



# **Response to the Nushagak-Mulchatna Watershed Council**

**‘180 Questions about the Pebble Project’**

October, 2005

**Northern Dynasty Mines Inc.  
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In April 2005, the Nushagak-Mulchatna Watershed Council submitted 180 questions about the Pebble Project to Northern Dynasty Mines Inc. and asked the company to provide factual responses to each. Northern Dynasty appreciates the Council's active interest in the Pebble Project, and its efforts to inform Council members about the issues and considerations associated with developing an open pit mine.

It has taken Northern Dynasty some months to prepare answers to the 180 questions. This is the case because the company is actively engaged in the process of studying the environment around the project site, and developing the best possible mine plan for the Pebble Project. This means that, in many cases, we do not yet have the information required to answer questions fully. It also means that our planning about how the proposed Pebble mine might be designed and operated is constantly changing, making it even more difficult to answer questions with a high degree of certainty.

Despite these limitations, Northern Dynasty has done its best to provide responses to all 180 questions. In some cases, questions have been fully answered. In other cases, we have provided certain information but indicated that final responses must await the completion of Northern Dynasty's study program and mine planning process.

Northern Dynasty encourages all project stakeholders to ask questions and seek information about the Pebble Project, and is committed to answering all requests as quickly as possible.

In preparing responses to the Nushagak-Mulchatna Watershed Council's 180 questions, we have tried to be as open and forthright as possible – recognizing that certain questions simply can't be fully answered at this early stage of project development. The answers provided in this document represent the best information available to Northern Dynasty as of August 2005. Readers should note that the company's responses to some questions may change over time as more information becomes available and mine planning proceeds.

Complete details of Northern Dynasty's study program and proposed mine plan will be made available to all interested parties over the course of the multi-year state and federal project permitting process.

## **TAILINGS DISPOSAL**

*1. Where will the tailings be placed and how big an area will be covered by these tailings?*

The design of tailing disposal areas is still underway, so exact details are not yet known. That said, the preferred location for tailings storage is in the upper part of the South Fork Kuktuli River, near the open pit. While several configurations have recently been considered, none will directly affect salmon spawning areas.

The final location of the tailings impoundments will be based on information gathered through the community consultation process and through environmental and engineering studies carried out in 2004 and 2005. The size of the tailings storage is likely to measure 10 square miles, although this number may change as the design process continues.

Northern Dynasty will keep both the public and regulatory agencies posted on developments as they occur.

*2. What will be the chemical composition of the water that is stored with the tailings in the impoundment?*

The chemical composition of tailings water is not known at this time, as studies are not yet complete. Northern Dynasty will provide a complete list of chemicals and minerals present in tailings water, as well as their relative quantities, within the mine planning materials submitted for permit application sometime next year.

In general, tailings water will contain very fine suspended particulates from the crushing process employed in the mill, including residual minerals common to the deposit – such as copper and molybdenum. In addition there will be chemicals left over from the flotation process employed in the mill.

*3. Will the tailings generate acidic water?*

No, tailings will not create acidic conditions.

Although Northern Dynasty is still developing its mine plan, it is expected that tailings will be separated into two different streams. One will be ‘non-reactive’ tailings that will not have the ability to generate acid. The other, smaller portion will be ‘potentially reactive’ tailings that, by their very nature, could generate acidic conditions if stored improperly. Proper storage for ‘potentially reactive’ tailings means they will be placed underwater to avoid acid generation.

4. *How will acid generation be prevented?*

Acid generation will be prevented by storing all ‘potentially reactive’ mine rock and tailings under water. This is a proven technique that has been successfully applied at mining operations around the world.

In order for ‘potentially reactive’ mine rock or tailings to produce acidic conditions, they must be both wet and exposed to air (oxygen). Both conditions are necessary. If ‘potentially reactive’ mine rock and tailings are stored under water and not exposed to air, the conditions necessary for acid generation to occur are not present.

5. *We have heard that pyrite causes acid formation and that it is possible to prevent acid generation by segregating the pyrite from other tailings. Is this NDM's plan? How will acid generation from the pyritic tailings be prevented both during and after operation?*

Although Northern Dynasty is still developing its mine plan, it is expected that both mine rock and tailings will be separated into two groups: materials that contain no pyrites and are ‘non-reactive’, and those that contain pyrites and are ‘potentially reactive’. Once separated, ‘potentially reactive’ materials will be stored under water – both during mine operations and after closure – to prevent acid generation and maintain water quality.

Rock or tailings that contain pyrites do have the ability to generate acidic conditions, but only if they are exposed to both water and air. ‘Pyritic’ – or ‘potentially reactive’ – materials are stored under water to manage acid generation risks.

6. *Are there other metals present in the deposit that are not economic to recover, or that are present only in trace amounts, that are discarded along with the tailings? What risk do these pose to the environment?*

It is expected that tailings will contain some metals – including copper and molybdenum – that are not economic to recover, although studies are not yet complete. Northern Dynasty will provide a complete list of the minerals present in tailings water, their relative quantities, as well as their potential impact on the environment, within the planning materials to be submitted for permit application sometime next year.

So long as these minerals are safely and permanently stored in the tailings impoundments, there will be no deterioration of water quality conditions.

7. *Will the water that flows through the tailings impoundment be allowed to drain into surface waters during mine operation?*

No. Tailings water will be contained in the tailings impoundment so that it can be re-used in the mill. Water from the tailing impoundment will *not* be allowed to drain into surface waters during mine operation.

Precautions will be incorporated into tailings impoundment design to ensure that tailings water does not seep into the downstream environment. For instance, seepage collection structures could be built downstream of the tailings embankment. Seepage would be collected and pumped back into the tailing impoundment for re-use at the mill.

8. *Will the water that flows through the tailings impoundment be allowed to drain into surface waters after mine closure?*

Water will continue to accumulate in the tailings impoundment after mine closure, and this water will be discharged into surface waters. However, the way in which it is discharged will depend upon the quality of the water.

At this point in the design process, the studies required to assess post-closure water quality in the tailings impoundment are not yet complete. As a result, Northern Dynasty has not yet developed a plan for how water discharges will be managed. All of this information will be provided within the planning materials to be submitted for permit application sometime next year.

As part of the permitting process, Northern Dynasty is required to develop a 'Reclamation Plan' for the Pebble Project. It is likely that the Reclamation Plan will have features common to other mining projects, including:

- if the quality of the water that accumulates in the tailings area meets 'Aquatic Life Standards' set by the State of Alaska, these waters may be discharged to surface waters or may be allowed to accumulate in a constructed wetland before being discharged to surface waters; and
- if the quality of the water that accumulates in the tailings area does not meet 'Aquatic Life Standards,' these waters may be directed to a water treatment facility, where impurities would be removed so that 'Aquatic Life Standards' are met. Water treatment would be paid for in perpetuity by the bonds that the company would provide as a permit requirement.

9. *Will the water that flows through the tailings impoundment be allowed to drain into groundwater aquifers?*

No. Precautions will be incorporated into tailings impoundment design to ensure that tailings water will *not* be allowed to drain into groundwater aquifers in the downstream environment. For instance, seepage collection structures could be built downstream of the tailings embankment. Seepage would be collected and pumped back into the tailing impoundment for re-use at the mill.

*10. How will flow to groundwater be prevented? Will a liner be used?*

Northern Dynasty is still developing its mine plan, and has not yet determined what systems and techniques will be used to prevent tailings water from seeping into groundwater.

In general, flow to groundwater can be controlled in two ways. One is to install a waterproof liner within the tailings impoundment to control seepage. Another is to develop a seepage control system that seeks to capture any tailings water that seeps out of storage areas and pump it back into the impoundment for re-use at the mill.

*11. What would such a liner be made of, and what is the life expectancy of the liner?*

Liners can be made of different things. Some are composed of special kinds of clay. Others are made of modern materials, such as durable high density polyethylene plastic.

The life expectancy of tailings impoundment liners is infinite. This is the case because, over time, finely ground tailings material will consolidate at the bottom of the impoundment and become part of the liner system. As they consolidate, tailings solids become increasingly resistant to water movement and reinforce the waterproof liner.

*12. Are such liners susceptible to failure through physical and chemical degradation?*

No. Liners are specifically designed and installed to *not* be susceptible to failure. Whether composed of clay or modern materials, they are engineered to avoid physical and chemical degradation problems.

*13. Are such liners able to withstand catastrophic events such as strong earthquakes?*

Yes. Liners are engineered and installed in order to prevent failure, even in the event of earthquakes or other natural events.

*14. Of what material is the tailings dam constructed?*

Tailings embankments – they're not really "dams" – are constructed from natural materials collected at the project site, including rock, gravel, sands and sometimes clay. In the case of Pebble, the tailings embankment will be built from rock and gravel found at the project site. Over time, tailings solids will collect and consolidate at the bottom of the tailings storage area, further stabilizing the tailings embankment.

Northern Dynasty is still developing its mine plan, so the detailed design of the tailings embankment at the proposed Pebble mine is not yet complete. However, it will be carefully engineered for long-term stability and safety, and will be of significant size, creating a substantial new landform in the project area.

*15. Is the dam impermeable, and if so, how is it made this way?*

Tailings embankments are not usually impermeable because their stability is actually enhanced by allowing some seepage. However, the seepage of tailings water must be carefully controlled.

For more information, see question #16.

*16. We have heard that all dams leak to some degree. What engineering controls are used to prevent these leaks or collect leakage?*

Tailings embankments do not leak in the usual sense of the word. Rather, seepage is allowed to occur in a planned and controlled manner to enhance the stability of the embankment. This seepage actually strengthens the embankment, and is an important engineering feature in areas where seismic activity can occur.

In cases where embankments are engineered to allow some seepage, they are built with a 'zone' of very water resistant material in the core of the structure. Coarser materials that are less resistant to water movement are placed on the downstream side of the core.

In this way, water movement is greatly impeded by the by the low-permeability core. Water that does get through is directed by gravity to the higher permeability filter zone, where it drains to a seepage collection and recovery system. Seepage water is collected and pumped back into the tailings impoundment for re-use in the mill.

*17. How are the processing chemicals cleaned or rinsed from the tailings before they are placed in the impoundment, or are the chemicals used in processing disposed of along with the tailings? How is contamination from these chemicals prevented?*

The vast majority of chemicals used in the milling process remain with the mineral concentrate that is transported from the mine site for refining. These chemicals do not end up in the tailings storage facility.

Some residual processing chemicals will be transported to the tailings storage area with tailings water. However, great care is taken to design a milling process that ensures chemicals present in tailings are kept at predictable and manageable levels.

Some residual processing chemicals will be recycled along with the tailings water for use in the mill. 'Make-up' chemicals are added to the recycled water in the mill to achieve the concentrations necessary for the flotation process.

Finally, some residual processing chemicals will stabilize in the tailings solids that form at the bottom of the tailings impoundment. So long as the impoundment provides for the safe and permanent storage of tailings materials, these chemicals will not affect the surrounding environment.

*18. Is it possible to cement the tailings? Would that be an effective method of preventing water flow through the tailings pile?*

Yes, it is possible to mix cement with tailings but this is usually done at underground mines where a high-strength material is required to provide structural support. The tailings embankment at the proposed Pebble mine will not require this kind of structural support.

Although Northern Dynasty has not yet completed its mine plan, it is not expected that cement will be added to tailings to prevent water movement. Rather, it is anticipated that the tailings embankment will be designed in order to allow seepage to occur in a planned and controlled manner, along with a seepage collection and recovery system.

*19. Is it possible to place the tailings back in the pit after the orebody is mined out?*

Yes it is possible, but only at mine sites where multiple pits exist (a situation that is not currently envisioned at Pebble). This is the case for a few different reasons:

- An open-pit must be entirely mined out before tailings can be placed within it. It would not be possible to safely and efficiently extract ore while tailings are being deposited within an active pit.
- Tailings tend to bulk up during the milling process, and typically will not all fit back into the pit from which they were derived. Multiple storage locations are usually required.
- While it is physically possible to place tailings back into a pit after mine closure, it would require that tailings material be handled twice. In most cases, this is neither an environmentally sound nor an economically feasible practice.

*20. How will the tailings be prevented from blowing away?*

Northern Dynasty is still developing its mine plan for the Pebble Project, and evaluating strategies to ensure that tailings materials are safely and permanently stored. This information will be fully described within the mine planning materials to be submitted for permit application sometime next year.

In general, the principal way to keep tailings from blowing away is to keep them wet during operations and covering them at closure.

Tailings material is transported from the mill to the tailings impoundment via a pipeline and a series of spigots. About 30 per cent of this material is tailings solids, which will gradually separate from tailings water to create a slightly sloping 'beach' at the low end of the tailings impoundment and a shallow tailings pond at the high end.

