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THE LEGAL IMPACT OF GEOTECHNICAL BASELINE REPORTS

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ABSTRACT: This paper discusses geotechnical baseline statements as they apply to trenchless projects and their legal impact when a DSC claim is filed by the Contractor. Although the geotechnical community is constantly striving to improve geotechnical baseline reports, it is important to remember that the author of a GBR is typically an engineer and not an attorney. Since the GBR is typically a “contract document” many of the statements can have legal implications on DSC claims that may or may not hold true when evaluated by a court of law. This paper attempts to explain the legal implications of geotechnical baseline statements, reviewing how these statements have been applied in court rulings on DSC claims. Specific trenchless project examples will be used to support the findings within the paper. The paper is intended to help the geotechnical community craft geotechnical baseline reports that are effective for determining a DSC in practice and will be effective if a claim should be elevated beyond the project level and into a legal setting.

1. INTRODUCTION

The stated objective of a Geotechnical Baseline Report (GBR) is to define and allocate the risks associated with subsurface excavation.¹ In theory, the GBR works in tandem with the Differing Site Condition (DSC) Clause in the Contract Documents to provide a mechanism for the contracting parties to identify any truly unanticipated conditions that may be encountered and pay the contractor an equitable adjustment for costs incurred to complete the work.

While sound in theory, this objective can be thwarted by the geotechnical engineer’s use of language in the GBR that the courts will either disregard as unenforceable or interpret as vague or ambiguous. Because the GBR and similar documents² are, fundamentally, Contract Documents, the courts have developed a body of rules and principles applicable to the interpretation of geotechnical documents. Achieving the stated objective of the GBR thus depends not only the technical expertise of the geotechnical engineer, but also on careful consideration of how the courts actually interpret the engineer’s work product. With knowledge of the courts’ approach to the interpretation of GBRs, the geotechnical engineer can create a document that achieves its central purpose. Without such knowledge, however, owners and their engineers sometimes resort to terms and conditions in GBRs that they

¹ See Randall J. Essex, P.E., Geotechnical Baseline Reports for Construction: Suggested Guidelines at 5 (American Society of Civil Engineers 2007).

² While this paper focuses on the GBR, the courts in the United States in fact have not yet decided any DSC case arising from the project’s use of a GBR. More commonly, the courts have been asked to interpret an array of other geotechnical data reports, miscellaneous soils reports, geotechnical design summaries, specification language, boring logs and test pit data.

may *believe* are useful in clarifying the allocation of risk or shedding liability for a particular condition only to discover later in court – the hard way – that such terms and conditions don't mean what the engineers and owners think they mean.

This paper therefore seeks to provide the legal context in which GBRs are interpreted and applied in order to assist owners and engineers in achieving the stated purpose of risk allocation. The paper begins with a brief overview of DSC law and general principles in order to establish the context. The main focus of the paper is then an exploration of specific cases in which attempts to allocate risk in GBRs have either been upheld or have gone awry, leading to a final section describing suggested drafting techniques calculated to advance the purpose of the GBRs' mission to provide a clear and enforceable allocation of subsurface risk.³

2. GENERAL RULES OF INTERPRETATION

The GBR is intended to operate hand-in-hand with the DSC Clause, whose purpose is to save the government money by minimizing the amount of speculative cost contingency and thereby removing uncertainty from the contractor's perspective.⁴ The typical DSC clause thus defines a Type 1 claim⁵ as arising from "subsurface or latent physical conditions at the site which differ materially from those *indicated* in the contract."⁶ To prevail in a Type 1 claim, the contractor must prove five essential elements,⁷ but only the first of those elements is pertinent here -- specifically, whether the Contract Documents affirmatively "indicate" the ground conditions or not, and if so to what extent.

Without a GBR, equivalent soils report, or associated boring logs, it is doubtful that a contractor could maintain a Type 1 DSC claim at all. As numerous courts have held, there can be no Type 1 DSC claim "unless the contract indicated what that condition would be through reasonably plain or positive indications."⁸ Because of this rule, the courts frequently recite the general rule that a Type 1 DSC claim "stands or falls" upon what is actually indicated in the contract documents.⁹

While this rule is easy to state, its application in practice is more complex because Contract Documents in most complex civil construction projects are not entirely silent in regards to subsurface conditions. In the case of complete silence on the part of the Contract Documents, the rule that no Type 1 DSC claim can be maintained unless conditions are "indicated" can be applied in a straight-forward manner. More typically, however, the issue presented by a Type 1 DSC claim is not whether the Contract Documents provided "indications" of subsurface conditions, but rather how those conditions are described, how those descriptions will be interpreted by the courts in the event of a controversy, and how any warnings, caveats or limitations set forth in the geotechnical report will be construed by the courts.

