Description	Units	Quantity	Unit Cost	Amount
15.01	Mobilization and Demobilization	LS	All Req'd	\$111,712	\$111,712
20.02	SWPPP	LS	All Req'd	\$10,000	\$10,000
20.04	Clearing & Grubbing	LS	All Req'd	\$5,000	\$5,000
20.10(a)	Usable Excavation	CY	200	\$12	\$2,400
20.10(b)	Unusable Excavation & Disposal	CY	9,500	\$16	\$152,000
20.12	Dewatering	LS	All Req'd	\$15,000	\$15,000
20.15	Furnish Trench Backfill	CY	500	\$30	\$15,000
20.21(a)	Type II Classified Fill & Backfill	CY	8,500	\$30	\$255,000
20.21(b)	Type II-A Classified Fill & Backfill	CY	500	\$42	\$21,000
20.22	Leveling Course	CY	500	\$52	\$26,000
20.25	Geotextile Fabric	SY	1,000	\$7	\$7,000
20.31	Shape & Regrade Fram Street	LS	All Req'd	\$5,000	\$5,000
20.32	Shape & Regrade Driveway	EA	4	\$750	\$3,000
30.07	Sewer Lift Station Concrete Slab on Grade	LS	All Req'd	\$15,000	\$15,000
50.02(a)	Furnish & Install 8" PVC C900 Gravity Sewer Pipe	LF	900	\$150	\$135,000
50.02(b)	Furnish & Install 6" PVC Sewer lateral Pipe	LF	350	\$150	\$52,500
50.02(c)	Furnish & Install 4" HDPE Sewer Force Main Pipe	LF	400	\$110	\$44,000
50.03	Construct Sanitary Sewer Manhole, Type A	EA	4	\$9,500	\$38,000
50.05	Connect to Existing Sewer Manhole	EA	1	\$2,000	\$2,000
50.10	Sanitary Sewer Service Tee Connection, 8x8x6	EA	14	\$800	\$11,200
50.12	Construct Sanitary Sewer Cleanout	EA	1	\$1,800	\$1,800
50.14	Bypass Pumping & Temp Sanitary Sewage Flows	LS	All Req'd	\$5,000	\$5,000
50.23	Furnish & Install Sewer Wet Well, Piping & Equipment	LS	All Req'd	\$85,000	\$85,000
50.24	Furnish & Install Valve Vault, Piping & Equipment	LS	All Req'd	\$75,000	\$75,000
50.25	Furnish & Install Submersible Pumps & Equipment	LS	All Req'd	\$65,000	\$65,000
50.26	Furnish & Install Power & Controls for Lift Station	LS	All Req'd	\$50,000	\$50,000
55.02(a)	Furnish & Install 18" CPEP, Type S Pipe	LF	300	\$90	\$27,000
55.02(b)	Furnish & Install 24" CPEP, Type S Pipe	LF	100	\$110	\$11,000
55.24	Storm Drain Outlet Protection	EA	2	\$1,000	\$2,000
60.02	Furnish & Install 8" HDPE Water Pipe	LF	800	\$150	\$120,000
60.03	Furnish & Install 8" Gate Valve & Valve Box	EA	5	\$3,500	\$17,500
60.04	Furnish & Install Fire Hydrant Assembly (Single Pumper)	EA	2	\$8,000	\$16,000
60.05	Furnish & Install 6" HDPE Fire Line w/6" Gate Valve	EA	2	\$7,500	\$15,000
60.06	Water Service Connection, 1", 1.5" or 2" HDPE	EA	10	\$2,000	\$20,000
60.08	Temporary Water Service	LS	All Req'd	\$2,500	\$2,500
60.13	Connect to Existing Water Main	EA	2	\$1,000	\$2,000
65.02	Construction Surveying	LS	All Req'd	\$15,000	\$15,000
70.07(a)	Remove & Dispose Sewer Main Pipe	LF	200	\$40	\$8,000
70.07(b)	Remove & Dispose Water Main Pipe	LF	400	\$40	\$16,000
70.11	Standard Signs	LS	All Req'd	\$2,000	\$2,000
70.12	Traffic Maintenance	LS	All Req'd	\$5,000	\$5,000
70.19	Erosion and Sediment Control	LS	All Req'd	\$10,000	\$10,000
70.22	Insulation Board - 2'x8'x2" Thick	EA	20	\$75	\$1,500
75.04	Seeding, Hydraulic Method	LS	All Req'd	\$10,000	\$10,000
80.01	PMPL Overhead Electrical Utility Extension	LS	All Req'd	\$30,000	\$30,000
Subtotal Estimated Construction Cost (2022)					\$1,538,112
Project Contingency (15%)					\$230,717
Total Construction Cost w/ Contingency (2022)					\$1,768,829
Predesign Survey & Geotechnical Site Investigation					\$44,221
Wetlands Delineation & USACE Permitting (Assumes No Mitigation Req'd)					\$35,377
Final Design & Bid Phase Assistance					\$141,506
Contract Administration & Construction Inspection					\$123,818
TOTAL RECOMMENDED PROJECT BUDGET					\$2,113,750