Coarse tailings material separates from water first and remains higher on the beach. Smaller, lighter materials stay with the water longer, and generally settle out near the tailings pond.

Steps are then taken to ensure that all exposed tailings solids remain wet so they cannot be dispersed by wind. This is done by discharging tailings material through different spigots at different times.

Closure techniques are also employed. Techniques that have been used successfully at other mines include maintaining a water cover over tailings solids, establishing an ice cap in winter, or covering dry tailings with a layer of non-erodible rockfill, topsoil, or vegetation.

*21. We understand that tailings are often vegetated in order to stabilize the pile and prevent wind erosion and dispersal. The Pebble area is a harsh climate with strong winds. Can suitable vegetation be established in such a climactic environment?*

Yes, we believe that vegetation can be established on the Pebble Project site. Vegetation has been successfully established as part of mine reclamation projects in other northern geographies, including parts of Alaska.

To be permitted, the Pebble Project must have an approved Reclamation Plan in place, including specific measures to successfully re-vegetate the area. This may require that certain soils or "overburden" be placed on top of tailings and contoured to both help re-vegetation and establish water features and other habitats.

The Reclamation Plan for the Pebble Project is not yet complete, but it must be approved before mine permits can be issued. Regulatory agencies must be satisfied that the re-vegetation measures laid out in the plan will be successful.

22. *Will the tailings be capped after processing is complete? What will be used?*

Yes, the tailings will be capped although the specific materials to be used will not be known until Northern Dynasty completes its Reclamation Plan.

In general, capping may be carried out using water, soils or mine rock. Sometimes, capping is achieved by applying ‘soil amendments’ and planting in order to get a self-sustaining plant community established. In such cases, capping with other materials is not necessary.

Northern Dynasty’s Reclamation Plan, which must be in place before mine permits are issued, will specify what capping techniques will be employed and the nature of the medium to be used.

23. *What will the tailings impoundment look like after reclamation?*

Northern Dynasty is still developing its mine plan for the Pebble Project, including its Reclamation Plan. The steps taken to reclaim disturbed areas following mine closure will be fully defined within the mine planning materials to be submitted for permit application sometime next.

In general, reclamation will include land contouring, establishing native plant cover, wetland creation and the development of surface water drainage channels. Embankments will likely be visible as gently sloping earthen landforms with level crests and generally straight alignments.

In the area of the tailings pond where ‘potentially reactive’ materials are stored, water cover will be maintained to avoid acidic conditions. This could be accomplished by building a flooded porous rock fill with a revegetated cap along the perimeter, along with a shallow pond over the remainder of the surface.

The rest of the tailings facility will contain non-reactive sand and silt-size rock particles. It may be reclaimed through a combination of methods, including re-vegetation and surface ponds.

24. *What exactly is a Mixing Zone? Will Northern Dynasty use a Mixing Zone?*

A ‘Mixing Zone’ is a three-dimensional area in a surface water body specified in a discharge permit, within which Aquatic Life Standards do not have to be met.

These zones are generally specified where an ‘end-of-pipe’ discharge does not meet Aquatic Life Standards, but where mixing with receiving water will result in those standards being met further downstream. Some discharges do not need ‘Mixing Zones’ because they already meet Aquatic Life Standards, while others do because they do not meet these standards.

There are no current plans for a ‘Mixing Zone’ at the proposed Pebble mine.

25. *Why was the south tributary of the Koktuli River chosen for tailings disposal?*

The headwater area of South Fork Koktuli River (east of Kaskanak Mountain) is being considered for tailings disposal because it presents fewer environmental and socioeconomic risks than any of the possible alternatives.

This location is currently favored by Northern Dynasty, though studies are ongoing. Once these studies are complete, Northern Dynasty plans to discuss the selection process with communities to ensure that important information has not been missed.

The headwater area of South Fork Koktuli River is favored as a site for tailings disposal for several reasons. One of the most important reasons is that, unlike other comparable sites, it does not support 'robust' populations of fish and wildlife.

26. *We understand that one method of preventing acid generation and controlling dust is to keep the tailings under water. Given the size of the "tailings lake" that would be created, how will NDM protect the tailings dam from damage due to ice movement during severe windstorms that occur regularly in this area?*

The tailings pond will be shallow, and will be located some distance from the tailings embankment. To the extent that ice movement does occur due to severe wind storms, it will likely result in ice sheets becoming 'beached' on the gently-sloping tailings solids. Ice will not come into contact with the embankment itself.

## **MINE WATER**

27. *We know that water draining through a mine pit, processing facilities, and the general mine environment can become contaminated with explosive residue, fuels, lubricants, and that it can be acidic, and bear toxic levels of metals. Can you provide a complete list of potential contaminant sources? Please provide it.*

Northern Dynasty is still developing its mine plan for the Pebble Project, so a complete list of potential contaminant sources is not yet available. A list of potential contaminants, their relative quantities as well as how they will be managed to prevent discharge to the environment, will be presented within the mine planning materials to be submitted for permit application sometime next year.

28. *What will be the chemical composition of water draining from the mine environment after the operation closes?*

The chemical composition of water to be discharged into the environment following mine closure is still being determined. This information will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

Regardless of its specific composition, all water discharged into the environment – either during mine operations or following closure – must meet Aquatic Life Standards set by the State of Alaska.

29. *How will contamination emanating from the mine environment be prevented from polluting surface and groundwater both during and after operation?*

Northern Dynasty's Water Management Plan will outline the facilities, systems and procedures required to ensure that surface and groundwater are not degraded during mine operations or after closure. These topics are still being studied, but will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, Northern Dynasty plans to control, collect and contain all process and run-off water for re-use in the milling process during operations. Any water that might be released to the downstream environment during mine operations would have to meet Aquatic Life Standards.

After closure, some water flows may be routed into the open pit for ongoing passive treatment. Other will be released into the environment, but only if they meet Aquatic Life Standards. Contamination will not be permitted to emanate from the mine site and pollute surface and ground water either during or after mine operations.

30. *What will become of the pit after mining is complete? We have heard that pits can be turned into lakes. Will NDM turn the Pebble Pit into a lake?*

It is likely that the pit at the proposed Pebble mine will become a lake after mine closure, although Northern Dynasty's Reclamation Plan is not yet complete. This aspect of reclamation planning will be discussed with local communities before a final decision is reached.

It should be noted that filling the pit with water will take many decades.

*31. Will the pit walls generate acidic water?*

Some portions of the proposed pit wall contain ‘potentially reactive’ rock and will create acidic conditions. Although acid generation will cease as the pit fills with water, strategies will be developed to either prevent or manage acidic conditions when and where they do occur.

It is also possible that a portion of the pit’s ‘high wall’ – that segment that will not be inundated with water – will contain ‘potentially reactive’ rock. Permanent strategies to prevent or manage acidic conditions will be developed in these cases.

Northern Dynasty is currently studying these topics and developing management plans. Strategies to address acidic conditions within the open pit will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

*32. What contaminants will be present in the pit lake water?*

The composition of the pit lake water is still being studied, but will be fully defined within the mine planning materials submitted for permit application sometime next year.

*33. If the pit lake water is contaminated or acidic, how will this water be prevented from entering the downstream environment?*

Planning for pit closure is not yet complete. This question will be fully addressed within the mine planning materials submitted for permit application sometime next year.

In general, the pit lake would have to be virtually full before any contained water could flow over the pit rim to the downstream environment. It will take many decades before this occurs.

Ultimately, any water leaving the pit lake must meet Aquatic Life Standards. If pit lake water does not meet Aquatic Life Standards, it will have to be collected and treated in a treatment plant before being discharged into the environment.

## HUMAN HEALTH

### A. Drinking Water Quality

*34. What potential sources of pollution have the possibility of affecting the quality of drinking water sources?*

Drinking water sources will be fully protected. This is the case because all water that leaves the mine site will be carefully monitored. Water will not be permitted to discharge into the environment unless it meets Aquatic Life Standards, both during mine operations and following closure.

For most elements, Aquatic Life Standards are much stricter than drinking water standards. Exceptions to this rule include mercury and arsenic. These elements will be individually monitored to ensure that concentrations are below human consumption standards.

*35. How high is the risk that drinking water sources could be contaminated by the Pebble operation?*

The risk posed by the Pebble Project to drinking water sources is extremely low.

*36. What is the relative toxicity of potential contamination sources?*

The various chemicals and minerals associated with the mining and milling process at the proposed Pebble mine are still being studied, along with their respective quantities and the manner in which they will be managed. All of this information will be provided within the mine planning materials to be submitted for permit application sometime next year.

*37. What chemicals are used in the mineral processing, and at other mine functions?*

Northern Dynasty's metallurgical studies, which will determine how the minerals present within the Pebble deposit can be most efficiently extracted, are not yet complete. Chemicals that will be used in the milling process are not yet known. This information will be comprehensively defined within the mine planning materials to be submitted for permit application sometime next year.

Northern Dynasty expects to employ a standard crush-grind-float process to extract minerals from ore. Based on the experience of other operations designed to extract minerals from similar deposits, it is expected that most chemicals used in this process will be organic. A variety of additional extraction processes are also being considered to optimize gold recovery.

*38. What chemicals could escape from the environment in the case of improper operation, inadequate safeguard measures, or in the case of an unforeseen natural disaster?*

The various chemicals associated with the mining and milling process at the proposed Pebble mine are still being studied, along with their respective quantities and the manner in which they will be managed. All of this information will be provided within the mine planning materials to be submitted for permit application sometime next year.

Northern Dynasty is developing a mine plan that will ensure all of the chemicals used at the proposed mine site are contained and carefully managed, and do not damage the surrounding environment. This includes creating special contingency plans to address risks associated with natural events – such as earthquakes and floods.

In addition to all of the safeguards built into the project design, an environmental monitoring program will be employed at every phase of mine development. The monitoring program will be designed to detect any unexpected environmental changes – including potential chemical contamination – before such changes pose a threat to humans, air, water, or fish and wildlife.

Northern Dynasty's environmental monitoring program must be reviewed and approved by regulatory agencies as part of the mine permitting process.

*39. Have you documented all sources of drinking water in downstream environment?*

We are conducting baseline water quality studies in Nondalton, Iliamna, Newhalen, and Pedro Bay. Although we are designing the Pebble Project to avoid releases of measurable or harmful amounts of potential contaminants, we understand the importance of this topic to downstream water users, and are committed to the collection of sufficient baseline data.

*40. Will these sources be monitored throughout the life of the mine and beyond?*

Northern Dynasty is still undertaking baseline water quality studies. Once these and other studies are complete, the company will propose an environmental monitoring program within the mine planning materials to be submitted for permit application sometime next year.

The extent of monitoring of domestic (and other) water sources is not yet known, although Northern Dynasty's environmental monitoring plan must be reviewed and approved by state and federal agencies. In general, Northern Dynasty believes that some domestic water quality monitoring is appropriate, but a final determination on the extent and location of monitoring activities will be reached through consultation with government agencies and affected users – including the Nushagak-Mulchatna Watershed Council.

*41. What will NDM do to ensure that drinking water quality is not changed?*

The mining and milling process is being designed to properly manage and control potential contaminants at the mine site. This can be done, in part, by achieving a carefully controlled 'water balance' – in which the amount of water stored and used at the project site is balanced with the amount of precipitation and run-off within the project area.

After mine operations are complete, Northern Dynasty's Reclamation Plan will specify provisions for routing run-off water and ensuring that all water leaving the project area meets Aquatic Life Standards and human consumption standards.

Finally, an environmental monitoring plan will be employed at every phase of mine development to detect any unexpected environmental changes before such changes pose a threat to humans, air, water, or fish and wildlife.

All aspects of Northern Dynasty's mine plan will be reviewed and approved by State and Federal government agencies.

*42. What will NDM do to assure every potentially affected human consumer of water that his or her source will remain unchanged in perpetuity?*

Northern Dynasty's mine plan will include facilities design, operating plans, closure plans, environmental monitoring plans, as well as relevant safeguards to ensure that the project does not affect domestic water quality in the region. These plans will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

*43. What will NDM do if its operation, despite the best of intention and engineering excellence, contaminates water during mine operation and through closure?*

State and federal regulations require the company to meet very strict water quality standards. Mine planning is currently underway to develop a project that meets these standards during mine operations and through closure.

Additionally, Northern Dynasty will post a large bond as part of the permitting process. The purpose of this bond is to provide sufficient funds in the event of unexpected outcomes to deal with contaminants or other unanticipated effects.