³ The authors caution readers not to over generalize from the suggested techniques because (in the wise words of one leading federal court long ago) "a study of the cases that have been decided in this area, which are too numerous to cite, makes it clear that each one must turn upon its own peculiar facts." *Leal v. United States*, 276 F.2d 378 (Ct. Cl. 1960).

⁴ *Weeks Dredging & Contracting, Inc. v. United States*, 13 Cl. Ct. 193, 219 (1987). See also *Olympus Corp. v. United States*, 98 F.3d 1314, 1316-17 (Fed. Ct. 1996) ("The bidders need not weigh the cost and ease of making their own borings against the risk of encountering an adverse subsurface, and they need not consider how large a contingency should be added to the bid to cover the risk."); *Foster Const. CA & Williams Bros. Constr. v. United States*, 435 F.2d 873, 887 (Ct. Cl. 1970).

⁵ *Weeks Dredging & Contracting, Inc. v. United States*, 13 Cl. Ct. 193, 219 (1987). See also *Olympics Corp. v. United States*, 98 F.3d 1314, 1316-17 (Fed. Ct. 1996) ("The bidders need not weigh the cost and ease of making their own borings against the risk of encountering an adverse subsurface, and they need not consider how large a contingency should be added to the bid to cover the risk."); *Foster Const. CA & Williams Bros. Constr. v. United States*, 435 F.2d 873, 887 (Ct. Cl. 1970).

⁶ See, e.g., Randall J. Essex P.E. *Geotechnical Baseline Reports for Construction: Suggested Guidelines* at 14 (ASCE 2007) (quoting standard federal contract clause).

⁷ To prevail, the claimant in a Type 1 claim must prove that (1) the contract documents contained affirmative indications describing subsurface conditions; (2) the contractor must have acted as a reasonably prudent bidder in interpreting the contract documents; (3) the contractor must have reasonably relied on the contract documents; (4) the actual subsurface conditions encountered must have differed materially from those depicted; and (5) the extra costs incurred by the contract must be attributable to the different condition. See generally *Weeks Dredging & Contracting Inc. v. United States*, 13 Cl. Ct. 193, 208 (1987).

⁸ *Conner Bros. Constr. Co. Inc. v. United States*, 65 Fed. Cl. 657, 681 (2005); see also *Appeal of Stuyvesant Dredging Co.*, 1989 WL 114375, 89-3 BCA ¶ 22,222 (Sept. 11, 1989) (because contract was silent as to what debris or trash might be encountered, court held that no Type 1 DSC was encountered).

⁹ *Weeks Dredging & Contracting Inc. v. United States*, 13 Cl. Ct. 193, 219 (1987).

Unless an owner elects to remain completely silent regarding subsurface conditions, the following general principles developed by the courts should be kept in mind by geotechnical engineers and owners as they prepare to issue baseline documents:

1. Referring to the GBR as a mere reference document or attempting to classify it as something other than a formal Contract Document will not by itself negate the bidder's right to rely on the geotechnical information. On the contrary, even if the documentation (i.e., soils report, boring logs, GBR) is not part of the contract in a technical or official sense, a reference to the materials can be enough to make the documentation part of the representation of subsurface conditions for purposes of bidding and any subsequent DSC claim.¹⁰
2. The courts regard boring logs as "usually the best indicators of subsurface conditions and bidders ought to rely heavily on them" and that a "pattern of test borings is usually reasonably representative of the entire site."¹¹ Because the contractor "must consider all of the information provided" in the bid documents, however, the bidder must also consider (1) whether the borings are numerous and well-spaced, or whether they are few and far between, (2) whether the boring results are relatively consistent with one another, and (3) the general description of the site and any warnings of conditions which might be encountered.¹² Courts do not automatically assume that test borings necessarily represent an overall or general depiction of the project site and will instead engage in a detailed examination of the entirety of the Contract Documents to assess the relative strength of the indications made by the borings.¹³
3. General statements that geotechnical information is provided "for information only" or that the bidders should make their own borings or draw their own inferences and extrapolations are typically given little weight by the courts.¹⁴ As discussed below, however, this rule does not prevent owners and their geotechnical engineers from placing legally effective conditions on geotechnical information or from limiting the right of bidders to rely on specific information. With that said, however, the general rule against general disclaimers does illustrate the general tendency of the courts to discount broadly worded, generic warnings with hostility because if literal effect were to be given such disclaimers then the courts believe the DSC clause and its beneficial purpose would be eviscerated.¹⁵
4. The contractor's interpretation of the indications represented in the Contract Documents need not necessarily be the best interpretation or the only interpretation, but a reasonable interpretation.¹⁶
5. At the same time, however, the contractor must take into consideration the entire set of representations made in the Contract Documents and may not cherry-pick indications or selectively rely on one statement to the exclusion of others.¹⁷ As a result, the court in determining the nature and extent of "indications" in the Contract Documents must read the Contract as an

