Testimony of
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Committee on Transportation and Infrastructure
Subcommittee on Water Resources and Environment

"EPA's Expanded Interpretation of Its Permit Veto Authority under the Clean Water Act"

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Good morning. I am Hal Quinn, president and chief executive officer of the National Mining Association (NMA). NMA is the national trade association representing the producers of most of the nation's coal, metals, industrial and agricultural minerals; manufacturers of mining and mineral processing machinery, equipment and supplies; and engineering and consulting firms, financial institutions and other firms serving the mining industry.

I want to thank the chairman and the members of the subcommittee for holding this hearing on the significant implications of the U.S. Environmental Protection Agency's (EPA) expanded interpretation of its veto authority under Section 404 of the Clean Water Act (CWA). Recently, EPA has taken unprecedented actions under Section 404 to both retroactively veto a permit for an existing operation, and to preemptively veto a project before a company was afforded the opportunity to apply for a permit. Due to these actions, businesses and investors can no longer be sure that lawfully-issued permits will be honored or that permit applications will be fairly evaluated. EPA has dramatically altered the rules of the game with respect to its use of 404(c), and in doing so greatly harmed the U.S.' reputation for maintaining a stable rule of law that fosters the certainty needed to attract and maintain capital investments needed to sustain economic growth.

THE 404 PERMIT PROCESS

The scope of the CWA's regulatory reach has expanded substantially over the years and EPA has recently proposed to extend the law's reach in a manner that will touch many more landowners and businesses. At the same time, the process for obtaining permits to proceed with economic and land use activities has become longer and more complicated. To make matters worse, EPA's recent decisions on the reach and timing of its role under CWA Section 404 have removed the longstanding certitude businesses understood accompanied a permit if one successfully navigated the protracted process.

Many essential and valuable projects involve activities that require Section 404 CWA permits. Section 404(a) of the CWA authorizes the Army Corps of Engineers (Corps) to permit the "discharge of dredged or fill material into navigable waters at specified disposal sites." Under its Section 404 program, the Corps permits thousands of projects each year for activities ranging from construction and transportation to agriculture and

manufacturing, thereby facilitating economic activity worth hundreds of billions of dollars to the U.S. economy.

The regulatory process for obtaining a section 404 permit from the Corps is set forth in great detail in the Code of Federal Regulations and has a long history of well-established practice. The section 404 permitting process serves two important complimentary functions. On the one hand, the permitting process allows the government to evaluate and address unacceptable impacts on navigable waters. On the other hand, the process offers parties the assurance of regulatory certainty that if they obtain a permit they can proceed in accordance with its terms.

That regulatory certainty and assurance that a permit-compliant operation is a lawful operation afford investors the certitude they need to commit the capital required to develop projects, including the significant expense required to go through the permitting process itself. Such capital can be raised only if investors are assured that their investment will not be rendered worthless on a regulatory whim.

EPA's recent actions, however, have gravely undermined the certainty needed to attract investment, particularly with respect to large, capital intensive projects. By retroactively vetoing one project and initiating the veto process preemptively for another, EPA has embarked upon previously uncharted waters in terms of regulatory uncertainty that both chills the appetite for new investment and raises the cost of capital for businesses and landowners. Understandably businesses and investors are less likely to risk their capital if they will not be afforded due process by their government, or if they fear a permit carries a term measured by the next election cycle.

RETROACTIVE VETO

In 2007, after 10 years and millions of dollars spent on environmental reviews conducted by EPA, the Corps, and other state and federal agencies, the Corps – with EPA's concurrence - issued a 404 permit to a mining company. The company then began operations in full compliance with the terms of the permit. Three years later, EPA retroactively and unilaterally invalidated the company's permit. Never before had EPA used 404(c) to veto and revoke an existing permit issued under the law by the Corps. It deserves mention again—EPA had ample opportunity to

participate in the permit review process and did so, as evidenced by the substantial changes made to the project expressly designed to resolve all of EPA's concerns before the Corps issued the permit. EPA's belated and unprecedented action dramatically changed the calculus for anyone that currently holds, or needs to acquire, a Section 404 permit.

In defense of its actions, EPA now asserts that it will use Section 404(c) after a permit has been issued only in rare circumstances. Such assurances carry no value now that the harm is complete, and its implications reverberate throughout the business community. After all, the term "rare" as used by EPA has no discernable boundaries for exercising such breathtaking discretion.

Projects that require significant capital expenditures over a substantial period of time need to generate a certain level of return to justify the investment. Actions that introduce new and increased regulatory risk raise the threshold of the necessary return to undertake the required early-stage investment. Even assuming that EPA would exercise such unbridled discretion in so-called "rare circumstances," the chilling affect remains significant and substantial. Here is how University of California Berkeley Professor David Sunding assessed the costs associated with the risks raised by EPA's unprecedented actions:

- Greater difficulty in obtaining project financing
- Lenders and bondholders will require higher interest rates to compensate for increased risk
- Some credit rationing will occur

Professor Sunding also quantified the impact of a potential veto as follows: if a project proponent faces a one percent chance that EPA would act under Section 404(c) after the permit issues, it would decrease the expected cost-benefit ratio for the project by 17.5%. A two percent chance that EPA would take adverse action—not an unrealistic assumption for a large or controversial project—would decrease the project's cost-benefit ratio by ***30%***. These types of substantial changes in the profile of a project will undoubtedly dissuade numerous businesses from pursuing investments that require them to acquire a Section 404 permit.

Senator Edmund Muskie, who played the most significant role in the design and passage of the CWA, clearly articulated that there are "three essential

elements" to the Act – "uniformity, finality, and enforceability." EPA's retroactive revocation of a lawfully issued Section 404 permit has destroyed two of those essential elements – uniformity, since EPA has no discernable standard for exercising this remarkable authority it claims after the permit process has come to closure; and finality because a permit can never be final when a non-issuing agency remains free to reopen the matter anytime, anywhere and for any reason, including those already fully vetted and addressed when the permit was issued.

PREEMPTIVE VETO

In February 2014, EPA took yet another unprecedented step when it initiated a veto process of a mining project on state lands in Alaska before the company had even applied for their 404 permit. In doing so, EPA bypassed the established lawful procedures of the CWA and the National Environmental Policy Act (NEPA) specifically designed to fully and fairly evaluate potential projects and provide project proponents with the due process of law. EPA's actions trampled the authority of the state of Alaska, preempted the role of other federal and state agencies, and potentially stranded the mining company's $700 million in capital investment. Frankly, EPA's actions here suggest the agency can exercise power akin to local zoning powers—authority the Constitution does not confer upon the federal government.

EPA claims that it initiated the veto process only in response to petitions submitted in 2010, and only after it completed its science report that purportedly shows the project would have significant and irreversible negative impacts on the Bristol Bay watershed. However, internal EPA documents obtained by congressional committees and various media outlets reveal that, as early as 2008, regulators inside EPA were advocating a preemptive 404 veto of the project. In fact, it appears these same regulators secretly worked with tribal and environmental activists to generate the petitions asking EPA to stop the project well before any studies of the environmental impacts were even begun.

The efforts to get EPA to veto the project before the Corps had an opportunity to evaluate a permit application with the mine plan, engineering designs and environmental background data reached all the way to top agency officials in Washington. A presentation prepared in 2010 for then-EPA Administrator Lisa P. Jackson candidly admits that a preemptive veto

"had never been done before in the history" of the CWA, would bypass the processes designed to "generate considerable information informing the [404] decision," and would not "adhere strictly to the regulation." However, that same document observes that, if EPA were to utilize the "established legal framework" under Section 404, the agency would "have less control of the 'spin' and political debate," and could only hope to prohibit "that project" – as opposed to all potential future projects in the area.

Other federal agencies with roles in the permit review process were likewise saying as early as 2010 that an EPA veto was a fait accompli. According to the Fish and Wildlife Service, an EPA regulator indicated he had briefed top EPA officials in Washington and believed EPA leaders have decided to proceed and they are just deciding when. All this occurred before EPA even began the watershed assessment EPA claims is the basis for its decision to proceed in this unusual and unprecedented manner.

Importantly, EPA's decision to initiate a preemptive veto before the Corps, and other state and federal agencies even began their environmental reviews clearly shows that EPA's actions have been neither transparent nor based on the best information or science. The proper and best way to evaluate potential environmental impacts and decide whether a proposed project meets the requirements of CWA section 404 is to proceed with the well-established CWA and NEPA procedures designed to ensure informed agency decision-making and afford due process. Only then can the Corps and EPA have the project-specific information necessary to make lawful, reasoned decisions under the CWA.

PRECEDENTIAL NATURE OF EPA'S EXPANDED INTERPRETATION OF ITS VETO AUTHORITY

EPA has defended its use of its newly claimed 404 retroactive and preemptive veto authority as limited to very "unique" circumstances. However even a very small risk of EPA using its veto authority can have significant impacts on project investment. Furthermore, EPA's assurance that it intends to use its 404 authority sparingly in the future are unconvincing in light of recently publicized internal agency documents. For example, EPA stated in a headquarters briefing that the preemptive use of Section 404 "can serve as a model of proactive watershed planning."

EPA's actions have already emboldened opponents of projects to petition EPA to use this so-called "rare and unique" power in other states. Six Chippewa tribal bands have asked EPA to initiate CWA veto proceedings against a mining project in northern Wisconsin. Their request is similar to the 2010 request in Alaska's Bristol Bay region. Without any discernable or objective criteria governing EPA's claimed authority under section 404, a cloud of uncertainty and delay hangs over any plan to invest and create jobs

We believe legitimate concerns about proposed projects requiring a 404 permit should be addressed. However, the law provides the right place and the right time to do so through the current CWA permitting process that provides ample opportunity to take a hard look at an actual project proposal.

CONGRESS MUST ACT

Under EPA's expansive claim of authority, the very regulatory finality and certainty Congress intended for the CWA permitting process does not—and cannot—exist. The breadth and depth of concern is reflected in a recent communication to Congress by 184 organizations– representing agriculture, construction, housing, manufacturing, utilities, energy production, and transportation sectors –asking that clear limitations be restored to govern EPA's role and authority. In short, under Section 404 EPA's role should be as it has been historically - during the permit review process. EPA must not be permitted to displace a Corps' permit decision until after 404 review processes are completed, but before a permit is actually issued. Such limitations would maintain the longstanding environmental protections provided under the law while at the same time encouraging economic investment and growth by ensuring transparency and certainty landowners and businesses need to invest and grow our economy.

We commend the Chairman of the House Transportation and Infrastructure Subcommittee on Water Resources and Environment Bob Gibbs (R-Ohio) and Ranking Member of the Transportation and Infrastructure Committee Nick Rahall (D-W.Va) and 17 co-sponsors for introducing H.R. 4854, the "Regulatory Certainty Act," which addresses these serious concerns and provides for the clarity so needed by U.S. businesses. Their legislation would put a limit on the EPA's gross overreach and give mining projects the

certainty they need to move forward – stimulating our nation's economic engine when America needs it the most.

CONCLUSION

Thank you again for the opportunity to testify today. In summary, EPA's authority under CWA Sec. 404(c) must be clarified and limited in a manner that provides the regulatory transparency and certainty landowners and businesses deserve. Only then can landowners and businesses have the faith in the federal permitting process necessary to invest in American development and jobs.

Economic Incentive Effects of EPA's After-the-Fact Veto of a Section 404 Discharge Permit Issued to Arch Coal

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1. Introduction

In 2007 the Army Corps of Engineers issued a Section 404 discharge permit to Arch Coal in connection with the Spruce No. 1 Mine located in Logan County, West Virginia. Arch Coal subsequently operated the mine in compliance with its permit. Nonetheless, more than three years after the Corps issued the 404 permit, EPA proposed to withdraw the discharge authorization granted to Arch Coal. Both the Corps and the State of West Virginia disagreed with the EPA decision, finding that there was no reason to take away the permit. This precedential decision by EPA -- to exercise its limited authority to withdraw a discharge authorization so as to effectively revoke the permit over the objections of the Corps and State has the potential to affect a wide range of economic activities that require authorization under Section 404 of the Clean Water Act.