Specifically, if water-borne contaminants are found to be leaving the project area, it may be necessary to establish and operate a water treatment plant to bring water quality into compliance. Other remedies, such as an enhanced groundwater 'pump-back' system, may also be required. These systems are well understood and are functioning effectively at a number of mining projects around the world.

## **B. Subsistence Food Quality**

*44. What are the potential sources of contamination to subsistence food resources as a result of the Pebble operation?*

Potential contaminants associated with the mining and milling process at the proposed Pebble mine are still being studied, along with their respective quantities and the manner in which they will be managed. All of this information will be provided within the mine planning materials to be submitted for permit application sometime next year.

In general, the sources of potential contamination that could affect subsistence food resources include various chemicals and metals, as well as dust from the mining and milling process. It is Northern Dynasty's goal to protect all subsistence resources from significant contamination.

*45. How high is the risk that these resources could be contaminated by the Pebble operation?*

Overall, the risk of subsistence food resources becoming contaminated is low.

*46. What is the relative toxicity of potential contamination sources?*

The relative toxicity of potential contaminant sources at the proposed Pebble mine are still being studied, as well as the manner in which they will be managed. All of this information will be provided within the mine planning materials to be submitted for permit application sometime next year.

*47. What will NDM do to ensure that subsistence foods that local residents consume do not become contaminated?*

Northern Dynasty's mine plan will include facilities design, operating plans, closure plans, environmental monitoring plans, as well as relevant safeguards to ensure that the project does not affect subsistence resources in the region. These plans will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, Northern Dynasty's mine plan will maintain water quality in the project area by achieving a careful water balance, and ensuring that any water that does leave the mine area during operations or after closure meets Aquatic Life Standards and human consumption standards. Additionally, strict protocols will be developed to avoid and reduce dust created by the mining and milling process, as well by project-related transportation.

Northern Dynasty is studying different ways to avoid and reduce project-related dust. These include:

- blasting techniques that do not create large dust plumes;
- keeping tailings material saturated or under water;
- containing dust from the crushing and grinding process within the mill building;
- undertaking all concentrate handling within enclosed areas;
- utilizing a concentrate pipeline, rather than concentrate trucks;
- road watering;
- a truck-wash system at the mill site and the port site.

*48. During the life of the operation and beyond, what will NDM do to assure subsistence resource consumers that their resources have not been contaminated?*

Northern Dynasty's mine plan will include operating plans, closure plans, environmental monitoring plans, as well as relevant safeguards to ensure that the project does not affect subsistence resources in the project area. These plans will be comprehensively described within the mine planning materials to be submitted for permit application sometime next year.

Northern Dynasty has already begun an extensive environmental monitoring program for such resources as water, plants and soils. An environmental monitoring plan will be employed at every phase of mine development to detect any unexpected environmental changes before such changes pose a threat to humans, air, water, or fish and wildlife.

### **C. Air Quality**

*49. What are the potential sources of contamination to air as a result operations at Pebble?*

Potential sources of air pollution at the proposed Pebble mine are still being studied, as well as their respective quantities and the manner in which they will be managed. All of this information will be provided within the mine planning materials to be submitted for permit application sometime next year.

In general, potential sources of contamination to air as a result of operations at the Pebble Project include dust and certain particulates from heavy equipment.

*50. How will power be generated?*

Northern Dynasty is currently conducting joint studies with Homer Electric Association (HEA) to assess options for the supply of power to the mine. Detailed information on how power will be generated to supply the Pebble Project will be contained in the HEA's energy plan when it is complete.

*51. Of the various alternatives for power that are being considered, which is projected to have the lowest air quality impact?*

HEA is currently preparing an energy plan that will determine how power will be generated to supply the proposed Pebble mine. This plan will provide information on each of the various power generation alternatives studied, and their respective impacts on air quality.

In general, power generated from hydroelectric and natural gas generating plants, transmitted to the proposed Pebble mine site from the Rail Belt Grid via the Kenai Peninsula, is expected to have the lowest air quality impact. Northern Dynasty is currently using this power alternative for mine planning purposes.

*52. How will dust be controlled in the mine environment?*

Northern Dynasty will employ a number of different approaches to avoid and reduce project-related dust at the mine site. This includes dust generated from mining activities, milling activities and tailings disposal.

The specific approaches employed for dust control will be fully described within the mine planning materials to be submitted for permit application sometime next year.

Techniques and processes currently being evaluated include:

- blasting techniques that do not create large dust plumes;
- keeping tailings material saturated or under water;
- containing dust from the crushing and grinding process within the mill building;
- undertaking all concentrate handling within enclosed areas.

*53. How will dust be controlled along the transportation corridor?*

Dust control measures to be employed along the transportation corridor will depend on the type of road surfacing, which has not yet been determined. Proposed dust control measures for the transportation corridor will be fully described within the mine planning materials to be submitted for permit application sometime next year.

In general, Northern Dynasty may employ a number of different approaches to avoid and reduce project-related dust along the transportation corridor. These include:

- utilizing a concentrate pipeline, rather than concentrate trucks;
- road watering;
- a truck-wash system at the mill site and the port site.

*54. What alternatives for transportation provide the lowest air quality impact?*

Transportation options are still being evaluated, including potential road routes and designs, as well as the modes of transportation that will serve to move materials and people to and from the mine site. The transportation plan proposed for the Pebble Project, as well as its relative impact air quality, will be fully described within the mine planning materials to be submitted for permit application sometime next year.

55. *We are aware that Red Dog Mine had a problem with lead and zinc concentrate dust being released along the road to the port, and that this dust contaminated vegetation and soil, thereby affecting berries as a subsistence resource. How will similar contamination be avoided at the Pebble operation?*

Northern Dynasty is evaluating a range of options for transporting mineral concentrate from the mine to the port site. The preferred transportation option, as well as the systems and techniques that will be used to control concentrate dust from being released to the environment, will be fully described within the mine planning materials to be submitted for permit application sometime next year.

Techniques and approaches currently being evaluated to control concentrate (or fugitive) dust from being released to the environment include:

- containing dust from the crushing and grinding process within the mill building;
- undertaking all concentrate handling within enclosed areas;
- utilizing a concentrate pipeline, rather than concentrate trucks;
- a truck-wash system at the mill site and the port site.

56. *If subsistence resources are somehow accidentally contaminated through some unforeseen circumstance, will we be compensated for the loss of those subsistence resources?*

Yes, but no circumstances would result in the complete loss of subsistence resources.

57. *If so, how do you propose to put a price tag not only on the loss of the resource, but the loss of a lifestyle?*

It is possible to provide compensation for lost subsistence harvest, as this is a measurable quantity. Northern Dynasty will not attempt to place a price tag on the subsistence lifestyle, as there is no possibility that the Pebble Project could result in the complete loss of this lifestyle.

## **ENVIRONMENTAL HEALTH**

### **A. Water Quality**

*58. What Pebble project potential sources of pollution have the possibility of affecting the quality of water?*

Potential sources of pollution associated with the mining and milling process are still being studied, along with the manner in which they will be managed. All of this information will be provided within the mine planning materials to be submitted for permit application sometime next year.

In general, potential sources of water pollution include:

- acid generation from ‘potentially reactive’ rock or tailings;
- sedimentation due to erosion at the mine site or along access roads;
- mine site run-off;
- tailings water;
- mine water.

*59. How high is the risk that water could be contaminated by the Pebble operation?*

The risk is very low. Northern Dynasty is developing a mine plan that will maintain water quality in the project area by achieving a careful water balance, and ensuring that any water that does leave the mine area during operations or after closure meets Aquatic Life Standards and human consumption standards.

The various design features and operational controls to be used in mine operations are well-established and proven techniques for water management. They will be fully reviewed and approved by state and federal government agencies, and subject to strict Quality Assurance/Quality Control processes.

*60. How high is the risk that water quality could be slowly degraded over time through minor leaks and releases?*

The risk is very low. Northern Dynasty is developing a mine plan that will maintain water quality in the project area by achieving a careful water balance, and ensuring that any water that does leave the mine area during operations or after closure meets Aquatic Life Standards and human consumption standards.

Additionally, an environmental monitoring plan will be employed at every phase of mine development to detect any unexpected environmental changes before such changes pose a threat to water quality.

*61. What is the relative toxicity of potential contamination sources?*

The relative toxicity of potential contaminant sources at the proposed Pebble mine are still being studied, as well as the manner in which they will be managed. All of this information will be provided within the mine planning materials to be submitted for permit application sometime next year.

In general, the toxicity of various water streams at the mine site is expected to be low. For example, preliminary acute toxicity bioassay test results show that rainbow trout could survive in a solution of tailings water.

*62. What is the chemical composition of water that is impounded in the tailings pile during operation?*

The chemical composition of the tailings water is still being evaluated. This information will be provided within the mine planning materials to be submitted for permit application sometime next year.

*63. What will be the chemical composition of water draining from the mine environment after the operation closes?*

The chemical composition of water that will be discharged from the project site following mine closure is still being evaluated. This information will be provided within the mine planning materials to be submitted for permit application sometime next year.

In general, all water discharged from the project site, either during operations or post-closure, will meet Aquatic Life Standards and human consumption standards.

*64. What is the acid generating capability of the tailings, the pit walls, and the waste rock piles?*

Some portion of the tailings and the pit walls at the proposed Pebble mine will have the potential to generate acidic conditions. This potential is still being evaluated, and will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

Northern Dynasty's mine plan will describe the approaches and techniques proposed to avoid and reduce acid generation at the mine site, as well as how acidic conditions will be managed to protect the surrounding environment.

Northern Dynasty does not expect the Pebble Project to incorporate waste rock piles.

*65. What chemicals could escape from the environment in the case of improper operation, inadequate safeguard measures, or in the case of an unforeseen natural disaster?*

The various chemicals associated with the mining and milling process at the proposed Pebble mine are still being studied, along with their respective quantities and the manner in which they will be managed. All of this information will be provided within the mine planning materials submitted for permit application sometime next year.

In general, these chemicals include:

- natural elements leached from rock and tailings;
- reagents used in the milling process; and
- other chemicals used to maintain operations.

Northern Dynasty is developing a mine plan that will ensure all of the chemicals used at the proposed mine site are contained and carefully managed. This includes creating special contingency plans to address risks associated with natural events – such as earthquakes and floods.

In addition to all of the safeguards built into the project design, an environmental monitoring program will be employed at every phase of mine development. The monitoring program will be designed to detect any unexpected environmental changes – including potential chemical contamination – before such changes pose a threat to humans, air, water, or fish and wildlife.

*66. What will NDM do to ensure that water quality is not changed in the downstream environment?*

Northern Dynasty is developing a mine plan that will maintain water quality in the downstream environment by achieving a careful water balance, and ensuring that any water that does leave the mine area during operations or after closure meets Aquatic Life Standards and human consumption standards.

Additionally, an environmental monitoring plan will be employed at every phase of mine development to detect any unexpected environmental changes before such changes pose a threat to water quality.

*67. What will NDM do to assure all stakeholders that water quality will remain unchanged in perpetuity?*

Northern Dynasty is developing a mine plan that will maintain water quality in the downstream environment by achieving a careful water balance, and ensuring that any water that does leave the mine area during operations or after closure meets Aquatic Life Standards and human consumption standards.

Additionally, an environmental monitoring plan will be employed at every phase of mine development to detect any unexpected environmental changes before such changes pose a threat to water quality.

Northern Dynasty's mine plan for the Pebble Project, including its closure and environmental monitoring plan, must be comprehensively reviewed and approved by Federal and State government agencies before the proposed mine can be permitted.

## **B. Water Flow**

*68. How much water will the Pebble operation consume?*

Northern Dynasty is still undertaking studies and developing its mine plan for the Pebble Project. The amount of water to be used at the proposed mine will not be known until this process is complete. This information will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, the amount of water used by the proposed Pebble mine will depend primarily on mill 'through-put' – or the number of tons per day of ore processed at the mill. A great deal of engineering effort has already gone into adjusting the excavation and milling requirements to the size of the tailings storage area to achieve optimum water balance. This work is continuing.

Water is used in the milling process and is discharged to the tailings storage area with tailings. Some of this water is incorporated permanently within the tailings mass; the rest will be recycled back to the mill. The amount of water incorporated permanently inside the tailings mass is the amount of water that the Pebble Project will consume.

*69. How much will this consumption affect the level of water in the downstream environment?*

Northern Dynasty is still undertaking studies and developing its mine plan for the Pebble Project. The amount of water to be used at the proposed mine, and corresponding impacts on downstream flows, will not be known until this process is complete. This information will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, Northern Dynasty engineers, surface hydrologists, groundwater hydrologists, and aquatic biologists are working hard to develop a tailings disposal and mill operations plan that will protect base flows in both the Koktuli and Upper Talarik drainages.