¹⁰ See generally *P.J. Maffei Bldg. Wrecking Corp. v. United States*, 3 Cl. Ct. 482, 486 (1983); *Renda Marine Inc. v. United States*, 02-306C (Fed. Cl., Aug. 1, 2005 at 17); *Foster Constr. CA & Williams Bros. Co. v. United States*, 435 F.2d 873, 880 (Ct. Cl. 1970).

¹¹ *PCL Constr. Servs. Inc. v. General Services Admin.*, GSBICA 16588 (Sept. 15, 2006) at 27; see also *Appeal of Bay West Inc.*, ASBCA No. 54166 (Apr. 25, 2007) ("it has long been the rule that contract borings are the most significant indicator of subsurface conditions. . . . this is so even though the contract advised bidders they were responsible for making their own determination of the characteristics of the native soils and contained disclaimers in the Physical Data clause").

¹² *PCL Constr. Servs. Inc. v. General Services Admin.*, GSBICA 16588 (Sept. 15, 2006) at 27-28.

¹³ See, e.g., *Weeks Dredging & Contracting Inc. v. United States*, 13 Cl. Ct. 193, 223 (1987) (read as a whole, the 156 boring logs contained in the Contract Documents did not amount to an overall or general depiction of the project site; "rather, we believe that given the state and locations of the boring logs, taken as a whole, a reasonably prudent contractor would have realized the relatively limited scope and utility of information the government was intending to provide relative to the intervening subsurface materials between the logs and throughout the entire contract site"). See also *Renda Marine Inc. v. United States*, 02-306 C. Fed. Cl. (Aug. 1, 2005 at 20).

¹⁴ In one case, for example, a geotechnical report statement that test borings "should be considered applicable only to the test boring locations on the dates shown, and it should be assumed that these conditions may be different at other locations or at other times" was dismissed by the court as follows: "The idea that boring logs' representations were confined to the length of the holes would render the boring data and related provisions of the differing site conditions clause meaningless as far as pricing the work is concerned and frustrate the purpose of the clause, which is to reduce contingencies in bids." *Whiting-Turner/A.L. Johnson Joint Venture v. General Servs. Admin.*, GSPCA 15401 at 20 (December 25, 2001).

¹⁵ See, e.g., *Foster Constr. CA & Williams Bros. Co. v. United States*, 435 F.2d 873 (Ct. Cl. 1970); but see *Millgard Corp. v. McKee/Mays v. Dallas County*, 49 F.3d 1070 (5th Cir. 1995) (rejecting contractor's Type 1 DSC claim based on encountering quicksand-like material by enforcing, as an effective disclaimer that trumped the DSC clause, repeated warnings in Contract Documents that geotechnical information was not necessarily accurate).

¹⁶ *Maffei Bldg. Wrecking Corp. v. United States*, 732 F.2d 913, 917 (Fed. Cir. 1984).

¹⁷ *Flippin Materials Co. v. United States*, 312 F.2d 408 (Ct. Cl. 1963); *Billington Contracting, Inc.*, ASBCA No. 54147 (2005); *Appeal of Great Lakes Dredge & Dock Co.*, 91-1 BCA ¶ 23613, 1990 WL 212040 (Dec. 18, 1990).

“organic whole, according reasonable meaning to all of the contract terms” from the vantage point of a “reasonable and prudent contractor.”¹⁸

6. A contract is “ambiguous” when there “are two reasonable interpretations that are consistent with the contract language.”¹⁹ As a result, if the “indications” of subsurface conditions in the Contract Documents are ambiguous (i.e., two or more reasonable interpretations when read as a whole), there is an increased likelihood that the court will give the contractor the benefit of the doubt and conclude that its reasonable interpretation is the controlling one.²⁰
7. However, the mere fact that the parties may disagree over the interpretation of the contract does not make the contract ambiguous. If the ambiguity is so obvious as to raise a duty to inquire, the bidder’s failure to inquire regarding such a patent ambiguity means that the contractor assumes responsibility and liability for the ambiguity.²¹

3. SPECIFIC CASE STUDIES

With this background in mind, we turn now to the main purpose of the paper: to describe what has worked—and what has not worked—in efforts by authors of GBRs or equivalent soils reports to clarify the allocation of risk in geotechnical documents and instruct bidders on how they may or may not permissibly rely on the information provided.