This report discusses the economic impacts of EPA's actions with respect to the Spruce Mine discharge permit. EPA's after-the-fact veto of Arch Coal's permit makes it more difficult for project developers to rely on essential 404 permits when making investment, hiring or development decisions, and proponents must now account for the possibility of losing essential discharge authorization after work on the project has been initiated.

2. Permitting under Section 404 of the Clean Water Act

There are a variety of public and private sector projects permitted under Section 404 of the Clean Water Act. These activities are vital to the American economy, and include: pipeline and electric transmission and distribution; housing and commercial development; renewable energy projects like wind, solar, and biomass; transportation infrastructures including roads and rail; agriculture; and many others. The Army Corps of Engineers issues roughly 60,000 discharge permits annually under Section 404, and estimates that over $220 billion of investment annually is conditioned on the issuance of these discharge permits. Given the breadth of the statute, a large share of public and

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private infrastructure or development projects must receive and depend on the certain operation of the 404 permit.

Public and private activities requiring Section 404 authorization generate significant indirect and induced benefits to affiliated industries. Reduced levels of investment in projects requiring discharge authorization translate directly into lost jobs and lost economic activity across essentially the whole economy. Tables 1 and 1a show the monthly value of new construction put in place in the United States, which is widely used as a measure of new construction spending. Table 2 gives the direct, indirect and induced output multipliers for key activities typically requiring a Section 404 permit.

There are numerous studies in the economics literature detailing the nationwide output and employment benefits various types of construction projects.[2] A study by the President's Council of Economic Advisors found that under the American Recovery and Investment Plan, construction and manufacturing were likely to experience particularly strong job growth from a recovery package emphasizing infrastructure, energy, and school repair.[3] Another study found that "greater use of renewable energy systems provides economic benefits through investments in innovation, and through new job creation, while at the same time protecting the economy from political and economic risks associated with [energy dependence]."[4] The benefits go beyond measures of output and employment – indeed, "research has shown that well designed infrastructure investments can raise economic growth, productivity, and land values, while also providing significant positive spillovers to areas such as economic development, energy efficiency, public health and manufacturing."[5]

As of 2010, commercial construction activity comprised around 2.5 percent of GDP while residential construction makes up another 2 percent. Spending in these industries will grow as the economy continues to recover from the recession. Standard & Poor's forecasts a 14 percent increase (to $44.8 billion) in commercial construction starts and a 1.8 percent increase in residential housing investment in 2011.[6] The National Association of Home Builders forecasts a 42 percent increase in residential construction starts between 2011 and 2012, from 615,000 to 873,000.[7]

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[2] See Heintz, James, Pollin, Robert and Heidi Garrett-Peltier, *How Infrastructure Investment Support the U.S. Economy: Employment, Productivity and Growth*, Political Economy Research Institute, University of Massachusetts Amherst, January 2009.

[3] CEA, *The Job Impact of the American Recovery and Reinvestment Plan*, January 9, 2009, p. 2.

[4] Kammen, Daniel, Kapadia, Kamal and Matthias Fripp, *Putting Renewables to Work: How Many Jobs Can the Clean Energy Industry Generate?*, Energy and Resources Group, University of California at Berkeley, April 13, 2004, p. 3.

[5] Department of the Treasury with the CEA, *An Economic Analysis of Infrastructure Investment*, October 11, 2010, p.1.

[6] S&P, p. 4.

[7] A start is defined as excavation (ground breaking) for the footings or foundation of a residential structure. For a multifamily structure, all units are counted as started when the structure is started. NAHB/Housing Economics, April 2011.

In March 2011, public and private investment in the construction of residential and commercial structures totaled over $300 billion for the previous 12 months.[8] This economic activity stimulates other sectors of the economy. Table 2 shows that every $1 of spending on residential construction, utility and transportation infrastructure or commercial construction generates roughly $3 of economic activity throughout the economy.

Construction spending also generates large numbers of jobs. As shown in Table 3, for each $1 billion spent in new residential construction in the United States, over 10,000 new jobs are created directly and indirectly (i.e., in industries that support construction activity).[9] An additional 5,700 jobs are created through induced effects, meaning the economic activity resulting from increased earnings generated by the direct and indirect economic activity. Thus, in total every $1 billion of residential construction generates around 16,000 jobs. Spending on commercial and institutional facilities such as shopping centers, schools, office buildings, factories, libraries and fire stations has a somewhat larger job-creation effect, at around 18,000 jobs per $1 billion of spending.

Between 1987 and 2007, public spending on transportation and water infrastructure as a percentage of GDP remained steady between 2.3 and 2.6 percent.[10] In 2009, the federal government spent $39 billion on new highway infrastructure.[11] On balance, government spending on highway construction has increased during the past 30 years in real terms.[12] Not only are investments in these kinds of infrastructure critical to quality of life throughout the nation,[13] the multiplier effect on job creation resulting from such investment is substantial. In March 2011, the value of transportation and water infrastructure put in place amounted to roughly $160 billion. As shown in Table 3, every $1 billion in transportation and water infrastructure construction creates approximately 18,000 jobs total.

Renewable energy is an example of an emerging sector of the economy that also relies on discharge permits. The United States spends 0.3 percent of its GDP on the production of clean technologies.[14] The renewables industry, however, has been expanding at a rate of 28 percent per year since 2008.[15] Further, in its 2011 release of the *Annual Energy Outlook*, the U.S. Energy Information Administration forecasts that cumulative additions to electricity generating capacity[16] from renewable sources will exceed 20,000 megawatts

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[8] See Table 1.
[9] Direct and Indirect Effects.
[10] CBO, *Public Spending on Transportation and Water Infrastructure*, November 2010.
[11] CBO, *Spending and Funding for Highways*, January 2011.
[12] *Ibid.*
[13] See for example, Dalenberg, Douglas R. and Partridge, Mark D., "The Effects of Taxes, Expenditures, and Public Infrastructure on Metropolitan Area Employment," *Journal of Regional Science*, Vol. 35, No. 4, 1995, pp. 617-640.
[14] Associated Press, "China Leads Push to Go Green," *New York Times*, May 8, 2011, accessible: http://www.nytimes.com/2011/05/09/business/energy-environment/09clean.html?scp=2&sq=renewable%20energy%20gdp&st=cse.
[15] *Ibid.*
[16] Net Summer Capacity.

by 2020.[17] With fixed costs ranging from roughly $15 to $400 per kilowatt for renewable generation plants,[18] projected near-term future spending on infrastructure for renewables will be substantial.

Table 1. Annual Value of Public and Private Construction Put in Place, as of March 2011[1]

Type of Construction	($'m)
Residential Buildings	237,757
Commercial Buildings and Structures[2]	81,560
Health Care Institutions	39,448
Educational Institutions	80,764
Public Safety Institutions[3]	10,795
Transportation Infrastructure[4]	122,574
Communication Infrastructure	17,387
Power and Electric Infrastructure[5]	81,618
Sewage, Waste and Water Supply Infrastructure[6]	37,427
Total Construction[7]	*768,899*

[1] The annual value is calculated as the unadjusted Census survey estimate of new construction put in place during March 2011 multiplied by 12 and seasonally adjusted.
[2] Includes lodging and office.
[3] Includes correctional and fire/safety structures.
[4] Includes air, rail and water travel as well as highway and street-related infrastructure.
[5] Includes electric transmission and pipelines.
[6] Includes sewage and waste treatment and storage facilities as well as water supply treatment and storage facilities.
[7] The categories listed here do not add up to total construction because some categories have been omitted.
[8] March 2011 numbers are preliminary.

Source: US Census Bureau, *Value of Construction Put in Place*, March 2011.

[17] EIA, Table 9: Electricity Generating Capacity – Reference Case, *Annual Energy Outlook 2011*, April 2011.
[18] EIA, *Updated Capital Cost Estimates for Electricity Generation Plants*, November 2010.

Table 1a. Annual Value of Public and Private Construction Put in Place, as of March 2011[1] ($'m)

Type of Construction	Private	Public
Residential Buildings	229,065	8,692
Commercial Buildings and Structures[2]	65,770	15,167
Health Care Institutions	29,111	10,337
Educational Institutions	12,301	68,463
Public Safety Institutions[3]	n/a	10,658
Transportation Infrastructure[4]	9,043	113,408
Communication Infrastructure[5]	17,334	n/a
Power and Electric Infrastructure	70,139	11,479
Sewage, Waste and Water Supply Infrastructure[6]	n/a	36,272
Total Construction[7]	*476,111*	*292,788*

[1] The annual value is calculated as the unadjusted Census survey estimate of new construction put in place in March 2011 multiplied by 12 and seasonally adjusted.
[2] Public does not include lodging as it is not broken out separately but included in total.
[3] Not broken out separately for the private sector but included in the total.
[4] For private, Transportation Infrastructure spending does not include highway and street-related infrastructure as it is not broken out separately, but included in the total.
[5] Not broken out separately for the public sector but included in the total.
[6] Not broken out separately for the private sector but included in the total.
[7] The categories listed here do not add up to total construction because some categories have been omitted.
[8] March 2011 numbers are preliminary.

Source: US Census Bureau, *Value of Construction Put in Place*, March 2011.

Table 2. Output Impacts of $1 Spending in the US for Select Economic Activities

Area of Economic Activity	Corresponding IMPLAN Sector		Direct Effect[3]	Indirect Effect[4]	Induced Effect[5]	Total Effect
	Sector	Description				
Construction of Commercial and Institutional Structures[1]	34	Construction of new nonresidential commercial and health care structures	$1.00	$0.84	$1.16	$2.99
Construction of Utility, Energy and Transportation Infrastructure[2]	36	Construction of other new nonresidential structures	$1.00	$0.88	$1.15	$3.03
Construction of New Residential Housing Structures	37	Construction of new residential permanent site single- and multi-family structures	$1.00	$1.01	$1.00	$3.01

[1] Includes commercial development and public works such as schools, libraries and fire stations.
[2] Includes renewable energy projects, pipeline and electric transmission and transportation infrastructure such as roads and rail.
[3] The direct effect captures the initial change in economic activity resulting from the new investment.
[4] The indirect effect reflects new economic activity that is stimulated by the direct investment in industries that supply inputs to the sector of initial change.
[5] The induced effect captures the economic activity that results when the increased earnings generated by the direct and indirect economic activity is spent on local goods and services.
Source: IMPLAN version 3

Table 3. Employment Impacts of $1 Billion Spending in the US for Select Economic Activities

Area of Economic Activity	Corresponding IMPLAN Sector		Direct Effect[3]	Indirect Effect[4]	Induced Effect[5]	Total Effect
	Sector	Description				
Construction of Commercial and Institutional Structures[1]	34	Construction of new nonresidential commercial and health care structures	7,843	3,624	6,591	18,057
Construction of Utility, Energy and Transportation Infrastructure[2]	36	Construction of other new nonresidential structures	7,400	3,912	6,550	17,862
Construction of New Residential Housing Structures	37	Construction of new residential permanent site single- and multi-family structures	5,103	5,136	5,718	15,957

[1] Includes commercial development and public works such as schools, libraries and fire stations.

[2] Includes renewable energy projects, pipeline and electric transmission and transportation infrastructure such as roads and rail.

[3] The direct effect captures the initial change in economic activity resulting from the new investment.

[4] The indirect effect reflects new economic activity that is stimulated by the direct investment in industries that supply inputs to the sector of change.

[5] The induced effect captures the economic activity that results when the increased earnings generated by the direct and indirect economic activity is spent on local goods and services.

[6] Employment impacts are given in full-time equivalent jobs, *i.e.*, each job is equivalent to 2,080 hours of work.

Source: IMPLAN version 3

3. Direct Economic Impacts of EPA's After-the-Fact Veto

EPA's precedential decision to revoke a valid discharge authorization alters the incentives to invest in projects requiring a permit under Section 404. Project development usually requires significant capital expenditure over a sustained period of time, after which the project generates some return. Actions like the EPA's that increase uncertainty, raise the threshold for any private or public entity to undertake the required early-stage investment. For this reason, the EPA's action has a chilling effect on investment in activities requiring a 404 authorization across a broad range of markets.