PETERSBURG BOROUGH
HUNGRY POINT SUBDIVISION - BASE BID
 2022 Project Budget Estimate (Predesign)



Prepared By PND Engineers - August 30, 2022
 PND Project No. 222073



Item	Item Description	Units	Quantity	Unit Cost	Amount
15.01	Mobilization and Demobilization	LS	All Req'd	\$244,592	\$244,592
20.02	SWPPP	LS	All Req'd	\$10,000	\$10,000
20.04	Clearing & Grubbing	LS	All Req'd	\$50,000	\$50,000
20.10(a)	Usable Excavation	CY	200	\$12	\$2,400
20.10(b)	Unusable Excavation & Disposal	CY	42,000	\$16	\$672,000
20.21(a)	Type II Classified Fill & Backfill	CY	35,000	\$30	\$1,050,000
20.21(b)	Type II-A Classified Fill & Backfill	CY	1,100	\$42	\$46,200
20.22	Leveling Course	CY	1,100	\$52	\$57,200
20.25	Geotextile Fabric	SY	2,000	\$7	\$14,000
50.02(a)	Furnish & Install 8" PVC C900 Gravity Sewer Pipe	LF	1,200	\$150	\$180,000
50.02(b)	Furnish & Install 12" PVC C900 Gravity Sewer Pipe	LF	480	\$160	\$76,800
50.02(c)	Furnish & Install 6" PVC Sewer lateral Pipe	LF	450	\$150	\$67,500
50.02 (d)	Furnish & Install 12" HDPE Sewer Force Main Pipe	LF	650	\$160	\$104,000
50.03	Construct Sanitary Sewer Manhole, Type A	EA	9	\$9,500	\$85,500
50.05	Connect to Existing Sewer Manhole	EA	3	\$2,000	\$6,000
50.10	Sanitary Sewer Service Tee Connection, 8x8x6	EA	18	\$800	\$14,400
55.02(a)	Furnish & Install 18" CPEP, Type S Pipe	LF	540	\$90	\$48,600
55.02(b)	Furnish & Install 24" CPEP, Type S Pipe	LF	80	\$110	\$8,800
55.24	Storm Drain Outlet Protection	EA	1	\$1,000	\$1,000
60.02	Furnish & Install 12" HDPE Water Pipe	LF	1,720	\$150	\$258,000
60.03	Furnish & Install 12" Gate Valve & Valve Box	EA	12	\$4,500	\$54,000
60.04	Furnish & Install Fire Hydrant Assembly (Single Pumper)	EA	6	\$8,000	\$48,000
60.05	Furnish & Install 6" HDPE Fire Line w/6" Gate Valve	EA	6	\$7,500	\$45,000
60.06	Water Service Connection, 1", 1.5" or 2" HDPE	EA	18	\$2,000	\$36,000
60.13	Connect to Existing Water Main	EA	2	\$1,000	\$2,000
65.02	Construction Surveying	LS	All Req'd	\$40,000	\$40,000
70.11	Standard Signs	LS	All Req'd	\$2,000	\$2,000
70.12	Traffic Maintenance	LS	All Req'd	\$10,000	\$10,000
70.19	Erosion and Sediment Control	LS	All Req'd	\$10,000	\$10,000
70.22	Insulation Board - 2'x8'x2" Thick	EA	40	\$75	\$3,000
75.04	Seeding, Hydraulic Method	LS	All Req'd	\$15,000	\$15,000
80.01	PMPL Overhead Electrical Utility Extension	LS	All Req'd	\$40,000	\$40,000
Subtotal Estimated Construction Cost (2022)					\$3,301,992
Project Contingency (15%)					\$495,299
Total Construction Cost w/ Contingency (2022)					\$3,797,291
Predesign Survey & Geotechnical Site Investigation					\$68,351
Wetlands Delineation & USACE Permitting (Assumes No Mitigation Req'd)					\$49,365
Final Design & Bid Phase Assistance					\$284,797
Contract Administration & Construction Inspection					\$265,810
TOTAL RECOMMENDED PROJECT BUDGET					\$4,465,614