As noted above, overreliance by owners and their engineers on generic, broad-stroke disclaimers has not been an effective method for risk allocation. Moreover, insufficient clarity in drafting of geotechnical documents has caused many courts to conclude that the GBR or equivalent soils report is “ambiguous” from a legal standpoint. As noted, an ambiguous GBR essentially provides no predictable baseline because, by definition, the GBR (if ambiguous) is said to have two or more reasonable interpretations. For both reasons, the stated objective of the GBR is not achieved and the Owner may incur extra liability that it most likely believed to have been adequately managed by the GBR author.

A close reading of the court cases across the country yields a middle ground in which appropriate caveats and limitations on the use of the geotechnical information will be respected by the courts while at the same time advancing the fundamental purposes of the GBR to provide a clear baseline for risk allocation. The essential thrust of these cases is that caveats, conditions, limitations or disclaimers will be respected if they are focused and specific in nature.

A. Judicial Rejection of GBR Risk Allocation

To appreciate what this means, we begin with several illustrative cases in which the courts have held that purported attempts to allocate the risk of geotechnical conditions are unenforceable, confusing, ambiguous or simply unfair.

1. Case Study #1

A missile test facility was to be built for the military at a site where dewatering was likely. At the time that the project was designed, the geotechnical borings did not reveal the existence of a high groundwater table.²² However, the contract indicated the need for “drainage and dewatering.” The contractor filed a Type 1 Differing Site Conditions claim due to the groundwater encountered on the site during construction of the facility. The government rejected the claim and argued that the contractor was on notice of high groundwater due to its general knowledge of the vicinity as well as other parts of the Contract indicating the need for “drainage and dewatering” incidental to the performance of work. The court rejected the government’s argument. According to the court, the need for draining and dewatering “could just as easily have been referring to operations necessitated by rainfall.” As

¹⁸ See generally *Universal Constr. Inc. v. United States*, 71 Fed. Cl. 179, 183 (2006); see also *Brunswick Corp. v. United States*, 951 F.2d 334, 336 (Fed. Cir. 1991).

¹⁹ *Conner Bros. Constr. Co. Inc. v. United States*, 65 Fed. Cl. 657, 667 (2005) (emphasis added).

²⁰ See fn. 19.

²¹ *Conner Bros. Constr. Co. Inc. v. United States*, 65 Fed. Cl. 657, 667-668 (2005).

²² *Woodcrest Constr. Co. v. United States*, 408 F.2d 406 (Ct. Cl. 1969).

a result, the reference to “draining and dewatering” was not enough to override the “impression” given by the boring logs that no significant groundwater would be encountered. In this case, the contract documents were too vague and did not specifically address the fact that there would likely be required dewatering even though the borings did not indicate a high groundwater level.

2. Case Study #2

A similar outcome is illustrated in a contract to construct over a mile of concrete tunnel utilidors having heights and widths of two to six feet and depth of tunnel excavation from five to nine feet.²³ The boring logs for the project did not indicate a high groundwater table. However, a “baseline” statement in the Contract Documents stated that a “condition of high groundwater exists in this area.” The contractor filed a Type 1 differing site condition claim for groundwater pumping and dewatering costs. The government denied the Type 1 DSC claim based on the baseline statement. The court held that the contract statement that a “condition of high groundwater existed in the area” was a “low key message” that was “muffled by the specific information” in the borings and was nothing more than an indefinite caveat because the term high groundwater is “obviously a relative term” and therefore the precise information in the borings was not negated by the “undefined and unexplained generality of the high groundwater” clause. The court also held that even though the water level might vary from month-to-month—and that a prudent bidder should be aware of such fluctuations and therefore question whether the borings taken at a snapshot in time are truly representative—did not negate the bidder’s right to rely on the borings as presented in bid documents.