Increasing the level of uncertainty can also reduce investment by making it more difficult to obtain project financing. Land development activities, infrastructure projects and the like often require a significant level of capital formation. Reducing the reliability of the Section 404 permit will make it harder for project proponents to find financing at attractive rates as lenders and bondholders will require higher interest rates to compensate for increased risk, and some credit rationing may also result.

Permit Uncertainty and the Hurdle Rate

The decisions to undertake an investment in a project can be considered as a comparison of the benefit-cost ratio of the project to a hurdle rate. Letting B denote the present value of net benefits from the project and C denotes the investment cost, the investment condition is to undertake the project when

$$\frac{Benefit}{Cost} > 1 + hurdle\ rate\ .$$

The hurdle rate represents the expected rate of return a firm requires on its investment. When uncertainty exists on the future benefits and cost of a project, firms and public agencies often use risk-adjusted hurdle rates. For private firms, hurdle rates of three or four times the cost of capital are common (Summers, 1987). For government agencies, with a lower cost of capital and less risk aversion, hurdle rates are typically lower, but are usually well in excess of 1.

It is especially common for firms and public agencies to select high hurdle rates when engaging in a project that involves irreversible investment. In this case, high hurdle rates emerge through inertia as decision makers are forced to trade-off the possibility of making an error in an immediate investment decision against the opportunity cost of delaying the investment. The optimal timing of investment in this case would occur when the expected benefit foregone over the interval before the investment is made exceeds the (probability-weighted) downside losses from a wrong investment. Under a present value criterion, the hurdle rate reduces to the discount rate, which is denoted here by r.

In uncertain investment settings with irreversible investment, Pindyck (1982, 1991) and Dixit (1992) characterize the optimal timing of an investment as the tangency between two curves; one describing the value of investing and the other describing the value of waiting. The equation for the value of investing is based directly on present value calculations: the value of an investment is positive if the discounted present value of expected returns exceeds the present value of the sunk, irreversible investment cost, C. The expression for the value of waiting is determined according to the value of the option to delay investment from the present period to subsequent periods. Doing so allows the firm an opportunity to acquire relevant market information over time, which reduces downside risk. The necessary and sufficient conditions for an optimal investment decision are the so-called "value-matching condition" and "smooth-pasting condition," effects that are described in Dixit and Pindyck (1994).

Abel (1983) shows that greater uncertainty over future market outcomes delays investment in situations where investments are irreversible. This outcome is a common theme in the early literature on quasi-option value (Arrow and Fisher, 1974; Henry, 1974; and Conrad, 1980), and the parallels between this literature and the more recent literature on investment under uncertainty have been demonstrated by Fisher (2000). It is also true for the case of uncertainty over future regulatory actions.

In the context of an investment decision, delaying investment essentially means reducing the level of investment in any given period. Consider a mine where the cost of extracting ore is $40/ton. With permit certainty, and considering the irreversible nature of investment in the mine, suppose the mine the hurdle rate test if the market price of ore were $50/ton. Market prices fluctuate and it may take some time for the price to hit this trigger point, but once it is achieved, the mine owner will commence investment. If the

target price increases to $55/ton, it is less likely that the market price of ore will reach this new, higher level, and investment is delayed, meaning that there is less investment expected in any given period.

It is demonstrated in the appendix to this report that an increase in the threat of permit revocation increases the hurdle rate, thereby delaying investment. The reason for this outcome is twofold. First, as in Abel (1983), delaying investment is valuable because market returns can be earned on financial capital during each period of delay, and this "outside option" is more valuable to firms the more volatile the expected future market returns from the project in relation to returns on the outside asset. Second, and quite unique to the present setting, delaying investment is valuable under the threat of permit revocation because delaying investment reduces the likelihood of stranded capital. This effect is strong --even in the case of small changes in the revocation probability-- as stranded capital can have substantial implications on the rate of return of firms relative to capital that simply earns below-market returns in response to adverse market outcomes. For these reasons, increasing the threat of permit revocation raises the hurdle rate that investors require to engage in projects, delaying investment.

The possibility of permit revocation has highly pernicious effects on investment. Investment, in some cases, is not only delayed, but entirely deterred. Indeed, under various circumstances in which investment would take place absent the threat of permit revocation, investment is deterred, and this is true even for extremely small probabilities of having a permit revoked. The reason is that firms cannot directly control the probability of having a permit revoked when revocation is not based on the firm's own compliance, and this fact introduces a new source of risk that makes investing in sectors of the economy that rely on discharge permits relatively unattractive. To better understand the deterrence effect of permit revocation on new investment, consider the effect of a small probability of revocation represented by the variable p. Taking p to represent the expected annual probability that a discharge permit is revoked, the benefit-cost ratio (derived in the Appendix) of an investment with an expected annual net benefit of $\$B$ and an irreversible one-time capital investment level of $\$K$ is

$$\frac{Benefit}{Cost} = \frac{B}{rK}\left(\frac{r(1-p)}{(r+p)}\right).$$

First consider the case in which discharge permits are certain and can be relied on by project proponents. In this case, the net present value of the benefit stream from the project is B/r and the initial capital outlay for the project is K. These terms, which appear to the left of the term in brackets, represent the standard benefit-cost ratio used in studies of irreversible investment (Dixit and Pindyck, 1994).

Now consider the distortion to the benefit-cost ratio of new investment projects under the threat of permit revocation. The term in brackets is the distortion to the benefit-cost ratio created by this threat. When $p = 0$, the distortion vanishes and the benefit cost ratio returns to the market value in standard case. Notice that this term is concave in the threat of permit revocation; that is, small changes in the threat of permit revocation in

environments with little regulatory threat have larger impacts on investment decisions than small increments in the revocation probability at higher frequencies of government intervention.

An important implication of this result is that small changes in the probability that discharge permits are revoked have large effects on investment incentives even when revocation is infrequent in practice. To see this result, consider the magnitude of the distortion to investment incentives (the term in the brackets of the equation above) in the case of a 5% discount rate.

At a 5% rate of discount ($r = 0.05$), if investors expect a 1% chance per year of permit revocation, the expected benefit-cost ratio of projects involving discharge permits decreases by 17.5%. That is, $\frac{.05(0.99)}{(.06)} = 82.5$ in the term reflecting the regulatory distortion above. If an observed regulatory action subsequently causes investors to expect a 2% chance per year of having a discharge permit revoked, the expected benefit-cost ratio of projects involving discharge permits decreases by 30%, and, if it turns out investors expect a 5% chance per year of having a discharge permit revoked, the expected benefit-cost ratio of projects involving discharge permits decreases by 52.5%. **Thus, small changes in the threat of permit revocation can lead to dramatic reductions in private investment.**

It should also be noted that the possibility of revocation has the largest deterrent effect on large projects. This effect is independent of the fact that large projects are the most likely to be controversial and have a higher chance of having their discharge authorization revoked. Large projects by definition have a higher level of capital outlay than smaller projects. Permit revocation increases the downside risk associated with a project, as revocation results in some level of stranded investment. This principle is demonstrated formally in the appendix,

To summarize this mainly conceptual discussion, raising the possibility that discharge permits can be revoked reduces investment incentives in two essential ways: (i) revoking permits raises hurdle rates among private investors; and (ii) revoking permits reduces the expected benefit-cost ratio of new projects. These effects will dampen investment rates in industries that rely on Section 404 permits, both by delaying and by deterring new projects from being built.

Project Financing

Another issue related to the effect of permit revocation on investment relates to capital formation. It is common for both private and public projects to be debt financed. In this case, corporations and governments raise revenue by issuing bonds. Though some investors have developed their own models for measuring the probability that the borrower will default, there are three principal rating services that have developed their own corporate and government bond ratings: Moody's, Standard & Poor's and Fitch.

Debt ratings are based on a combination of quantitative and qualitative factors that each rating agency considers to estimate the probability of a bond defaulting payment. Of particular relevance to the EPA's actions is that rating agencies typically consider regulatory risk as a principal consideration in its bond ratings:

> The analysis of credit risk may include, for example, business risk and financial risk in the case of rating a corporation or financial institution, or geopolitical risk in the case of a sovereign government. When assessing structured finance issues, the broad fundamental areas we typically consider include: asset credit quality, legal andregulatory risks, the payment structure and cash flow mechanics, operational and administrative risks, and counterparty risk (Standard and Poor's, 2010).

Increased regulatory risks could thus lower a corporation's or government's credit rating. This circumstance in turn could make it much more expensive to access capital.

It is possible that some project developers will be unable to obtain financing due to the increased risk of their investment. The practice of a bank that is unwilling to lend money, even when the borrower is willing to pay higher interest rates, is called credit rationing. There are multiple circumstances that can lead to credit rationing, for example a shortage of credit or a temporary, exogenous shock to the credit market. But, Stiglitz and Weiss (1981) show that credit rationing could be an equilibrium outcome even without a credit shortage.

Land Markets and Incidence of Regulation

Land is an asset that has a fixed location. Regulation that affects the returns to land ownership in defined areas thus has the potential to alter the equilibrium price of land. At present, there are over 100 million acres of land in the contiguous United States that contain wetlands and other waters subject to regulation under the Clean Water Act. Many more acres are within the drainage of waters of the United States and thus potentially come under the jurisdiction of the Army Corps of Engineers.

In a competitive land market, land prices reflect the discounted value of the returns earned from dedicating land to its highest and best use (Capozzaand Helsley, 1998). For undeveloped land, this sum is typically equal to the value of rents when the land is in an undeveloped condition, plus the amount developers are willing to pay for land when they initiate their project.

Regulation that lowers the profits from future development will be capitalized into current land values, meaning that the equilibrium market price of land will be lower as a result. Thus, the EPA's action will, to a degree determined by local market conditions, be borne by landowners in areas containing wetlands and other waters of the United States.

4. Conclusions

The EPA's precedential decision to revoke a valid discharge permit will have a chilling effect on investment across a broad swath of the American economy. Activities ranging from residential and commercial development, roads, renewable energy, and other projects rely on discharge authorization under Section 404 of the Clean Water Act. These activities provide needed infrastructure, housing, and other services, and are a significant part of the annual value of economic activity in the country. They also generate hundreds of thousands of jobs nationwide, and stimulate economic activities in support sectors.

The types of projects that require discharge permits are usually capital intensive and involve irreversible investments, meaning that the project proponent cannot recoup costs if the necessary authorization is revoked by the EPA. Revoking discharge permits introduces two essential market distortions: (i) revoking permits raises hurdle rates among private investors; and (ii) revoking permits reduces the expected benefit-cost ratio of new projects. These effects are likely to dampen investment rates in industries relying on discharge permits, both by delaying and by deterring new projects from being built. Importantly, I show that even small changes in the probability of ex post revocation can have a large effect on project investment.

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6. Appendix

This appendix develops the model of expected investment returns under the threat of permit revocation discussed in the report.

Let $c_t(q)$ denote the cost of investment in a project of size q at time t. Investment costs are considered to be divided into an initial and irreversible expenditure at time $t=0$ (the date of project approval), which is denoted K, and a series of recurring costs associated with project operation in the subsequent periods $t=1,\ldots,T$, denoted by the constant c. The present value of cost for a project of known size is

$$c_t = K + \sum_{t=1}^{T}\left(\frac{1}{1+r}\right)^t c, \tag{1}$$

where r is the discount rate.

The expected return from the project is positive, in the sense that the expected benefit to the operator exceeds the sum of investment cost and recurring operational costs of the project. Let B denote the expected net benefit of the project in each period of operation, which is defined as the gross benefit less operational costs, c. For a project with an operating lifetime of T periods, the present value of the net benefit of the project is

$$NPV_0 = \sum_{t=1}^{T}\left(\frac{1}{1+r}\right)^t B - K, \tag{2}$$

where costs in equation (1) are subsumed into the net benefit function. Equation (2) represents the standard present value criterion for evaluating projects.