It should be noted that Northern Dynasty has made a commitment to the people of Bristol Bay and all Alaskans that there will be no net-loss to any fishery – be it a commercial, recreational or subsistence harvest – as a result of the Pebble Project.

*70. How much will this affect water temperatures in the downstream environment?*

Northern Dynasty is still undertaking studies and developing its mine plan for the Pebble Project. The project's potential effects on downstream water temperature will not be known until this process is complete. This information will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, the temperature of streams can be increased in instances where water is impounded and then released, or where stream flows are greatly reduced. Neither of these circumstances are expected to occur at the Pebble Project, so water temperatures should not be affected.

*71. How will NDM ensure that fish passage, fish habitat, fish spawning and fish rearing are not impacted by reduced water flow?*

Northern Dynasty is still undertaking studies and developing its mine plan for the Pebble Project. The approaches and techniques used to protect fish and fish habitat are not yet finalized, but will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, the first priority in preventing adverse impacts to fish passage, fish habitat, and spawning and rearing activities is to site project facilities as far away from important fish habitat as possible. The next priority is to protect base flows in all three major streams – the North Fork Koktuli, the South Fork Koktuli, and Upper Talarik Creek.

Additionally, Northern Dynasty will ensure that any water that does leave the mine area during operations or after closure meets Aquatic Life Standards.

It should be noted that Northern Dynasty has made a commitment to the people of Bristol Bay and all Alaskans that there will be no net-loss to any fishery – be it a commercial, recreational or subsistence harvest – as a result of the Pebble Project.

*72. Will effluent be allowed to pass from the tailings pile or from the mine into the groundwater table, or will there be linings that prevent effluent movement?*

No. Water from the tailing impoundment will not be allowed to drain into the groundwater table in the downstream environment.

Precautions will be incorporated into the tailings impoundment design to ensure that tailings water does not seep into the environment. The specific design features and techniques employed to control seepage from the tailings impoundment into groundwater will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, flow to groundwater can be controlled in two ways. One way is to install a waterproof liner within the tailings impoundment area to control seepage. Another is to develop a seepage control system that seeks to capture any tailings water that seeps out of the impoundment, and pump it back into the tailings storage area.

*73. We have heard that very small changes in water chemistry can be detrimental to salmon reproduction and juveniles. How will Northern Dynasty prevent these small changes?*

Northern Dynasty will ensure that any water that does leave the mine area during operations or after closure meets Aquatic Life Standards and human consumption standards. The specific approaches and techniques employed to achieve discharge water standards will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

Additionally, an environmental monitoring plan will be employed at every phase of mine development to detect any unexpected environmental changes before such changes pose a threat to water quality or fish.

It should be noted that Northern Dynasty has made a commitment to the people of Bristol Bay and all Alaskans that there will be no net-loss to any fishery – be it a commercial, recreational or subsistence harvest – as a result of the Pebble Project.

*74. We have heard that a small amount of copper is particularly harmful to fish eggs and fry. Is this true? We understand that the goal is to recover the copper, but some will escape to tailings. How will you prevent harm to eggs and juvenile fish from copper contamination?*

Very high levels of copper can interfere with fish eggs and fry. At the same time, copper is a ‘micro-nutrient’ that is necessary in small amounts for proper embryonic development. Aquatic Life Standards take this into account.

### **C. Plants**

*75. What are the potential sources of contamination that could affect the health of plants in the mine area and along the transportation corridor?*

Potential sources of contamination at the mine site and along the transportation corridor are still being studied. All of this information – as well as the approaches and techniques that will be employed to manage potential contaminants – will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, the sources of potential contamination that could affect the health of plants include various chemicals and metals, as well as dust from the mining and milling process.

*76. How will this contamination be avoided?*

Northern Dynasty is still undertaking studies and developing its mine plan for the Pebble Project. The approaches and techniques used to protect vegetation near the mine site and along the transportation corridor from potential contaminants have not yet been finalized, but will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, Northern Dynasty will ensure that any water that does leave the mine area during operations or after closure meets Aquatic Life Standards and human consumption standards.

The company is also studying different ways to avoid and reduce project-related dust. These include:

- blasting techniques that do not create large dust plumes;
- keeping tailings material saturated or under water;
- containing dust from the crushing and grinding process within the mill building;
- undertaking all concentrate handling within enclosed areas;
- utilizing a concentrate pipeline, rather than concentrate trucks;
- road watering;
- a truck-wash system at the mill site and the port site.

Additionally, an environmental monitoring plan will be employed at every phase of mine development to detect any unexpected environmental changes before such changes pose a threat to plant health.

77. *We are aware that Red Dog Mine had a problem with lead and zinc concentrate dust being released along the road to the port, and that this dust contaminated vegetation. How will similar contamination be avoided?*

Northern Dynasty is evaluating a range of options for transporting mineral concentrate from the mine to the port site. The approaches and techniques that will be used to control concentrate dust from being released to the environment, will be fully described within the mine planning materials to be submitted for permit application sometime next year.

Techniques and approaches currently being evaluated to control concentrate (or fugitive) dust from being released to the environment include:

- containing dust from the crushing and grinding process within the mill building;
- undertaking all concentrate handling within enclosed areas;
- utilizing a concentrate slurry pipeline, rather than concentrate trucks;
- a truck-wash system at the mill site and the port site.

#### **D. Soil**

78. *What are the potential sources of contamination that could affect the health of plants in the mine area and along the transportation corridor?*

Potential sources of contamination at the mine site and along the transportation corridor are still being studied. All of this information – as well as the approaches and techniques that will be employed to manage potential contaminants – will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, the sources of potential contamination that could affect the health of soil and vegetation include various chemicals and metals, as well as dust from the mining and milling process.

79. *How will this contamination be avoided?*

Northern Dynasty is still undertaking studies and developing its mine plan for the Pebble Project. The approaches and techniques used to protect soils and vegetation near the mine site and along the transportation corridor from potential contaminants have not yet been determined, but will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, Northern Dynasty will ensure that any water that does leave the mine area during operations or after closure meets Aquatic Life Standards and human consumption standards. The company is also studying different ways to avoid and reduce project-related dust. For more information, see question #76.

Additionally, an environmental monitoring plan will be employed at every phase of mine development to detect any unexpected environmental changes before such changes pose a threat to plant health.

80. *We are aware that Red Dog Mine had a problem with lead and zinc concentrate dust being released along the road to the port, and that this dust contaminated soil. How will similar contamination be avoided?*

Northern Dynasty is evaluating a range of options for transporting mineral concentrate from the mine to the port site. The approaches and techniques that will be used to control concentrate dust from being released to the environment, will be fully described within the mine planning materials to be submitted for permit application sometime next year.

Techniques and approaches currently being evaluated to control concentrate (or fugitive) dust from being released to the environment include:

- containing dust from the crushing and grinding process within the mill building;
- undertaking all concentrate handling within enclosed areas;
- utilizing a concentrate slurry pipeline, rather than concentrate trucks;
- a truck-wash system at the mill site and the port site.

#### **E. Air**

81. *What are the potential sources of contamination that could affect air quality in the mine area, along the transportation corridor, at the power generation facility, or at any other mine-related infrastructure?*

Potential sources of air pollution at the proposed Pebble mine and along the transportation corridor are still being studied. All of this information, as well as the approaches and techniques that will be employed to manage potential contaminants, will be provided within the mine planning materials to be submitted for permit application sometime next year.

Potential sources of air pollution associated with power generation facilities developed to support the Pebble Project will be addressed within the Homer Electric Association's energy plan.

In general, potential sources of air pollution associated with the Pebble Project include dust and certain particulates from heavy equipment.

82. *Is dust a significant environmental concern? If so, how will dust be controlled during construction and operation?*

Uncontrolled dust can create environmental harm, particularly ‘fugitive’ dust that emanates from mineral concentrate. The specific practices and techniques Northern Dynasty will use to avoid and reduce dust will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, Northern Dynasty is studying different ways to avoid and reduce project-related dust. These include:

- blasting techniques that do not create large dust plumes
- keeping tailings material saturated or under water;
- containing dust from the crushing and grinding process within the mill building;
- undertaking all concentrate handling within enclosed areas;
- utilizing a concentrate slurry pipeline, rather than concentrate trucks;
- road watering;
- a truck-wash system at the mill site and the post site.

83. *How is air quality factored into alternative analysis of power generation, transportation, and mine equipment? How much weight is air quality impact given in these analyses?*

Air quality is one of many important factors to be considered in selected a power source, transportation plan and mine equipment for the proposed Pebble mine.

Homer Electric Association is currently preparing an energy plan that will determine how power will be generated to supply the Pebble Project. This plan will provide information on each of the various power generation alternatives studied, including their relative impacts on air quality.

In addition, Northern Dynasty is undertaking its own studies to determine how on-site power generation needs will be met, and which mine equipment and transportation options will be employed. Air quality studies will be undertaken with respect to all of these issues, the findings of which will be provided within the mine planning materials to be submitted for permit application sometime next year.

## **F. Fish Habitat**

*84. We understand that the current preferred alternative is to sacrifice Frying Pan Lake and part of the south tributary Koktuli River drainage for tailings disposal. We understand that this site was chosen, in part, because the waters have lower levels of resident fish and fish spawning and rearing habitat. Nevertheless, these waters do provide habitat for some fish, and that the waters to be sacrificed do contain resident fish, fish rearing habitat in the form of beaver ponds, and spawning areas. We further understand that when such sacrifices are made, it is typical that compensation or mitigation of some sort is made. What is the form of this compensation? What specifically is being proposed?*

Northern Dynasty is still undertaking studies and developing its mine plan for the Pebble Project. The precise location of tailings impoundments will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

It is expected, however, that the proposed tailings impoundment will be situated in the South Fork Koktuli River and will displace Frying Pan Lake, a small perched water body in the project area. As such, Northern Dynasty will work with local stakeholders to develop a mitigation plan to offset project impacts on fish and fish habitat. Although preliminary work on this plan has begun, it is yet at conceptual phase.

Mitigation for loss or impairment of fish habitat can take many forms, but the best course of action is to either minimize the loss or mitigate it on site (or as close to the affected site as possible). If mitigation at the site itself is not possible, mitigation within the affected watershed is the next-highest priority.

Northern Dynasty is confident that mitigation strategies developed in cooperation with local stakeholders can achieve benefits that fully offset negative effects on fish and fish habitat.

It should also be noted that Northern Dynasty has made a commitment to the people of Bristol Bay and all Alaskans that there will be no net-loss to any fishery – be it a commercial, recreational or subsistence harvest – as a result of the Pebble Project.

85. *We understand that all the anadromous rivers of the Bristol Bay region are precluded from mining through Mineral Closing Orders (MCO). The Koktuli River is a catalogued anadromous river, but we are unsure of the MCO boundaries. The closures were put in place to preserve the salmon spawning and rearing areas specifically from mining activity. We are wondering whether or not the tailings disposal area overlaps with the Mineral Closing Order area that is on the Koktuli River. Please provide maps or drawings that clearly show the closed areas in relation to the tailings disposal area and other mine infrastructure. Does NDM plan to disturb, in any way, lands or waters that are overlain by the Koktuli River MCO?*

The MCO boundaries extend along the North Fork Koktuli, the Upper Talarik, and up the South Fork Koktuli to Frying Pan Lake.

Although Northern Dynasty's mine plan for the Pebble Project is not yet complete, it is not expected to undertake 'mining activity' within MCO boundaries. That said, it is possible that some facilities may be situated within a portion of the South Fork Koktuli MCO.

Detailed maps of proposed Pebble Project mine facilities will be provided within the mine planning materials to be submitted for permit application sometime next year.

86. *We understand that the National Marine Fisheries Service has special rules of Essential Fish Habitat (EFH). Congress defined EFH as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S.C. 1802(10)). It would appear that the Koktuli River would meet this definition. Does NDM consider any portion of the Koktuli River to be EFH? Does NMFS consider any portion of the Koktuli River to be EFH? What are the implications for development if indeed the areas of the upper part of the Koktuli south tributary are classified as EFH?*

Northern Dynasty is currently reviewing Essential Fish Habitat rules to determine how they might apply to areas affected by the Pebble Project. This information will be provided within the mine planning materials to be submitted for permit application sometime next year.

Northern Dynasty continues to refine its mine development plans to keep project facilities as far away from productive anadromous fish habitat as possible, and to have as little impact on streams outside the immediate project footprint as possible. NOAA Fisheries – formerly NMFS – is part of the permitting and environmental documentation process, and is actively providing feedback to Northern Dynasty. The company will continue to solicit input from NOAA Fisheries, as well as other state and federal government agencies, as the project evolves.