3. Case Study #3

For the construction of a federal bridge, contract documents were prepared that contained logs of drill holes describing conditions to be encountered during excavation for pier foundations. The information consisted of profile drawings and accompanying legends. The geotechnical documents for the project also contained a statement that the geotechnical information contained within the borings and geotechnical report “are not guaranteed, not representations, and that the bidder is urged to draw his own conclusions.” The contractor filed a Type 1 DSC claim on the ground that its pier excavation activities encountered wetter conditions than indicated in the borings.²⁴ The claim was denied by the government based on the clause in the geotechnical report stating that the borings did not guarantee the conditions or necessarily represent the conditions. The court interpreted the logs as conveying the existence of a “relatively impermeable and stable and firm materials” for the foundation piers. The court held that a “standard mandatory clause of broad application” that purported to disclaim responsibility for the accuracy of the logs—i.e., that the logs “are not guaranteed, not representations, that the bidder is urged to draw his own conclusions”—was not a proper defense. This case clearly illustrated that broad disclaimers within the geotechnical documents are not valid mechanisms for transferring geotechnical risk from the owner to the contractor.

4. Case Study #4

The contractor was awarded the contract to build 8,300 feet of 8-foot diameter concrete gravity sewer at a depth of 100 feet below the ground surface.²⁵ The bid documents contained boring logs from 16 geotechnical borings conducted at 500-foot intervals along the sewer alignment. The logs indicated a clay layer interspersed with pockets of silt and sand in the first 50-70 feet below ground surface and, beneath this layer, a layer of more permeable soils with significant pockets of clay. The contract drawings also indicated “a great deal of ground water” was present.

The DSC claim filed by the contractor was based on the unanticipated encounter with artesian water. The court described artesian water as “water under hydrostatic pressure because it is confined between impermeable layers of soil. Such a water—containing layer is called an artesian aquifer and it has a recharging capacity which frustrates easy dewatering. Static water, on the other hand, is groundwater that is not under pressure and is not replaced once removed or drawn down.” As noted, the contract documents indicated “a great deal of groundwater” at a specified level. The court held, however, that this indication was insufficient to indicate the presence of artesian water because “the accepted manner of indicating artesian water is to note “water encountered at” a certain level and then

²³ *United Contractors v. United States*, 368 F.2d 585 (Ct. Cl. 1966).

²⁴ *Foster Constr. C.A. & Williams Bros. Co. v. United States*, 435 F.2d 873 (Ct. Cl. 1970).

²⁵ *Metropolitan Sewerage Commission of County of Milwaukee v. R.W. Constr., Inc.*, 241 NW 2d 371 (Wis. 1976).

to state that the water “rose” in the boring to another higher level. As a result, even though “water” was noted, the court granted the DSC claim because the water warning was insufficiently specific to indicate artesian water.

5. Case Study #5

The government let a contract to repair a fuel storage tank. The bid documents disclosed that “the sand and soil bottom [of the tank] is anticipated to contain fuels from past and/or present fuels” and that the “sand shall be considered contaminated with oil” and that “the existing sand is contaminated with oil and jet fuel.” During construction the contractor filed a Type 1 DSC claim, looking to recover additional costs due to alleged large quantities of free-flowing jet fuel and oil free product in the tank. Based on the disclosures in the contract documents as stated above, the Government filed a motion for summary judgment to deny the claim. The court denied the motion. The court held that these contract warnings “could be construed to indicate that [the tank] contained sand tainted with jet fuel not filled with such a large volume of free-flowing product that it would spurt to a height of 18 inches for days.”

6. Case Study #6

In a contract to construct a well water system for the government, the contract contained geotechnical borings; however, the Special Provisions section of the contract stated that borings are representations only of conditions at their location and vertical reach but that conditions in the site area between borings must be inferred by the contractor and that “any localized variations characteristic of the region” will not be a basis for a change condition. The contract contained no definition of “localized variations” or of the “region” in question. During construction, the contractor filed a Type 1 DSC claim based on the existence of excessive cobbles and rock possessing greater compressive strength than indicated in the bid documents.²⁶ In addition, the contractor assumed that based on the borings, the largest rock that would be encountered would be up to five inches.

In awarding an equitable adjustment to the contractor, the Board dismissed two government arguments pertinent here. First, the Board held that this Special Provision was not specific or clear enough to override the inference (drawn from the boring logs) that no significant cobbles or hard rock would be encountered. Second, the government argued that the bidder’s assumption that the project site would contain at most small pieces of various kinds of rock up to five inches) was unreasonable. The government based this argument on the fact that any reasonable contractor would understand that a 6” drill tube would only extract small pieces of rock (i.e., 6” in diameter or less): “The Government contends that these sizes should have alerted a bidder that they were the largest size that could come out of a six inch tube.” The Board did not accept this argument, noting that “nowhere on the documents furnished to the bidders was the size of the tube mentioned” and thus bidders could not recognize the “asserted significance” of the sizes extracted through the tube.