Now suppose the regulator introduces threat of permit revocation. If firms perceive the likelihood of having their permit revoked in any given period to be p, then the net present value of a project with an operating lifetime of T periods is given by

$$NPV_0 = \sum_{t=1}^{T}\left(\frac{1-p}{1+r}\right)^t B - K. \tag{3}$$

Noting that the factor $(1-p)/(1+r) < 1$, the net present value can be expressed as

$$NPV_0 = \frac{(1-p)B}{r+p}\left(1-\left(\frac{1-p}{1+r}\right)^T\right) - K. \tag{4}$$

In the case where a permit has no explicit terminal time, T, it is convenient to treat the discounted net return of the project as the present value of an infinite annuity from the investment. In this case, equation (4) can be expressed as

$$NPV_0 = \frac{(1-p)B}{r+p} - K. \tag{5}$$

Notice that equation (5) reduces to the conventional formula used by Pindyck (1991) and Dixit (1992) for the present value of an infinite annuity with expected return *B/r*.

Next consider the continuation value, or net payoff of an investment made in period t=1 as opposed to period t=0. To calculate the net payoff from an investment in period t=1, consider a discrete probability model of the form examined by Dixit and Pindyck (1994) and Fisher (2000) in which the expected net benefit function is given by

$$B = V\left[q(1+u) + (1-q)(1-d)\right].$$

In this expression, q is the probability of a high draw from the value distribution, in which case the net value of the project is $(1+u)V$, and1-q is the probability of a low draw from the value distribution, in which case the net value of the project is (1-d)V. Thus, if V is defined as net benefit, the value B in equation (5) can be interpreted as the contemporaneous expected net benefit of the project at time t=0.

To calculate option value from delaying investment until time t=1, suppose the true value of the project is revealed at time t=1 as being either $V(1+u)$ or $V(1-d)$ and that the continuation value of the project is driven by high-draws from the value distribution. In this case, when waiting until time t=1 to make the investment decision, the investment is "in the money" only if a high draw is revealed. Under circumstances in which the project is worthwhile in both states of nature, there would be no option value to delaying an irreversible investment and investment would always take place. Irreversibility of investment would not impact the hurdle rate in this was the case.

The expected continuation value for the project must satisfy (in present value terms of period t=0):

$$\left(\frac{1}{1+r}\right)E_0(F_1) = \frac{q}{1+r}\left[\frac{V(1+u)(1-p)}{(r+p)} - (1-p)K\right]. \tag{6}$$

Notice that, by delaying investment it is possible that the discharge permit is revoked between periods t=0 and t=1. The conditional probability of investment at time t=1 is q(1-p).

The value of the option to delay investment is given by

$$OptionValue = \left(\frac{1}{1+r}\right)E_0(F_1) - NPV_0. \tag{7}$$

The formula for option value in equation (7), which is analogous to a call option on a share of stock (Dixit and Pindyck, 1994), is the difference between the continuation value and the net present value of investment from the time t=0 perspective.

Substitution of terms from equations (5) and (6) and simplifying gives

$$OptionValue = \frac{-(1-p)}{(1+r)(r+p)}\left[rB + (1-q)(1-d)V\right] + K\left(1 - \frac{q(1-p)}{1+r}\right)$$

The option value of delaying investment for one period is the sum of two terms. The first term is the foregone benefit from development in period t=0. The term in the square brackets sums the lost interest on expected earnings during the period in which investment is delayed and earnings in the non-investment state associated with a low draw. This term is negative. The second term represents the capital savings from delaying investment. This term is positive, not only because of the one period delay in investment but also because with probability p the permit was revoked during the period in which investment is delayed, stranding capital in the case of early investment. If the first term is larger in magnitude than the second term, for instance if the capital investment, K, is small or if capital is fully recoverable through re-sale in a salvage market, then there is no option value and consequently no return for delaying the investment.

In many settings, capital investment levels are sufficiently large that delaying investment creates a positive option value for firms. This also delays social benefits from arising that are indirectly related to the investment, for instance employment and induced local spending. Introducing the potential for permit revocation compounds this problem. To see this, notice that the option value of delaying investment is larger for larger values of the revocation probability, p:

$$\frac{\partial}{\partial p} OptionValue = \frac{\left[rB + (1-q)(1-d)V\right]}{(r+p)^2} + \frac{qK}{1+r} > 0$$

The implication is that increasing the threat of permit revocation delays investment from taking place. Positive option value increases the hurdle rate that investors require to engage in projects. A greater threat of permit revocation raises the hurdle rate, delaying investment in cases where investment is not deterred.

The possibility of permit revocation has pernicious effects on investment. Under various circumstances where investment would have taken place absent the threat of permit revocation, investment is deterred entirely. To see this, it is helpful to convert net present value in equation (5) into a benefit-cost ratio,

$$\frac{B}{rK}\left(\frac{r(1-p)}{(r+p)}\right), \tag{8}$$

where the net present value of the future benefit stream from operating the project in an environment without threat of permit revocation is B/r and the initial capital outlay for the project is K. The term in brackets is the distortion to the benefit-cost ratio created by the threat of permit revocation. If $p = 0$ the distortion vanishes and the benefit cost ratio returns to the market rate.

Notice that equation (8) is concave in the threat of permit revocation. This implies that small changes in the probability that discharge permits are revoked for reasons unrelated to compliance greatly reduce investment incentives. To see this, consider the magnitude of the distortion to investment incentives (the term in the brackets of equation (8)) in the case of a 5% discount rate.

For $r = 0.05$, if investors expect a 1% chance per year of permit revocation, the expected benefit-cost ratio of projects involving discharge permits decreases by 17.5%; however, if investors expect a 5% chance per year of permit revocation, the expected benefit-cost ratio of projects involving discharge permits decreases by 52.5%. Accordingly, small changes in the threat of permit revocation can lead to dramatic reductions in private investment.

Phil Brna/R7/FWS/DOI
09/23/2010 11:14 AM

To Frances_Mann@fws.gov
cc Ann Rappoport/R7/FWS/DOI@FWS
bcc
Subject Pebble and 404c

I spoke with Phil North. He has now briefed people in EPA all the way up to the assistant administrator. He believes EPA leaders have decided to proceed and they are just deciding when. They say in the next "couple of weeks" but it will probably be after the November election. Trout Unlimited has been talking with many congress people and agency folks at the DC level about this as well. He is sending me contact info for the TU person so we can talk with them. I want to find out who they are talking with at the Service and DOI. Also, Bristol bay commercial fisherman have sent a letter to over 150 fishing groups in the lower 48 and they are getting support to push 404c and oppose pebble. So far he thinks senators and representatives from Washington and Oregon are on board.

Phil says DC is opposed to his plan to do a year of outreach before they make a decision. He thinks they are just going to do this in accordance with the regs and as quickly as they can.

He thinks it is important we proceed with getting regional support. If we get that, Jeff should be talking with Rowan and the group in DC. Lets go ahead and schedule a short briefing for John, Steve, Jenifer and maybe Laverne if we can. If they support going to Jeff, we then need to call Marcia Coombs and ask for a briefing by Phil. We should ask her to come and we definitely want NPS (and maybe Pamela Bergmann) there

FYI, one of my main fishing buddies is an ARD at BLM and he says the new RD is a big fly fisherman and just coming up from Idaho where he has seen the devastation of mining. We should think about asking other RDs like BLM and USGS to participate in the briefing. Something to ask Laverne and company

When do you think we can schedule the first meeting? I will provide the Pebble layout showing road, port and mine as we know it. I also have a map showing 792.6 square miles of mining claims around Pebble

This is going to happen and its going to get bloody I am looking forward to it!

Phil Brna
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Conservation Planning Assistance Branch
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Chuitna and Pebble Retreats
Phil North To: Michael Szerlog, Marcia Combes 08/17/2009 02:04 PM
Cc: Hanh Shaw, John Pavitt

From: Phil North/R10/USEPA/US
To: Michael Szerlog/R10/USEPA/US@EPA, Marcia Combes/R10/USEPA/US@EPA
Cc: Hanh Shaw/R10/USEPA/US@EPA, John Pavitt/R10/USEPA/US@EPA

Michael and Marcia,
It looks like the team meetings for these two mines will happen, pending availability of critical team members. We will try to take advantage of the Alaska team members being in Seattle for the Regional Mining Team Retreat on September 18. The NPDES program is retreating on the 17th so we are proposing the two mine teams (which are all the same except for John Pavitt) meet on the 16th. I wanted to extend an invitation to the two of you. Each mine will be discussed for up to half the day.

The draft agenda is:

Overview of parts of the mine - Hanh/John
Quick review of EPA responsibilities
- NEPA issues - Hanh (Hanh on Pebble?)
- NPDES issues - Cindi
- 404 issues - Phil

Quick review of studies relevant to the above.
Discussion about weaknesses, missing information and fatal flaws.
Discussion about the EPA position on all of the above.
Discussion about the appropriate action in response to our position.

As you know I feel that both of these projects merit consideration of a 404C veto. We will discuss this from a technical perspective and staff perspective at these meetings.

Phil

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"To protect your rivers, protect your mountains."

EPA-3321

Phil North/R10/USEPA/US
06/25/2010 01:27 PM

To king2rick
cc gparker
bcc
Subject Visit by Dennis McLerran

Hi Rick,
Sorry for the delay in getting you this number. I have been on the phone on this same topic since we talked.

Kendra Tyler is the Regional Administrator's (Dennis McLerran) secretary her phone number is 206-553-0041.

As an introduction: I am an ecologist in the Aquatic Resources Unit (ARU) in the Office of Ecosystems, Tribal and Public Affairs. I was assigned to work on the Pebble mine about five years ago. I have been spending a lot of my time on it. It is my group ARU that has the authority under Clean Water Act 404(c). It is my group that is doing the technical evaluation. If Mr. McLerran visits Bristol Bay this summer, I hope to go along.

I have a fairly long personal history in Alaska including some time in Bristol Bay. Starting in 1975, before college, I worked for my uncle on salmon tenders around Alaska. He had a fish buying station in South Naknek so that is where I spent the early part of every summer. Then we went on to Kodiak, Prince William Sound and Cook Inlet. I fished crab in the Bering Sea one year, but that was the year of the crash. It was on to college for me after that.

I am now a fish biologist by training and, having attended college on the west coast, salmon has always been the focus. I have worked for EPA in Alaska since 1989, with a few years at the Fish and Wildlife Service (FWS) in California before that. While at FWS my job was to figure out how much water to release from dams to maintain the remnant salmon in California streams. It is much more satisfying to work to maintain healthy salmon runs.

Tribes have a special role in Pebble issues because of government-to-government relations. EPA takes that very seriously. I encourage you to develop that relationship as much as you can. I look forward to talking with you more in the future.

Phil

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"To protect your rivers, protect your mountains."

EPA-3243

Phil North/R10/USEPA/US
08/12/2010 02:45 PM

To "Peter Van Tuyn"
cc
bcc
Subject Re: Bristol Bay Native Corporation 404c letter

Hi Peter,
We have been discussing 404(c) quite a bit internally at all levels of EPA. This letter will certainly stoke the fire. I look forward to talking with you in the near future.

Phil

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"To protect your rivers, protect your mountains."

"Peter Van Tuyn" Phil, 08/12/2010 01:35:2

From: "Peter Van Tuyn" [redacted]
To: Phil North/R10/USEPA/US@EPA
Date: 08/12/2010 01:35 PM
Subject Bristol Bay Native Corporation 404c letter

Phil,

Attached to this email please find a letter from the Bristol Bay Native Corporation requesting that EPA use its authority under Clean Water Act Section 404(c) to prohibit the discharge of mine waste material into certain lands in the watershed of Bristol Bay. Pebble Limited Partnership is proposing a massive mine in this area, and BBNC believes that the proposed mine has an unacceptable risk of adverse impacts on critical area resources. I also attach a press release on the matter.

Please let me know if you have any questions, and I look forward to catching up with you in the coming days.

Best,
Peter Van Tuyn

Peter Van Tuyn
Bessenyey & Van Tuyn, L.L.C.
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Anchorage, AK 99501

EPA to Seek Service Support When They Use Section 404(c) of the Clean Water Act

PURPOSE OF AFWFO/RO OCTOBER 1, 2010 DISCUSSION

To inform Regional Office management about the status of the Environmental Protection Agency's (EPA) involvement in the potential Pebble Mine development and EPA's anticipated request for support from Region 7 of the U.S. Fish and Wildlife Service (Service).