Northern Dynasty must meet all state and federal regulations in order to obtain the permits necessary to develop the Pebble Project.

## **G. Terrestrial Animals**

*87. We know the proposed mine area is productive for terrestrial animals. Caribou migrate through the area and are known to calve nearby. Moose inhabit the area. Bears den near the deposit and travel through the area enroute to feeding grounds on the salmon spawning grounds. Fox, wolves, porcupine and a variety of other animals live here. What is being done to document the existing habitat, animal populations and movements? What effect will the mine and attendant infrastructure have on terrestrial wildlife?*

Northern Dynasty is conducting extensive baseline studies to understand the existing environmental conditions in the project area, including the presence of terrestrial wildlife. The project's potential impacts on caribou and other terrestrial wildlife species are not yet known but will be comprehensively defined, along with proposed strategies to eliminate, minimize and mitigate these impacts, within the mine planning materials to be submitted for permit application sometime next year.

## **H. Ecosystem Integrity**

*88. There is great deal of interconnectivity in the ecosystem of the project area. Bears rely on spawning salmon. Trout rely on salmon eggs. Caribou, wolves and bears migrate through the area. What is being done to evaluate the overall ecosystem?*

The overall ecosystem in the Pebble Project area is being assessed as part of Northern Dynasty's environmental baseline studies. This information will be provided within the mine planning materials to be submitted for permit application sometime next year

Northern Dynasty is acutely aware of the interdependence of various ecosystem components, and is designing the Pebble Project with this in mind. Every effort is being made to preserve ecosystem functions and values.

*89. What is being done to evaluate potential impacts when one of the ecosystem components is changed or damaged?*

An ecosystem functional analysis is part of Northern Dynasty's environmental baseline studies and mine planning process. This information will be provided within the mine planning materials to be submitted for permit application sometime next year.

Although every effort is being made to preserve ecosystem functions and values, it is clear that some areas will be affected by the Pebble Project. Northern Dynasty's first priority is to minimize overall ecosystem impacts through careful mine planning. This is an ongoing process, with design engineers, biologists, hydrologists and socio-economic experts working together as an integrated team.

*90. What is being done to evaluate potential impacts due to habitat fragmentation and obstacles resulting from infrastructure developments?*

Primary migration routes and areas important for critical life-cycle stages are being investigated as part of Northern Dynasty's environmental baseline studies. All of this information, as well as the strategies proposed to eliminate, minimize and mitigate impacts on habitat connectivity, will be provided within the mine planning materials to be submitted for permit application sometime next year.

All of the mine development concepts being considered for the proposed Pebble mine are relatively compact – in part, to avoid and minimize impacts on critical habitat.

*91. Are migratory routes being documented?*

Yes, fish and wildlife migration routes are being documented as part of Northern Dynasty's environmental baseline studies. All of this information, as well as the strategies proposed to eliminate, minimize and mitigate impacts on migratory routes, will be provided within the mine planning materials to be submitted for permit application sometime next year.

## **I. Visual Effects and Noise**

*92. What are the potential sources of visual disturbance and noise? Will you provide a complete list?*

Potential sources of noise and visual disturbance associated with the proposed Pebble mine, as well as the strategies proposed to avoid, minimize and mitigate these impacts, will be fully described within the mine planning materials to be submitted for permit application sometime next year.

*93. How far away will the sound from blasting travel? Will we hear a blast in Nondalton? Newhalen? Iliamna? Igiugig? Pedro Bay? Port Alsworth?*

Northern Dynasty is still developing its mine plan for the Pebble Project, and evaluating how blasting can be most effectively undertaken. This information, as well as any proposed strategies to mitigate blasting noise, will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, sound from blasting and other activities dissipates rapidly with distance. It is also influenced by factors such as air density, wind speed and direction.

Blasting methods can also play a large role in determining the intensity of sound emanating from mining operations. More contained blasts – those that do not produce large quantities of ‘fly rock’ and dust – tend to produce less noise than blasts with much of the energy directed upward into the air.

Northern Dynasty will use a range of measures to maximize blasting efficiency and limit blasting noise, such as contained blasts and blast mats. It is in the company’s financial interest to *not* waste blasting agents by making excessive noise.

*94. What affect will blasting noise have on terrestrial animals, spawning fish, and other wildlife?*

Northern Dynasty is still developing its mine plan for the Pebble Project, and evaluating the potential impact that blasting may have on nearby communities and local wildlife. This information, as well as any proposed strategies to avoid, minimize and mitigate noise impacts, will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, blasting and other noise can be disruptive to fish and wildlife – especially initially. However, fish and wildlife generally acclimate to regularly recurring noises and human activities.

A good example of this is the acclimation of birds to jet traffic at airports. The same acclimation has also been observed in spawning and migrating fish. While initial events may be disruptive, acclimation occurs relatively rapidly.

*95. How often will blasts occur?*

Northern Dynasty is still developing its mine plan for the Pebble Project, and evaluating how blasting can be most effectively undertaken. This information, as well as any proposed strategies to mitigate blasting noise, will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, it is typical to expect one to two blasting episodes per week during operations. However, several factors determine blasting frequency, including:

- mill ‘through-put’ or the amount of ore processed each day at the mill;
- the type (hardness) of rock being blasted;
- the amount of ‘waste rock’ or ‘over-burden’ associated with mine operations; and
- the amount of waste rock used for construction activities.

*96. Will lights be visible in Nondalton? Newhalen? Iliamna? Igiugig? Pedro Bay? Port Alsworth?*

Northern Dynasty is still developing its mine plan for the Pebble Project, and assessing potential visual effects such as lighting. This information, as well as strategies proposed to avoid, minimize and mitigate visual effects, will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, lights from the proposed Pebble mine are not expected to be directly visible from any of these communities. However, the ‘lume’ or glow from mine lighting may be visible at night from Iliamna, Newhalen or other communities.

Lighting impacts are influenced by several factors, including:

- line-of-sight’ from the operation to the community in question;
- atmospheric conditions (for example, low clouds can reflect light while cloud shrouds can block light); and
- ambient light conditions.

*97. Will the sound of mining equipment or processing facilities be heard in Nondalton? Newhalen? Pedro Bay? Port Alsworth?*

Northern Dynasty is still developing its mine plan for the Pebble Project, and evaluating how mining and milling activities will be undertaken. This information, as well as related noise impacts and any proposed strategies to mitigate noise from mining equipment and processing facilities, will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

In general, mine site activities that can result in elevated sound levels include blasting, truck loading and hauling, conveyor noise, crushing and grinding. It is not yet known what noise impacts these activities will have at various distances from the mine site.

*98. If trucks will be used to transport the product, how many trucks will pass by Pedro Bay every day?*

Northern Dynasty is still developing its mine plan for the Pebble Project, and evaluating whether mineral concentrate will be transported via pipeline or by truck from the mine site to the port site. Although the current planning model anticipates using a concentrate pipeline, the project would still be served by trucks bringing materials and supplies from the port to the mine site.

Whether a pipeline or trucking option is ultimately selected, the number and type of vehicles travelling to and from the mine each day will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

*99. If a train was used to transport the product, how many trains would pass by Pedro Bay each day?*

Based on studies undertaken by the Alaska Department of Transportation & Public Facilities (ADOT&PF), transporting mineral concentrate and mine supplies via train does not appear to be a viable option.

*100. If a slurry pipeline was used to transport the product out, how many trucks per day would be bringing supplies to the mine?*

Northern Dynasty is still developing its mine plan for the Pebble Project, and evaluating whether mineral concentrate will be transported via pipeline or by truck from the mine to the port site. Whether a pipeline or trucking option is ultimately selected, the number and type of vehicles travelling to and from the mine each day will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

*101. What will be done to diminish or avoid light and noise emanating from trucks or trains?*

Northern Dynasty is still developing a mine plan for the Pebble Project, and determining what transportation methods it will employ to supply and service the mine. This information, as well as the light and noise impacts associated with mine transportation and any strategies proposed to mitigate these impacts, will be fully defined within the mine planning materials to be submitted for permit application sometime next year.

Based on studies undertaken by the Alaska Department of Transportation & Public Facilities (ADOT&PF), transporting mineral concentrate via train does not appear to be a viable option.

102. *How visible will the mine infrastructure be from aircraft flying at normal altitude (~1,500 feet ASL) between: Port Alsworth and Nondalton? Nondalton and Iliamna? Nondalton and Igiugig? Nondalton and Pedro Bay? Port Alsworth and Katmai Park? Iliamna and sports fishing areas on Upper Talarik Creek and Lower Talarik Creek?*

The mine infrastructure will be visible from aircraft flying at normal altitude. The Pebble Project is very large, with mine facilities covering an estimated 17 square miles.

## **J. Reclamation**

103. *Can you give an overview of what the mine footprint will look like after the mine has been closed and reclamation of the land has been completed?*

Northern Dynasty is still developing its mine plan for the Pebble Project, including its Reclamation Plan. The steps taken to reclaim disturbed areas following mine closure will be fully defined within the mine planning materials to be submitted for permit application sometime next.

In general, reclamation will include land contouring, establishing native plant cover, wetland creation and the development of surface water drainage channels. Embankments will likely be visible as gently sloping earthen landforms with level crests and generally straight alignments.

Water features will undoubtedly be part of the Reclamation Plan. Over a period of decades, the pit will fill with water to resemble a lake with steep rock banks. Buildings and other infrastructure will likely be removed. Some local access roads may also be removed.

104. *Will the land be re-established as wildlife habitat with the same soil and vegetative cover that is present now?*

Northern Dynasty is still developing its mine plan for the Pebble Project, including its Reclamation Plan. The steps taken to reclaim disturbed areas following mine closure, including proposed strategies to establish wildlife habitat, will be fully defined within the mine planning materials to be submitted for permit application sometime next.

In general, Reclamation Plans take wildlife habitat needs into account. Areas disturbed by mining operations are re-contoured to resemble natural conditions and promote desired drainage patterns. Overburden and topsoil are spread over re-contoured area, which are re-vegetated with native plant cover.

The rehabilitation of reclaimed areas at the Fort Knox gold mine near Fairbanks has resulted in extensive wildlife and fish use. This use persists in spite of ongoing mining and milling operations.

*105. How will water be prevented from being contaminated by mine rock, tailings and infrastructure?*

Northern Dynasty is still developing its mine plan for the Pebble Project, including its Reclamation Plan. The steps taken to ensure that water quality is maintained following mine closure will be fully defined within the mine planning materials to be submitted for permit application sometime next.

In general, the Reclamation Plan will include specific provisions for routing run-off water and ensuring that all water leaving the project area meets Aquatic Life Standards and human consumption standards. An environmental monitoring plan will also be employed to detect any unexpected environmental changes before such changes pose a threat to water quality.

*106. Who will be liable for risk management once the mine is closed and NDM moves on?*

Northern Dynasty is responsible for developing and implementing a Reclamation Plan that ensures the proposed Pebble mine has no negative impacts on the local environment following mine closure. For a project of this size, it is anticipated that NDM will retain an ongoing responsibility for maintaining environmental resources.

That said, Alaskan law requires that bonds are established in advance of any construction activity, mining activity, staged expansions or other disturbances to ensure that there is always adequate financial resources available to facilitate appropriate mine closure and reclamation regardless of what happens to the mine operators.

## **K. Adequacy of Baseline Studies**

*107. We understand that NDM plans to apply for its permits in the summer of 2005. We also understand that NDM has collected baseline environmental and socioeconomic data in 2004, and that Cominco also did some baseline work previously. We further understand that baseline studies will continue through the permitting process. Under the development schedule, as we understand it, this will mean three years of NDM-generated baseline data will be in hand when the permits are expected to be issued. Given the enormous area potentially affected, and the variability of the ecosystem, we are concerned that the length of study for baseline development may be inadequate. We think this especially possible for environmental components such as caribou migration and surface water hydrology as it relates to salmon spawning and rearing. Can you demonstrate that three years of baseline data is adequate for all ecosystem components?*

Northern Dynasty's environmental baseline data collection process will be as long as necessary to satisfy government agencies that the Pebble Project can be built, operated and reclaimed in compliance with state and federal regulations. The company believes strongly that the amount of baseline data available, and the period over which it is collected, will be more than sufficient for the permitting process to move forward.

It should be noted that Northern Dynasty's schedule has changed. It now expects to apply for permits in 2006. This will add at least one full year of field studies to the data used as a basis for permit applications, in addition to the baseline environmental work done by Cominco in the 1990s and the data to be collected during the permitting process.