7. Case Study #7

The contract in this case required the removal by excavation and dredging of approximately 170 cubic yards of material on a fixed-price basis.²⁷ The contractor interpreted the contract documents to indicate that the subsurface conditions would be composed primarily of dredged material, predominantly dredged sand. In its claim, the contractor sought extra costs for encountering boulders, rocks/riprap, sandbags and plastic sheeting. The dredging specification warned bidders to anticipate “trees and some other minor amounts of debris” which might include “stones, rubble, wire rope, stumps & trees from snagging operations, and other debris.” Based on that warning, the Army Corps of Engineers denied the claim on the basis that bidders were warned that dredged material might contain stones.

Because the contract did not define “stones” by size, the court applied a standard dictionary definition to equate stone with a small piece of rock. Because the contractor encountered stones ranging in size from that of a fist to 2½ feet in diameter (weighing as much as 35 pounds or more), the mere reference to “stones” in the dredging

²⁶ *Appeal of Alps Constr. Corp.*, ASBCA No. 16966, 1973 WL 1894 (Sept. 17, 1973).

²⁷ *Appeal of Bay West Inc.*, ASBCA No. 54166.

specification was not enough to have put the contractor on notice that boulders might be encountered. Again this case demonstrates that a broad description with vague terms is not suitable for risk allocation.

8. Case Study #8

The claimant in this case was the Construction Manager hired by the federal government to construct a new building in Atlanta, Georgia.²⁸ The DSC claim arose from the caisson subcontractor's encounter with large amounts of groundwater. There were seven borings within the footprint of the building: three along the western edge of the footprint, which found groundwater at 11 to 12 meters below the surface, one boring in the central portion of the footprint, which found "possible groundwater at a depth of 11 meters, and three borings on the east side of the footprint that encountered no groundwater.

The bid documents addressed groundwater as follows: "The presence or absence of water in the bore holes at the time of drilling does not necessarily mean the groundwater will or will not be present at other times. Groundwater levels fluctuate seasonally and are related to the amount of rainfall received in months prior to the observations." Moreover, the bid documents advised bidders that they should assume that conditions represented at test borings may be different at other locations or other times.

Invoking the rule that test borings are "considered the most reliable reflection of subsurface conditions," the Board held that the contract warnings were only "broad, exculpatory clauses" that did not override the specific representations purportedly made by the borings: specifically, that the central and eastern portion of the footprint would be dry.

B. Judicial Acceptance of GBR Risk Allocation

With examples of attempted risk allocation gone awry outlined above, we now turn to the illustrative court cases upholding the GBR or equivalent soils report allocation of risk as enforceable and sufficiently specific to co-exist with the other indications in the contract.

1. Case Study #1

The contractor in this case was awarded a contract to build a lock and gate bay for the Army Corps of Engineers in West Virginia.²⁹ The scope of work involved dewatering the work site by excavating a designated area to form a new cofferdam and building and implementing a dewatering system to lower the water table within the excavation area. The contract established baseline geotechnical conditions and conditions for dewatering. In addition, the contract contained disclaimers regarding the information provided in the geotechnical documents. After identifying "predrainage design assumptions" underlying the design of the prescribed minimum dewatering system, the contract documents went on to state that "these assumptions may or may not be completely valid" and such disclaimers regarding the minimum dewatering system appeared throughout the contract.

In its Type 1 DSC claim, the contractor alleged that the dewatering system specifications presented five conditions that differed from the actual work site conditions resulting in excess, unforeseeable costs. For example, the contractor claimed that the specifications falsely indicated that bedrock at the site was tight, the bottom of the cofferdam cells would form a tight contact with bedrock preventing excess water seepage, and that the excavation would be performed "in the dry."

The court denied the DSC claim, holding that the contract does not contain representations regarding subsurface conditions. Rather, the specifications "merely list baseline assumptions incorporated into the design of the minimum prescribed dewatering system" and advised the contractor how to operate the dewatering system. The specifications as a whole "put contractors on notice that the contractors might have to augment the minimum system to fulfill the Contract if conditions at the site differed from the assumptions under girding the minimum prescribed dewatering system." The court also took up the validity of disclaimers that had been written into the contract. The

²⁸ *Whiting-Turner/A.L. Johnson Joint Venture v. General Services Admin.*, GSBCA No. 15401 (Dec. 5, 2001).