SUMMARY OF LIKELY ACTION

The U.S. Environmental Protection Agency (EPA) is seeking Service support as they initiate a formal process to issue a determination that the waters of the U.S., including wetlands, within the potential Pebble Mine action area are unsuitable for the placement of fill material. This action would be conducted under the authority of Section 404(c) of the Clean Water Act (CWA), and would effectively prevent the project from receiving the necessary federal permits to develop a mine in the Nushagak and Kvichak watersheds. The CWA authorizes the U.S. Army Corps of Engineers (Corps) or an approved state to issue permits for discharges of dredged or fill material at specified sites in waters of the United States. Section 404(c), however, authorizes EPA to restrict, prohibit, deny, or withdraw the use of an area as a disposal site for dredged or fill material if the discharge will have unacceptable adverse effects on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas.

As of last week, it is our understanding that EPA has tentatively decided to initiate the 404(c) process but they have not yet determined when this will occur. It is likely a final decision will be made after the November election. EPA Alaska staff have briefed all the way up to just below the EPA Administrator. Trout Unlimited and Alaskans from the Bristol Bay area have been visiting lawmakers in Washington D.C. (see Anchorage Daily News article dated 9/24/10). Originally EPA was contemplating a 404(c) action for the area associated with Pebble, but they are now considering a much larger area in southwest Alaska.

BACKGROUND ON 404(C)

Under Section 404 (c), EPA may exercise a veto over Corps' or a state's authorization of a site for the discharge of dredged or fill material. Under Section 404(c), EPA may also prohibit or otherwise restrict the specification of a site to be filled before a permit application has been submitted to, or approved by, the Corps or a state. In effect, Section 404(c) authority may be exercised before a permit is applied for, while an application is pending, or after a permit has been issued. Because Section 404(c) actions have mostly been taken in response to unresolved Corps permit applications, this type of action is frequently referred to as an EPA veto of a Corps permit.

An EPA Regional Administrator initiates a 404(c) action if he or she determines that the impact of a proposed permit activity is likely to result in:

- significant degradation of municipal water supplies (including surface or ground water),
- significant loss of or damage to fisheries, shellfisheries, wildlife habitat, or recreation areas.

EPA has used its Section 404(c) authority very sparingly, issuing only 12 final veto actions since 1972 (see attachment 1 for a list of actions). A recently concluded action was Yazoo Pumps, an action that was strongly supported by the Service. Currently, there are two mines (Spruce No. 1 mine in West Virginia, and Big Branch Mine in Kentucky) which are in the preliminary phases of 404(c) determinations.

WHAT COULD FWS INVOLVEMENT LOOK LIKE?

The success of a 404 (c) determination is dependent upon the support of stakeholder groups, but a critical piece is support from the other Federal agencies that have a recognized role in the Corps regulatory process.

The EPA would take the lead by issuing a "Notice of Proposed Determination" to withdraw, prohibit, deny, or restrict use of a defined area for the placement of fill material for the Pebble Mine project. The EPA notifies the project proponent and the Corps of their intent to make a 404(c) determination, and then issues a public notice in the federal register to seek input. A public hearing is usually held. Information obtained during the public notice and the public hearing processes is then used by the EPA Assistant Administrator to make a decision to affirm, modify, or rescind the recommended determination.

Through our authorities[1], the Service in R7 could support this action by:

- providing information to the EPA Regional Administrator prior to the "Notice of Proposed Determination" to assist them as they decide whether to go forward or not. Such information would include assessments, based upon the best available data and science, about the amount of habitat to be lost; potential adverse effects on habitat and species including listed species and encompassing direct, indirect, and cumulative adverse impacts; effects of contaminants on fish and wildlife species and water quality; information on the known and documented effects of mining on water quality,
- providing formal input during the public notice and public hearing processes;
- ensure that the Service's leaders in WO are aware and supportive of this action.

WHY PEBBLE MINE?

The EPA's reasons for potentially making a 404(c) determination at the Pebble mine site are primarily related to salmon. The Service shares those concerns. Additionally, significant adverse impacts to other species, such as marine mammals, migratory birds, listed species, and their habitats, are inevitable from a development on the scale of that described for the Pebble mine. However, salmon are the heart of Bristol Bay, and much of the areas' importance relates to salmon: subsistence, commercial fishing, sport fishing, the aquatic and terrestrial ecosystem and the ecosystem of the North Pacific.

- The mine is located on a divide between the Nushagak and Kvichak River watersheds – these two watersheds produce one in eight Alaska salmon.
- Bristol Bay currently produces more salmon than any other watershed on earth, and the Nushagak and Kvichak have the lion's share of salmon runs in Bristol Bay (69%).

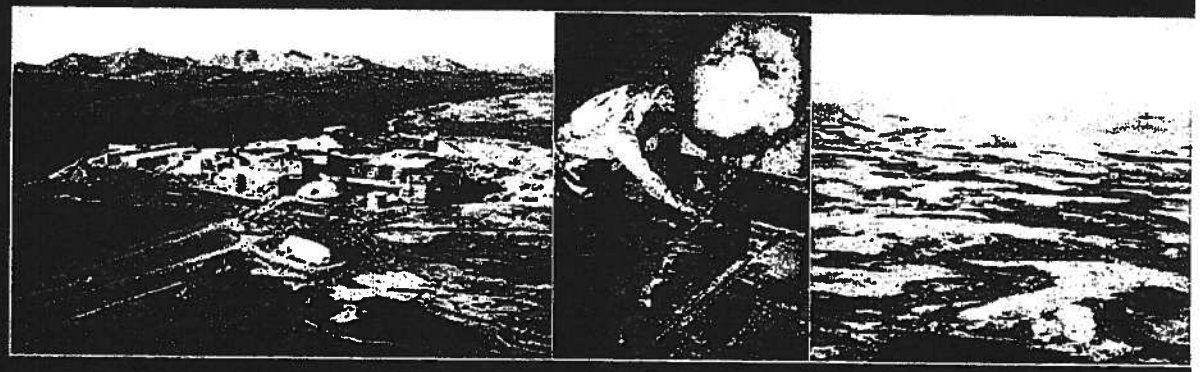
Bristol Bay 404(c) Discussion Matrix HQ Briefing 9/08/2010		
I. Timing	**Pros**	**Cons**
A. During the permitting process	1. Traditional process 2. Permit and NEPA processes will generate considerable information informing the decision.	1. Proponents will have spent tens of millions of dollars. 2. Little EPA involvement in determining information to be collected and analyzed. 3. If EPA vetoes the resulting permit, only that project would be prohibited, potentially setting up subsequent rounds of permitting, vetoing, etc. 4. Political backlash will be much worse after NEPA and 404 processes.
B. Proactive before permit applications	1. Preamble to the regulations expresses preference for advance 404(c) action. 2. A proactive 404(c) will provide the regulated community clarity on what can and cannot be permitted allowing for more efficient and timely development of permitted projects. 3. An advanced process can facilitate targeted information collection and better planning by project proponents. 4. Promotes sustainability goals. Can serve as a model of proactive watershed planning for sustainability. Similar to "alternative futures" watershed planning being used in Region 10. 5. Responsive to Tribal concerns.	1. Never been done before in the history of the CWA. 2. Immediate political backlash from Alaska. 3. Immediate dedication of resources, however, we would refocus work to address highest priority. 4. Litigation risk.

II. Process	Pros	Cons
A. Regulatory decision making mode – 404(c) process	1. Established legal procedure. 2. EPA control of the process and decision.	1. There is no real public discussion – public involvement is to comment then sue if they have the resources (NEPA, 404 permit, 404(c). 2. EPA would have less control of the "spin" and political debate.
B. Inclusive public discussion : 1) Address three key questions 2) Hold three public information sessions 3) Develop decision document for RA as output	1. EPA can begin the process in a neutral position, collect information, provide information to public, and building a position iteratively. 2. Starting in a neutral position can deflect political backlash. 3. Building a position iteratively by breaking the process into questions to be addressed can help build a public position and derail opposition. 4. Can involve State and Tribes upfront and work to meet their needs.	1. Possible FACA complications, however, process could be structured to alleviate those concerns. 2. Longer timeframe than just starting the 404(c) process 3. More Resources
i. As part of the 404(c) process	1. Established legal/regulatory process/framework	1. Sets precedent for future 404(c) actions. 2. Not adhering strictly to the regulation.
ii. Leading to a decision whether to initiate the 404(c) process.	1. Starts in a neutral position 2. Open and transparent process leading to a public recommendation. 3. Helps to develop a stronger record upfront. 4. Expands on Lisa Jackson's priorities – Protecting America's waters; Expanding the Conversation on Environmentalism and working for Environmental Justice; and building strong State and Tribal Partnerships	1. May have to address complications in representing 36 Tribes.

EPA
United States
Environmental Protection
Agency

Proposed Pebble Mine Project Alaska

Briefing for Administrator Lisa Jackson



EPA Region 10
Seattle, WA

January 13, 2010

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Presentation Overview

- Description of the proposed Pebble Mine
- Description of resources at risk
- Issues of concern
- EPA's regulatory role – current and future
- Future options to positively impact project

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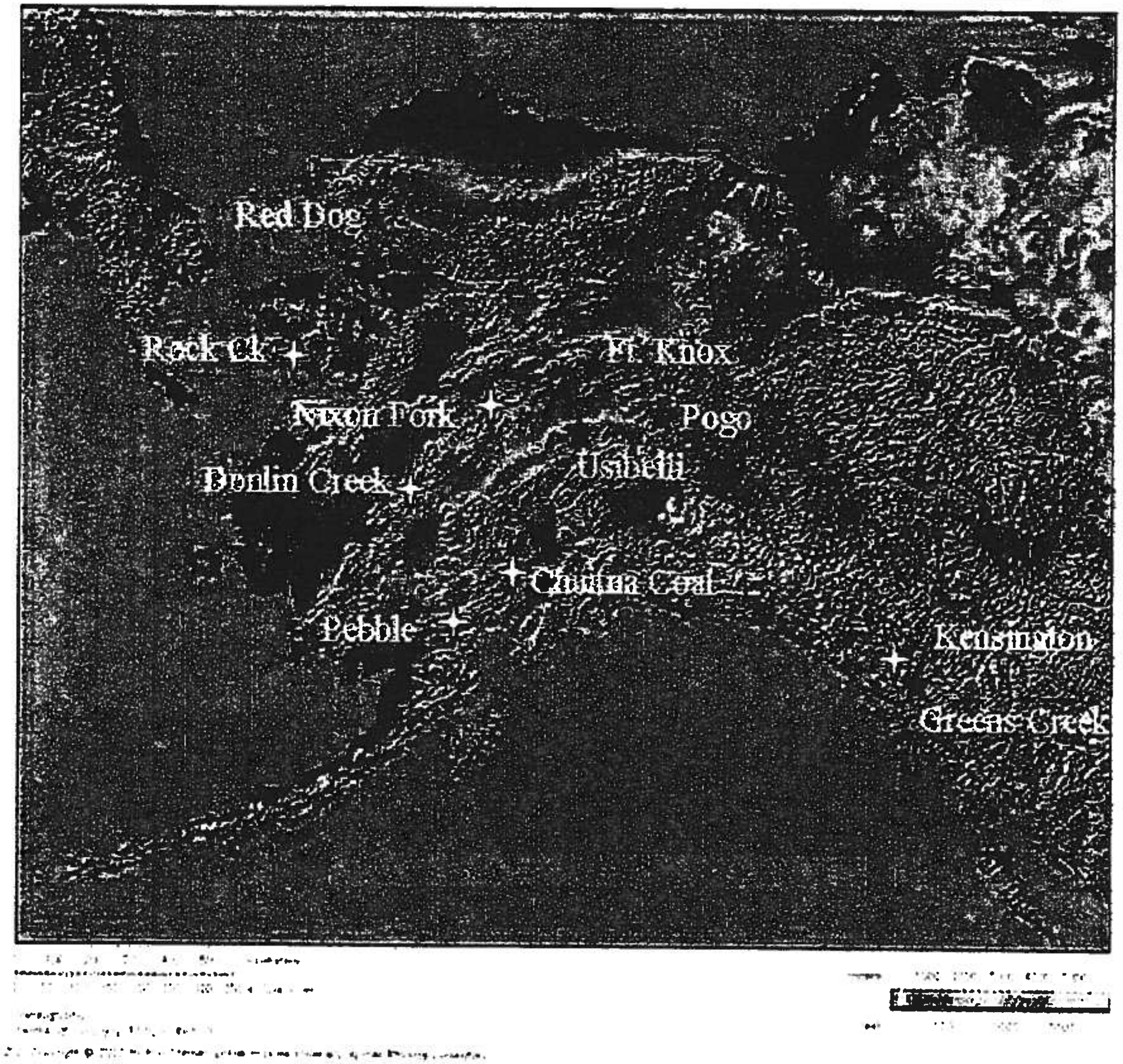
Key Messages