Given the intensity of the field and laboratory effort undertaken by Northern Dynasty, and the scrutiny with which the environmental documentation and permit applications will be reviewed, the data set is expected to be very robust - even for a project of this size.

NDM and its consultants have already collected an impressive amount of information on a wide range of environmental topics, including:

- surface hydrology;
- groundwater hydrology;
- salmon spawning and rearing for all three major watersheds in the vicinity of the Pebble Project, as well as the tributary streams near the project;
- wildlife, including caribou migration, moose winter areas and other subsistence species.

In addition, Northern Dynasty is undertaking a great deal of stakeholder and community consultation within the pre-application phase of the project, so that local knowledge can be gained and public concerns can be received and acted on *early* in the process. The company continues to encourage *all* stakeholders to become constructively engaged in making Pebble an environmentally responsible mining project.

108. *Can the permitting process proceed properly, and can scientifically defensible decisions be made with only one or two years of baseline data in hand?*

Yes, but there will be considerably more than one or two years of baseline data in hand by the time final decisions are made regarding the mine plan and permitting conditions for the Pebble Project.

Northern Dynasty believes strongly that the amount of baseline data available, and the period over which it is collected, will be more than sufficient for the permitting process to move forward. If state and federal agencies conclude that a longer period of baseline data collection is necessary prior to issuing permits, Northern Dynasty will be required to abide by that decision.

## **L. Catastrophic Failure**

109. *The Pebble project is located in a seismically active area. There is potential for severe earthquakes and volcanic eruptions. The region is also prone to strong winds and occasional rainstorms and flood events. All of these natural disasters have the potential to cause environmental damage on a large scale. This damage may be irreversible. (e.g. a tailings dam failure that spills tailings and acidic metal-laden waters into the Koktuli River and the remainder of the Nushagak-Mulchatna watershed). Can NDM provide a complete list of the risks associated with such natural disastrous events?*

Northern Dynasty is required to provide a comprehensive assessment of potential risks associated with natural events – such as earthquakes and floods. This information, as well as the project design, operating protocols and contingency plans the company proposes to address potential risks associated with natural events, will be fully defined within the mine planning materials to be submitted for permit application sometime next.

110. *How will NDM protect against these natural disasters?*

Northern Dynasty is still developing its mine plan for the Pebble Project, and evaluating the project design, operating protocols and contingency plans it will propose to address potential risks associated with natural events – such as earthquakes and floods. This information will be fully defined within the mine planning materials to be submitted for permit application sometime next.

In general, mine structures are designed to withstand very large forces without failing. For example, the Ft. Knox Mine near Fairbanks experienced a magnitude 7.9 earthquake and a magnitude 6.7 earthquake in 2002 with no damage to the tailings embankment, and no changes in groundwater movement or quality.

Northern Dynasty expects to design key Pebble Project facilities, such as the tailings impoundments, to remain stable under extreme natural disaster scenarios – such as the ‘probable maximum flood’ and ‘maximum credible earthquake.’ As a result, the potential for large scale environmental damage will not be realized.

*111. Will there be secondary structures built as safeguards? (eg, a secondary, emergency tailings dam?)*

Northern Dynasty is still developing its mine plan for the Pebble Project, and evaluating the project design, operating protocols and contingency plans it will propose to address potential risks associated with natural events – such as earthquakes and floods. This information will be fully defined within the mine planning materials to be submitted for permit application sometime next.

In general, Northern Dynasty will either provide appropriate safeguards and redundancies within the design of primary mine structures, or provide additional secondary safeguards as necessary.

*112. How will NDM manage water flow in the event of a large rainstorm?*

Northern Dynasty is still developing its mine plan for the Pebble Project, and determining how ‘water balance’ will be achieved and Aquatic Life Standards will be met under all weather conditions. This information will be provided within the mine planning materials to be submitted for permit application sometime next.

In general, tailings impoundments at the proposed Pebble mine will be designed to ensure that run-off water collected during the ‘probable maximum flood’ will be controlled at the mine site to prevent accidental discharge to the environment. Other mine facilities may be designed for different flood control criteria, depending on the relative risk.

*113. What are the design criteria for water management? 50 year flood? 100 year flood? 500 year flood?*

Different criteria are used for different facilities. For example, the ‘probable maximum flood’ will be the design criteria for tailings impoundments, but small sediment control ponds will have different criteria – ranging from a ‘10-year flood’ for small ponds to a ‘100-year flood’ for larger ponds.

The specific design requirements for each facility will be established by relevant state and federal agencies.

114. *Will there be any risks associated with floods and seismic events after mine closure? For example, could there be a release of contaminated water from the tailings pile 1000 years from now in the event of major earthquake? Please supply a complete list of risks associated with natural disasters in the post-mining period.*

All risks associated with the development, operation and closure of the proposed Pebble mine are being assessed by a number of means – including Failure Modes and Effects Analyses (FMEA). This information will be provided within the mine planning materials to be submitted for permit application sometime next.

Post-closure mine facilities will be designed and built to eliminate and minimize potential risks associated with natural events – such as earthquakes and floods. In general, the risks associated with seismic activity tend to decrease after closure, as large earth-fill embankments become more stable over time. Risks due to floods remain more constant, and are addressed within the design of flow routing structures.

## **SOCIO-ECONOMIC**

### **A. Subsistence**

115. *Of primary concern to area residents is the potential for loss of subsistence resources. These resources could be lost due to contamination, environmental degradation, ecosystem disruption, or through additional competition and use resulting from a dramatic human local population increase. If the impacts analysis from an Environmental Impact Statement (EIS) indicates that there will be a loss of subsistence resources, how will NDM deal with the issue?*

Northern Dynasty believes that the Pebble Project's potential impacts on subsistence resources are largely avoidable, primarily due to its location in a headwater area. Where direct effects are unavoidable, they will be mitigated.

Northern Dynasty is acutely aware of the importance of subsistence resources in the immediate project area and in downstream areas. The company's first priority is to design and operate the project to avoid contamination, environmental degradation or other effects that might result in a loss of subsistence resources.

Where impacts do occur, Northern Dynasty will work with current subsistence users to determine the magnitude and location of appropriate mitigation/compensation measures.

116. *How can NDM protect subsistence users from loss due to additional competition due to population increase as a result of the Pebble project?*

Although Northern Dynasty is still developing its mine plan for the Pebble Project, it is considering an isolated ‘commuter camp’ rather than having mine workers live in nearby communities. This means workers from outside the region would be required to live at a designated mine camp, and strict ‘no fishing’ and ‘no hunting’ policies would be enforced. The company believes this approach would significantly limit competition for subsistence resources.

Northern Dynasty believes that the best solution to this potential problem will result from a collaborative process involving local villages, subsistence users and the Alaska Department of Transportation & Public Facilities (ADOT&PF). In addition to a commuter camp and ‘no fishing/hunting’ policies, the company is open to restricted use of new transportation corridors.

117. *If NDM cannot protect from the loss, can it, or will it, compensate for the loss? If so, how do you propose that this would occur?*

Yes. If project effects on subsistence resources cannot be avoided or mitigated, compensation will be provided for lost harvest caused by the Pebble Project.

118. *The Nushagak - Mulchatna River produces a substantial run of Chinook (King) Salmon. This fishery is of exceptional subsistence value. NDM has stated that its project will result in no net loss of fish. Will NDM commit to say that its project will result in no net loss of fish on a species basis? i.e.: Will NDM stipulate that there will be no net loss of King Salmon? Replacement of King Salmon with sockeye or other species may be interpreted as "no net loss", but this would not be an acceptable substitution to us.*

Northern Dynasty accepts that substituting another species for king salmon in the subsistence fishery would not be an acceptable solution to subsistence users.

The company has made a commitment to the people of Bristol Bay and all Alaskans that there will be no net-loss to any fishery – be it a commercial, recreational or subsistence harvest – as a result of the Pebble Project. This means Northern Dynasty will provide ‘in-kind’ mitigation if the king salmon subsistence fishery is diminished as a result of the development and operation of the proposed mine.

119. *We understand that studies will be carried out to assess the baseline use of subsistence resources. In the wrong hands, such as unethical hunting guides, this information could be used to the detriment of subsistence users. How is this information kept confidential through a public process and in perpetuity?*

Northern Dynasty has commissioned subsistence studies, and contracted an independent consultant expert to gather and analyze the data. This consultant is bound by strict state laws and regulations concerning the confidentiality of information.

While Northern Dynasty's mine plan will be informed by the subsistence study findings, the data itself will be maintained in the strictest confidence by its consultant.

## **B. Commercial Fisheries**

120. *Commercial fishing has been virtually the sole economic driver of the Bristol Bay region for decades. Though drastically reduced in value due to price depression that came with the advent of farmed fish, the industry is still extremely important to every Bristol Bay resident, regardless of whether they are employed directly in the industry or not. Contamination and environmental degradation has the potential to reduce or eliminate salmon runs in the case of improper engineering or operation. We see potential effects for both gradual degradation, and from catastrophic events. While we understand that NDM intends to use the best possible engineering and operational procedures, it is possible that mistakes will be made, and that catastrophic damage to the fisheries could result. Is NDM doing studies to evaluate the relative risk to commercial fishery damage?*

Northern Dynasty continues to study the Pebble Project's potential risks to fish, fish habitat and fisheries, as well as the strategies that will be proposed to avoid, minimize and mitigate these risks. This information will be fully described within the mine planning materials to be submitted for permit application sometime next year.

Northern Dynasty acknowledges the importance of commercial fisheries to the people of Bristol Bay. The protection of aquatic resources is a fundamental objective for the development of the Pebble Project.

The company has made a commitment to the people of Bristol Bay and all Alaskans that there will be no net-loss to any fishery – be it a commercial, recreational or subsistence harvest – as a result of the Pebble Project.

121. *How high is the risk that commercial fisheries could be partly or completely damaged?*

Northern Dynasty is still undertaking studies to assess potential fisheries risks associated with the Pebble Project, but initial results show the risk to commercial fisheries is extremely low. Not only is the project situated away from productive fish habitat, it also has a relatively small footprint in the context of the overall watershed.

The Pebble Project is being designed to have no impact on commercial, sport or subsistence fisheries in the Bristol Bay region. Northern Dynasty has made a commitment that there will be no net-loss to any fishery as a result of the Pebble Project.

122. *Will there be financial compensation in the event that commercial fisheries are damaged?*

Yes, although Northern Dynasty commitment is to ensure that there is no net-loss to any fishery – be it a commercial, recreational or subsistence harvest – as a result of the Pebble Project. Where impacts do occur, the company will add to natural fish productivity in the region to fully achieve its no net loss goal. As a result, it is not expected that any financial compensation will be required.

123. *Bristol Bay commercial fishers have made advances in market recapture by advertising their product as natural wild Alaska salmon, free from antibiotics and other contaminants. Part of the marketing theme is that the Bristol Bay fish come from untouched, pristine waters. A large-scale mining operation, even if it is run to the highest possible environmental, engineering and operational standards, will still cast a shadow of doubt. In marketing, perceptions are reality. The presence of the mine may detrimentally affect the ability of Bristol Bay fish marketers to successfully regain market share. Does NDM have any suggestions on how to deal with this issue?*

The presence of a mine should not, in and of itself, affect market perceptions of the quality of Bristol Bay salmon, particularly if all water discharged from that mine (both during operations and post-closure) meets Aquatic Life Standards and human consumption standards. There are many other commercial salmon fisheries around the world – including the Fraser River salmon fishery in British Columbia, Canada – that are recognized globally for producing a competitive, high-quality product despite the presence of mining operations within salmon-producing watersheds.

In addition to meeting its permitting requirements for fish habitat protection and water quality, Northern Dynasty will maintain an open and cooperative relationship with Bristol Bay commercial fishing interests. This includes providing relevant monitoring data – including water quality, surface hydrology, salmon spawning counts, and fish tissue burdens – in support of the industry’s marketing efforts.

### **C. Sports Fisheries and Tourism**

*124. Some of the regions employment and revenue is derived from these industries presently. In the immediate project area an industry catering to elite fly fishers has evolved. Though we understand that it is NDM's goal to build a mine without affecting the quality or quantity of the fish resource, the fact is that the patrons of these lodges are paying for time in a remote, pristine, non-industrialized setting. The presence of a mine, and a much expanded population would change the experience, probably to the detriment of lodge owners. Tourists visiting nearby parks similarly expect an experience in a pristine environment. How does NDM respond to this issue? What can it do to avoid the problem?*

Northern Dynasty is still studying the potential impact of the Pebble Project on recreational fishing, fishing and hunting lodges, guide-outfitters, and wilderness tourism. This information, along with the strategies proposed to avoid, minimize and mitigate these impacts, will be fully described within the mine planning materials to be submitted for permit application sometime next.