²⁹ *Kiewit Constr. Co. v. United States*, 56 Fed. Cl. 414 (2003).

court concluded that these provisions “expressly warned contractors to determine for themselves the necessity of supplementing the minimum required dewatering system to achieve desired worksite conditions, making Plaintiff ultimately responsible for the construction and performance of the dewatering system.”

2. Case Study #2

In this subway tunneling contract,³⁰ the successful low bidder purchased a tunnel boring machine capable of tunneling at an average rate of five feet per hour through rock at the strength indicated in the bid documents, particularly the rock borings. At completion of the tunnel work, the contractor submitted a Type 1 DSC rock hardness claim. There appears to have been no question but that the compressive strength of the rock in the tunnel alignment was approximately twice that indicated in the owner’s bid documents and boring logs.

The contract documents contained both an exclusion and a disclaimer that lead the court to deny the DSC claim. In the DSC clause itself, for example, the contract stated that “the provisions of this article shall not apply to the rock conditions encountered during construction of this project.” In addition, the special provisions in a clause entitled “data relating to rock conditions” reiterated that the DSC clause “shall not apply to rock encountered during construction of this project.” The contractor urged the court to disregard the exclusion and disclaimer, on the ground that “to uphold the exclusion would practically nullify the DSC clause.” The court ruled in favor of the government, however, stating that the contract was “unmistakably clear” that the contractor rather than the owner must bear the risk of adverse rock conditions: “whether that action was wise is not for us to question, so long as it was clearly an unmistakably taken and was not violative of law, statutory or case.”

3. Case Study No. 3

The contractor in this case was awarded a \$72 million contract to widen roadways, construct interchanges and build four new bridges in Virginia.³¹ The contractor brought a Differing Site Conditions claim based on “elevated lake water levels” at a nearby reservoir. The government denied the claim, relying on a Site Information clause that advised bidders that the water level of the lake “routinely fluctuates” by several feet and that directed bidders to review historical records to take into account non-routine “possible fluctuations” of those levels. The Site Information clause also advised bidders that the lake level fluctuations were “beyond the control” of the government.

The court denied the contractor’s DSC claim. The court held that the Site Information clause “unmistakably informed” the bidder that factors beyond the control of the government caused the lake water to “routinely” fluctuate by as much as “several feet.” The court stated that the contract “established neither a baseline nor even a range of fluctuations” but instead “advised [bidder] that the water level of the lake routinely fluctuates by several feet.” The court summed up the contract indications as follows: “The contract steered clear of making any binding representations on the subject.”

The bidder nonetheless claimed that the government had “conceded” liability to pay the contractor for delays due to high water by extending the contract completion date for this very reason. The court also rejected this contractor argument. The court held that merely granting additional time for an excusable delay does not give rise to compensation and that to hold otherwise “would badly disorient the management of government contracts.”

4. Case Study No. 4

The contractor in this case³² contracted with the government to treat contaminated soil at a Navy facility. Its subcontractor filed a DSC claim. The DSC claim was based on the subcontractor’s belief that the bid documents represented that the contaminated soil contained less than 10% clay.

³⁰ *Appeal of James McHugh Constr. Co.*, 82-1 BCA ¶ 15682, 1982 WL 7886 (Mar. 12, 1982).

³¹ *Commonwealth of Virginia v. AMEC Civil, LLC*, 677 SE2d 633 (Va. 2009).

³² *Int'l Technology Corp. v. Winter*, 523 F.3d 1341 (Fed. Cir. 2008).

As an initial matter, therefore, the court had to decide whether the bid documents taken as a whole represented clay content at less than 10%. One of the two bid documents that characterized the ground conditions contained a table entitled "Soil Characteristics" that summarized nine samples with clay content figures ranging from 6% to 11%. The subcontractor complained that higher clay concentrations made its solvent extraction cycles more costly due to reduced soil permeability. The second bid document, however, indicated clay content from 23% to 28%.

The court rejected the DSC claim on two primary grounds. First, the court held that the 22% to 28% clay content figures "would have prevented a reasonable contractor from interpreting the contract documents as indicating that only a low level of clay was present in the overall soil stockpile." Second, the court held that a statement in one of the two bid documents³³ "should have been a warning to a reasonable contractor that permeability problems might prevent the effective use of [subcontractor's] extraction technology."