- Would be one of the largest mines in North America
- Located in a remote, environmentally sensitive location within the headwaters of a world class salmon fishery
- Unique, high-value Native Alaskan subsistence uses
- Project beyond the capability of current resources
- EPA has Key Regulatory Review Role

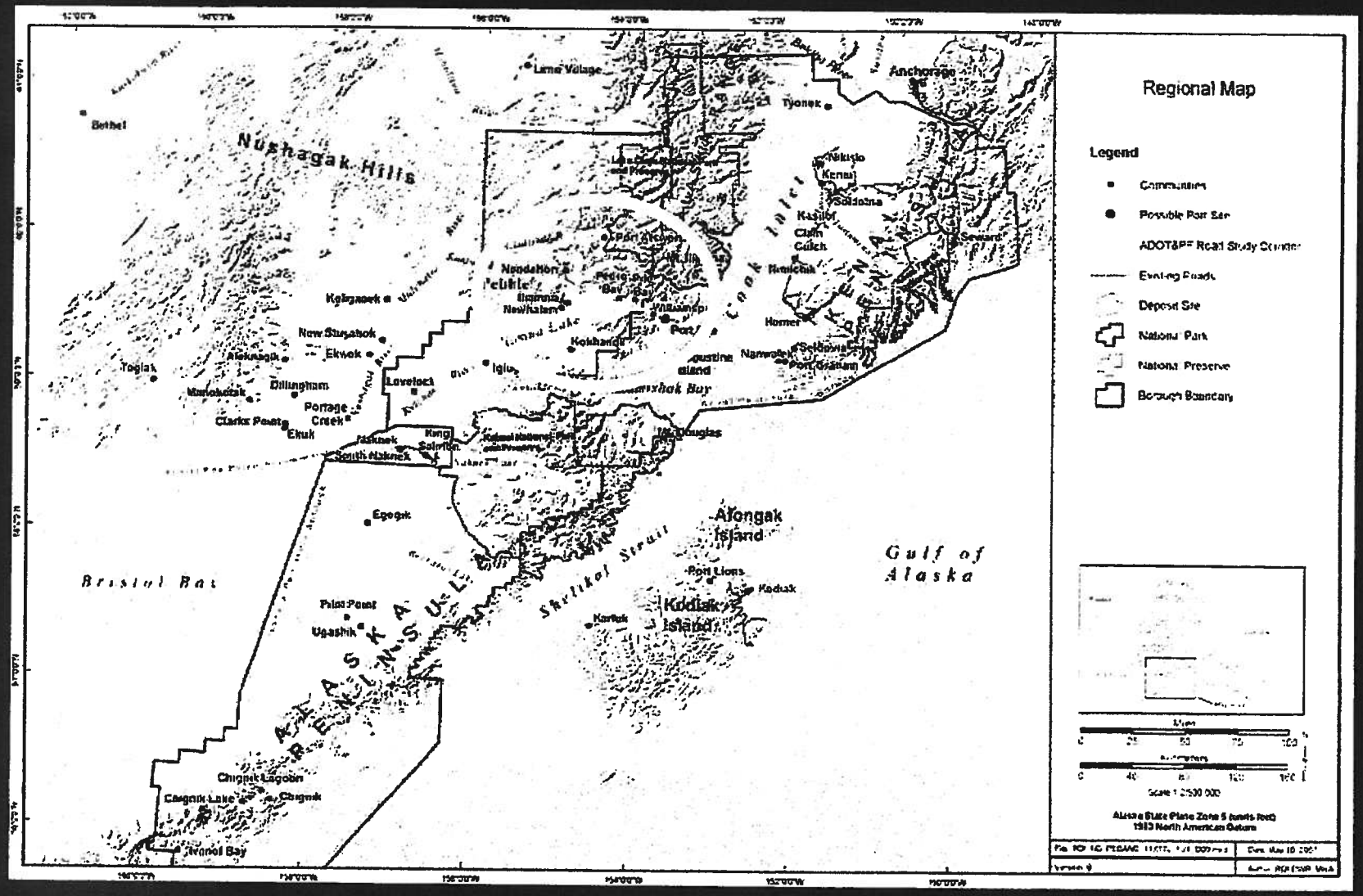
Alaska Operating and Proposed Mines

★ **Producing mine**

✧ **Developing and major exploration projects**



Pebble Location



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Proposed Pebble Mine

- Project Proponent: Pebble Partnership
  - Joint venture between Northern Dynasty and Anglo American LLC
- Land Ownership:
  - State land
  - Pebble Partnership holds mineral rights on 153 square miles
  - Proposed road would cross native allotments

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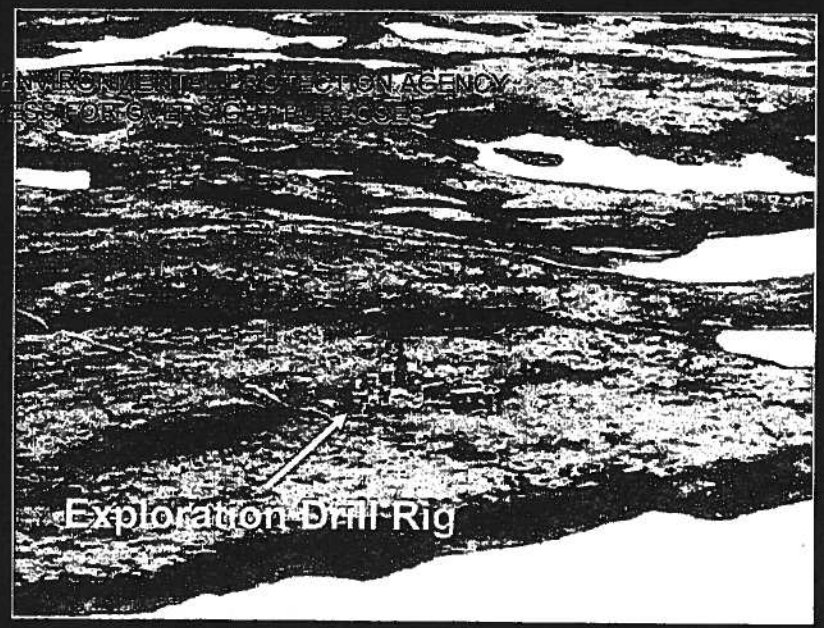
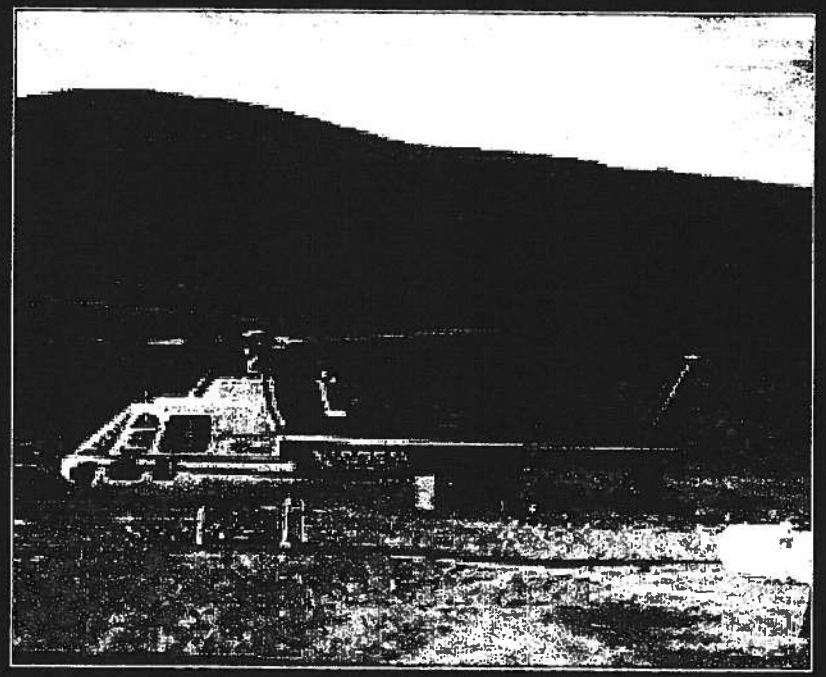
Pebble – Current Status

- Exploration
- Environmental baseline data collection
- Mine permit applications have not been submitted
- Possible submittal date – 2011?





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Pebble Project Proposal

- Current proposal:
  - 120,000 to 220,000 tons of ore processed/day
  - 30 + year mine life
  - Produce copper and molybdenum concentrates, gold and silver

- Project components:
  - Mine and mill
  - Access to/from the mine site (road)
  - Power

Bingham Canyon, UT

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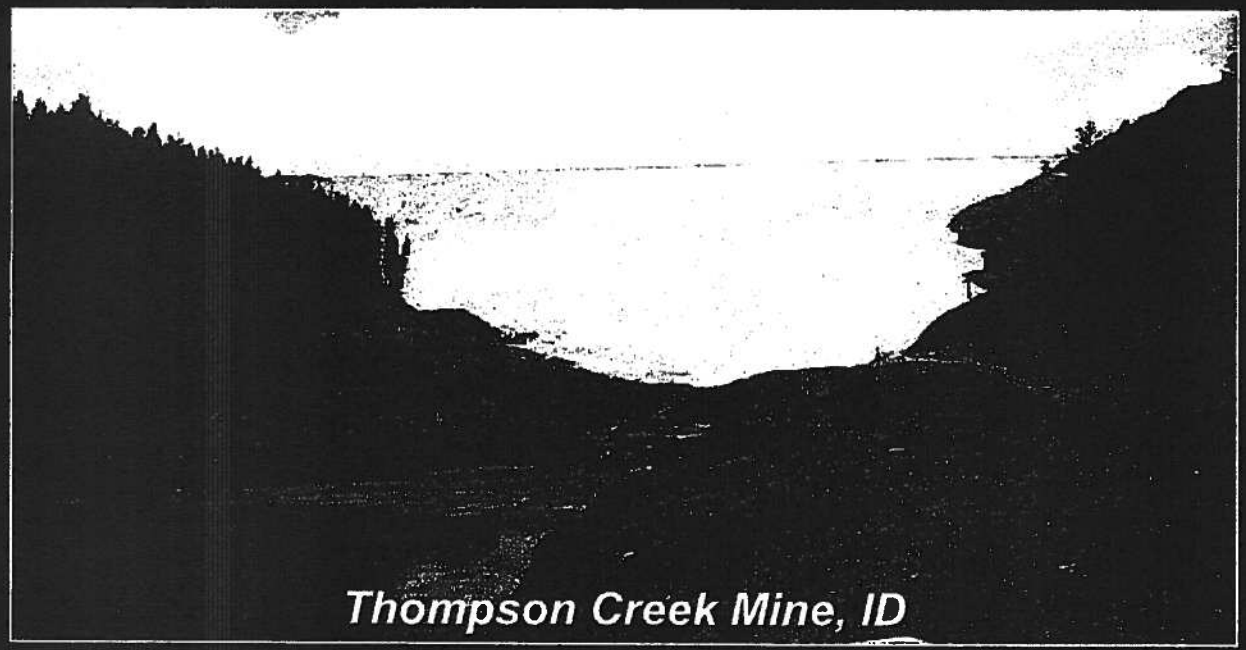
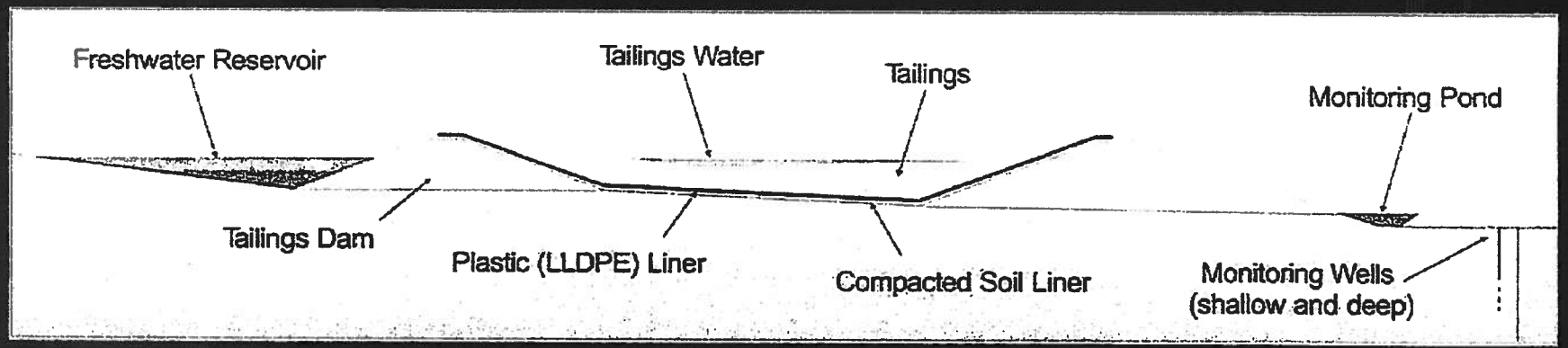
Proposed Pebble Tailings Disposal