The Bristol Bay region is a huge area (approximately 22,775 square miles), within which the proposed Pebble mine would present a relatively small and localized footprint (approximately 17 square miles or 0.075%). Northern Dynasty believes that the Pebble Project can co-exist with traditional land uses and lifestyles within the region, including recreational fishing and wilderness tourism.

Northern Dynasty intends to work closely with lodge owners, guide-outfitters and other tourism interests to define strategies to avoid, minimize and mitigate impacts to their businesses. For instance, although Northern Dynasty is still developing its mine plan for the Pebble Project, it is considering an isolated 'commuter camp' rather than having mine workers live in nearby communities.

This means workers from outside the region would be required to live at a designated mine camp, and strict 'no fishing' and 'no hunting' policies would be enforced. The company believes this approach could significantly limit impacts on lodge owners and wilderness tourism.

## **D. Population**

*125. We understand that the mine may employ 1000 people. Since many of the jobs require skills not readily available in the region, out of necessity, many people will move to the area. We have already inquired about potential effects this increased population could have on subsistence, environment, and wildlife. However, a large population increase would also put out demands for schooling, medical facilities, police force, fire departments and other services. Who is going to pay for services that will have to be developed or expanded?*

Although Northern Dynasty is still developing its mine plan for the Pebble Project, it is considering an isolated ‘commuter camp’ rather than having mine workers live in nearby communities. This means workers from outside the region would be required to live at a designated mine camp where all required services would be provided for them, including emergency and medical services.

Northern Dynasty believes that the best solution to the potential issues raised by housing and providing for mine workers will be developed in collaboration with local communities. Should local communities decide to develop housing for mine workers, planning initiatives would have to be undertaken with the State, the Lake & Peninsula Borough and Northern Dynasty to address infrastructure needs.

## **E. Lifestyle Change**

*126. Related to population increase, we envision that lifestyles of area residents would be radically altered. While some of the changes may be beneficial, some will not be. How does NDM respond to this issue?*

The lifestyles of area residents will not necessarily be “radically altered”. Some may be enhanced, some may be altered, and others may be unaffected. Local communities and individual residents will be consulted throughout the process of mine development, and will have the opportunity to influence many of the decisions that determine how and if their lifestyles are affected.

*127. Many residents lead a "subsistence lifestyle". Such a lifestyle may no longer be possible once the mine is developed. How does NDM respond to this issue? Some sort of compensation might be proposed, but how does one place a dollar value on a lifestyle?*

Although Northern Dynasty is still studying the Pebble Project’s potential impact on subsistence resources, it is not expected that subsistence lifestyles will be significantly affected. Subsistence activities will certainly continue during and after mine operations.

The Pebble Project’s potential impacts on subsistence resources, as well as proposed strategies to avoid, minimize and mitigate these impacts, will be provided within the mine planning materials to be submitted for permit application sometime next.

In the remote circumstance that there is any lost subsistence harvest caused by the Pebble Project, Northern Dynasty will provide compensation. The company will not attempt to place a dollar value on the subsistence lifestyle, as there is no possibility that the Pebble Project could result in the complete loss of this lifestyle.

## **F. Employment, Training and Business Opportunity**

*128. NDM has indicated that it will endeavor to hire locally, facilitate training, pass on business opportunities to local residents, and provide business development guidance. Some local residents have secured employment at the project, and some have availed themselves of the training opportunities provided by NDM. What is NDM's long-term plan for workforce development? What will NDM do to ensure that local residents get the training they need so that they can secure meaningful employment in advanced positions at the mine?*

Northern Dynasty has already begun (and is committed to continue) working with local officials at the village, borough, regional and state levels to create a workforce development strategy that will ensure local people who want to work at the Pebble Project have the education and training they need to qualify for the jobs of their choice. Planning for this strategy is under way but not yet complete.

In the meantime, Northern Dynasty has developed a 'Mining Careers' booklet that outlines all the jobs required to build and operate the proposed Pebble mine, as well as their respective education and training requirements.

*129. When will the longer-term training begin?*

Northern Dynasty has already begun discussing long-term workforce development programs with state and regional education and training authorities. Before long-term planning begins in earnest, however, the Pebble Project feasibility study must be completed and the multi-year state and federal project permitting process must be initiated.

## **G. Infrastructure Development**

*130. We understand that some sort of transportation system will be built, and that it is most likely to be a road leading to Cook Inlet.*

Yes. The Alaska Department of Transportation & Public Facilities (ADOT&PF) is currently studying potential routes and designs for a road and port to serve the Pebble Project, and support the transportation and economic development goals of the communities in the region.

*131. Who will have access to the road?*

This issue is currently being studied by ADOT&PF and Northern Dynasty. There are a number of different models that could be employed to manage road access. The communities affected by the potential road are being consulted as part of the decision-making process.

132. *To what standard will the road be built?*

This issue is currently being studied by the ADOT&PF and Northern Dynasty. At a minimum, the road would have to be built to an industrial standard for use by mine traffic.

133. *Who will pay for the road?*

This issue is currently being studied by the ADOT&PF and Northern Dynasty. One scenario is that the state and federal governments would pay for the road, and Northern Dynasty would pay an annual fee for its use.

134. *Who will pay for maintaining the road?*

This issue is currently being studied by the ADOT&PF and Northern Dynasty. If it is a State road, the State would likely pay to maintain it – perhaps using a local contractor and fees collected from users.

135. *Who is performing the transportation system alternatives analysis?*

The ADOT&PF is currently studying potential routes and designs for a road and port to serve the Pebble Project, and support the transportation and economic development goals of the communities in the region. Northern Dynasty is studying alternative transportation systems as well.

136. *How rigorous is this analysis?*

The ADOT&PF is studying potential routes and designs for a road and port to serve the Pebble Project, and support the transportation and economic development goals of the communities in the region. Northern Dynasty understands that ADOT&PF is undertaking a thorough engineering assessment that will stand up to public and regulatory scrutiny during the permitting process.

137. *Is the alternatives analysis complete?*

Northern Dynasty has been told that the ADOT&PF transportation study will be complete by late 2005 or early 2006.

138. *Is a railway being considered? If not, why not?*

A railway option was considered by the ADOT&PF but determined to be impractical as a result of steep grades.

139. *We have heard that a slurry pipeline may be used. If so, will there still be a road? Who will have access to the road? To what standard will the road be built?*

Northern Dynasty is still developing its mine plan for the Pebble Project, and evaluating whether mineral concentrate will be transported via pipeline or by truck from the mine site to the port site. Although the current planning model anticipates using a pipeline, the project would still be served by trucks bringing materials and supplies from the port site to the mine site via road.

The question of who will have access to the road, and the standard to which it will be built, are currently being studied by the ADOT&PF. At a minimum, the road would have to be built to an industrial standard for use by mine traffic.

140. *What sort of port facility will be constructed?*

This issue is currently being studied by the ADOT&PF and Northern Dynasty. Northern Dynasty's preference is for a deep sea port on the west side of Cook Inlet, near Iniskin Bay. However, the company is also studying the potential to barge concentrate to Homer's deep sea port facility.

141. *Who will have access to the port?*

This issue is currently being studied by the ADOT&PF and Northern Dynasty.

142. *Is it reasonable to expect that the port will accommodate cruise ships? Barge traffic carrying tourists in recreational vehicles?*

It is unlikely that the new port will accommodate cruise ships or barges carrying recreational vehicles. Ultimately, if it is public infrastructure, approved uses for the port facility will be determined by the ADOT&PF with input from Northern Dynasty and local communities.

## H. Change of Ownership

143. *We are concerned that NDM will sell its interest in this project to another mining company. NDM has made some verbal commitments to the people of Bristol Bay, but none of these commitments are in writing in some enforceable form. We are concerned that if NDM's interest is sold, the new owner will not honor the commitments your company has made. Will NDM be willing to make written commitments that will be binding upon subsequent owners of the project?*

Northern Dynasty's commitments to the people of Bristol Bay have already been provided in writing. For instance, the company has published corporate policy statements on:

- o Responsible Mineral Development;
- o Local Hire;
- o No-Net Project Induced Loss to Bristol Bay Fisheries, among others.

Should government agencies ultimately issue permits for the development of the Pebble Project, Northern Dynasty's commitments, responsibilities and obligations will become enforceable through state and federal law. These commitments will be binding on any subsequent owner and operator of the proposed Pebble mine.

144. *We have heard of Impacts and Benefits Agreements in Canada. As a Canadian based company, you must be aware of these agreements. Do you believe these agreements to be of value to both the mining company and the local people?*

We are aware of these agreements. However, their purpose and application in Canada is different than any agreement Northern Dynasty might reach with Native people in Alaska.

Impacts and Benefits Agreements in Canada recognize that treaties and land claims settlements have not been reached with many of British Columbia's Native people. These agreements are a vehicle for allowing resource development projects to proceed, without alienating land and resources that could become part of future treaty settlements.

In Alaska, Native land claims were settled by the Alaska Native Claims Settlement Act of 1971. As such, Northern Dynasty does not foresee pursuing an Impacts and Benefits Agreement based on the Canadian model.

However, Northern Dynasty is willing to discuss the issues that might be associated with such an agreement. Some of these issues may be addressed through Memorandums of Understanding (MOUs) with specific Native groups, while others may be incorporated into the permits issued to develop the Pebble Project.

145. *Are you willing to negotiate an Impact and Benefit Agreement with local entities?*

Alaska Natives settled their land claims through the Alaska Native Claims Settlement Act of 1971. As such, Northern Dynasty does not foresee pursuing an Impacts and Benefits Agreement based on the Canadian model.

However, Northern Dynasty is willing to discuss the issues that might be associated with such an agreement. Some of these issues may be addressed through Memorandums of Understanding (MOUs) with specific Native groups, while others may be incorporated into the permits issued to develop the Pebble Project.

146. *Will Northern Dynasty be the mine operator?*

At this stage of mine development, Northern Dynasty is the sole owner of the Pebble Project. However, the company intends to partner with an experienced mine operator (and other potential partners) to build and operate the proposed Pebble mine.

## **I. Shutdowns, Bankruptcy**

147. *What will happen if NDM finds that it cannot operate the mine profitably due to low metal prices?*

Northern Dynasty would not develop the Pebble Project unless it was possible to operate it profitably under all foreseeable conditions. Initial indications are that the proposed mine can be operated profitably over the course of its life with a high degree of certainty.

If a dramatic adverse change in mine economics were to occur during operations, the mine would first be put on 'care and maintenance' status, wherein all water management and environmental protection measures would continue until operations recommenced or the mine was closed and reclaimed. Such scenarios will be fully considered during the determination of bonding requirements to ensure that sufficient funds are always in place to close the mine and undertake all necessary environmental remediation, monitoring and (if necessary) water treatment.

148. *Will there be adequate contingency funding to ensure environmental protection in the event of a prolonged shutdown? Please provide details and examples.*

Yes. In the case of a prolonged shutdown, Northern Dynasty would be responsible for 'care and maintenance' of the proposed Pebble mine (including water management and environmental protection measures) until operations recommence.

Should the mine be closed permanently, reclamation bonds would be in place to undertake all necessary environmental remediation, monitoring and (if necessary) water treatment. The placement of these bonds would be a requirement of the permits issued to develop the Pebble Project.

149. *What will happen if NDM becomes insolvent?*

Should Northern Dynasty become insolvent, reclamation bonds would be in place to close the mine and undertake all necessary environmental remediation, monitoring and (if necessary) water treatment. The placement of these bonds would be a requirement of the permits issued to develop the Pebble Project.

150. *Will there be adequate funding, set aside from the hands of creditors, available to ensure environmental protection, even in the event of bankruptcy?*

Should Northern Dynasty become insolvent at any stage of mine development, reclamation bonds would be in place to close the mine and undertake all necessary environmental remediation, monitoring and (if necessary) water treatment. The placement of these bonds would be a requirement of the permits issued to develop the Pebble Project.

## **J. Bonding**

151. *We understand that bonds are put in place to ensure that adequate funding is available for reclamation. We also understand that often, a fund is developed for this purpose and that it is built up over time in the mine life. We are concerned that there will not always be adequate funding available for reclamation at all stages of the project. For example, if, ten years from now, a mine has been built and is operating, but metal prices decline dramatically due to some unforeseen economic event, for a prolonged period. Will there be adequate bonding and reclamation fund monies available to perform full reclamation at all life stages of the project?*

Should development or operation of the proposed Pebble mine cease at any point, reclamation bonds would be in place to close the mine and undertake all necessary environmental remediation, monitoring and (if necessary) water treatment. The placement of these bonds would be a requirement of the permits issued to develop the Pebble Project.