4. APPLICATION OF THE FINDINGS

When reviewing the case studies as presented herein it becomes clear that it is critically important to clearly present baseline statements, avoiding generalities and the risk of multiple interpretations. It is also clear that if the owner chooses to allocate a specific risk to a contractor that is not immediately evident on the boring logs, it is prudent to explicitly state the baseline condition, noting that the condition is different from what was encountered in the borings so as to avoid confusion and/or multiple interpretations. To illustrate this point, the following hypothetical case study is presented with suggested baseline statements:

A 60-inch diameter gravity sewer is to be constructed with trenchless construction methods at depths ranging from 20 to 30 feet below the ground surface. The geotechnical investigation for the project includes several borings and test pits that indicate relatively uniform geotechnical conditions consisting of lacustrine deposits of primarily medium dense to dense sandy silt at the elevation of the tunnel excavation. No gravel, cobbles, or boulders were encountered at any elevations in the borings or test pits. However, the site is located in an area that experienced historic glacial activity. As a result the owner is concerned about the risk of encountering cobbles and boulders during tunneling even though the geotechnical investigation would indicate that these materials did not present a high probability of occurrence during tunneling. Further, the owner wants to place the risk of encountering the 'occasional' boulder on the contractor but is willing to accept the risk of encountering a large number of boulders or nested cobbles (considering that the risk of occurrence is very low).

In the preparation of the GBR, it is necessary to acknowledge that a baseline is established for encountering cobbles and boulders even though no cobbles and/or boulders were discovered during the geotechnical investigation. By doing so, the contractor (and the court) will be alerted that the baseline information is going beyond what was indicated in the borings and that the contractor should use this information to establish the bid price rather than just relying on the borings. Further it is necessary to clearly indicate the number and size of boulders that the contractor is to include in the base bid so that a DSC can be clearly determined from the GBR. Therefore, to address the cobbles and boulders, a suggested baseline statement could read as follows:

"Although no gravel, cobbles, or boulders were encountered during the geotechnical investigation for this project, the tunnel is going to be constructed in soils that went through historic periods of glaciations. As a result, glacial drop stones, ranging in size from gravel to boulders can be encountered within the lacustrine formation. For the purpose of preparing the bid, the contractor is instructed to assume that 5% of the material by weight is gravel, 5% of the material by weight is cobbles, and that 5 boulders will be encountered during tunneling operations. Boulders will have a maximum dimension of 18-inches in the longest dimension. The baseline makes no representation as to the location along the tunnel alignment where the gravel, cobbles, or boulders will be encountered."

In this case it is important to acknowledge that the baseline statement is in conflict with the information gathered in the geotechnical investigation, i.e. no gravel, cobbles, or boulders were encountered in the borings so that the contractor is alerted that they need to base their bid on the baseline and not solely rely on the borings. In addition,

³³ The statement provided that "soil composed primarily of silt and clay . . . may not be suitable for solvent extraction because of the excessive time required to perform the necessary number of solvent extraction cycles to remove DDT."

although “trace” gravel and cobbles may be expected, “trace” is defined by the Unified Soil Classification System as containing “up to 5% by weight.” Since a reasonable interpretation of “up to 5%” may be 0%, it is important to baseline the upper bound of 5%.

5. CONCLUSIONS

When the geotechnical engineer prepares a GBR it is critically important to understand not only the technical implications of the baseline statements but also how the court will interpret each baseline should a differing site condition arise. Without such knowledge, owners and engineers can sometimes establish geotechnical baselines that they believe to accurately reflect their desired allocation of risk only to find out during dispute resolution that such statements do not have the legal interpretation that is in concert with the original intent of the engineer who authored the report. In developing the GBR it is important to remember that broad, generic statements that attempt to transfer risk from the owner to the contractor are generally given little weight by the courts. Risk allocation is most effectively achieved with precise, clear statements that have only one reasonable interpretation. In addition, and contrary to what many geotechnical engineers believe, the contractor has the right to rely on all of the geotechnical information that was referenced in the bid documents for the project and not just what was provided to them in the GBR when preparing their bid price. As such, if a baseline is presented that differs from the borings, i.e. the baseline addresses boulders when no boulders were encountered during the geotechnical investigation, it is important to acknowledge the fact that the baseline is a departure from the information gathered during the geotechnical investigation in the baseline statement. Finally, since the GBR is a contract document with the potential to markedly impact the outcome of a differing site condition claim on a trenchless project, review by an experienced attorney prior to release of the document is highly recommended.