- Tailings are ground up wastes from processing; includes solids and process wastewater.
- Amount = approx. 4.5 billion tons
- Tailings proposed to be disposed in ponds created by damming valleys.
- Approx. tailings pond size: > 700 foot-high and 6 mile long dam(s)

Tailings Impoundment



Thompson Creek Mine, ID



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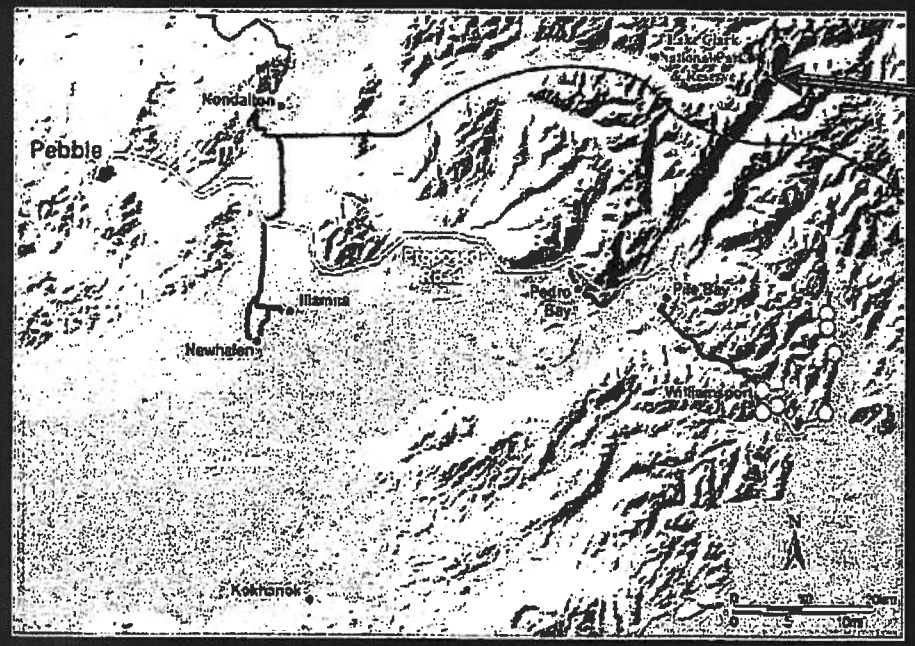
Pebble Mine Access

- Port site in Cook Inlet
- 86 to 104 mile road from port to mine site and adjacent pipelines



Lake Clark National Park and Reserve

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Resources at Risk

- Located in headwaters of pristine Bristol Bay watershed and world class fishery.
- Potential for impacts to wetlands, surface waters, aquatic resources, wildlife (caribou and moose), vegetation, ESA-listed species
- Important subsistence and traditional use area for native Alaskan communities

Surface Waters

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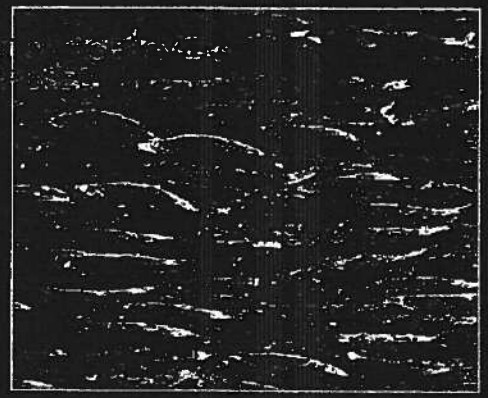
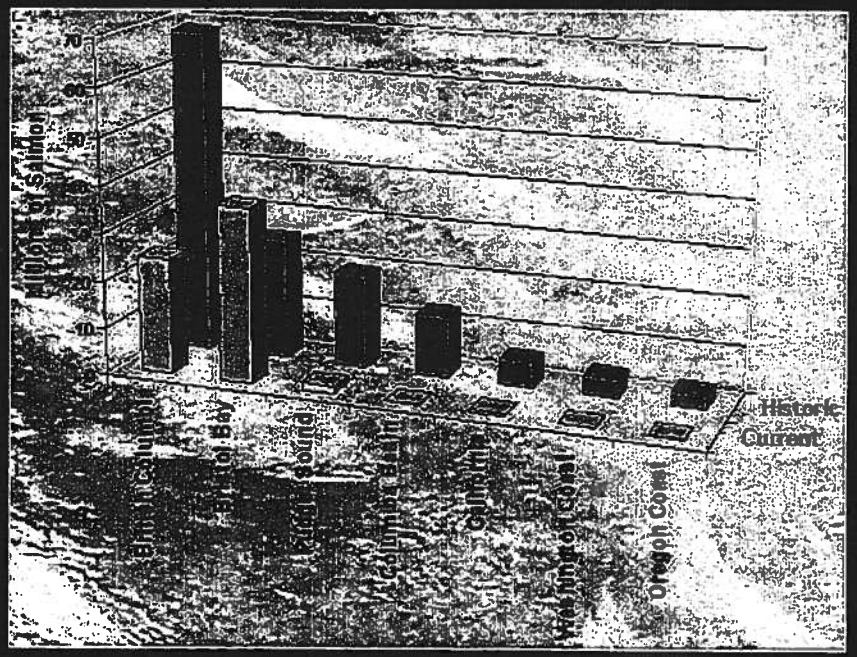


Salmon Fishery

- Nushagak and Kvichak rivers produce 13% of Alaska's salmon & 1.6 billion salmon smolts which influence the biomass of North Pacific Ocean
- Commercial value of salmon from these rivers range $30 – ~70 million annually
- In all of North America, only Bristol Bay maintains historic levels of wild salmon



Historic and Current West Coast North American Salmon Run Size

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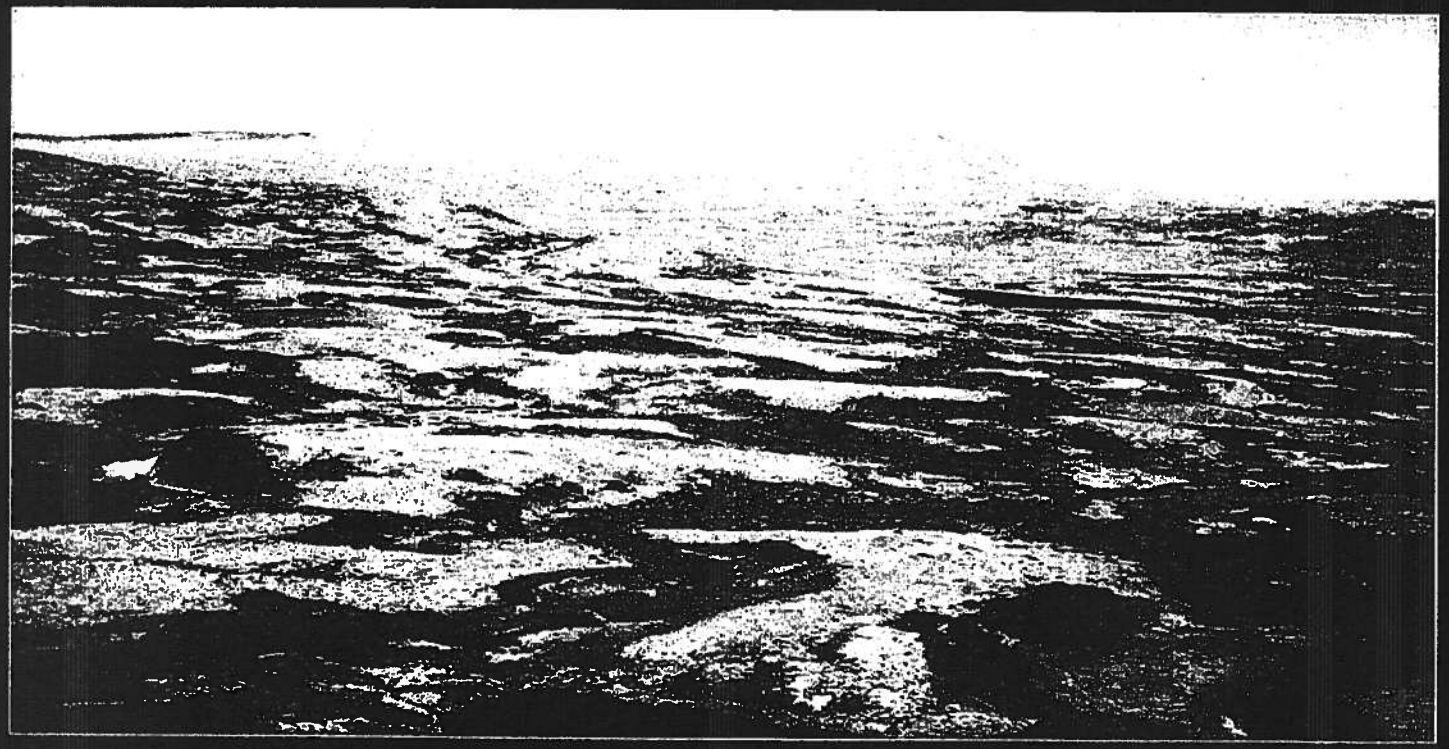
Wetlands