PETERSBURG BOROUGH
HUNGRY POINT SUBDIVISION - ADD. ALT. PUMP STATION 4 REPLACEMENT
 2022 Project Budget Estimate (Predesign)



Prepared By PND Engineers - August 30, 2022
 PND Project No. 222073



Item	Item Description	Units	Quantity	Unit Cost	Amount
15.01	Mobilization and Demobilization	LS	All Req'd	\$69,616	\$69,616
20.10(b)	Unusable Excavation & Disposal	CY	1,000	\$20	\$20,000
20.12	Dewatering	LS	All Req'd	\$15,000	\$15,000
20.21(b)	Type II-A Classified Fill & Backfill	CY	500	\$42	\$21,000
20.22	Leveling Course	CY	100	\$52	\$5,200
20.3	Excavation Shoring	LS	All Req'd	\$40,000	\$40,000
30.01	Remove and Replace Concrete and ACP Finishes	LS	All Req'd	\$20,000	\$20,000
30.07	Sewer Lift Station Concrete Slab on Grade	LS	All Req'd	\$20,000	\$20,000
50.02	Furnish & Install 8 Inch PVC Gravity Sewer Pipe	LF	60	\$150	\$9,000
50.03	Construct Sanitary Sewer Manhole, Type A	EA	1	\$12,000	\$12,000
50.14	Bypass Pumping & Temp Sanitary Sewage Flows	LS	All Req'd	\$15,000	\$15,000
50.22	Decommission Existing Lift Station and Piping	LS	All Req'd	\$25,000	\$25,000
50.23	Furnish & Install Sewer Wet Well, Piping & Equipment	LS	All Req'd	\$125,000	\$125,000
50.24	Furnish & Install Valve Vault, Piping & Equipment	LS	All Req'd	\$100,000	\$100,000
50.25	Furnish & Install Submersible Pumps & Equipment	LS	All Req'd	\$150,000	\$150,000
50.26	Furnish & Install Power & Controls for Lift Station	LS	All Req'd	\$150,000	\$150,000
50.27	Furnish & Install Emergency Generator & ATS	LS	All Req'd	\$150,000	\$150,000
70.12	Traffic Maintenance	LS	All Req'd	\$10,000	\$10,000
70.19	Erosion and Sediment Control	LS	All Req'd	\$3,000	\$3,000
Subtotal Estimated Construction Cost (2022)					\$959,816
Project Contingency (15%)					\$143,972
Total Construction Cost w/ Contingency (2022)					\$1,103,788
Permitting					\$11,038
Final Design & Bid Phase Assistance					\$110,379
Contract Administration & Construction Inspection					\$88,303
TOTAL RECOMMENDED PROJECT BUDGET					\$1,313,508