152. *Who determines the amount of bonding that must be in place?*

Bonding requirements are set by Alaska's Department of Natural Resources (ADNR). Northern Dynasty will fully comply with all State requirements.

153. *How rigorous is the financial analysis that results in the calculation of the bonding amount?*

These financial analyses are performed by Alaska's Department of Natural Resources (ADNR) and independent engineering consultants. Northern Dynasty expects bonding analyses for the Pebble Project will be extremely rigorous

154. *Who supplies such bonds?*

Bonds are generally provided by large, established financial institutions – such as banks. It's important to note, however, that bonds are but one of several financial instruments available to ensure that sufficient funds are always available to close a mine and undertake all necessary environmental remediation, monitoring and (if necessary) water treatment.

### **K. Cumulative Impacts**

155. *Is it a reasonable possibility that NDM will develop some of the other deposits it has discovered on its Pebble claim block?*

Not in the foreseeable future. All of the company's energies are focused on developing the identified mineralization within the Pebble deposit area.

156. *Will NDM supply a list of secondary, cumulative impacts that it reasonably anticipates will become reality?*

Yes. Northern Dynasty is still developing its mine plan for the Pebble Project, and assessing secondary and cumulative project effects. These effects, as well as the strategies proposed to avoid, minimize and mitigate them, will be fully described within the mine planning materials to be submitted for permit application sometime next year.

157. *Will the EIS consider these secondary, cumulative impacts?*

The Environmental Impact Statement (EIS) for the Pebble Project will be developed by the lead federal government agency, not by Northern Dynasty. However, it is reasonable to expect that the EIS will address secondary, cumulative impacts, as this is a mandated requirement under the federal National Environmental Protection Act (NEPA).

158. *What weight is given to cumulative impacts by regulators when they assess impacts in their determination of permit issuance?*

Cumulative impact assessment is a mandated requirement under the federal National Environmental Protection Act (NEPA), and can be expected to be given significant weight by regulators when they assess the Pebble Project.

## **L. Participation in Public Process**

159. *We understand that NDM will be finalizing its alternatives analysis and economic feasibility over the next eight months. It follows then that the preferred alternative and mine design will be formulated in the next few months. We have been told that we will have input to the project. Though NDM has informally listened to feedback from local residents there appears that there will be no regimented input into the initial engineering proposal that NDM plans to submit to the Department of Natural Resources. We think it important that local residents have formal, structured, regimented and meaningful input into the initial design. Will NDM provide an opportunity to provide formal, structured, regimented and meaningful input into the initial design?*

Yes. Northern Dynasty has already provided for formal, structured, regimented and meaningful input from local residents and other project stakeholders into its mine planning process. The company has undertaken hundreds of meetings with stakeholder groups and individuals over the past year, and documented all of their input, questions and concerns.

Northern Dynasty will continue to consult with local residents and other stakeholders in the future as it develops its mine plan. The company welcomes all requests for meetings or information to facilitate stakeholder involvement in the mine planning process.

While Northern Dynasty has provided significant opportunities for stakeholder input into the Pebble Project during the pre-application phase, this is an informal process that is not required by state and federal agencies. Once the company submits its permit application for the Pebble Project sometime next year, a formal public consultation process led by state and federal agencies will commence.

160. *We are unsure of how local residents are meant to participate in the public process. The timelines are not clear, and it is not clear how meaningful our comments and concerns will be. Can NDM provide clarification of the public process? In particular, we would like to know how we could have meaningful input into project design parameters such as: placement of tailings disposal site, method of product transport, access to road, accommodation of mine staff - community versus company camp / town.*

Northern Dynasty has conducted an informal public process over the past 18 – 20 months, designed to meet with local residents, communities and stakeholder groups in settings, venues and timeframes most convenient to them. Since January 2004, we have conducted some 325 stakeholder meetings.

To facilitate this informal public process, Northern Dynasty hosts regularly scheduled Leaders Conferences, to which most tribal governments, municipal governments and village corporations in the Bristol Bay region send representatives.

In addition, the company attends community meetings and special events to provide Pebble Project briefings, and honors any stakeholder group's request for a presentation about the project. It has published Pebble Project newsletters and backgrounders, and launched a dedicated website to provide project updates. Finally, Northern Dynasty employs a company representative to travel throughout Bristol Bay to meet with people in their own communities, gathering their input and answering their questions on an ongoing basis.

In all cases, stakeholder input is carefully documented and integrated into project planning.

While Northern Dynasty has provided significant opportunities for stakeholder input into the Pebble Project during the pre-application phase, this is an informal process that is not required by state and federal agencies. Once the company submits its permit application for the Pebble Project sometime next year, a formal public consultation process led by state and federal agencies will commence.

161. *Will the road (or railroad or pipeline), and the power generation system, be permitted in a joint EIS process with the mine, or will the three be separate public processes?*

Northern Dynasty understands that all project components will be assessed within a single permitting process, as required under the federal National Environmental Protection Act (NEPA).

162. *What are the merits of separate versus mutual permitting of the facilities?*

The relative benefits of separate versus integrated permitting for the various Pebble Project components is a moot point. It is Northern Dynasty's understanding that all project components will be assessed within a single permitting process, as required under the federal National Environmental Protection Act (NEPA).

163. *Who makes the decision as to whether the permitting process is separate or mutual?*

It is Northern Dynasty's understanding that, under federal NEPA legislation, all project components will be assessed within a single permitting process.

164. *Will NDM allow us to provide input to these project design parameters prior to submission of a draft proposal and permit application?*

Yes. Northern Dynasty has provided for formal, structured and meaningful input from local residents and other project stakeholders into its mine planning. The company has undertaken hundreds of meetings with stakeholder groups and individuals over the past year, and documented all of their input, questions and concerns.

Northern Dynasty will continue to consult with local residents and other stakeholders in the future as it develops its mine plan over the coming months. The company welcomes all requests for meetings or information to facilitate stakeholder involvement in the mine planning process.

165. *When do we get to say whether we find the project acceptable, and how much weight is given to our opinion if we do not find the project acceptable?*

Project stakeholders can reach their own conclusion about the acceptability of the Pebble Project at any time. However, the company encourages stakeholders to keep an open mind about the project until all of its studies are complete, until the proposed mine plan is submitted for permit application sometime next year, and until a thorough and rigorous public review of the project is undertaken as part of the state and federal permitting process.

State and federal agencies have a number of important considerations to weigh in their review of the Pebble Project, including the degree of local support and opposition to the project.

166. *Can we stop this project if we do not think that it can be safely built and operated?*

This is not a question that Northern Dynasty can fairly answer.

It is Northern Dynasty's understanding that local communities have a great deal of influence under the federal National Environmental Protection Act (NEPA) to provide input and voice opinions that can influence government decision-making regarding resource development projects. The company respects that process, and is committed to providing local stakeholders with the opportunity to provide meaningful input on the Pebble Project, and the information they need to reach informed opinions.

167. *We are aware that in its agreement with Cominco, NANA Corporation has the power to stop operations if there is a valid environmental reason to do so. Recognizing that NANA is the mineral right owner in the case of Red Dog, and therefore in a stronger position, would NDM nevertheless be willing to sign an agreement that would allow a local oversight agency the power to stop operations under certain conditions detrimental to the environment?*

It is premature for Northern Dynasty to consider such an idea at this time. The company's first responsibility is to design an environmentally sound and socially responsible project, which can only be achieved by working in partnership with affected communities.

An oversight committee such as that described above may be mandated as part of Northern Dynasty's permitting requirements for the Pebble Project. If this is not the case, the company will work with local communities to develop a mutually acceptable process for protecting local environmental and cultural values.

## **M. Cultural Preservation**

168. *We understand that there is little in the way of cultural resources in the immediate mine site. However, with a much-increased population, there is a strong chance that there will be interest in archaeological sites elsewhere in the region. It will cost Native groups money to protect these resources. Further, with a much-increased population, it is likely that Native heritage will be lost or diluted. Will damage to cultural sites be considered a potential impact in the EIS?*

The Environmental Impact Statement (EIS) for the Pebble Project will be developed by the lead federal government agency, not by Northern Dynasty. However, it is reasonable to expect that the EIS will address potential impacts on cultural sites.

169. *Will impact to Native heritage be considered in an EIS?*

The Environmental Impact Statement (EIS) for the Pebble Project will be developed by the lead federal government agency, not by Northern Dynasty. However, it is reasonable to expect that the EIS will address impacts on Native heritage.

## **N. Communications**

*170. To date, NDM has been forthcoming with information about its project, and the alternatives that it is considering. We recognize that the level of effort and expense NDM has put into communication is above and beyond what is often put forth by resource developers in these situations, and more than is required by public process. Will this level of communication continue commensurate with the permitting process, and subsequently through development, operation and closure?*

Yes. Northern Dynasty's commitment to public consultation and community outreach will continue throughout the permitting process, although the specific communication mechanisms and vehicles used will depend on a range of circumstances – including stakeholder preferences. It's important to note that state and federal government agencies will also be undertaking public consultation activities during the permitting process.

Northern Dynasty will also continue to be open and forthright in its communication with local communities and other project stakeholders through mine construction, operations and closure. Again, the specific communication mechanisms and vehicles to be employed will depend on a range of circumstances – including stakeholder preferences. This is a responsibility that the company takes very seriously.

## **O. Native Liaison**

*171. We have heard that NDM will hire community coordinators in villages. In what villages will these coordinators be hired?*

Northern Dynasty has no current plans to hire communication coordinators, beyond the staff it currently employs.

*172. When will the coordinators be hired?*

Northern Dynasty has no current plans to hire communication coordinators, beyond the staff it currently employs.

*173. What will be the duties of the coordinators?*

Northern Dynasty has no current plans to hire communication coordinators, beyond the staff it currently employs.

## **P. Schedule**

174. *The current schedule that NDM has shown us has permitting being completed two years after permit applications are filed. Construction is to take place in the following two years after that, with production to immediately follow. Is it possible to construct the road and the mine in just two years?*

Yes.

175. *The schedule seems to us to be on a fast track. Having only two years to consider the project, have input to the project design, and consider all the ramifications seems too short, in light of everything we see at stake. While we understand some of the reasons NDM might have for moving forward as rapidly as possible, we want to make sure there is adequate time to truly consider and debate the merits of the project, weighing the risks against the rewards. Would NDM consider relaxing the permitting schedule to allow for more in-depth consideration?*

The development and permitting schedule for the Pebble Project is not on a fast track.

Northern Dynasty is expected to apply for permits to develop the Pebble Project sometime next year, after which it is expected to take at least two years for state and federal agencies to review the project. The company has already delayed its planning schedule by one year, which has allowed for the collection of more environmental baseline data, and believes this is a realistic and appropriate planning timeline for a project of this scope.

Ultimately, the amount of time spent by state and federal agencies reviewing the Pebble mine proposal is up to them. It is out of Northern Dynasty's hands.

## **Q. Other**

176. *Is there any circumstance upon which NDM would elect not to develop a mine at this site? If so, what are they?*

Assuming that the Pebble Project is proved to be economically feasible, the only circumstance that would result in Northern Dynasty not developing the proposed mine is if the necessary permits from state and federal agencies were denied.

177. *Other than unfavorable financial feasibility analysis, what could stop this project from proceeding?*

The only circumstance that would result in Northern Dynasty not developing the proposed Pebble mine is if the necessary permits from state and federal agencies were denied.

178. *What is the overall mine footprint?*

Based on current planning models, the Pebble Project footprint – defined as those surface areas directly affected by the open-pit, mill, tailings impoundment and related infrastructure - will be about 17 square miles in area.

179. *Does NDM have investments or partnerships with other companies that are planning or operating projects in and around the Pebble Project?*

No.

180. *What, if any, ties does NDM have with Bristol Bay Native Corporation and its subsidiary companies?*

Northern Dynasty has no formal ties to the Bristol Bay Native Corporation (BBNC), although it does have a contractual arrangement with a BBNC subsidiary. The BBNC is one of many important stakeholders in the Pebble Project area with whom the company has established a dialogue to provide project updates.

BBNC subsidiary Bristol Environmental & Engineering Services Corporation (BEESC) is one of more than 40 consultants that have been contracted to work on the Pebble Project. BEESC has been commissioned to carry out environmental baseline studies for water, water quality and trace elements along the proposed road corridor, as well as marine studies associated with the proposed port site. BEESC is also assisting Northern Dynasty to address permitting requirements and to develop workforce development strategies.