- Estimated 5,000 – 9,000 acres of wetlands impacts



Alaska Native Villages

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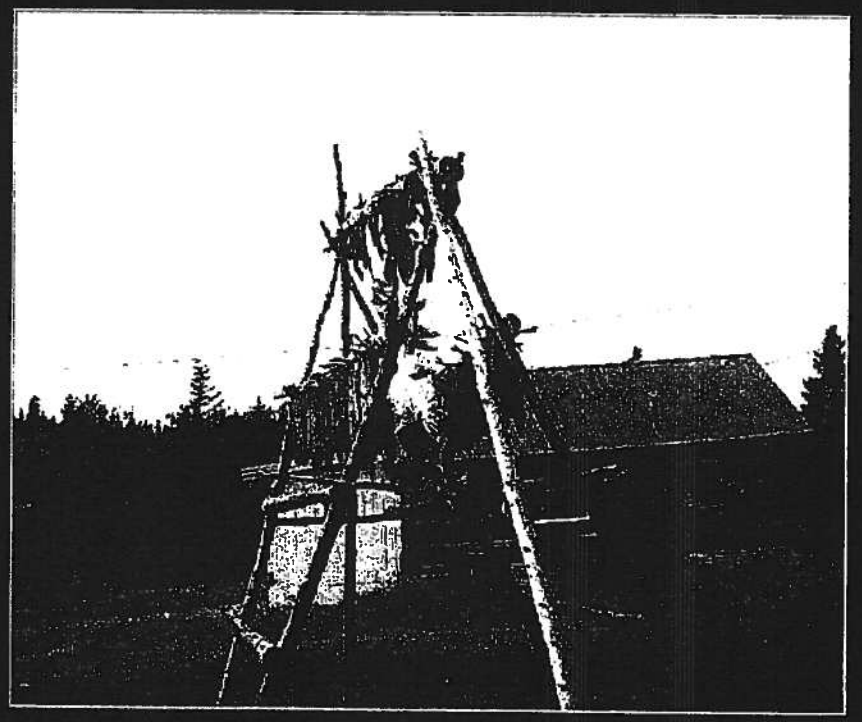
Tribal Concerns

- Important subsistence and traditional use area – salmon, caribou, berry-picking, etc.
- State NPDES authorization
- Corps as the EIS lead
- Mixed tribal viewpoints



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Regulatory Process & Future EPA Role

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Multiple Agencies Regulate Mining

- Federal Agencies
  - Land Management Agencies: USFS, BLM, NPS
  - EPA
  - Army Corps of Engineers
  - USFWS
  - NOAA
- State Agencies
  - Environmental Department
  - Natural Resources Department
  - Fish and Game
  - Department of Law
  - Historic Preservation Office
- Tribal Governments
- Local
  - Counties and (in Alaska) Boroughs

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Many Permits and Authorizations Required for Mining in Alaska

STATE

- Plan of Operations (DNR)
- Reclamation and Bonding (DNR)
- Waste Management Permits and Bonding (ADEC)
- Certification of NPDES and ACOE Permits (ADEC)
- Sewage Treatment System Approval (ADEC)
- Air Quality Permits (ADEC)
- Fish Habitat and Fishway Permits (ADFG)
- Water Rights (DNR)
- Right of Way/Access (DNR/DOT)
- Tidelands Leases (DNR)
- Dam Safety Certification (DNR)
- Cultural Resource Protection (DNR)
- Monitoring Plan (Surface/Groundwater/Wildlife) (DNR/DEC)
- Coastal Zone Consistency Determination (DNR)

FEDERAL

- US EPA Section 402 NPDES Water Discharge Permit
- US EPA Air Quality Permit review
- US ACOE Section 404 Dredge and Fill Permit
- US ACOE Section 10 Rivers and Harbors Act
- US ACOE Section 106 Historical and Cultural Resources Protection
- NMFS Threatened and Endangered Species Act Consultation
- NMFS Marine Mammal Protection Act
- NMFS Essential Fish Habitat
- NMFS Fish and Wildlife Coordination Act
- USFWS Threatened and Endangered Species Act Consultation
- USFWS Bald Eagle Protection Act Clearance
- USFWS Migratory Bird Protection
- USFWS Fish and Wildlife Coordination Act

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How is EPA Involved in Review and Permitting of Mining?

- National Environmental Policy Act
- Clean Water Act
- Safe Drinking Water Act
- Clean Air Act

- **EPA Does Not Regulate:**
- Exploration Activities
- Solid Wastes from mining
- Reclamation and closure
- Financial assurance

- *These are regulated by states and, on federal land, by US Forest Service and BLM*

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NEPA

- Corps of Engineers likely to be NEPA lead agency *

The EIS will assess:

- air quality
- surface water quality
- ground water quality
- wetlands
- vegetation
- wildlife
- fish & aquatic resources
- geochemistry
- geotechnical stability
- socioeconomics
- land use & recreation
- subsistence
- cultural resources
- visual resources
- health
- environmental justice
- cumulative impacts
- noise

* PLP, State, tribes, and the Corps would prefer EPA lead.

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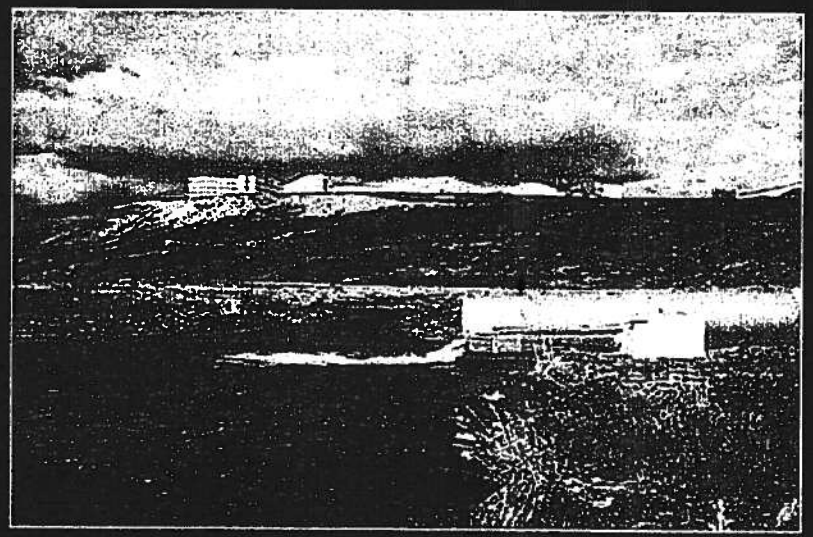
CWA 402 NPDES Permits

- NPDES permits required for the discharge of pollutants from point sources to waters of the U.S.
- Needed for discharges from tailings ponds, mine drainage, storm water.
- EPA delegated NPDES program to AK. In Nov. 2010, AK will begin writing mining permits.



- EPA role = oversight of state

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CWA 404 Wetlands Permits

- Permits issued by Corps for dredge or fill activities in wetlands and waters of the U.S
- Will be required for roads, gravel sites, tailings facility, etc.
- Corps must select least environmentally damaging alternative
- EPA can veto under 404(c)
- Tribal consultation

Kensington (AK)

Lower Slate Lake

Parallel Process

EIS Process	Federal Process	State Process	Local Process
Notice of Intent	Corps Wetlands E.O. 13175 Tribal Consultation	SHPO National Historic Preservation Act 106 Consultation	Borough Plan
Scoping	E.O. 12898 Environmental Justice	ADFG Fish Habitat ADNR Operation Plan Reclamation Plan	City Plan Tribal Village Plan
Draft EIS	USFWS/NMFS Endangered Species Act Consultation	ADEC APDES Permit Waste Management Air Quality Monitoring Plan 401 Certification	
Final EIS	NMFS Magnuson-Stevens Fisheries Management Act EFH Assessment		
Record of Decision	Federal Permit, Certification, Approval	State Permit, Certification, Approval	Local Consistency

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EPA Involvement To-Date

- Established project manager & project review team
- Review baseline environmental data & submit comments to PLP
- Coordinate with other agencies
- Site visits
- Meetings with tribes and other groups
- Summer 2010 – Tribal Mining Training in villages

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Pebble - Issues

- Technical/Scientific
  - Very large mine site and waste sites
  - Located in headwaters of world class salmon fishery
  - Potential for acid rock drainage
  - Long-term closure and financial assurance
  - Transportation risks associated with road and port traffic
- Tribal
  - Subsistence and socio-cultural impacts
  - How to effectively involve 20+ tribes in the region
- Regulatory
  - One of first new mines that will be subject to APDES
  - Loss of tribal consultation, EPA lead NEPA role

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Future Options

- Project-specific options to influence project:
  - Assign lead role in developing EIS
  - 404(c) veto either pre-emptive, during EIS, or after EIS

- Regulatory change that could influence project:
  - Change existing CWA 402/402 permitting framework that was upheld in the June 2009 Kensington Supreme Court decision (404 applies to discharge with the "effect of fill" notwithstanding otherwise applicable effluent limitation guidelines developed under CWA section 306).
  - EPA cross-office workgroup exploring options for improving CWA regulation of hard rock mining.

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Options for Improving CWA Regulation of Hard Rock Mining

- Options include:
  - Strengthening 404(b)(1) Guidelines review process & clarifying technical review factors under current approaches.
  - Revising the 2002 Fill Rule to require compliance with applicable ELGs.
  - Revising the waste treatment exclusion (WTE) to prohibit or limit use of waste treatment systems in WUS.

- High level meeting with Army/Corps on 11/20/09 to discuss options.

- Follow up meeting to be scheduled.

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EPA Workgroup Recommendation

- **Require compliance with applicable ELGs; WTE invoked on narrow case-by-case basis.**
  - Significant environmental benefit due to application of ELGs, in combination with additional scrutiny in evaluating use of WTE.
  - Continues to provide disposal options, but with additional restrictions or conditions and a more prominent EPA role in applying WTE on a case-by-case basis.

- **Implementation Considerations:**
  - All options result in rescinding EPA 2004 Mining Memo.
  - Requires narrow amendment to Fill Rule; rulemaking and/or guidance to clarify and limit WTE.
  - Essential that EPA and Army Corps coordinate effectively in this policy review; recommended approach requires joint rulemaking.
  - Timing is critical due to implications on future mining projects (like Pebble).

FY11 Proposed Investment: **Bristol Bay 404(c)**

Funding Gap = $312k

Activity/Proposal: Initiate the process and publish a CWA 404(c) "veto" action for the proposed permit for the Pebble gold mine in Bristol Bay, AK.

Background: EPA is on a fast track to evaluate the potential harm of a proposed gold mine to the natural resources of Bristol Bay, AK. The Bay is the largest sockeye salmon fishery on the Pacific Coast; the fishery itself is larger than the combination of all other Pacific Ocean fisheries, and provides income to residents and food to Alaskan native villages. The mine, if permitted, would be the largest gold mine in the US, and would generate six times the tailings as the current largest mine.

While resorting to exercising EPA's 404(c) authority is rare (only 12 actions since 1981), the Bristol Bay case represents a clear and important need to do so given the nature and extent of the adverse impacts coupled with the immense quality and vulnerability of the fisheries resource. Threat of impacts will also harm all other investment in Bristol Bay. Six Alaskan tribes and 14 other stakeholders have requested that EPA initiate a 404(c) veto based on their concerns that the mine would irreversibly adversely affect the fishery. Region 10 believes that additional information gathering and analysis must be completed in order to support a decision to formally initiate of 404(c). It's still possible that a veto will not prove necessary, but a decision to move forward has created the need for upfront analysis and outreach regardless.

Additional FY11 resource needs funds for travel to Anchorage and the permit site; and contractor support to conduct specific scientific/technical analysis on the characteristics of salmon resource, the ecological and economic significance of salmon, stressors and threats to watershed health, and success or failures of potential mitigative measures. This work will support a decision in June 2011 whether to proceed with the 404(c) veto. If yes, then additional resources will be needed in FY12 to issue the Recommended Determination, respond to comments, and issue the Final Determination by the summer of 2012.

Impact/Rationale: Given the magnitude of proposed project's environmental impact and the Administration's decision to proceed, we have no choice but to support this work.

Decisions to date/shortfall: Funding has already been provided for one SEE staffer in Region 10, along with $64k in FY10 funds to initiate the risk analysis. The work that EPA has already committed to (i.e., pre-404(c) activities) will require an additional $312k in the Region and HQ. Conduct of the 404(c) action itself (anticipated in FY12) will require an additional $187k.

Subset of OW Priorities resource gaps identified at Management Retreat:

		FY 11 Need Above Base	FY 12 Need Above Base	FY 11 FTE Need Above Base	FY 12 FTE Need Above Base
		Dollars in thousands			
1	Non-responsive				

OW Priorities resource gaps identified subsequent of the Management Retreat:

Bristol Bay	OWOW	$312.0			
Non-responsive					
Overall Total		Non-			

List of Program Areas identified as Potential Sources of Resources for Priorities:

		FY 11 Redirection	FY 12 Redirection	FY 11 FTE Redirection	FY 12 FTE Redirection
		Dollars in thousands			
1	Non-responsive				